UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION

UBIQUITOUS CONNECTIVITY, LP, Plaintiff, v. CITY OF SAN ANTONIO, by and through its agent, CITY PUBLIC SERVICE BOARD OF SAN ANTONIO, d/b/a CPS ENERGY, Defendant.	CIVIL ACTION NO. 5:18-cv-00718-XR

UBIQUITOUS CONNECTIVITY'S OPPOSITION TO CPS ENERGY'S RULE 12(b)(6) MOTION TO DISMISS FOR FAILURE TO STATE A CLAIM [Dkt. No. 17]

Plaintiff UBIQUITOUS CONNECTIVITY, LP (hereinafter, "Ubiquitous" or "Plaintiff") hereby opposes the Rule 12(b)(6) Motion To Dismiss For Failure To State A Claim filed by CPS CITY OF SAN ANTONIO, by and through its agent, CITY PUBLIC SERVICE BOARD OF SAN ANTONIO, d/b/a CPS ENERGY (hereinafter, "CPS") that was filed on September 20, 2018 (Dkt. No. 17) (the "Motion").

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"Ubiquitous"	Plaintiff UBIQUITOUS CONNECTIVITY, LP
"CPS"	Defendant CPS CITY OF SAN ANTONIO, by and through its agent, CITY PUBLIC SERVICE BOARD OF SAN ANTONIO, d/b/a CPS ENERGY
"'935 Patent"	U.S. Patent No. 8,064,935
"'655 Patent"	U.S. Patent No. 9,602,655
"Patents-in-Suit"	'935 Patent and '655 Patent collectively (to be found at Dkt. No. 1-2)
"McDonough Decl."	Declaration of James F. McDonough, III, dated November 5, 2018 (attached hereto)
"Zat. Decl."	Declaration Of Ivan Zatkovich In Support Of Ubiquitous Connectivity's Opposition To Cps Energy's Motion To Dismiss (dated November 5, 2018, attached to McDonough Decl. as Exhibit C)
"POSITA"	person of ordinary skill in the art

I. INTRODUCTION

Today, it is fashionable for defendants to file 35 U.S.C. §101 at the beginning of a patent case. This type of motion presents an easy opportunity to persuade a court to dismiss a case prior to it truly understanding the patents, including knowing what the claims mean, grasping the state of technology at the filing date, and determining what factual issues must be resolved by a jury. This case is no different, and CPS has seized on the opportunity to mischaracterize the claims of the Patents-in-Suit as being directed to nothing more than "monitoring and controlling appliances," an alleged "abstract idea" that is supposedly bereft of "an inventive concept beyond that idea."

At Step 1 of *Alice*, CPS has applied an inappropriate level of abstraction to the scope of the claims such that its description of the claims is "untethered from the language of the claims," which Courts have found fatal to such motions. The Patents-in-Suit are actually directed to the creation of a set of "on-demand bidirectional communication" technologies, not any abstract idea. The patents provide a solution to what was a technical problem in the year 2004—existing communication system technologies could not facilitate on-demand bilateral communications between a cellphone and conventional "base unit" components in a network. Ubiquitous' solution was integrating cellular, user-friendly two-way communications into a base unit. This is far from the mere provision of "remote access" to which CPS tries to limit the inventions. For these reasons, the Court need not proceed to Step 2 of *Alice* and should instead deny CPS's Motion.

Even if the Court reaches Step 2, at least three "inventive concepts" are embodied in the claims of the Patents-in-Suit at the "base unit," including (1) two-way digital communications with a cellular phone, (2) unsolicited event notification with a cellular telephone, and (3) geo-fence based communications within these constructs. And the combination of these three is indisputably inventive itself. CPS's motion thus also fails at Step 2. Finally, and even setting the merits aside, CPS's motion is premature because there are pending claim construction and factual disputes.

II. LEGAL AUTHORITY

A. MOTION TO DISMISS UNDER FED. R. CIV. P. 12(B)(6).

Regional circuit law applies to a §101 motion brought under Fed. R. Civ. Proc. 12(b)(6). *See Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1257 (Fed. Cir. 2017). "When evaluating a motion to dismiss for failure to state a claim under Rule 12(b)(6) the complaint must be liberally construed in favor of the plaintiff and all facts pleaded therein must be taken as true." *Affinity Labs of Tex., LLC v. Netflix, Inc.*, 2016 LEXIS 163110, *4-*5 (W.D. Tex. May 6, 2016). The burden of proof that claims of a patent are invalid lies with the party asserting invalidity. *See* 35 U.S.C. §282(a) ("The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity."); *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 97 (2011). Where a court considers evidence presented that is outside of the pleadings, a motion to dismiss "must be treated as one for summary judgment under Rule 56." Fed. R. Civ. Proc. 12(d); *see also U.S. Bank N.A. v. Denning*, 2015 LEXIS 120813, *6 (W.D. Tex. Sep. 10, 2015).

B. PATENTABLE SUBJECT MATTER UNDER 35 U.S.C. §101.

Invalidity is a question of law which may depend upon underlying questions of fact. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1365 (Fed. Cir. 2018). When the validity of an issued patent is challenged, the analysis starts with the presumption that the patent is valid and that the accused infringer's burden of overcoming this presumption of validity must be proven by clear and convincing evidence. 35 U.S.C. § 282(a); *i4i Ltd. P'ship*, 564 U.S. at 97; *Commil USA, LLC v. Cisco Systems, Inc.*, 575 U.S. __, 135 S.Ct. 1920, 1929 (2015); *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 958 (Fed. Cir. 2014). Section 101 of the Patent Act provides: "Whoever invents or discovers any new and useful process, ***machine***, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. §101 (emphasis added). The Supreme Court has carved out

three exceptions to the broad §101 statutory categories of patent eligible subject matter, namely that "laws of nature, physical phenomena, and abstract ideas" may not be patented. *Bilski*, 561 U.S. at 601-602); *see also Core Wireless Licensing, S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1361 (Fed. Cir. 2018)). The Supreme Court's decisions in *Mayo* and *Alice* have established the test to be used applying the exclusions (the "*Alice* Test"). *Mayo Collab. Serv. v. Prometheus Lab., Inc.*, 566 U.S. 66, 77-80 (2012); *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 573 U.S. 208, 134 S.Ct. 2347, 2360, 189 L.Ed.2d 296 (2014).

The *Alice* Test proceeds on a claim-by-claim basis and requires the party bearing the burden of proving invalidity of each claim. *Id.*

> The "framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts" comprises two steps. [*Alice*] at 2355. The first step requires courts to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." [*Alice*] If they are, the court must then analyze whether the claim elements, either individually or as an ordered combination, contain an "inventive concept" that 'transform[s] the nature of the claim' into a patent-eligible application." [*Alice*] (quoting *Mayo*, 566 U.S. at 72, 78).

Visual Memory LLC, 867 F.3d at 1258; *see also Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (referring to step one as the "abstract idea" step and step two as the "inventive concept" step). Both steps of the *Alice* Test are informed by the claims and the specification. *See Amdocs (Israel) v. Openet Telecom, Inc.*, 841 F.3d 1288, 1299 (Fed. Cir. 2016).

"Under Alice step one, 'the claims are considered in their entirety to ascertain whether [the claims] character as a whole is directed to excluded subject matter.'" *Two-Way Media Ltd. v. Comcast Cable Communs., LLC*, 874 F.3d 1329, 1337 (Fed. Cir. 2017) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)). "We look to whether the claims in the patent focus on a specific means or method, or are instead directed to a result or effect that itself is the abstract idea and merely invokes generic processes and machinery." *Id.* If it is

determined that the claims at issue are not directed to an abstract idea, there is no need to proceed to Step 2. *See Core Wireless*, 880 F.3d at 1361; *see also RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1326 (Fed. Cir. 2017) ("If the claims are not directed to an abstract idea, the inquiry ends."); *Thales Visionix Inc. v. U.S.*, 850 F.3d 1343, 1349 (Fed. Cir. 2017) ("Because we find the claims are not directed to an abstract idea, we need not proceed to step two.").

If the claim falls into one of the exceptions, then Step 2 of the *Alice* Test requires that each element of the claim must be further evaluated both by itself and in an ordered combination to determine whether the elements transform the claim to such an extent that it nevertheless claims only subject matter that is patentable. *Alice*, 134 S.Ct. at 2355. Step 2 of the *Alice* Test involves the search for an "'inventive concept' sufficient to 'transform the nature of the claim into a patent-eligible application.'" *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1312 (Fed. Cir. 2016) (quoting *Alice*, 134 S.Ct. at 2355). As such, a claim which is deemed to be directed to an abstract idea in Step 1 of the *Alice* Test may nevertheless remain a patent-eligible application of that abstract idea by, for example, improving upon existing technology or integrating the abstract idea into a new combination of steps in a way that is unconventional in the field. *Mayo*, 566 U.S. at 79-85. "The inventive concept inquiry requires more than recognizing that each claim element, by itself, was known in the art. … [A]n inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces." *BASCOM Global Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016). Whether a claim is unconventional is a highly-factual inquiry and "that pragmatic analysis of §101 is facilitated by considerations analogous to those of §§ 102 and 103 as applied to the particular case." *Internet Patents Corp.*, 790 F.3d at 1347; *see also Berkheimer*, 881 F.3d at 1368 ("The question of whether a claim element or combination of elements is well-understood, routine and

conventional to a skilled artisan in the relevant field is a question of fact" to "be proven by clear and convincing evidence.").

III. THE MOTION IS PREMATURE DUE TO CLAIM CONSTRUCTION AND FACTUAL DISPUTES.

A determination of patentability at the pleadings stage of this litigation is premature. First, there are claim construction disputes that must be resolved before any claims can be assessed for inventiveness, *i.e.*, the Court must determine the exact meanings of the claims before they can be properly assessed. Second, the expert opinions on patentability supporting this Opposition, including those regarding the technological field at issue, the state of that technology at the priority date for the Patents-in-Suit, and the claimed solutions to those technical problems, are the only opinions of record that shed light on the specification and technologies at issue as they would have been interpreted by persons of ordinary skill at the priority date of the Patents-in-Suit.[1]

A. THE EXISTING CLAIM CONSTRUCTION DISPUTES MUST BE RESOLVED PRIOR TO DETERMINING WHETHER THE CLAIMS ARE PATENT INELIGIBLE.

Based on communications that Plaintiff has had with the CPS, coupled with the claim construction set forth in CPS's Motion, it is clear that there are claim construction disputes that must be resolved prior to any analysis of the claims under 35 U.S.C. §101. The Federal Circuit has recognized that claim construction "will ordinarily be desirable—and often necessary—to resolve claim construction disputes prior to a § 101 analysis, for the determination of patent eligibility requires a full understanding of the basic character of the claimed subject matter." *BanCorp Servs., LLC v. Sun Life Assurance Co. of Canada*, 687 F.3d 1266, 1273-1274 (Fed. Cir. 2012); *Content Extraction & Transmission LLC v. Wells Fargo Bank*, 776 F.3d 1343, 1349 (Fed. Cir. 2014). "If there are claim construction disputes at the Rule 12(b)(6) stage, we have held that

[1] Even assuming the CPS submits a rebuttal declaration from a competing expert, that would merely complicate but not resolve the factual issues on patentability that are now before this Court.

either the court must proceed by adopting the non-moving party's constructions, or the court must resolve the disputes to whatever extent is needed to conduct the § 101 analysis, which may well be less than a full, formal claim construction." *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1125 (Fed. Cir. 2018), *pet. for r'hrg en banc denied*, 890 F.3d 1354 (2018) (internal citations omitted). When there are salient claim construction disputes at the pleading stage, denial of a §101 motion is warranted. *See Netflix, Inc.*, 2016 U.S. Dist. LEXIS 163110 at *11-*13; *A Pty Ltd. v. Facebook, Inc.*, 2015 WL 5883331, *5-*6 (W.D. Tex. Oct. 8, 2015).

It is an established tenet of patent law that claims define the inventions of a patent. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (*en banc*). In most cases, ascertaining the meaning of the claims requires the court to consider "those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean." *Id.* at 1314 (*quoting Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). The starting point for the Court's analysis is the available intrinsic evidence relating to the patent. *See id.* at 1317. Extrinsic evidence, such as the background science or the meaning of a term in the relevant art, may be considered to understand what a disputed claim term would have meant to a person of ordinary skill in the art (a "POSITA"). *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1216 (Fed. Cir. 1995). In analyzing the claim language, the Court must analyze the context in which the term appears and other claims of the patent to gain insight on the patentee's intention for claim definition. *Phillips*, 415 F.3d at 1313.

In its Motion, CPS asks this Court to accept its meanings for the claim language of each alleged element of Claim 19 of the '935 Patent and Claim 1 of the '655 Patent. *See* Motion, at pp. 8-10 (tables listing the claim language and the "[c]laimed [i]dea," or in other words, the alleged

meaning of that claim language).[2] Ubiquitous asked CPS to stipulate to those constructions. *See* Exhibit A[3] at pp. 1-3. But CPS refused. *See* Exhibit B at pp. 1-2.[4] Ubiquitous submits its preliminary claim constructions for eleven common terms of the patents at Appendix A. Given that these constructions differ dramatically from those presented by CPS in its Motion, *compare* Appx. A *with* Motion, at pp. 8-10, there is undeniably a dispute.

Here, it is obvious that the parties disagree on the meanings of the claim elements (and even what those elements are), which distinguishes this case from those in which there is no dispute over claim construction. *See e.g., Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1374 (Fed. Cir. 2016). As the record stands, there is no way for the Court to decide this issue without claim construction. *See BanCorp Servs., LLC*, 687 F.3d at 1273-1274 (claim construction ordinarily necessary prior to a §101 analysis); *see also Netflix, Inc.*, 2016 U.S. Dist. LEXIS 163110 at *11-*13; *A Pty Ltd.*, 2015 WL 5883331 at *5-*6. Alternatively, the Court could accept Ubiquitous' claim constructions (*see Aatrix Software, Inc.*, 882 F.3d at 1125), or CPS could stipulate to them, which would lead to only one conclusion—the claims are not directed to an abstract idea.

B. THERE ARE FACTUAL DISPUTES AS TO WHETHER THE CLAIMS WERE WELL-UNDERSTOOD, ROUTINE, AND CONVENTIONAL.

The current briefing also highlights the fact that there are factual disputes that must be

[2] For example, CPS claims the language "wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geofence" means "conditional sending of commands if the remote device gets too far from the base unit." Motion, at p. 10.

[3] Any reference to Exhibit __ or Appendix __ in this Opposition refers to that exhibit or appendix as cited and authenticated in the McDonough Decl.

[4] In its letter, CPS did respond with a construction of "SMS (i.e., text messaging)" for the term "simple message service." *See* Ex. 2, at p. 2. This construction is different from that which it proposes in its Motion, *compare id. with* fn. 2, and it is also different than Ubiquitous' construction for that term. *See* Appx. A, p. 1; *see also* Zat. Decl., §VII.A

resolved before the Court can rule on CPS's Motion. That is because

> [w]hether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination. Whether a particular technology is well-understood, routine, and conventional goes beyond what was simply known in the prior art. The mere fact that something is disclosed in a piece of prior art, for example, does not mean it was well-understood, routine, and conventional.

See Berkheimer, 881 F.3d at 1369; *see also Aatrix Software, Inc.*, 882 F.3d at 1128; *Mortgage Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1325 (Fed. Cir. 2016); *Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1340-1341 (Fed. Cir. 2013). These cases hold that the question of whether the claim limitations involve more than the performance of well understood, routine, and conventional activities is a factual inquiry examined through the lens of a POSITA. *Berkheimer*, 881 F.3d at 1368 ("The question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact. Any fact, such as this one, that is pertinent to the invalidity conclusion must be proven by clear and convincing evidence."). Disputes of fact must be resolved prior to rendering claims ineligible pursuant to a dispositive motion. *Id.*

Ubiquitous' expert has provided a thorough declaration explaining the technological field the subject claims cover (as understood by a POSITA[5]) and the state of that technology at the priority date of the patents. *See, infra,* Section IV.B.1. It also describes the unconventional nature of many of the claim elements and how their use in the claims were not routine nor well-known. *See, infra,* Section IV.B-C. This declaration, discussed in more detail below, disputes all of CPS's positions on these same subjects, thus highlighting the factual issues that must be resolved before the Court can rule on the Motion. At best, CPS's motion is premature. At worst, CPS has no

[5] A POSITA for these patents "would have a bachelor's degree in electrical engineering or computer science and two years of industry experience in the field of computers and communications." *Id.*

evidence to support its contentions at all. Either way, CPS's Motion should be denied.

IV. THE CLAIMS OF THE PATENTS-IN-SUIT ARE PATENT ELIGIBLE.

Contrary to what the Court might glean from CPS's Motion, *Alice* does "not . . . broadly hold that all improvements in computer-related technology [hardware and software] are inherently abstract and, therefore, must be considered at step two." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). It is "relevant to ask whether the claims are directed to an improvement to computer functionality versus being directed to an abstract idea, even at the first step of the *Alice* analysis." *Id*. (emphasis added). The invention's ***ability*** to run on a general purpose computer does not doom the claims. *Id*. at 1338. "[D]escribing the claims at such a high level of abstraction and untethered from the language of the claims all but ensures that the exceptions to 101 swallow the rule." *Id*. at 1337. The Court must look at ***each claim*** individually in view of the specification.

A. CPS'S ALLEGED "REPRESENTATIVE CLAIMS" ARE FAR FROM "REPRESENTATIVE."

CPS claims that because "Claim 19 of the '935 Patent and Claim 1 of the '655 Patent" are "the only two claims mentioned in the Complaint," they are representative of the asserted claims.[6] This is wrong. Ubiquitous disputes that Claim 19 of the '935 Patent and Claim 1 of the '655 Patent are representative—they are not. "Under the doctrine of claim differentiation, each claim in a patent is presumptively different in scope." *Wenger Mfg. v. Coating Machinery Sys.*, 239 F. 3d 1225, 1233 (Fed. Cir. 2001) (*citing Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182,

[6] Claim 19 of the '935 Patent and Claim 1 of the '655 Patent were not chosen because they are representative of other claims or because those are the only claims infringed. One claim from each of the patents is listed in the Complaint because that is what the plausibility standard of *Iqbal/Twombly* requires. Ubiquitous must only identify the asserted patents, identify the accused products, and allege that each and every element of at least one claim of the patent be met. *See Disc Disease Sols. Inc. v. VGH Sols., Inc.*, No. 2017-1483, 2018 U.S. App. LEXIS 11231, *7 (Fed. Cir. May 1, 2018). When infringement contentions are due in this matter, and not before, that is the time that all asserted claims must be disclosed.

1187 (Fed. Cir. 1998)). Moreover, "[t]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." *Phillips*, 415 F.3d at 1315. Courts may only treat claims as representative "in certain situations, such as if the patentee does not present any meaningful argument for the distinctive significance of any claim limitations not found in the representative claim or if the parties agree to treat a claim as representative." *Berkheimer*, 881 F.3d at 1365. Nor is a claim "representative simply because it is an independent claim." *Id.* The other independent and dependent claims are distinct and claim unique limitations as compared to the alleged "representative claims." As proof, Appendix B to this Opposition outlines each of the differences and unique elements required in Claims 1-18 and 19-20 of the '935 Patent (as compared to Claim 19), *see* Appx. B, Table 2, Co. 3, and Claims 2-24 of the '655 Patent (as compared to Claim 1). *See* Appx. B, Table 1, Col 3. For these reasons, Claims 19 and 1 are not "representative claims."

B. THE PATENTS ARE DIRECTED TO THE CREATION OF A SET OF "ON-DEMAND BIDIRECTIONAL COMMUNICATION" TECHNOLOGIES, NOT ANY ABSTRACT IDEA.

The '935 and '635 Patents are directed to the creation of "on-demand bidirectional communication" technologies that have various features (as identified individually by each claim). *See* Zat. Decl., §VIII.A.v. The claims are not, as CPS characterizes them, directed to "monitoring and controlling devices." *See* Zat. Decl., §IX.A.i. That myopic view is mere posturing by CPS—an overgeneralized attempt to render these inventions invalid by branding the claims "abstract."[7] The specification itself is dispositive to the inquiry. The "Field of Invention" section of the patents disclose that "the system relates to on demand bidirectional communication between a remote

[7] This is further supported by CPS's own communications with Ubiquitous. In its Motion, CPS asks the Court to accept their view of meaning of elements in each of Claim 1 and Claim 19. *See* Motion, pp. 8-10 (tables of claim elements). But when asked to commit to those, CPS rebuffed Ubiquitous' request because CPS knows the elements of the claims are not "generic" devices and electronics. *See, supra,* Section III.A and cited exhibits.

access unit and a multifunctional base control unit in a geographically remote location." '655 Patent at 1:22-26; *see also* Zat. Decl., §V.A.

CPS takes the positions it does in its Motion because the key to Step 1 of the *Alice* Test is determining "'whether the focus of the claims is on the specific asserted improvement in computer capabilities' or whether 'computers are invoked merely as a tool.'" *Smart Sys. Innovations, LLC v. Chicago Transit Auth.*, 873 F.3d 1364, 2017 U.S. App. LEXIS 20333, *13 (Fed. Cir. Oct. 18, 2017) (*quoting Enfish, LLC*, 822 F.3d at 1335-1336). It is important to recognize the danger of overgeneralizing the claims at Step 1. *See Mayo*, 566 U.S. at 71 ("The Court has recognized, however, that too broad an interpretation of this exclusionary principle could eviscerate patent law. For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas."); *Alice*, 134 S.Ct. at 2354 ("we tread carefully in construing this exclusionary principle lest it swallow all of patent law."); *McRO, Inc.*, 837 F.3d at 1313 ("We have previously cautioned that courts must be careful to avoid oversimplifying the claims by looking at them generally and failing to account for the specific requirements of the claims.").

But CPS makes the fatal mistake of applying "an inappropriate level of abstraction such that its description of the claims is 'untethered from the language of the claims.'" *See Blackbird Tech LLC v. Niantic, Inc.*, 2018 LEXIS 186629, *8 (D. Del. Oct. 31, 2018) (*quoting Enfish, LLC*, 822 F.3d at 1337). The claims here cover specific devices configured in specific ways, to create session based bidirectional communications between a multifunctional base unit and a cellphone, which were otherwise unable to communicate. *See* Zat. Decl., §V.III.A.ii.

1. <u>The Technical Problems</u>: Then Existing "OEM" Base Unit Components Were Unable To Facilitate Bilateral Communications With Cellular Telephones With Then Existing Communication System Technologies.

The state of communications technology in 2004 is summarized by Dr. Zatkovich. *See* Zat. Decl., §IV. This summary is important because in order to properly assess the claims at issue

here, the Court must understand the state of that technology in 2004, including the state of control systems (polling versus event driven systems) and the applications of those systems at the time. *See* Zat. Decl., §IV.A.i-iii (explaining the same). That background, with reference to the "Background of The Technology" section in the patents, is detailed by Dr. Zatkovich. *Compare id.* (explaining the technological state of the systems referenced in the patent as of 2004) *with* '655 Patent, 1:30-3:14 ("Background of The Technology"); *see also* Zat. Decl., §V.B. The Court must also understand the communication paradigms that then existed within control systems. Those include one-way versus two-way (or bidirectional) communications, transmission range considerations for various communication types, early interactive telephone-based systems, and the history of smartphone development, which are also detailed by Dr. Zatkovich. *See* Zat. Decl., §IV.B.i-iv (explaining the same). Finally, the Court must have the requisite background regarding the 2004 state of location detection and geofencing, which includes understanding location trilateration, GPS systems, cellular tower technology, and geofencing. *See* Zat. Decl., §IV.C.i-iv.

In 2004, it is clear that "OEM" base unit systems were unable to create session-based communications with cellular telephones prior to the inventions of the '935 and '655 Patents. *See* Zat. Decl., §IV.B.iv. It was never done because then-existing technology did not allow it. *See* Zat. Decl., §VIII.A.ii.a (explaining the same). To situate the Court in time, the Patents-in-Suit "were filed in November 2004 but the first iPhone did not become available until January 2007. Although the iPhone was not the first 'smartphone,' it was the first example of what we now consider to be a modern smartphone." *Id.*, §IV.B.iv. Cellular telephones did not have "apps" as we know them today. Additionally, as of 2004, "then-existing thermostats typically monitored ambient temperature and maintained that temperature within a predetermined range." *Id.*, §V.B. And although "progress was being made toward more sophisticated forms of remote monitoring

and control (e.g., land-line connectivity to a home monitoring and control system," *id.* (*citing* '655 Patent, 1:64-67), the "then-existing land-line based solutions had significant drawbacks," *id.*, including the fact that they used "'tones or cryptic, hard-to-understand, digitized voice prompts.'" *Id.* (citing '655 Patent, 2:46-55). Power-line based systems also were in development but were limited to intra-building communication, and although there was commercial interest in internet based systems, there was serious drawbacks to that type of system. *Id.* The Patents-in-Suit also

> disclose the then-existing use of cellular networks with monitoring and control systems but observe that these systems were crude and inconvenient to use because they either offered one-way communication or very unfriendly two-way communication. *See* 2:46-51 (disclosing the existence of inferior telephone interfaces) and 3:4-8 (disclosing use of a cellular phone but with the same shortcomings of other telephone interfaces). *See also* 7:15-22 (then-existing systems utilizing a cell phone required a user to dial in to a base unit, press telephone keypad keys to create touch-tone (DTMF) sounds that would be received and interpreted by the base unit, and then manually disconnect from the base unit when communication is complete).
>
> In another example, the Ubiquitous Patents disclose the then-existing use of a "control architecture" including a one-way communication of commands to a device under control. *See* 2:17-20. The Ubiquitous Patents also disclose then-existing bi-directional communications in the limited context of Internet-based communications. *See* 2:65-3:3. By contrast, then-existing telephone or mobile device based communications disclosed by the Ubiquitous Patents involve one-way techniques (e.g., DTMF/keypad tones) or two-way techniques with significant shortcomings (e.g., "hard-to-understand digitized voice prompts"). *See* 2:46-52. Thus, each approach had identified shortcomings.

See Zat. Decl., §VIII.A.ii.a. These problems were overcome by Ubiquitous.

2. <u>The Technical Solutions</u>: Integration Of Cellular, User-Friendly (Automated) Two-Way Communications Into A Base Unit At A Remote Location.

Only with this background, can the Court understand why the patents were written the way they were: which was to inform a POSITA of technical solutions to overcome then-existing technical problems in bidirectional control systems. *See* Zat. Decl., §VI. A POSITA would understand that, "[a]lthough the context of the Ubiquitous Patents' invention is home or business appliance monitoring and environmental control, the [Patents-in-Suit] are focused on only one

aspect of that industry, and that is the integration of an incompatible communication device (a cellular phone) into that space." *See* Zat. Decl., §V.C. (and related discussion).

"The [Patents-in-Suit] reflect improvements over the 2004-era state of the art regarding structures and features in a base unit including interfacing cellular communications with computing devices." *See* Zat. Decl., §VIII.A.ii.b.[8] The custom "base unit" is disclosed at Figure 4 of the patents. *Id.* The "subsystems" disclosed, and how a POSITA would implement them with hardware and software, are expressly disclosed in the specification. *Id.* "Thus, the innovations that went into creating the base unit reflected the key structural improvements within a base station for facilitating improved communication through on-demand, bi-directional command communications." *Id.* (discussing the teachings of the specification).

Although the inventions of the Patents-in-Suit "can be created from components available from original equipment manufacturers (OEMs)," those components could not "simply be combined like puzzle pieces to achieve a functioning result." *Id.* The teachings of the Patents-in-Suit would have to be followed, *e.g.*, the implementation details for sending a message from a base unit to a remote unit, the configuration of the base unit to receive simple messages from a wireless interface, and other structural improvements within a base system. *Id.* Each limitation of the alleged "representative claims" are written to overcome the shortcomings in the art. *See id.* (Table1 and Table 2, listing claim language and the technical problem it overcomes). Contrary to CPS's claimed "abstract idea," the Patents-in-Suit to not purport to invent any "new forms of environmental monitoring or control." *See* Zat. Decl., §VIII.A.ii.c. Instead, they "are directed to

[8] *See also* 7:41-48 (disclosing that technical solution avoids "voice mode" to achieve two-way communications); 7:52-54 and 7:61-67 (use of SMS, optionally involving port addresses, allows automated/on-demand communications between a mobile device and another device without requiring user intervention); and 8:59-65 (two-directional communications not requiring user intervention or crude user interfaces).

base unit improvements that facilitated improved communication techniques during environmental monitoring and control and are not directed to an abstract idea concerning environmental monitoring and control." *See* Zat. Decl., §VIII.A.ii.d.

The character of the claims as a whole confirms this. *C.f., McRO, Inc.*, 837 F.3d at 1312. For Claims 19 and 1, the significance and number of limitations that directly concern communications technology is greater than the significance and number of limitations that concern "monitoring and control." *See* Zat. Decl., §VIII.A.iii. The Patents-in-Suit and their claims are directed to improved communications rather than environmental monitoring and control. *See* Zat. Decl., §VIII.iv. Moreover, "[t]his bidirectional on-demand communication interface, implemented through the base unit, was unconventional in that a cellular device was not used in this manner before. It was also unique in that it enabled unsolicited messages and information to be sent from a remote monitored and controlled device to the user's cell phone such as sending notification of a fire alarm, a security break-in, or a child leaving a geographic (geo-fenced) area." *See* Zat. Decl., §V.C. Claims 1-18 and 19-20 of the '935 Patent (as compared to Claim 19) and Claims 2-24 of the '655 Patent (as compared to Claim 1) are similarly not "abstract." *See* Zat. Decl., §VIII.C (explaining why). In the end, the claims of the Patents-in-Suit "are directed to improved communications rather than environmental monitoring and control" and teaches specific structures for achieving "improve[d] communication." *See* Zat. Decl., §VIII.A.v.

3. CPS's Characterizations of The Patents-In-Suit Are Plainly Wrong.

Although the explanations above sufficiently rebut CPS's characterizations of the Patents-in-Suit, Ubiquitous nonetheless disputes the specific arguments made by CPS in its Motion:

- The Patents-in-Suit teach significantly more than environmental "monitoring and control." *See* Zat. Decl., §IX.A.i.
- The Patents-in-Suit do not merely claim a "result;" they claim an improved "base unit" that generates a result. *See* Zat. Decl., §IX.A.ii.

- Geo-fencing is not a "routine and conventional activity within environmental monitoring and control. *See* Zat. Decl., §IX.A.iii.
- The Patents-in-Suit do not fall into the alleged categories of activities that CPS asserts are inherently unpatentable. *See* Zat. Decl., §IX.A.v.
- The other independent and dependent claims add limitations and do not reflect the "same abstract idea," or any abstract idea. *See* Zat. Decl., §IX.A.vi.

4. The Combination Of Physical Elements Describes A Machine That By Its Very Nature Cannot Be "Abstract."

The elements of the claims of the Patents-in-Suit describe, even as deconstructed by CPS, a "machine." *See Burr v. Duryee*, 68 U.S. 531, 570 (1863) ("A machine is a concrete thing, consisting of parts, or of certain devices and combination of devices. The principle of a machine is properly defined to be 'its mode of operation,' or that peculiar combination of devices which distinguish it from other machines."). A "machine" is explicitly patent eligible. *See* 35 U.S.C. §101; *see also In re Nuijten*, 500 F.3d 1346, 1356 fn 4 (Fed. Cir. 2007) (device that generates a signal is a "machine"). Here, the claims of the Patents-in-Suit explicitly describe a "system" comprising tangible elements, and they should be construed as a machine. *See Corning v. Burden*, 56 U.S. 252, 269 (1853) (construing claims as a "machine" in a way that is most favorable to the patentee where claims contain machine in the title and specification).

C. EVEN IF THE COURT FINDS THAT THE PATENTS-IN-SUIT ARE DIRECTED TO AN ABSTRACT IDEA, THE CLAIMS DISCLOSE "INVENTIVE CONCEPTS."

"In *Alice* step two, we consider the elements of the claim, both individually and as an ordered combination, to assess whether the additional elements transform the nature of the claim into a patent-eligible application of the abstract idea." *Two-Way Media Ltd.*, 874 F.3d at 1338 (citing *Content Extraction & Transmission LLC*, 776 F.3d at 1347). At Step 2, a claim is patent eligible if it embodies an inventive concept by reciting a "specific, discrete implementation of the abstract idea." *BASCOM Global Internet Servs., Inc.*, 827 F.3d at 1350; *see also Amdocs (Israel)*

Ltd., 841 F.3d at 1300 (holding an invention patentable if claims "solve a technology-based problem, even with conventional, generic components, combined in an unconventional manner"). A claim contains an "inventive concept" if it comprises more than "well-understood, routine, conventional activity already engaged in by the scientific community." *Mayo*, 566 U.S. at 79.

1. The Inventive Concepts: The Base Unit and Cellular Remote Unit Each Embody At Least Three "Inventive Concepts."

CPS's Motion ignores the evidence of the claims and the specification by asserting that the "base unit" is conventional. Motion at 10. But the description of the "base unit" discloses communications improvements applied to a base unit within the context of environmental monitoring and control, including the disclosure of application software to create on-demand triggers executed in response to events. *See* '665 Patent: 5:4-13:36, 7:41-48, 7:52-54, 7:61-67, 8:1-12, 8:59-65, 10:30-36, 10:50-66, 11:24-38 and Fig. 4; Zat. Decl., §VIII.A.i.b. Contrary to CPS's contention, such a "base unit" could not have been purchased off-the-shelf, and would have required assembly of OEM components and coding to connect the components together to assemble a base unit that could interact with a cellphone. *See* Zat. Decl., §VIII.A.i.b., §VIII.B.i.b.1. In addition, the use of a cellular phone to remotely control environmental devices was not available generally. *See* Zat. Decl., §VIII.B.i.b.2.

In the end, at least three "inventive concepts" are embodied in the claims of the Patents-in-Suit at the "base unit," including (1) two-way digital communications with a cellular phone, (2) unsolicited event notification with a cellular telephone, and (3) geo-fence based communications within these constructs. *See* Zat. Decl., §VIII.B.i.A. and §VIII.B.ii.1-3. As such, the "base unit" and the cellular control unit of the claims of the Patents-in-Suit were each not conventional in the pre-iPhone world of 2004, or at worst, there is a question of disputed fact to be resolved by a jury. *See Amdocs (Israel) Ltd.*, 841 F.3d at 1300; *Berkheimer*, 881 F.3d at 1365; *see also BSG Tech LLC*

v. Buyseasons, Inc., 899 F.3d 1281, 1290 (Fed. Cir. 2018) ("in cases where the only issue at step two is whether claim limitations are well-understood, routine, and conventional, a genuine dispute over that issue will preclude summary judgment that a claim is ineligible under § 101."). Claims 1-18 and 20 of the '935 Patent (as compared to Claim 19) and Claims 2-24 of the '655 Patent (as compared to Claim 1) similarly embody "inventive concepts." *See* Zat. Decl., §VIII.C.

2. <u>Another Inventive Concept</u>: The Combination of The Claim Elements.

CPS's Step 2 analysis also wrongly concludes that the combination of the elements of the claims of the Patents-in-Suit was conventional in November 2004. However, "an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces." *BASCOM Global Internet Servs., Inc.*, 827 F.3d at 1350. CPS's Motion glosses over the requirement that a claim's elements must also be considered in their "ordered combination." *See Alice*, 134 S.Ct. at 2355; *Mayo*, 566 U.S. at 79-80; *see also KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 418-419 (2007) ("inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.").

As such, even if the Court finds that the base unit and cellular remote control were generic and their use conventional in 2004, which is not possible on this record, their combination into a system that allows for bidirectional communication between incompatible devices was indisputably not generic or conventional in 2004. *See* Zat. Decl., §VIII.B.iii. Indeed, their combination reflects "significantly more" than an "abstract idea" of environmental monitoring and control. *Id.*; *cf., Amdocs (Israel) Ltd.*, 841 F.3d at 1300-1301 (Where "generic components operate in an unconventional manner to achieve an improvement," the claim "provides the requisite 'something more' than the performance of well-understood, routine, and conventional activities previously known to the industry."). As thoroughly demonstrated above, and contrary to CPS's

claim, the claims of the Patents-in-Suit do not recite a collection of conventional components performing their ordinary functions. *See* Zat. Decl., §IV.B. They embody "improvements to acknowledged deficiencies in the art, thereby fully reflecting something 'substantially more' than an abstract idea." *Id*, §IV.B.i. For these reasons, CPS's Motion should also fail at Step 2.

D. THE PATENTS-IN-SUIT ARE MORE LIKE THOSE DETERMINED TO BE CONCRETE WITH "INVENTIVE CONCEPTS" THAN THOSE DEEMED INVALID.

In addition to the characterizations CPS makes and that are disputed by Ubiquitous in Sections IV.B.3, *supra*, CPS makes an additional legal argument. It argues that the claims of the Patents-in-Suit are merely directed to "remotely controlling devices," Motion, at p. 11, and thus are patent ineligible under District Court cases.[9] *Id.* at pp. 10-13. To start, the cited opinions were all issued prior to *Enfish*, which is the first case to articulate a clear test to patentability for computer improvements. *Enfish*, 822 F.3d at 1335-1336 (holding *Alice* does not render all computer hardware/software inventions "abstract"). More importantly, the problem addressed by the Patents-in-Suit concern much more than monitoring and controlling—the patents claim "an improved base unit configured to perform on-demand, bi-directional command communications, not "remote access." *See* Zat. Decl., §IX.A.iv. CPS's cases are thus inapposite for this reason.

In the final analysis, the claims of the Patent-in-Suit are much more like those deemed patentable by the Federal Circuit. The easiest way to see this is by comparing the claims at issue in *Data Engine,*[10] *Berkheimer, Core Wireless, Visual Memory, Amdocs, Thales, McRO, Bascom, Enfish, and DDR* to the claims of the Patents-in-Suit. Appendix C to this brief includes those

[9] These cases are *Joao Control & Monitoring Sys., LLC v. Telular Corp.*, 173 F.Supp.3d 717, 727 (N.D. Ill. 2016); *Gaelco S.A. v. Arachnid 360, LLC*, 293 F. Supp. 3d 783, 792 (N.D. Ill. 2017); *Tuxis Technologies, LLC v. Amazon.com, Inc.*, 2015 WL 1387815, at *2 (D. Del. Mar. 25, 2015); *Becton, Dickinson & Co. v. Baxter Intern., Inc.*, 127 F.Supp.3d 687, 692–93 (W.D. Tex. Aug. 3, 2015); *Cloud Satchel, LLC v. Amazon.com, Inc.*, 76 F.Supp.3d 553, 562 (D. Del. 2014).

[10] The full cite to this case, which does not appear above, is *Data Engine Technologies LLC v. Google LLC*, 2018 U.S. App. LEXIS 28412 (Fed. Cir. Oct. 9, 2018).

cases, the claims at issue in those cases, and a comparison to Claim 19 of the '655 Patent to those cases. Notably, most of the claims in these Federal Circuit cases are apparatus claims, like those in the Patents-in-Suit. Appx. C ("Comment" column). And all were either not "abstract" or were directed to technical improvement in the relevant art (or both). *Id.* ("Claim From Case" and "Comment" columns). This is exactly what Ubiquitous' claims do. *See, supra,* Section IV.B-C.

Conversely, the claims of the Patent-in-Suit are unlike those cited as precedent by CPS. Again, the difference in the claims is shown by comparing the claims in those cases[11] to the claims of the Patents-in-Suit. Appendix D to this brief includes those cases, the claims at issue in those cases, and a comparison to Claim 19 of the '655 Patent for reference. The claims in those cases are all method claims (unlike Ubiquitous' apparatus claims) for doing something "on a computer" but they all lack any tangible form (technical components) or improvements thereon. Appx. D ("Claim From Case" and "Comment" columns). For instance, they comprise things like displaying "forms" and "icons," "detecting events," "verifying mail," "identifying characteristics," "recording images," computerizing a contractual relationship, "processing information," and distributing "products over the internet." *Id.* Thus, these claims are not the correct analogues.

V. CONCLUSION

For at least the foregoing reasons, CPS's Motion should be denied after conversion to a summary judgment motion. Alternatively, Plaintiff requests the opportunity to amend its Complaint to provide the viewpoints of a POSITA as to the claims of the Patents-in-Suit.

[11] CPS cites as precedent *Internet Patents Corp.*, 790 F.3d 1343; *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Secured Mail Solutions LLC v. Universal Wilde, Inc.*, 873 F.3d (Fed. Cir. 2017); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307 (Fed. Cir 2016); *In re TLI Commc'ns LLC Patent Litigation*, 823 F.3d 607, 615 (Fed. Cir. 2016); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014); *Content Extraction and Transmission LLC*, 776 F.3d 1343; *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 718–19 (Fed. Cir. 2014).

Dated: November 5, 2018

Respectfully submitted,

s/ *James F. McDonough, III*

WAYNE WRIGHT LLP
(Alexander) Wyatt Wright (TX 24037741)
Attorney in Charge
5707 W. Interstate 10
San Antonio, Texas 78201
Telephone: (210) 734-7077
Facsimile: (210) 734-9965
Email: wyatt@waynewright.com

HENINGER GARRISON DAVIS, LLC
James F. McDonough, III (GA 117088)*
Jonathan R. Miller (GA 507179)*
Travis E. Lynch (GA 162373)*
3621 Vinings Slope, Suite 4320
Atlanta, Georgia 30339
Telephone: (404) 996-0869, -0863, -0867
Facsimile: (205) 547-5504, -5506, -5515
Email: jmcdonough@hgdlawfirm.com
Email: jmiller@hgdlawfirm.com
Email: tlynch@hgdlawfirm.com

Attorneys for Plaintiff
Ubiquitous Connectivity, LP

* admitted *Pro Hac Vice*

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 5th day of November, 2018, I caused to be electronically-filed the foregoing document with the Clerk of Court using the CM/ECF system, which caused it to be served on counsel who have appeared in this matter by electronic mail.

/s/ James F. McDonough, III
James F. McDonough, III

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION

UBIQUITOUS CONNECTIVITY, LP, Plaintiff, v. CITY OF SAN ANTONIO, by and through its agent, CITY PUBLIC SERVICE BOARD OF SAN ANTONIO, d/b/a CPS ENERGY, CPS.	CIVIL ACTION NO. 5:18-cv-00718-XR

DECLARATION OF JAMES F. MCDONOUGH, III
IN SUPPORT OF
UBIQUITOUS CONNECTIVITY'S OPPOSITION TO
CPS ENERGY'S RULE 12(b)(6) MOTION TO DISMISS FOR FAILURE TO STATE A CLAIM [Dkt. No. 17]

I, James F. McDonough, being over the age of 18 years, competent to testify as to the matters stated herein, and based on my own personal knowledge, state as follows:

1. I am a member of the law firm Heninger Garrison Davis, LLC which represents Plaintiff UBIQUITOUS CONNECTIVITY, LP (hereinafter, "Ubiquitous") in the above-styled case. I am one of the attorneys that have been assigned to work on this case.

2. Attached hereto as Exhibit A is a true and correct copy of a letter I wrote to counsel for Defendant CITY OF SAN ANTONIO, by and through its agent, CITY PUBLIC SERVICE BOARD OF SAN ANTONIO, d/b/a CPS ENERGY (hereinafter, "CPS") dated October 23, 2018.

3. Attached hereto as Exhibit B is a true and correct copy of a letter counsel for CPS wrote to me dated October 29, 2018 in response to my October 23, 2018 letter.

4. Attached hereto as Exhibit C is a true and correct copy of the **DECLARATION OF IVAN ZATKOVICH IN SUPPORT OF UBIQUITOUS CONNECTIVITY'S OPPOSITION TO CPS' MOTION TO DISMISS** dated November 5, 2018.

5. Attached hereto as Appendix A is a true and correct copy of the Preliminary Proposed Claim Constructions for U.S. Patent Nos. 9,602,655 and 8,064,935 proposed by Ubiquitous.

6. Attached hereto as Appendix B is a true and correct copy of **TABLES SHOWING THAT CLAIM 1 OF '655 PATENT AND CLAIM 19 OF '935 PATENT ARE NOT REPRESENTATIVE OF OTHER CLAIMS** in which I have identified the additional limitations added by each dependent claim to Claim 1 of the '655 Patent and Claim 19 of the '935 Patent, and the differences between the other independent claims, their dependent claims, and the alleged representative claims.

7. Attached hereto as Appendix C is a true and correct copy of a summary analysis of selected cases in which claims similar to the claims of the Patents-in-Suit that I caused to be prepared.

8. Attached hereto as Appendix D is a true and correct copy of a summary analysis of cases cited by CPS in their motion to dismiss that I caused to be prepared.

Dated: November 5, 2018

Respectfully submitted,

s/ *James F. McDonough, III*

HENINGER GARRISON DAVIS, LLC
James F. McDonough, III (GA 117088)*
3621 Vinings Slope, Suite 4320
Atlanta, Georgia 30339
Telephone: (404) 996-0869, -0863, -0867
Facsimile: (205) 547-5504, -5506, -5515
Email: jmcdonough@hgdlawfirm.com

Attorney for Plaintiff
Ubiquitous Connectivity, LP

* admitted *Pro Hac Vice*

EXHIBIT A

HENINGER GARRISON DAVIS, LLC
3621 Vinings Slope
Suite 4320
Atlanta, GA 30339

James F. McDonough, III
Partner
T: 404-996-0869
F: 205-380-8076
jmcdonough@hgdlawfirm.com

Via Electronic Transmission

S. Benjamin Pleune
ben.pleune@alston.com
Alston & Bird LLP
101 South Tryon Street, Suite 4000
Charlotte, North Carolina 28280-4000
(704) 444-1000 – Telephone
(704) 444-1111 – Facsimile

October 23, 2018

Re: *Ubiquitous Connectivity v. CPS Energy (5:18-cv-00718)*

Mr. Pluene:

Ubiquitous Connectivity LP ("Ubiquitous") writes today concerning CPS Energy's ("CPS") Rule 12(b)(6) Motion to Dismiss for Failure to State a Claim and Memorandum of Law in Support Thereof [Dkt. No. 17] (the "Motion"). In that Motion, CPS presents its views of the claimed material in Claim 19 of the '935 Patent and Claim 1 of the '655 Patent. Specifically, CPS presents the following claim elements and proffers its views on the meaning of those claim elements:

CLAIM LANGUAGE	CLAIMED IDEA
19. A communication system having wireless connectivity, the communication system comprising:	
a base unit operatively interfaced with an environmental device, and configured to receive a current status of an environmental device;	generic device capable of interfacing with another device
a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity, wherein the first message is a wireless message including the current status of the environmental device;	a transmitter that transmits messages to a remote device
a receiver associated with said base unit, and configured to receive a second message from the remote unit, wherein the second message is a wireless message including a command for the environmental device; and	a receiver that receives messages from a remote device
a controller operatively associated with the base unit and operatively connected with the environmental device, and configured to send the command to the environmental device.	a controller that controls another device

CLAIM LANGUAGE	CLAIMED IDEA
1. A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising:	generic device capable of interfacing with another device (*e.g.*, thermostat)
a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;	generic computer interface for receiving and sending data
a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network,	generic wireless interface for sending data to a remote device and receiving data from the remote device
wherein the first message is a first digital communications message including a representation of the environmental information, and	data representing a device status
wherein the second message is a second digital communications message including a command regarding the environmental device; and	data representing a command for another device
a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and	generic processor
wherein the command is for the base unit initiated by a user from the cellular remote unit, and	user entering a command via generic cellphone
wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	conditional sending of commands if the remote device gets too far from the base unit

Motion, at pp. 8-10. According to CPS, the remaining claims in each of the '935 Patent and the '655 Patent "are . . . indistinguishable from Claim 19 of the '935 Patent and Claim 1 of the '655 Patent." Motion, at p. 16.

CPS asks the Court to apply the meanings from its tables above to the claims of the '935 and '655 Patents. Accordingly, Ubiquitous would like CPS to stipulate that the claim meanings attributed to the claim elements as presented in the tables above are its proposed claim constructions for this litigation. Please also stipulate that CPS will not be seeking to have any other terms construed in the litigation. Ubiquitous requests that CPS stipulate to these proposed constructions by close of business on October 26, 2018.

Sincerely,

James F. McDonough, III

EXHIBIT B

ALSTON & BIRD

Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
704-444-1000 | Fax: 704-444-1698

S. Benjamin Pleune Direct Dial: 704-444-1098 Email: ben.pleune@alston.com

October 29, 2018

VIA EMAIL

James F. McDonough, III
Heninger Garrison Davis, LLC
3621 Vinings Slope, Suite 4320
Atlanta, Georgia 30339

Re: *Ubiquitous Connectivity, LP v. CPS Energy*
TXWD – Case No. 5:18-cv-00718

Dear Jim:

I write in response to your October 23rd letter regarding CPS Energy's ("CPS'") motion to dismiss Ubiquitous Connectivity, LP's Complaint under Rule 12(b)(6) ("Motion").

Your letter contends that "CPS asks the Court to apply the meanings from its tables . . . to the claims of the '935 and '655 Patents." That is not true. The tables in CPS's Motion simply explain the generic nature of the components claimed in the asserted patents, components that cannot confer eligibility because, at best, they amount to nothing more than field-of-use restrictions. *See Bilski v. Kappos*, 561 U.S. 593, 612 (2010) ("[L]imiting an abstract idea to one field of use or adding token post-solution components d[oes] not make the concept patentable[.]").

CPS's Motion uses these charts to illustrate the abstract nature of Claim 19 of the '935 Patent and Claim 1 of the '655 Patent because, as you know, purely functional language in a claim is insufficient, on its own, to confer eligibility. *See Affinity Labs of Texas v. Amazon.com*, 838 F.3d 1266, 1269 (Fed. Cir. 2016) ("The purely functional nature of the claim confirms that it is directed to an abstract idea, not to a concrete embodiment of that idea."). CPS's charts illustrate that the components mentioned in the claims identified in the Complaint are described purely in functional terms, which means they offer nothing with respect to the eligibility of the claims. *See id.*

These charts are not meant to be CPS's claim construction positions under *Phillips*. As you are well aware, claim construction in federal district courts is governed by *Phillips*, and CPS will address the claims under that claim construction standard if and when the case is allowed to

proceed to that phase of litigation. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). The remaining claims are indeed indistinguishable from Claim 19 of the '935 Patent and Claim 1 of the '655 Patent to the extent that those remaining claims are equally abstract as there is nothing in them that would confer patent eligibility, a point made by CPS in its Motion which has nothing to do with claim construction.

Moreover, CPS's understanding of Ubiquitous's reading of the asserted patents is currently limited to Ubiquitous's Complaint, a deficient pleading that fails to provide sufficient notice of Ubiquitous's infringement allegations. Due at least to the lack of specificity in Ubiquitous's Complaint, CPS cannot ascertain any basis on which Ubiquitous could argue that its asserted claims are not ineligible. Your letter seeks to restrict CPS to claim construction positions it has not advanced without putting forth any constructions Ubiquitous believes would save its asserted claims from ineligibility. In fact, Ubiquitous has not yet identified any term it believes has a plausible construction that would somehow affect the § 101 analysis.

As you know, at the Rule 12(b)(6) stage, "evaluation of a patent claim's subject matter eligibility under § 101 can proceed [without] a formal claim construction." *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1374 (Fed. Cir. 2016). "If there are claim construction disputes at the Rule 12(b)(6) stage . . . the court must proceed by adopting the non-moving party's constructions, . . . or the court must resolve the disputes to whatever extent is needed to conduct the § 101 analysis, which may well be less than a full, formal claim construction." *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1125 (Fed. Cir. 2018) (citations omitted).

Not only has Ubiquitous failed to identify any constructions (much less terms) that it contends would affect the § 101 analysis in any way, but it has also failed to provide any plausible construction of the claims of the '935 and '655 Patents that would make them patent-eligible. *See, e.g., Content Extraction & Transmission LLC v. Wells Fargo Bank, N.A.*, 776 F.3d 1343, 1349 (upholding the district court's grant of a 12(b)(6) motion on § 101 grounds because "even when construed in a manner most favorable to [the plaintiff], none of [the plaintiff's] claims amount to 'significantly more' than the abstract idea"). Ubiquitous has not proffered any plausible constructions (in its Complaint or otherwise) to support any argument that any of its claims are patent-eligible.

Nonetheless, if and when necessary, CPS can (and will) offer claim constructions that support its additional affirmative defenses that the claims are invalid under one or more of 35 U.S.C. §§ 102, 103, and 112, and are not infringed by CPS. However, no legitimate construction could shelter the claims from being found patent ineligible under 35 U.S.C. § 101 as CPS has asked the Court to find in its Motion. As just one example, CPS believes that the proper construction of "simple message service" in Claim 1 of the '655 Patent is SMS (*i.e.*, text messaging). The '655 Patent admits that "[e]very imaginable type of input-output port has been used to communicate data into and out of a computer," '655 Patent at 2:60-62, and one existing method "involves the use of the cell phone network's short message service ('SMS') in which text messages are sent to and received from a controlled system," *id*. at 3:8-11.

The '655 Patent thus readily admits that any known method of transferring data, SMS or otherwise, is conventional and not something the alleged inventors contend they discovered. Because it is a conventional data transfer method using a generic computing system as a tool, neither the inclusion of the "simple message service" term nor the construction thereof does

anything to remedy the abstract nature of the claims demonstrated in CPS's Motion (*i.e.*, "sending of commands" (Motion, at p. 10)).

Sincerely,

S. Benjamin Pleune

cc: Rodeen Talebi, Fish & Richardson PC

EXHIBIT C

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION

UBIQUITOUS CONNECTIVITY, LP Plaintiff v. CITY OF SAN ANTONIO by and through its agent, CITY PUBLIC SERVICE BOARD OF SAN ANTONIO d/b/a CPS ENERGY Defendant	CASE NO. 5:18-CV-00718 **JUDGE Xavier Rodriguez**

DECLARATION OF IVAN ZATKOVICH IN SUPPORT OF UBIQUITOUS CONNECTIVITY'S OPPOSITION TO CPS ENERGY'S MOTION TO DISMISS

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I, Ivan Zatkovich, hereby declare:

I. INTRODUCTION

I have been retained by counsel for Ubiquitous Connectivity, LP (hereinafter "Ubiquitous") to provide opinions on subject matter eligibility issues concerning the claims of U.S. Patent Nos. 8,064,935 (hereinafter "the '935 Patent") and 9,602,655 (hereinafter "the '655 patent"), both entitled "UBIQUITOUS CONNECTIVITY AND CONTROL SYSTEM FOR REMOTE LOCATIONS." I will collectively refer to these patents as the "Patents-in-Suit"). I understand that the complaint that Ubiquitous filed asserts claim 1 of the '655 Patent (hereinafter "Claim 1") and claim 19 of the '935 Patent (hereinafter "Claim 19"). I will collectively refer to these claims as the "Ubiquitous Claims."

I am aware that defendant City of San Antonio (hereinafter "CPS Energy" or "Defendant") has filed a motion seeking to invalidate the Patents-in-Suit, asserting that the claims of the Patents-in-Suit are directed to ineligible subject matter under 35 U.S.C. § 101.

I have been asked to opine on the subject matter eligibility of the Patents-in-Suit under 35 U.S.C. § 101 in view of legal guidance provided by counsel for Ubiquitous and my evaluation of the Patents-in-Suit and Ubiquitous Claims.

In this declaration, I use the term "SMS" as that term is defined in the specification and as defined by patentee acting as his own lexicographer, the meaning of which comprises "short message service messages," "simple message service messages" and other digital communication messages. I discuss a proposed construction for "simple message service" below.

My opinions are set forth below. I make these statements based upon facts and matters within my own knowledge or on information provided to me by others. All such facts and matters

are true to the best of my knowledge and belief. The list of material I considered in forming these opinions is in **Exhibit 2**.

II. BACKGROUND AND QUALIFICATIONS

A copy of my curriculum vitae with a list of cases where I have been retained in the past five years is attached as **Exhibit 1** to this declaration.

I received a Bachelor's degree in Computer Science, with a minor in Electrical Engineering Digital Circuit Design, from the University of Pittsburgh in 1980. I completed a Master's thesis in Computer Networks in 1981 at the University of Pittsburgh, the results of which were published in Byte Magazine. My Master's thesis involved designing a heterogeneous network architecture that allowed substantially different computer systems to communicate with a common command interface. The primary application used to test the network was a search game that allowed multiple players on different computers to navigate through a shared matrix. The application maintained a common database of player locations across all computers in real time.

I have over 30 years of experience in computer science and computer network architecture involving a diverse set of implementations including Telecommunication, CTI (Computer Telephony Integration), early wireless/cell phone communication, booking and provisioning systems. I specialize in systems for eCommerce, Geolocation, Supply Chain, and Logistics.

I have been a Principal Consultant with eComp Consultants for over ten years. eComp Consultants provides professional consulting services relating to computer and technical matters in a wide range of industries including embedded Internet systems, cellular telephony, and cloud-based services. Such consulting services include working with clients, such as Amazon.com,

Microsoft, GEICO, Verizon, and McGraw-Hill, on specific information technology projects, process improvement, project management, and other technology issues.

At eComp Consultants, I have been frequently called upon to provide my expert opinion on matters concerning patent disputes. I have been qualified as a technical expert in over 24 matters and have specifically analyzed and testified about computer systems for managing and tracking shipments and supply chain and logistics management. A complete list of the cases in which I have testified in the last five years is included in **Exhibit 1**.

In my professional career, I have worked for companies such as Digital Equipment Corp., GTE Data Services (now Verizon), and Eva-Tone, Inc. on projects designing, developing, and integrating software and hardware for major computer and telecommunications systems and networks and on projects designing and developing eCommerce, content management, and web publishing systems.

I worked for Digital Equipment Corp. from approximately 1980 until 1987. There I designed and developed computer models that could simulate a manufacturer's supply chain, including tracking the status of the delivery of parts and other goods. I also designed a computer network that could handle Just-in-Time (JIT) ordering and shipping. I also designed and developed the communications drivers to operate within the DECNet architecture. This work also involved designing and implementing relational databases that could handle the complex workflows.

I worked for GTE Data Services (now Verizon) from approximately 1987 until 1996. There I worked on designing the network architecture for a communications system that had service provisioning and service booking capabilities. I also designed and developed automated

Geolocation, and geographic mapping applications including truck routing for customer services and Facilities management.

I worked for Eva-Tone, Inc. from approximately 2002 until 2007. There I designed and implemented systems for enterprise resource planning and supply chain management. My work also entailed designing and implementing an eCommerce system that allowed the company to book shipments using a variety of carriers and transport modes, including bulk, drop shipping, and container shipping, and manage and track shipments being handled by multiple carriers. Another eCommerce system I designed and implemented for Eva-Tone's customer, Pro Marine USA, required developing separate interfaces to different freight carriers (e.g. UPS, FedEx, USPS) since each carrier implemented a separate API to access their in-house carrier systems. I understand that this system is still in use today.

Specific projects I have developed or managed that are related to this matter include:

- **Digital Equipment Corporation** –
  - Developed TMS, a Computer Telephony Interface system for interfacing computers with telephone lines including receiving and sending computer commands and messages.
  - Designed Computer control systems and user control panels for remote control of manufacturing equipment.
- **Verizon**
  - Implemented systems for provisioning, configuration, and update of Mobile Phones and wireless devices.
  - Implemented remote monitoring of telephone facilities including central office switch buildings. Application included remote control of zoned X10 monitoring devices and alarm activation operating on local secure networks and external networks.
  - Designed and developed Automated Geolocation, Geographic mapping and Facilities Management system based on Customer & Equipment location.

- **GIS Dispatch Mapping** (AWAS) – Implemented Geographic based mobile field services for locating subscribers and displaying routing information on a geographic map.
- **Utility Partners -** Development of remote appliance monitoring and control applications using Zigbee wireless multi-hop mesh network system, for monitoring of utility buildings, security and alarm notification. Also, implemented system for remote meter reading and appliance control.
- **eComp Consultants -** Development of mobile applications (iPhone and Android), high speed wireless communications, Wi-fi security mesh networks, and performed evaluation of secure networks, protected data storage systems, and wireless telecommunication systems.

I have been retained as a testifying expert on the following matters related to remote control, cellular communications, and geolocation.

- **Black Hills v. Samsung et.al. – ITC Patent Litigation**
  Analysis of Mobile based location sharing and event driven mobile applications such as AT&T FamilyMap, Google+ Location, and Latitude. Providing infringement assertions against Samsung, LG, and Toshiba (smart phones & mobile tablets).

- **Black Hills v. Sonos – Patent Litigation**
  Testifying expert for central control of multiple remote devices including, creating a multi-hop mesh network for relaying communications through network nodes.

- **ABC v. ENC, CISCO, et.al. – Patent Litigation**
  Testifying expert for Remote control of legacy monitoring systems including relaying keypad entry and display information to a remote user interface. Provided Infringement reports, invalidity rebuttal reports, and deposition.

- **KeyNetics v. Samsung – Patent Litigation**
  Testifying expert regarding the programming mobile phones for access to Proximity Sensors, Motion sensors, accelerometer devices, and determine threshold and index of activity allowable before triggering events.

By virtue of at least the above education and experiences, I have gained a detailed understanding of the technology that is the subject of my Declaration. For example, my experience with computer network architecture, cellular device communication, geolocation, and remote control and monitoring of devices is relevant to the subject matter of the Patents-in-Suit. As such, I am qualified to provide opinions regarding the state of the art at the time of the invention (2004), how one of ordinary skill in the art at that time would have interpreted and understood the Patents-in-Suit, and the subject matter eligibility of the claims of the Patents-in-Suit under 35 U.S.C. § 101.

III. LEGAL STANDARDS

A. Subject Matter Eligibility under 35 U.S.C. § 101

I understand that through decisions such as *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014) and *Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 132 S. Ct. 1289 (2012), the Supreme Court established a two-part test to distinguish between patents that claim laws of nature, natural phenomena, and abstract ideas from patents that claim patent-eligible applications of these concepts. I will refer to this test as the "*Alice* test" because I understand that the specific articulation of the test, as provided to me by counsel, comes from the *Alice* decision.

I understand that step one of the *Alice* test is to determine if the claims at issue are "directed to" a patent-ineligible concept such as an abstract idea. Although I understand that there is no explicit definition of what qualifies as an abstract idea, I understand it can include "fundamental economic practices," "methods of organizing human activity," and "an idea of itself."

I understand that an important distinction exists between an invention that is "directed to" an abstract idea and an invention that "involves" an abstract idea. As the Supreme Court has noted,

all inventions somehow implicate laws of nature, natural phenomena, or abstract ideas. "At the same time, we tread carefully in construing this exclusionary principle lest it swallow all of patent law. At some level, all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas. Thus, an invention is not rendered ineligible for [a] patent simply because it involves an abstract concept." *Alice* at 2354.

I also understand that the courts have offered guidance on how to distinguish whether claims are "directed to" or merely "involve" a concept. One approach is to consider whether the claims' "character as a whole is directed to excluded subject matter." *Enfish, LLC v. Microsoft et al.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) Another approach is to consider "the focus of the claimed advance over the prior art." *Genetic Techs., Ltd. v. Merial LLC*, 818 F.3d 1369, 1375 (Fed. Cir. 2016). In particular, I understand that courts do not consider all improvements to computer or communication systems as necessarily directed to an abstract idea. *Enfish* at 1335. Thus, some claims directed to such subjects may properly be resolved in the first Alice step in favor of patentability.

If the claims are "directed to" a patent-ineligible concept, I understand that the second step is an analysis of the claims at issue to determine if the limitations of the claims amount to "significantly more" than the ineligible concept itself. This analysis determines whether additional elements of each claim—both individually and as an ordered combination—transform the nature of the claim into a patent-eligible application of that abstract idea. I also understand that this second step is sometimes described as a search for an "inventive concept" where some element or combination of elements sufficiently ensure that the claim in practice does amounts to significantly more than a patent on an ineligible concept. To this end, I understand that a claim that recites an

abstract idea must include additional features to ensure that the claim is more than a "drafting effort designed to monopolize" the abstract idea, and that claiming an abstract idea while adding the words "apply it with a computer" is insufficient. *Alice* at 2357, 2358.

I further understand that claims that recite an invention that is not merely the routine or conventional use of a generic computer or the Internet have been found to be patent-eligible. I understand that claims that do not broadly and generically claim "use of the Internet" and are "necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks" have been found to be patent-eligible.

I also understand that the Supreme Court cites examples of patentable subject matter that include: improvements to another technology or technical field; improvements to the functioning of the computer itself; specific limitations other than what is well-understood, routine and conventional in the field; unconventional steps that confine the claim to a particular useful application; and other meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment.

IV. TECHNICAL BACKGROUND

The present discussion offers a brief overview of technical issues raised by or implicated by the Patents-in-Suit. The discussion that follows is not meant to be exhaustive as to these topics but is instead meant to supplement and expand on topics mentioned within the Patents-in-Suit so that the relevance of those topics to the Patents-in-Suit and the Ubiquitous Claims is apparent and so these concepts are understood within an appropriate context.

A. Control Systems: Polling versus Event-driven Detection

Some electronic systems detect and respond to events in the ordinary course of their operation. These systems can be broadly categorized into two types: systems that detect occurrence of an event through "polling" and systems that respond automatically to the occurrence of the event (systems that are "event-driven").

i. Polling-based Systems

A system that operates on polling requires the system to check for the existence of a condition on regular time intervals. A trivial example of a system that operates by polling the existence of a condition is an automobile driver checking the fuel level indicated on a gas gauge. An example of such a gas gauge is illustrated below.

In this system, a driver looks at the gas gauge and visually discerns the fuel level in the automobile from the position of a needle within the gas gauge. The drive may act in response to receiving this information by putting refilling the automobiles fuel tank; *e.g.*, a polling-based event. In this trivial example, the position of the needle reflects the information polled from the gas gauge, by a driver, as of the moment of polling.

Systems employing polling have several benefits which make them attractive for some types of control environments. For example, polling-based systems are typically relatively

inexpensive to create and simple to operate because the portion of the system related to retrieving the polled information may be idle until a request to poll for information is received.

Systems employing polling can also have several considerations which make them unattractive for other types of control environments. One consideration with polling-based systems is that they require a polling interval that will detect potentially problematical changes to the system within an acceptable time period. For example, if a polling-based system checks a monitored condition every minute and the shortest time in which changed circumstances to the monitored condition could become problematical is at least five minutes, the polling-based system will detect the changed circumstances at least four minutes before the changed circumstances become problematical. By contrast, if a monitored condition could become problematical in two minutes but the condition is only polled every five minutes, the polling interval is too long.

Referring back to the fuel gauge example: Drivers probably check the position of the gas needle on infrequent intervals (hours or days) because they may not expect the position of the needle on the gas gauge to change quickly, which is perfectly acceptable for most automobiles. Other types of control systems, such as home intrusion systems, would want much shorter polling intervals (if polling was used at all in such systems).

ii. Event-driven Systems

An event-driven system is different from a system that operates on polling because an event-driven system contains mechanisms that trigger an alert or an action on the occurrence of a condition than triggering an alert or an action on *detection* of the condition through polling. An example of an event-driven system is the "low-fuel indicator" within the driver's field of vision in a conventional automobile. An example of this indicator, as a yellow light, is shown below.

Circuitry internal to the automobile constantly monitors the fuel level in the gas tank of the automobile. When the fuel level drops below a predetermined level, a low-fuel indicator typically turns on that is intended to alert the user to the low fuel level. The purpose of using a light is to draw the driver's attention to the fact that the light is on when the light comes on or for the driver to at least notice the light shortly after coming on. If the driver notices when the fuel light comes on, the driver becomes immediately aware of the low-fuel condition without any regard to polling intervals. Because a low-fuel condition has a greater time sensitivity than an ordinary fuel level indicator, an event-driven system is appropriate for the former and is not necessary for the latter.

Event-driven systems have several benefits which make them attractive for some types of control environments. For example, event-driven systems can respond quickly (without any consideration for a polling interval). Although an event-driven system can be more expensive and more complex than a polling-based system, when monitoring a single condition, event-driven systems typically have a controller that can be adapted or configured to monitor several circumstances with little or no additional expense or complexity.

iii. Applications for Polling-based or Event-driven Control Systems

As discussed above, some types of monitored circumstances can use polling-based monitoring while other types of circumstances need event-driven monitoring. The typical factors justifying one type of monitoring versus the other, for a particular application, are cost/complexity and required urgency for learning of changed circumstances.

For example, monitoring ambient temperature within a room can typically occur with polling-based monitoring, operating on minute-or-so polling intervals, because the ambient temperature in a room will typically change only very slowly (over the course of several minutes or even potentially an hour) absent rare circumstances such as a fire. Other environmental monitors, such as humidity or wind direction sensors, have similar polling interval needs.

Nonetheless, other environmental monitors concern circumstances to which a faster detection and response is probably desired. Examples of such circumstances would be detectors for fire, flood, intrusion/break-in, "stuck elevator" conditions, and gas or water leaks. As is evident from these examples, the nature of the changed circumstance, and the danger or urgency of the changed circumstances, dictates the required timeliness for detection and response.

Notwithstanding the above-discussed tradeoffs between polling-based and event-driven monitors, an existing event-driven monitoring system can monitor events that would otherwise tend to be monitored with polling-based monitoring in the absence of an existing event-driven monitor. As previously discussed, an event-driven monitor tends to have a controller for acting in response to a changed condition. This controller can often be configured to act in response to any of multiple examples of changed circumstances. Thus, modern systems monitoring a variety of circumstances often use event-driven monitors because one type of monitored event requires

event-driven monitoring and the remaining types of monitored events allow but do not require event-driven monitoring. Thus, a single control meets all monitoring needs.

B. Communication Paradigms in Control Systems

Early control systems were very simple because technology had not yet advanced to the point where more complex components and communications capabilities could be made available at a reasonable price. For purposes of a historical overview, and to understand the context in which the Patents-in-Suit arose, an overview of paradigms employed in control systems is provided.

i. One-way versus Two-way Communication

One consideration in control system design is whether to use one-way or two-way communication in the control system. As these terms suggest, a one-way system allows communication from a first device to a second device but does not allow any communication from the second device to the first device. A simple example of a one-way device is a temperature sensor that communicates its measured result to a recipient on regular intervals. Because this temperature sensor has no need to receive information from the recipient of the temperature measurement, the communications scheme for this control system can be a one-way communications scheme.

A slightly more complicated example, reflecting a two-way communication scheme, is a security system including one or more sensors and one or more actuators. An example of this system is shown below.

As seen above, the security system receives input from several sources including temperature and motion sensors, magnetic switch sensors, and a smoke detector. In particular, the KeyPad provides two-way communications because it receives input, in the form of key presses, and communicates that input to the control panel. Additionally, the KeyPad receives information about the status of the security system and displays it on the LCD display within the KeyPad. For example, if a user deactivates monitoring through the KeyPad, the KeyPad will present a message to the user, based on information received form the Control Panel, indicating that the monitor is disabled. Thus, the KeyPad employs two-way communication between a first component (the KeyPad) and a second component (the Control Panel).

Two-way communications are particularly beneficial in monitoring or control applications where data entered on a first device is meant to change circumstances in a second device coupled through two-way communications to the first device. Typically, the second device in these

circumstances receives a command from the first device and confirms that circumstances have changed in response to the command through a response message sent to the first device.

For example, if a first device such as a device accessing a remote HVAC unit through a (intermediary) second device sends a command, via a first message, to set the target temperature for the HVAC unit to a particular value, the second device can confirm that the new target temperature has been achieved with the remote HVAC unit through sending a confirmation, via a second message. The second message may indicate that the target temperature requested from the HVAC unit has been achieved.

Technological considerations often weigh heavily in determining whether a particular system employs one-way or two-way communications. For example, many early types of communication devices employed one-way communications for cost or complexity reasons because technology had not yet made it cost effective or practical to use two-way communications for those devices (despite obvious benefits for two-way communication over one-way communication).

An example illustrating these practical considerations is a television remote control. Until recently, all TV remote controls typically operated on the principle that the remote control transmitted user input (in the form of channel or volume level selection) and the television or a cable set-top box received that information without returning a response. This paradigm is illustrated below.

Recent systems have recognized a desire for two-way communications within the context of television content consumption. As seen below, a new class of smart remote controls sends and receives information related to content that can be viewed on the television.

Technology and economic considerations often influence whether two-way communication is available for a particular environment or operational paradigm. Those considerations are discussed next.

ii. Range Considerations for Various Communication Types

Devices used in control systems can be categorized by the nature of their underlying communications technology and the communication range that the technology allows. For example, some communications technologies have very limited range and are only typically usable within a particular room within a building or within a distance of 10 or so feet. Some examples of these technologies are infrared transmitters (such as those used in early TV remote control units), Bluetooth™, and ultrasonic communications. Range limitations for infrared transmitters arise from those devices requiring a direct line of sight from the transmitter to the receiver. Range limitations for Bluetooth™ and ultrasonic communications arise from the relatively low power transmitters employed and the tendency for the received energy to fall off quickly with distance or due to absorption by walls and other environmental objects.

Other communications technologies allow for ranges that are greater than a room in a building or ten feet. For example, Wi-Fi technology may allow for communication ranges of 20-40 feet including traversing several walls within a building. In another example, powerline networking technology uses the electrical wiring within a building to communicate data – usually a two-way communication of such data – between different locations within the building. Notwithstanding that different rooms may operate on different electrical circuits, data communication is usually able to traverse from one electrical circuit to another electrical circuit based on a common point of connection between the two circuits. As seen below, this type of

communication employs communications adapters that plug into an electrical outlet at each location in which data transmission or reception is intended. In the example illustrated below, all six rooms share an Internet connection to the outside world through electrical wiring.

The range of powerline communication devices is limited, however, to within a building or sometimes to within a larger electrical circuit within a building. Similarly, telephone wire based communications can communicate data through existing telephone lines within a building.

Communications options between buildings and over greater distances are more limited. For example, high-speed Internet through telephone lines, using digital subscriber line ("DSL") technology, can provide communications capabilities to locations that are within a short distance from a telephone central office (i.e., a switching or relay center within the telephone network). High-speed Internet through a cable TV provider can also provide communications capability to urban or relatively urban areas because urban areas have sufficient commercial interest to justify the large capital outlay that would be required to run high-speed cable communications. However,

both types of high-speed Internet are typically unavailable in remote areas because the cost for running wires to those areas would be prohibitive. Dial-up Internet has been available for many years and works for low-speed operations. But, like cable and DSL technologies, dial-up Internet requires the presence of telephone wiring which can be problematical in remote locations.

The most effective way to reach a large area, especially in remote locations, is using cellular technology. This technology can cover large areas in a more cost-effective way than running cables or telephone lines to individual recipients.

Although the cost to deliver cellular service can be borne by well-funded cellular service providers, the cost for equipment to receive such service has been high for consumers and typical businesses. One reason for the high cost of cellular control systems is that the complexity and cost of components used in cellular transceivers is quite high. Although mobile phone manufacturers can amortize development costs over millions of phones sold, the market for cellular-based control systems is much smaller while the complexity and cost of developing those systems is quite high. Therefore, technological hurdles for providing cellular-based control systems were typically not overcome and the market was left wanting better systems but not having such systems available.

iii. Early Interactive Telephone-based Systems

An early form of a remote monitoring and control system employed a dedicated computer that received inputs from environmental sensors and was connected to a dedicated telephone line. The computer could receive calls on the telephone line and could communicate information from the environmental sensors to a caller dialing in to the monitor and control system.

Typical early systems prompted users, through a recorded message that was played back over the telephone line, to enter an access code to gain access to the monitored results. Some

systems offered an ability for the user to select among several measured results. For example, a recorded message may say, "Press 1 to hear the current room temperature. Press 2 to hear the status of the intrusion system." Because early systems only monitored a few conditions, the recorded messages were generally short but uses nonetheless typically had to listen to the options to know which key should be pressed to receive their desired result. Obviously, such systems could not accommodate dozens or hundreds of monitored conditions because users would simply not have the patience for listening to dozens or hundreds of options described in a recorded message.

Telephone line based systems also typically provided poor audio quality. Although the words in the recorded message from such a system may be discernable, the quality of the recording generally discouraged users from using the system more than what was minimally required.

Another shortcoming of telephone line based systems is that they are polling-based systems. A user calls in at a particular moment and hears the system status at that moment. If the monitored results change between user calls, or if a dangerous circumstance develops at the monitored location, a user is oblivious to these circumstances.

Given all of the shortcomings of telephone-based monitoring systems discussed above, one might wonder why cellular phones were not integrated into monitoring and control systems before the Patents-in-Suit. The reason is that integrating cellular communications with a computing device, prior to the modern smartphone era, was very difficult, as discussed next.

iv. Smartphone Development History

A fact that is relevant, in my opinion, to understanding the state of the art when the Patents-in-Suit were invented is that the Patents-in-Suit were filed in November 2004 but the first iPhone

did not became available until January 2007.[1] Although the iPhone was not the first "smartphone," it was the first example of what we now consider to be a modern smartphone.[2]

The iPhone arguably changed how we use mobile phone technology and changed our expectations for what is possible with such technology. However, that technology would not become available until several years after the Patents-in-Suit were filed. Thus, our determination of whether the Patents-in-Suit reflect various patentability considerations, such as reflecting ordinary or common concepts, should be viewed through a lens of then-contemporary (2004) understanding for such concepts.

A specific example of then-contemporary understanding was the (lack of an) ability to interface a computer system with a cellular network. I understand from talking with named inventor Charles Shamoon that no commercial solution for interfacing a computer system with a cellular network existed when the Patents-in-Suit were filed. This is consistent with my understanding of the state of the art at that time.

Therefore, the inventors had to employ a software developer to investigate and develop a solution for interfacing a computer with a cellular network. *See id.* I understand that this developer was ultimately successful in their efforts and that the Patents-in-Suit arose out of those results. *See id.*

Additionally, prior to the iPhone's introduction in 2007, GPS functionality was provided by dedicated GPS units rather than mainstream cellular telephones. At the time that the Patents-in-Suit were filed (and for several years thereafter), Garmin was the market leader for GPS devices

[1] *See* Contemporary magazine article discussing the recent iPhone introduction in 2007 at https://www.macworld.com/article/1054764/macworld-expo/liveupdate.html.
[2] The first smartphone is generally acknowledged to be the IBM "Simon" from 1994-95. This phone was very limited in its capabilities. *See* http://time.com/3137005/first-smartphone-ibm-simon/.

and those devices were dedicated units not integrated with a cellular phone.[3] Therefore, the Patents-in-Suit disclose that GPS functionality for the remote unit would be provided by an external module or potentially a cellular receiver within the cellular telephone if such technology was available. *See* '655 Patent at 4:34-37.

In my opinion, an objective view for what was conventionally done or for the components that were readily available (and their ordinary function) must take into account a cellular phone market that was radically different than it was after the iPhone was introduced in 2007.

C. Location Detection and Geo-fencing

Recent progress in circuitry for detecting a user's location, at any point on the Earth, to within a few feet, has made possible technological advancements and product features utilizing such information. Because some aspects of the Patents-in-Suit concern such technology, an overview of this technology is provided herein.

At present, three techniques are commonly used for detecting a user's location. All three techniques employ a mobile device for receiving a signal and detecting from the received signal the user's position. Only two of these techniques are discussed within the Patents-in-Suit so the discussion that follows focusses on those two techniques.[4] All techniques rely at least in part on the technique of identifying location from a trilateration of distances known to a receiving device.[5]

i. Location Trilateration, Generally

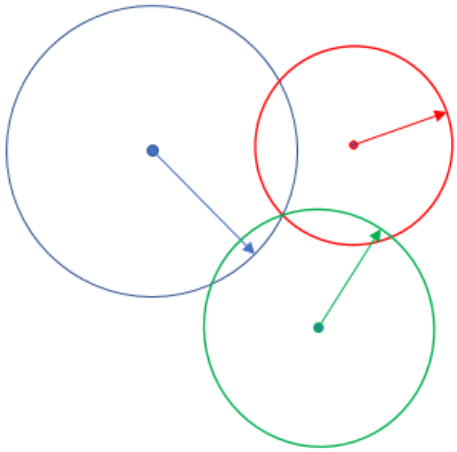
[3] For example, an article in the MIT Technology Review notes that Garmin was the established market leader – indeed a Wall Street darling – when the Ubiquitous Patents were filed but found that its market position changed dramatically upon the iPhone's introduction in 2007. *See* https://www.technologyreview.com/s/511786/a-shrinking-garmin-navigates-the-smartphone-storm/.

[4] A third technique, based on estimating distance from a Wi-fi network, was developed after the Ubiquitous Patents.

[5] A common misconception is that location detection uses "triangulation" rather than trilateration. Triangulation involves finding a location, at an unknown distance from each of two points, based only on the angle to each of those points.

All current location-determining technologies operate on the principle that they use information received from several sources and discern, from that information, a user's location. The information received reflects, directly or indirectly, a distance from a known location. Once distances are known from a user's device to each of several known locations, the user's position can be determined with very good accuracy.

For example, if a user's distance from each of known locations can be determined, the user's position can be determined from trilateration. As seen below, a location-determination device may learn that it is located near three transmitters shown at the center of the blue, green, and red circles below. The location-determination device identifies the distance from each transmitter as the radius of the corresponding circle.



If we use distance information from two transmitters, the user's location is one of two intersections of the circles for those transmitters. For example, if we only use information from the blue and green transmitter, we can only resolve the user's position as reflecting two possibilities illustrated as the two intersections of the blue and green circles.

If we use three transmitters, the user's location is determinable as a single intersection of the three circles formed from the distance of the user from each transmitter. More than three transmitters can be used to enhance the accuracy of the user's position, by overlaying more than three circles, but three circles are reasonably effective under ordinary circumstances.[6]

"Trilateration" is the process of determining position from the intersection of at least three circles as discussed above. This process is the foundation for modern location detection approaches including GPS and cellular tower techniques.

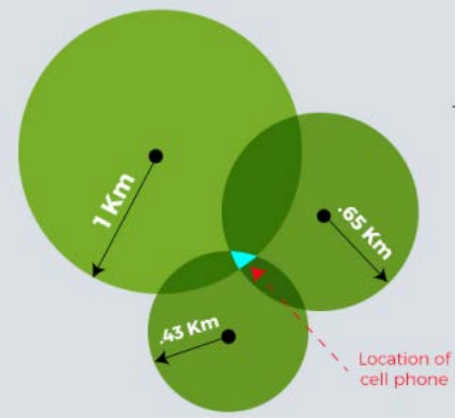
ii. Global Positioning Satellite (GPS)

Location determination based on global positioning satellites applies the trilateration principle discussed above to signals received from satellites. As illustrated below, these satellites provide information to a receiving device that can be used to determine the distance to each satellite (because these positions are fixed and known). GPS techniques typically employ data from four or more satellites so that location can be determined to within an accuracy of less than ten feet.

iii. Cellular Tower

[6] This discussion purposefully omits considerations with curvature of the Earth. For example, a more precise description would concern finding the intersection of three spheres rather than three circles. The present discussion is sufficient for my purposes.

A more recent development is integration of GPS with cellular towers to improve GPS responsiveness – a system called "assisted GPS."[7] The benefit of assisted GPS over conventional GPS is that assisted GPS can determine the location of a user, from cellular tower data, much faster than the time that would be required to determine the user's location exclusively through GPS satellites. For example, assisted GPS may determine locations in a few seconds but conventional GPS may require several minutes. Thus, assisted GPS is more practical for applications described in the Patents-in-Suit. An illustration is shown below.



As a final note on the subject of location determination, I understand that assisted GPS was still being developed when the Patents-in-Suit were filed in 2004. A contemporary publication indicates that Qualcomm (the dominant cellular phone chip maker then and now) demonstrated the first test of this technology in November, 2004;[8] *i.e.*, approximately the same time that the Patents-in-Suit were filed. Thus, incorporation of assisted GPS, by the Patents-in-Suit, was not a common practice reflecting conventional components operating in their conventional way.

[7] *See* https://www.windowscentral.com/gps-vs-agps-quick-tutorial.
[8] *See* https://www.qualcomm.com/news/releases/2004/11/10/qualcomm-announces-completion-assisted-gps-test-calls-wcdma-umtsgsmgprs

iv. Geo-fencing

A geo-fence is a geographical region that is defined for purposes of detecting whether a user or device has entered or left the region. Geo-fenced regions can take two forms.

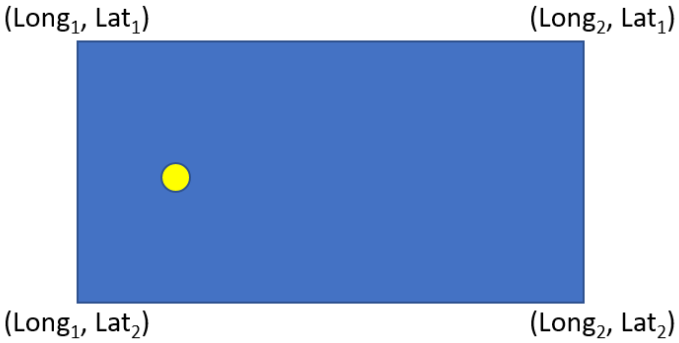
One geo-fence form is a circle around a center point. This form is used for determining when a user or device is at a distance greater than or less than a predetermined value from the center point.

Another geo-fence form is a region defined as an arbitrary shape. The shape can be formed from line segments or arcs and may comprise a regular shape such as a rectangle or an irregular shape. An example of a geo-fence region with an arbitrary shape is shown as the red line below.

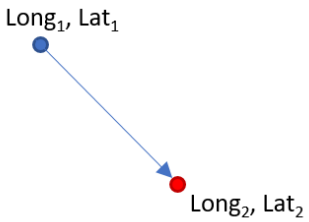
As seen above, a geo-fence alerts a user or system when a device enters or leaves the geo-fenced region. Because a geo-fence system has full knowledge of the geo-fence region it supports (*i.e.*, the region's defining line segments and arcs), and the position of a user's device is known from one of the techniques discussed above, an easy geometrical determination reflects whether that device is inside or outside a geo-fence.

For an example of such a determination, for a rectangular geo-fence region such as the one shown below (with four corners defined as latitude and longitude values as shown below): a user's mobile device (*e.g.*, the location of the yellow point in the illustration below) is known to be *within* the geo-fence if the latitude of the user's device is greater than Lat_1 but less than Lat_2 and if the

longitude of the user's device is greater than $Long_1$ and less than $Long_2$. Unless both of these conditions are met, the user's mobile device is outside the rectangular geo-fence region.[9]



In another example, if the geo-fence is defined as a fixed distance from the base unit, geo-fence determinations are even easier. As shown below, because we know the location of the base unit (blue dot below) and the location of the user's device (red dot below), we can use the Pythagorean theorem to determine the distance from the former to the latter. If the distance is greater than the geo-fence distance limit, the user is outside the distance-based geo-fence.



$$\text{Distance} = \sqrt{(Long_2 - Long_1)^2 + (Lat_2 - Lat_1)^2}$$

v. Conclusion

[9] This simple example treats being "on the geo-fence" as outside the geo-fence.

The above-discussed technical factors influenced the market and technical environment from which the Patents-in-Suit arose. How those patents overcome those issues, and how the Ubiquitous Claims reflect a solution to the problems faced by the market and technical environment, is discussed next.

V. OVERVIEW OF THE PATENTS IN SUIT

I understand that the '935 Patent and the '655 Patent were issued from a common patent application. Specifically, the '935 Patent issued from U.S. Patent Application No. 11/686,993 and the '655 Patent issued from U.S. Patent Application No. 13/271,203. Further, U.S. Patent Application No. 13/271,203 was a "continuation application" from U.S. Patent Application No. 11/686,993. *See* '655 Patent at 1:7-8.

When one patent application arises from a continuation application of another patent application, Counsel has explained to me that the substantive content of the specifications of the two issued patents will be identical, except for potential differences between the respective summary sections, claims, and potential typographical errors that may exist within the background or discussion sections of one but not both patents. Therefore, for consistency purposes, all citations to the Patents-in-Suit are to the '655 Patent unless otherwise stated.

I have reviewed in their entireties the specifications and claims of the Patents-in-Suit. My summary of the Patents'-in-Suit disclosures is based on that review. In the subsections that follow, I offer a brief overview of the Field of the Invention, Background, and Discussion sections of those patents.

A. Field of the Invention

My review of the Patents-in-Suit leads me to conclude that the Fields of Invention for the Patents-in-Suit are identical. Each Field of Invention reads as follows:

> The present invention relates to a remote monitoring and control system for an environment. More specifically, the system relates to on demand bidirectional communication between a remote access unit and a multifunctional base control unit in a geographically remote location.

See '655 Patent at 1:22-26. As seen above, the Inventors viewed their invention as generally related to a remote monitoring and control system but more specifically related to an on-demand bidirectional communication system between a "remote … unit" and a "base control unit" at a remote location.

The significance of these descriptions is discussed in greater detail in the section of this declaration. *See* Sections VIII and IX.

B. Background

The Background section sets forth some, but not all, relevant information about the state of the art for the Patents-in-Suit. For example, the Technical Background section (Section IV.) discloses some aspects of the then-current state of the art on environmental monitoring and control systems. That section describes that then-existing thermostats typically monitored ambient temperature and maintained that temperature within a predetermined range. *See* '655 Patent at 1:37-42. By contrast, the Patents-in-Suit observe that the existing solutions did not provide an ability to alert a remote user that the ambient temperature went outside the predetermined range and provide the remote user a mechanism to remotely adjust the predetermined range if desired. *See* '655 Patent at 1:48-54.

The Patents-in-Suit acknowledge that progress was being made toward more sophisticated forms of remote monitoring and control (*e.g.*, land-line connectivity to a home monitoring and

control system; *see* '655 Patent at 1:64-67). However, the Patents-in-Suit observe that then-existing land-line based solutions had significant drawbacks.

> The need to expand the geographic range of control for a limited system, such as power line carrier, radio frequency, or infrared, led to the development of telephone interfaces, including voice, DTMF, and Caller ID. While such systems allow users to exercise control of their facilities remotely, they are not as user friendly and often use tones or cryptic, hard-to-understand, digitized voice prompts. Often a long distance call from a pay telephone was required to access the controller, which had to be interfaced with the facility telephone network.

See '655 Patent at 2:46-55.

Notwithstanding the relatively limited state of the art described above, the Patents-in-Suit disclose that significant commercial interest existed in the monitoring and control field. *See* '655 Patent at 1:62-2:7 (disclosing commercial interest and existence of Internet-based solutions but acknowledging serious drawbacks with such systems). *See also* '655 Patent at 2:23-32 and 2:40-43 (disclosing powerline-based solutions, which were ostensibly limited to intra-building communications).

The Patents-in-Suit further disclose that limited capabilities existed for interfacing a cellular telephone with such systems, including an ability to send a "short message service" (SMS) message to such systems.[10] *See* '655 Patent at 3:8-13. But, as discussed above, then-existing cellular-based solutions employing keypad tones (DTMF) or other crude interfaces for allowing a remote user to interface with such systems were substantially deficient. *See* '655 Patent at 2:46-62.

[10] This disclosure reflects that a SMS message could be sent from a cellular phone, through the cellular network, to the Internet, and ultimately to a monitored system if that system had a connection to the Internet. This disclosure does not suggest that a SMS message could be sent from a cellular phone to a base unit in a remote location because the remote location would not have access to an Internet connection. The Ubiquitous Patents addressed this barrier in part by integrating a cellular transmitter-receiver with circuitry for the base unit.

Thus, as seen above, the Patents-in-Suit disclose that the state of the art for such systems was very limited notwithstanding the existence of commercial interest and crude-but-ineffective examples employing various technical mechanisms.

C. Discussion

The Patents-in-Suit disclose solutions to the aforementioned shortcomings in the art. For example, the Patents-in-Suit disclose an arrangement of electronic components that interoperate in a way that overcomes those shortcomings. In another example, the Patents-in-Suit disclose that the arrangement of components communicates in a specific way, through a series of "message pairs," to allow the system as a whole to overcome the shortcomings in the art.

A message pair comprises a first message that initiates further action and the second message is the action triggered in response to the first message. Thus, the arrangement of components and series of message pairs discussed below provide an on-demand, bidirectional communication system, applied in the context of environmental monitoring and control, that represented a significant advancement in the art.

i. Component Arrangement for On-demand, Bidirectional Communications Systems

Figure 1 (shown below) illustrates the arrangement of electronic components that provide the on-demand, bidirectional communication system.

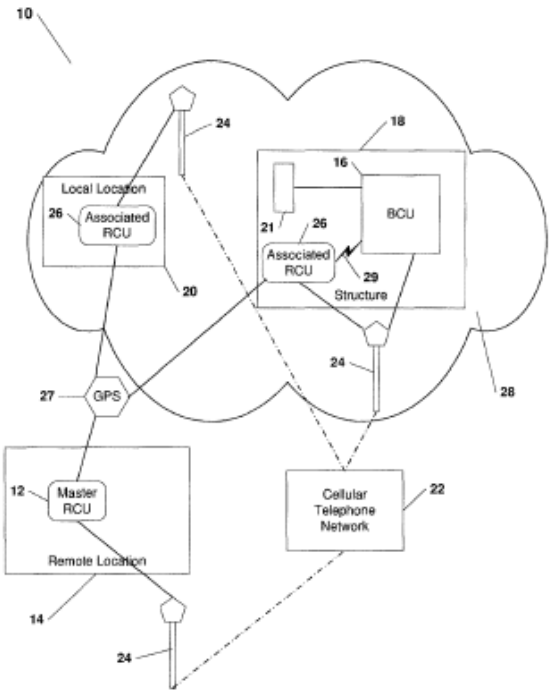


Fig. 1

As seen above, the system of Figure 1 includes base unit 16, environmental device 21, and remote unit 12.[11] Figure 1 illustrates that base unit 16 and environmental device 21 are within a building 18. Base unit 16 communicates with environmental device 21 through an interface shown as a line (but not numbered). Base unit 16 also communicates with remote unit 12 through a cellular network 22 comprising multiple cellular towers 24. Remote unit 12 further communicates with a source of location-determination information (GPS) 27.

The Ubiquitous Claims recite details of the base unit and Figure 1 illustrates how the base unit fits within the Ubiquitous Patent's three-component system for remotely monitoring and controlling environmental devices whose location previously precluded such monitoring and

[11] Figure 1 also illustrates additional remote units 26 but these units are not recited in the Ubiquitous Claims.

control. The illustrated components are identified at '655 Patent at 3:58-4:7. The base unit, environmental device(s), and remote unit are discussed below.

a) Base Unit

The Patents-in-Suit disclose that the base unit comprises several subsystems, such that each subsystem performs a particular function or set of related functions. *See* '655 Patent at 4:55-57. The Patents-in-Suit disclose that these subsystems may reflect modules created by original equipment manufacturers (OEMs) or the subsystems may comprise a collection of integrated circuits created by such manufacturers. *See* '655 Patent at 4:62-65.

This is consistent with industry practice – then and now – to leverage specialized components to the extent that such components exist for meeting design goals. Then or now, no electronic device manufacturer created all components contained in its products.

Notwithstanding the economically necessary practice of incorporating components from other manufacturers, it was common at that time (less so now) for component integration to require a considerable amount of work and to require overcoming significant challenges. Thus, inclusion of third-party components or subsystems within a design is only a starting point for getting the design to function correct with those components or subsystems; considerable development work remains to achieve interoperability.

Figure 4 illustrates an embodiment of a base unit. As seen therein, the base unit contains a series of components that, organized into submodules, perform the functionalities described in the Patents-in-Suit. For example, the base unit includes a wireless module 70 the communicates with antenna 90, speaker 102, and microphone 100. Wireless module 70 further includes

submodules (i.e., modules within wireless module 70) audio circuit 94, I/O circuit 98, and power circuit 96.

In another example of submodules, within an I/O module, the illustrated base unit has a rich set of interfaces. In the illustrated embodiment, interfaces exist for powerline devices (*e.g.*, X10) 72, air handling controllers such as HVAC 74 (*see* '655 Patent at 6:8-17), environmental sensors 76, computer I/O busses such as serial, USB, and Ethernet capabilities 78, 80, and 82, respectively (*see* '655 Patent at 5:58-64 and 6:18-28), digital and analog components 84 and 86, respectively, Bluetooth™ devices 88, and devices accessible through an expansion bus 89. *See* '655 Patent at 5:58-6:43. Environmental sensors 76 support the popular 1-wire interface standard. *See* '655 Patent at 5:65-6:7 (1-wire interface provided to allow base unit to act as gateway for devices with 1-wire interface). Digital and analog devices 84 and 86 allow the base unit to interface with devices whose interface standard is specific to the base unit rather than reflecting an industry standard interface. *See* '655 Patent at 6:29-36. Similarly, expansion bus 89 allows the base unit to interface with non-industry-standard devices. *See* '655 Patent at 6:37-39.

Another example of submodules within a module in the base unit is the submodules within the user interface module. The embodiment of Figure 4 illustrates that the base unit may contain a keypad 120 for user input and LCD display 112 for displaying output to a user. *See* '655 Patent at 5:37-46. In another embodiment, the Patents-in-Suit disclose that a user (at the remote location) may interact with the base unit through a computer networking (TCP/IP) interface if that interface is available. *See* '655 Patent at 5:46-57.[12]

[12] Although the specification suggests that communications with the base unit, including configuration and operation, could occur through the Internet, this possibility (if attempted with a base unit at a remote location) implies an ability communicate through the Internet over a cellular network. As discussed above, one of the deficiencies in the art was

The Patents-in-Suit also disclose that microcontroller 106 executes custom software and that this custom software performs several functions. For example, software executing on the base unit receives simple message service messages from a remote unit. *See* '655 Patent at 11:21-45. The Patents-in-Suit also disclose that software executed by the microcontroller within the base unit is configured to provide autonomous control over environmental controls. For example, this software receives information from an environmental sensor and acts in response to the received information, including issuing a command to an environmental unit or notifying a user at a remote unit. *See* '655 Patent at 10:33-57. The Patents-in-Suit note that this software and the hardware on which it executes combine to provide "an on-demand bidirectional communications interface for monitoring, controlling, and securing various environment functions and characteristics attendant the interior and exterior of a building." *See* '655 Patent at 11:46-49.

Another function performed by this software relates to the user interface subsystems; *e.g.*, interpreting input received from the keypad and displaying data on the display. *See* '655 Patent at 5:39-42. One example of data entered into the keypad can be the location of the base unit so that a proximity detection event can use that information in conjunction with the location of the remote device. *See* '655 Patent at 9:1-15. Defendant asserted that the Patents-in-Suit do not disclose how the base unit knows its location for proximity detection purposes but that is incorrect. *See id.*

For the reasons discussed above, the hardware and software components disclosed as present in the base unit combine with the environmental devices and remote unit discussed below to provide "an on-demand bidirectional communications interface for monitoring, controlling, and

that Internet service was not available at the remote location absent integration of a cellular transmitter-receiver into a base unit.

securing various environment functions and characteristics attendant the interior and exterior of a building" as recited in the Ubiquitous Claims. *See* '655 Patent at 11:46-49. *I.e.*, an on-demand bidirectional communications system.

b) Environmental Device(s)

The Patents-in-Suit disclose that the base unit interfaces to a wide variety of environmental devices through its I/O module. For example, as discussed above in conjunction with the I/O module within the base unit, environmental devices such as X10-based devices, 1-wire-based devices, environmental sensors, and other devices can be interfaces with the base unit. *See* '655 Patent at 5:58-6:39.

The Patents-in-Suit describe some of these environmental devices in use. Among the disclosed examples of sensors that can be integrated with the I/O circuits of the base unit are are fire, temperature, humidity, "sun load," and wind detectors, and proximity detectors, The Patents-in-Suit disclose actuating various examples of environmental devices in response environmental conditions detected such as controlling whether windows are covered or uncovered, activating HVAC units in response to warm temperatures or deactivating those systems if a fire occurs, and activating sprinkler systems. Operation and use of the environmental devices is discussed at '655 Patent at 10:33-57.

c) Remote Unit

The Patents-in-Suit disclose that the (unclaimed) remote unit may be a cellular telephone, executing custom software, with an additional module for "assisted GPS" functionality. *See* '655 Patent at 6:44-60 (discussing assisted GPS).

As discussed below, the custom software is a critical element for an on-demand, bidirectional communications system with the remaining components of the three-component system for monitoring and control at remote locations. The custom software detects reception of a simple message service message and acts on that event as discussed below.

Additionally, because assisted GPS functionality was not part of then-current cellular telephones, in practical form, the assisted GPS module extended conventional cellular telephone features. Thus, the Patents-in-Suit disclose that the remote unit is based on a cellular telephone but is far more than a cellular telephone.

Figure 2 illustrates an exterior view of an embodiment of the remote unit. As seen therein, the remote unit may display one or more environmental indicators such as a measured temperature or air conditioning (AC) on/off status. *See also* '655 Patent at 4:8-15 (describing the remote unit). The Patents-in-Suit note that using a cellular telephone as a foundation for a device that communicates through a cellular network has the benefit of ensuring that the resulting remote unit meets all of the complicated governmental/regulatory requirements associated with communicating over a cellular network. *See* '655 Patent at 7:48-51.

In one embodiment, the Patents-in-Suit disclose that the remote unit may execute custom Java/J2ME software. *See* '655 Patent at 4:44-52. The Patents-in-Suit note that the custom software utilizes a programming kernel that was not typically available for mobile devices at that time. *See* '655 Patent at 7:10-16. Although the Patents-in-Suit predate Android cellular phones, it bears mention that Android cellular phones execute applications comprising custom Java software.

The custom software on the remote unit presents a user with an ability to trigger sending environmental commands to the base unit through the cellular network. *See* '655 Patent at 6:61-7:10. The Patents-in-Suit disclose a protocol for sending these commands that allows a remote unit to form a command and for a base unit to interpret that command. *See* '655 Patent at 8:1-12 (describing the format of a command from the base unit to the remote unit).

The custom software executing on the remote unit communicates with the base unit, through the cellular network, via simple message service. *See* '655 Patent at 7:22-24 ("The data path between the remote control unit and the base control unit is SMS ('simple message service')"). One part of the custom software's communication with the cellular network involves use of a port address that identifies the target recipient of the message as specific software executing on the base unit. *See* '655 Patent at 7:24-30 (describing use of a port address to direct the message to an intended recipient application) and 7:52-67. Use of simple message service messaging integrated with a port address allowed the base unit and remote unit to respond to receipt of a simple message service message as an event rather than requiring user intervention to differentiate such messages from other messages that may be received by either device.

For example, the Patents-in-Suit disclose a remote unit receiving a message, through simple message service, indicating that an entry alarm was triggered at a remote location. *See* '655 Patent at 7:41-47. In response, the remote unit detects the event of receiving this message and presents a graphical alert to the user of the remote unit in response. *See id.* The Patents-in-Suit note that the inventive system did not involve receiving a conventional telephone call and listening to a recorded voice message. *See* '655 Patent at 7:46-48 (noting that "voice-mode" was not involved in this message).

Thus, use of a port address with custom software executing on the remote unit allowed the inventors to overcome the barriers to providing an on-demand, bidirectional communications system on the remote unit side of the inventive system. An inventor of the Patents-in-Suit indicated that integration of event-driven responses to simple message service messages was not conventional in 2004 and that is consistent with my understanding.[13]

Figure 3 (below) illustrates an internal arrangement of components for the remote unit.

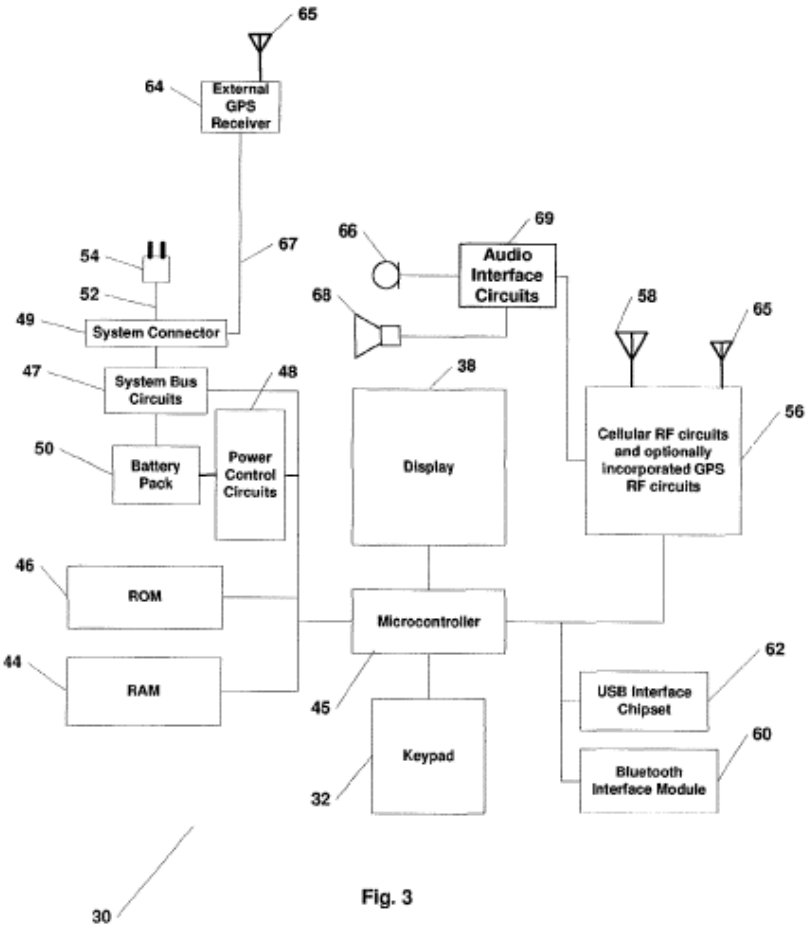


Fig. 3

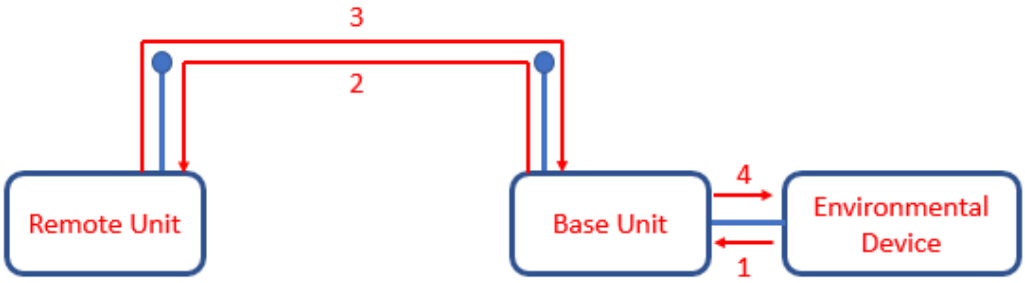
[13] Phone conversation with patent inventor Charles Shamoon.

See also '655 Patent at 4:16-33 (describing the components in Figure 3). In particular, Figure 3 illustrates the presence of an external GPS module 64, coupled to other components in a cellular phone through system connector 49, consistent with my understanding that GPS integration within cellular phones was not generally available until the iPhone's introduction in 2007. The specification discloses that the external GPS unit communicates with the cellular phone through a serial interface cable 67. *See* '655 Patent at 4:37-40. The GPS module 64 is disclosed as an external module or an internal module including an "assisted GPS module." *See* '655 Patent at 6:44-60.

The specification discloses that the GPS module within the remote unit can facilitate event-driven control scenarios including geo-fencing operations (discussed in greater detail below). *See* '655 Patent at 8:45-54. Thus, the remote unit is a significant aspect of the three-part collection of hardware components that operate to perform communications for an on-demand, bidirectional communications system as discussed next.

ii. Specific Communications for On-demand, Bidirectional Communications Systems

The Patents-in-Suit disclose a four-step communication scheme that operates to provide an on-demand, bidirectional communications system for achieving the advanced environmental monitoring and control goals discussed in Patents-in-Suit. These steps are illustrated below and discussed thereafter.



As seen above, the sequence of communications occurring within the on-demand, bidirectional communications system begins with an environmental device detecting a condition and communicating that condition to the base unit. The first communication is illustrated above as communication "1." *See* '655 Patent at 11:64-65 (base unit constantly receives data from environmental sensors); 9:17-18 (base unit "can initiate communications based on its aggregated inputs"). The Patents-in-Suit disclose a wide variety of events and sources of input that could trigger communication of the first message, such as a fire or burglar alarm event detection or changes to building occupancy. *See* '655 Patent at 5:58-6:43 (disclosing numerous sources of input), 11:50-57 (sources), and 11:67-12:3 (sources); 9:20-27 (disclosing numerous events) and 11:65-67 (disclosing types of input received).

Upon receiving the communication from the environmental device, the base unit interprets the first communication and generate a second message, for communication to the remote unit, if the nature of the information within the first message indicates that the remote unit should be alerted to the occurrence of an environmental condition within the building containing the base unit and the environmental device. This second message is identified above as "2." If an alert should issue to the remote unit, the base unit communicates a second message to the remote unit through the cellular network (shown above as an antenna). *See* '655 Patent at 7:41-43 (base unit

communicates alert to remote unit); 9:15-17 (base unit communicates device status to remote unit on event-driven basis); 12:47-51 (base unit communicates "alarm" message to remote unit). In this way, the base unit acts as a gateway for communicating with the remote unit through the cellular network.

Upon receiving the second message at the remote unit, via the cellular network, the remote unit determines whether the information received in the second message warrants alerting a user to that information; *i.e.*, base unit distinguishes an "alert" from a message reflecting an updated measurement value. If the information warrants that alert, remote unit displays (in one embodiment) information about the received message to the user on the screen of the remote unit. *See* '655 Patent at 7:41-45 (remote device displays graphical indication or textual message in response to receiving an alert from the base unit). The user recognizes the information and optionally responds to the information by directing the base unit to execute a command in response to the second message. *See* '655 Patent at 7:45-46 (user indicates a response to an alert); 12:19-24 (users directs the base unit to adjust an environmental condition, through a "command," from the remote unit); 12:52-57 (user directs environmental device, through base unit, via a "control signal").

The remote unit communicates the command from the user as part of a third message from the remote unit to the base unit through the wireless network (illustrated above as antenna). The third message (shown above as "3") is received and interpreted at the base unit. *See* '655 Patent at 6:61-65 (remote unit sends command to base unit); 7:2-3 (application software executing on remote unit sends command to base unit); 9:18-19 (the base unit "can respond to individual

requests and commands received from the remote control unit"). In response to receiving the third message, the base unit processes the message. *See* '655 Patent at 7:4-6.

As a fourth and last step in the sequence of communications, command is communicated from the base unit to an environmental device to adjust operation of the environmental device in response to the command received. *See* '655 Patent at 8:45-47 (base unit adjusts an environmental device such as a water heater in response to a command from the remote unit). The command is shown above as "4."

Geo-fencing communications are also extensively disclosed. For example, crossing a geo-fence can trigger a message from a base station to a remote unit. *See* '655 Patent at 9:20-27 (leaving geo-fence can cause base station to send message). *See* also '655 Patent at 9:5-9 (same). The remote unit may direct an environmental device such as a water heater to adjust its configuration in response to the geo-fence traversal. *See* '655 Patent at 8:45-54; 8:62-65.

Thus, the sequence of messages shown above is operative to receive an environmental condition from an environmental device, communicate information associated with that condition to a remote unit through a base unit acting as a gateway to the cellular network, communicate a user's response to the information from the remote unit to the base unit (again through the cellular network), and to update operation of an environmental device to reflect the user's response. This sequence of communications reflects a sequence of on-demand, bidirectional communications. *See* '655 Patent at 11:46-49 ("The present invention thus provides an on-demand bidirectional communications interface for monitoring, controlling, and securing various environment functions and characteristics attendant the interior and exterior of a building.").

D. Disclosures in the Patents-in-Suit as a Whole

Although the context of the Patents'-in-Suit invention is home or business environmental monitoring and control, the Patents-in-Suit are focused on only one aspect of that industry, and that is the integration of an incompatible communication device (a cellular phone) into that space.

In order to fully integrate a cell phone into a monitoring and control environment, such as a home control environment, the patent establishes a system for reliable "on-demand bidirectional communication." *See* '655 Patent at 1:22-26. In other words, the system requires two-way communication between a cell phone and a remote device where either side can initiate a message, a command, or receive status information.

At the time of the invention, there was no commercially available system that could integrate a cell phone with a system in this fashion. The patent also establishes a network architecture to perform this integration. At the core of the network is a base control unit acting as a communications gateway between a remote unit and devices, to be monitored or controlled, in proximity to the base control unit. *See* '655 Patent at 1:22-26.

The two-way communication capability described herein is essential because it permits the user operating a remote unit to initiate commands to, and request status from, the monitored devices (at a remote location) through the user's cellular phone, as well as allowing monitored devices to alert the user to specific events in an unsolicited manner (i.e. an ability to provide on-demand status and commands triggered by event-driven notifications). *See* '655 Patent at 2:65-3:1; 9:15-19.

Although the base control unit can be partially constructed with off-the shelf integrated circuits, or modules provided by subsystem makers, the base control unit is not a generic component. *See* '655 Patent at 4:63-5:3. The base control unit illustrated in Fig. 4 must be

customized to perform a multitude of functions. It must function both as a communication gateway and as a user interface controller. As a communications gateway, the base unit can handle high-end protocols such as TCP/IP for connecting the base control unit to the Internet as well as handling low-end communication protocols such as the 1-wire standard for simple remote devices. *See* '655 Patent at 5:65-6:7.

The base control unit may accept and translates a variety of communications and protocols including serial interfaces that connected with desk top computers, USB for communicating with data storage and digital camera devices, Bluetooth and Wi-fi for wireless device communication, digital and analog I/O for direct peripheral or device integration, X10 interface for communicating with monitored and controlled devices over power lines, a proprietary internal bus for interfacing with custom devices design specifically for this base unit / remote unit architecture. *See* '655 Patent at 6:18-44.

This bidirectional on-demand communication interface, implemented through the base unit, was unconventional in that a cellular device was not used in this manner before. It was also unique in that it enabled unsolicited messages and information to be sent from a remote monitored and controlled device to the user's cell phone such as sending notification of a fire alarm, a security break-in, or a child leaving a geographic (geo-fenced) area.

The unique capability of sending unsolicited messages (i.e. revised status) from the remote device through the base unit is what distinguished the invention from the prior art in the prosecution history. This was acknowledged by the examiner.

> However, the cited prior arts, either alone or in combination, fail to teach means for transmitting said second SMS message including information associated with the remote device and the indication of revised status through said connectivity means to said base unit …."

(Prosecution History for U.S. Patent Application 11/163,372 – Final Office Action of September 6, 2006 at 7), attached as **Exhibit 3** to this declaration.

Taking the disclosures of the Patents-in-Suit and the cited portion of their file history provides a very clear picture for the innovative ideas incorporated therein. A discussion of patentability issues begins after my determination for a person of ordinary skill in the art for the Patents-in-Suit.

VI. Person of Ordinary Skill in the Art

I have performed the below-discussed analysis with a view to the understanding of a person of ordinary skill in the art (POSITA) as of the priority date of the Patents-in-Suit (November 2004). Identifying this level of understanding is important for understanding how the POSITA would interpret aspects of the Patents-in-Suit and for how the POSITA would view the challenges and deficiencies in the state of the art for subjects discussed in those patents.

In my opinion, a person of ordinary skill in the art would have a bachelor's degree in electrical engineering or computer science and two years of industry experience in the field of computers and communications. Notwithstanding this educational and experiential requirement, a person with more experience but less education, or a person with more education but less experience could potentially be a person of ordinary skill in the art.

VII. Claim Construction

I understand that Ubiquitous proposes that several terms recited in the Ubiquitous Claims should be construed. The list of terms for construction, and their proposed constructions, is included as Appendix A. Among the proposed terms for construction is "simple message service" as discussed below.

A. Simple Messaging Service

I understand that Ubiquitous proposes that the term "simple message service," as used and claimed in the Patents-in-Suit, should be construed to mean "service capable of transmitting control and command signals between network interfaces."

I agree with this proposed construction because it is consistent with how a person of ordinary skill in the art, at the time of the invention, interpreting the Ubiquitous Patents, would have understood that term. In coming to this conclusion, I reviewed the Patents-in-Suit and the file histories of the Patents-in-Suit. The bases for my conclusion are stated below.

The Patents-in-Suit use the terms "simple message service," "short message service," and "SMS" when describing several types of communications that occur, through a cellular network, between a base unit and a remote unit. *See*, *e.g.*, '655 Patent at 3:8-13; 7:22-40; 7:52-67; 8:59-62; 11:24-36; and Claim 1 at 14:24-25. However, these terms are not synonymous. Indeed, the distinction between these terms is important for understanding the invention of the Patents-in-Suit.

Within the context of the Patents-in-Suit, the term "simple message service" reflects an enhanced form of "short message service." Thus, simple message service is based on short message service but is more than short message service. The Patents-in-Suit make this distinction clear as discussed next.

The Patents-in-Suit discuss simple message service details in two ways. For example, in some instances, the Patents-in-Suit expressly use the term "simple message service" when discussing a "service capable of transmitting control and command signals between network interfaces." For example, at 7:22-30, the '655 Patent states the following:

> The data path between the remote control unit and the base control unit is SMS ("simple message service".) However, the implemented port addressing scheme

> allows short messages to the remote control unit to bypass standard cellular telephone functions and to operate the features of the unit independently. The desired port to be addressed on the receiving unit is configured in the user data header of the SMS message that is transmitted to the receiving unit as is well known in the art.

A person of ordinary skill in the art would have understood this disclosure to concern more than conventional text messaging capabilities for several reasons. One reason is that this disclosure expressly uses the phrase "simple message service" rather than the internationally standardized name for text messaging of "short message service" (as discussed below) notwithstanding inclusion of the terms "SMS" and "SMS message."

Another reason is that the above-illustrated disclosure describes communications involving control and command signals rather than mere textual information as was ordinary with short message service messages (i.e., conventional text messaging). As previously discussed, the Patents-in-Suit disclose and recite sending commands from a remote unit to a base unit.

Moreover, the above-illustrated disclosure refers to communicating through a "port addressing scheme" that reflects more than ordinary text messaging.[14] As the disclosure above expressly notes, the simple message service bypasses ordinary cellular phone functionality (*i.e.*, text messaging) to achieve an enhanced form of communication relative to short message service.

In addition to explicit references to simple message service, the Patents-in-Suit discuss simple message service with reference to the enhancements made to short message service (SMS) messages without expressly using the term "simple message service" in the discussion. A person of ordinary skill in the art would have recognized such usage.

[14] As previously discussed, use of a port address within a message allows a receiving device to direct a received message to a particular application. Ordinary text messaging did not include such functionality.

For example, as discussed above, the '655 Patent discloses at 7:23 and 7:25 functionality associated with the terms "SMS" and "short message" but within a context that reflects that the communication is founded on but is not limited to short message service messaging. A person of ordinary skill in the art would have understood that the context reflects control and command signals rather than ordinary text messages even if the term "short message service" had not been used within the surrounding discussion.

In another example, at 3:58-67, the '655 Patent disclosing performing control through a "short message." Although the Patents-in-Suit use short messaging (SMS) as a foundation upon which its control communications are built, ordinary SMS messages are not capable of commanding or controlling other devices. Yet, a person of ordinary skill in the art would know that and would, within the context of the Patents-in-Suit, recognize that disclosures referring to SMS or short messages, but in fact discussing enhancements to such communications that allow the claimed systems to operate as described, refer to what simple message service as discussed therein. Similar disclosures, reflecting more than conventional text messaging but using terms reflecting a SMS foundation on which enhanced messaging was built, exist in the '655 Patent at 7:30-33 (discussing a command), 7:37-40 (discussing a command), 7:52-54 (discussing port addressing), 7:64 (discussing port addressing), and 11:25-28 (discussing commands).

In a third example, at 7:52-54, the '655 Patent states the following: "SMS port addressing allows Mobile Terminated SMS messages to be processed within the cellular telephone's application software without user intervention."

A person of ordinary skill in the art would have understood this disclosure to concern two concepts. The "Mobile Terminated" phrase refers to receiving a message at a mobile device; i.e.,

the message terminates at that device, rather than originating from that device. "SMS port addressing" refers to a communications capability for individual messages to be received by particular software applications based on a "port address" associated with the message. For example, a first software application may be configured to receive all messages sent to port 10000 while a second software application may be configured to receive all messages sent to port 10001. By incorporating a port address within a message, the message has an ability to direct itself to a particular software application on the recipient device. This capability reflects a command and is therefore different than, and much more than, what is commonly understood as a "text message" so this disclosure is inconsistent with "short message service" and is consistent with the "simple message service" disclosure (reflecting something different than "short message service") discussed above.

In a fourth example, at 8:59-62, the '655 Patent states the following:

> Data are captured by the remote control unit, they are processed by its application software, and the results are transmitted by port-addressed SMS to the base control unit for proximity detection.

Again, because this disclosure reflects a command to the base unit, a person of ordinary skill in the art would have understood this disclosure to concern the port addressing aspect of "simple message service" discussed above as distinguished from the "short message service" interpretation commonly associated with text messaging.

By contrast, the Patents-in-Suit discuss conventional text messaging (SMS) messages in a different way – in a way that makes clear that the Patents-in-Suit are discussing prior art text messaging that lacks the enhancements reflected by simple message service messages.

For example, at 3:8-13 (*i.e.*, in the Background section), the '655 Patent states the following:

> A more advanced method involves the use of the cell phone network's short message service ("SMS") in which text messages are sent to and received from a controlled system. SMS messages travel on the same cellular network (on the same physical layer) as standard voice calls but on a different logical channel.

This passage merely describes sending and receiving text messages without any further actions triggered from the text messages or any added intelligence within the content of the text messages, such as a port address, consistent with then-existing technology.

A person of ordinary skill in the art would also have understood this disclosure to concern then-existing, conventional text messaging capabilities available on cellular telephones because "short message service" is the service name for what consumers understand as text messaging.[15] The technical standards for short message service, including its abbreviation as "SMS," are set forth in published standard managed by an international standards body (the IETF).[16] That standard concerns communicating ordinary text messages as a consumer would understand text messaging, rather than more sophisticated messages, including commands, reflected in the proposed construction. Thus, as seen above, the cited passage from the Patents-in-Suit plainly equates "SMS" with "short message service" and reflects that those terms are different than "simple message service."

Claim 1 also recites the following: "wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular

[15] For example, the Library of Congress website discusses "short message service," abbreviating it as "SMS," and describing it as "text messaging" for mobile phones. *See* https://www.loc.gov/preservation/digital/formats/fdd/fdd000431.shtml.
[16] *See* RFC5724 (setting for the standards for "simple message service" and abbreviating it as "SMS") at https://www.ietf.org/rfc/rfc5724.txt.

remote unit is outside of the geo-fence." *See* 14:23-26. Based on that claim's unambiguous disclosure of "simple message service," rather than "short message service," a person of ordinary skill in the art would have understood the claimed limitation to reflect the simple message service type of communication disclosed within the specification of the Patents-in-Suit.

For the reasons discussed above, I agree with the proposed construction of "simple message service" put forth by Ubiquitous.

VIII. CLAIMS ARE DIRECTED TO PATENT-ELIGIBLE SUBJECT MATTER

In this section, I applied the two-step *Alice* test as part of my technical analysis of the Patents-in-Suit. For the reasons discussed below, I concluded that the Ubiquitous Claims recite patentable subject matter under (both) the first and second *Alice* steps; *i.e.*, should the Court find that the Ubiquitous Claims are not patentable subject matter under the first *Alice* step, those claims are nonetheless patentable subject matter under the second *Alice* step. The bases for my technical analyses and conclusions are provided next.

A. Step 1 of the *Alice* test: Claims of the Patents-in-Suit are Directed to a Novel and Patent Eligible "On-demand, Bidirectional Communication System" and not to the "Abstract Idea of Environmental Monitoring and Control"

I understand that in step one of the *Alice* test, the objective is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." Patent-ineligible concepts are those "that claim laws of nature, natural phenomena, and abstract ideas."

Defendant asserts that the patent is directed to "Monitoring and Controlling Appliances." That assertion is not correct. The patent may involve monitoring and controlling appliances as one of the primary applications of the invention, but the invention is directed to the creation of a specific communication interface that will allow cellular devices (e.g. cell phones) to control and

monitor remote devices. And the invention identifies the specific type of communication system that must be created to do this: an "On-demand, Bidirectional Communication" system.

The patent explicitly states this itself:

> "FIELD OF INVENTION
>
> The present invention relates to a remote monitoring and control system for an environment. More specifically, the system relates to on demand bidirectional communication between a remote access unit and a multifunctional base control unit in a geographically remote location."

See '655 Patent at 1:20-26.

Bidirectional communication means that the cellular device can send information or commands to the remote unit or vice-versa. On-demand means that the either side can initiate the communication, i.e. it is unsolicited. For example, the remote unit can detect and event such as a fire alarm and send a notification directly to the cell phone without any prior initiation of a communication session with by the cell phone. Again, this type of communication system did not occur between cellular devices and remote devices prior to this invention.

Then, the patent sets out defining the specific system and components needed to achieve this on-demand, bidirectional communication system. At the center of this solution is the base unit which is described in detail as a proprietary device that forms the intermediary between the cellular device and the remote device. In addition, the claims of both patents are directed either to the operation of the base unit or the communication between the cellular device and a remote device through the based unit.

i. "Involves" vs. "Directed to"

An important aspect of the first-step evaluation involves distinguishing an invention that is "directed to" an abstract idea from an invention that merely "involves" the abstract idea. *See id.* I understand the terms "directed to" and "involves" reflect, within the context of a relationship to an abstract idea, substantially different degrees of relatedness to that abstract idea.

A person of ordinary skill in the art, reading the Patents-in-Suit, would understand that the Patents-in-Suit "involve" many concepts that are important to those patents. For example, in my opinion, the Patents-in-Suit involve simple message service technology. More specifically, the Patents-in-Suit disclose *and claim* use of simple message service technology. *See, e.g.*, '655 Patent at 7:22-24 and Claim 1 at 14:24-25. Thus, based on its disclosures and claims, the Patents-in-Suit at least involve simple message service technology.

In another example, the Patents-in-Suit disclose and claim aspects of environmental monitoring. *See, e.g.*, '655 Patent at 9:20-27 and Claim 1 (reciting, among other things, a first digital communications message including a representation of environmental information). Thus, the Patents-in-Suit at least involve environmental monitoring.

In an additional example, the Patents-in-Suit disclose and claim use of location-determination technology. *See, e.g.*, '655 Patent at 4:1-4 and Claim 1 at 14:20-21. Thus, the Patents-in-Suit also at least involve use of location-determination technology.

A person of ordinary skill in the art, reviewing the Patents-in-Suit, would recognize that the Patents-in-Suit "involve" many additional concepts. Among these concepts are cellular networks (*see* Figure 1, element 22), customized software including application icons (*see* Figure 2, element 42), microcontrollers (*see* Figure 3, element 45), and port addressing (*see* '655 Patent

at 7:24-30). Other examples of concepts involved with the Patents-in-Suit are readily apparent upon review of those patents.

Nonetheless, the Patents-in-Suit are not *directed to* all of these concepts. As identified above, the patent specifically states, and the communication in the claims are directed to, the creation of an on-demand bidirectional communications system.

ii. Advances Over the Art

As one test for distinguishing "directed to" concepts from "involving" concepts, courts recommend considering "the focus of the claimed advance over the prior art." Several examples of claimed advances, from the Patents-in-Suit, are discussed next.

a) Then-existing Systems with Significant Shortcomings

In one example, the Patents-in-Suit disclose the then-existing use of cellular networks with monitoring and control systems but observe that these systems were crude and inconvenient to use because they either offered one-way communication or very unfriendly two-way communication. *See* '655 Patent at 2:46-51 (disclosing the existence of inferior telephone interfaces) and 3:4-8 (disclosing use of a cellular phone but with the same shortcomings of other telephone interfaces). *See also* '655 Patent at 7:15-22 (then-existing systems utilizing a cell phone required a user to dial in to a base unit, press telephone keypad keys to create touch-tone (DTMF) sounds that would be received and interpreted by the base unit, and then manually disconnect from the base unit when communication is complete).[17]

[17] An Internet-based demonstration of DTMF tones, through simulated phone key presses, is available at https://scratch.mit.edu/projects/1981662/. You may need to install or authorize Adobe Flash software to run on your browser to use this demonstration however.

In another example, the Patents-in-Suit disclose the then-existing use of a "control architecture" including a one-way communication of commands to a device under control. *See* '655 Patent at 2:17-20. The Patents-in-Suit also disclose then-existing bi-directional communications in the limited context of Internet-based communications. *See* '655 Patent at 2:65-3:3. By contrast, then-existing telephone or mobile device based communications disclosed by the Patents-in-Suit involve one-way techniques (e.g., DTMF/keypad tones) or two-way techniques with significant shortcomings (e.g., "hard-to-understand digitized voice prompts"). *See* '655 Patent at 2:46-52. Thus, each approach had identified shortcomings.

In a further example, the Patents-in-Suit disclose that the then-current art lacked a monitoring and control environment in which the above-discussed principles of bi-directional communications with remote devices, not involving cryptic or inconvenient user interfaces, were used at remote locations for which landlines or then-known communication schemes were unavailable due to economic or practical considerations. *See* '655 Patent at 1:48-54.

b) Patents-in-Suit Overcome the Shortcomings

The Patents-in-Suit disclose that they address and resolve these shortcomings in the art through improvements incorporated within a base unit. For example, a central theme in the Patents-in-Suit is integration of cellular, user-friendly or automated, two-way communications into a base unit at a remote location.

Although this innovation may seem modest under our present-day experience with smart phones that can communicate with almost any type of device, the world was very different in 2004 when the Patents-in-Suit were filed. As discussed earlier, the first iPhone became available in

2007 and smart phones proliferated in variety and capabilities shortly thereafter. *See* Section IV.B.iv.

The Patents-in-Suit reflect improvements over the 2004-era state of the art regarding structures and features in a base unit including interfacing cellular communications with computing devices including a base unit. Specific solutions to the then-existing shortcomings are disclosed. *See* '655 Patent at 7:41-48 (disclosing that technical solution avoids "voice mode"[18] to achieve two-way communications); 7:52-54 and 7:61-67 (enhanced form of SMS, optionally involving port addresses, allows automated/on-demand communications between a mobile device and another device without requiring user intervention); and 8:59-65 (two-directional communications not requiring user intervention or crude user interfaces). A consistent theme with all these technological improvements is that they concern communications improvements applied to a base unit within the context of environmental monitoring and control.

Figure 4 illustrates an embodiment of a base unit. As seen therein, the embodiment is a highly customized computing device integrating structures supporting software execution (e.g., a microcontroller) with structures supporting cellular communications (e.g., wireless module 70 and antenna 90) and with structures supporting data acquisition or control (e.g., powerline interface 70, environmental sensors 76, and expansion module 89) and with structures supporting a user interface (e.g., LCD 112, keypad 120, and audio components 92, 100, and 102). *See* '655 Patent at 5:4-6:43 (describing these structures). The Patents-in-Suit refer to these various collections of structures supporting particular functionalities as "separate subsystems." *See* '655 Patent at 4:57.

[18] *See* Section IV.B.iii above for a discussion of voice-mode technology.

Additionally, the specification discloses that these structures or subsystems were tied together with custom software. The Patents-in-Suit refer to this software as "application software" within the base unit. *See* '655 Patent at 10:30-36 (disclosing the existence of application software within the base unit). The application software executing on the base unit included a macro language for creating on-demand triggers executed in response to events. *See* '655 Patent at 10:50-66. The Patents-in-Suit also disclose that application software executing on the base unit was configured to receive and act on simple message service messages. *See* '655 Patent at 11:24-26. Many other functions associated with the base unit are described. Indeed, a majority of the specification of the Patents-in-Suit is devoted to describing functions achieved by the base unit. *See* '655 Patent at 5:4-13:36 (describing a wide range of functions perform by a base unit).

Although the Patents-in-Suit do not expressly identify that application software on the base unit performs all base unit functions, a person of ordinary skill in the art would recognize that the extensive base unit functionality described in the Patents-in-Suit would be achieved through software.

I additionally understand that the inventors had to develop additional custom software to interface the microcontroller within the base unit to the wireless interface within the base unit, to facilitate communication through a cellular network, because no then-available software for that interfacing existed.[19] This is consistent with my understanding of the state of the art at that time.

The Patents-in-Suit describe portions of the software interface for these functions. *See* '655 Patent at 11:27-38 (discussing base unit interfacing with the SMS capability offered through the wireless interface) and 8:1-12 (discussing implementation details for sending a message from

[19] Phone conversation with patent inventor Charles Shamoon.

a base unit to a remote unit). Thus, the innovations that went into creating the base unit reflected the key structural improvements within a base station for facilitating improved communication through on-demand, bi-directional command communications.

The Patents-in-Suit disclose that the base unit can be created from components available from original equipment manufacturers (OEMs). *See* '655 Patent at 4:62-65. In 2004, acquiring a base unit would have required combining components from OEMs because no then-available device contained the subsystems discussed above.

Additionally, I do not understand this use of OEM-provided components to suggest that the components of the base unit could simply be combined like puzzle pieces to achieve a functioning result. Instead, integration of such components – at least in 2004 – was typically a very challenging process because such components lacked interface software (*i.e.*, driver software[20]) for interfacing such components with hardware other than hardware running a standard operating system like Microsoft Windows. Because base units are typically low-power, cost-sensitive devices, rather than personal computers, they would not have utilized commercial operating systems within this timeframe, so a lot of custom software would have been developed to allow integrating such devices.

The controller disclosed by the Patents-in-Suit also allows the Patents-in-Suit to overcome shortcomings in the art. As discussed above, then-existing monitoring and control solutions such as X10 could provide an interface for monitoring and controlling environmental conditions but those solutions could not be accessed remotely and were not event driven. *See* '655 Patent at 2:34-

[20] Driver software is software that communicates with a particular piece of hardware in a way that other software may interface with the hardware through the driver software. Stated differently, driver software facilitates access to particular hardware for the benefit of other software. Lack of driver software, or ineffective driver software, is often a very substantial technical hurdle to overcome when integrating several pieces of hardware.

45. By interfacing the controller with systems like X10, through hardware interfaces in the base unit, the shortcomings of the X10 can be overcome.

The Ubiquitous Claims reflect the innovations incorporated within the base unit. For example, Claim 1 recites the following limitations overcoming shortcomings in the art:

Limitation	**Shortcoming(s) Overcome**
A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising:	Base unit employing cellular communications technology (to support communications from remote location)
a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;	Bi-directional communications between base unit and environmental device
a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network,	Bi-directional communications between base unit and remote unit (user's cell phone)
wherein the first message is a first digital communications message including a representation of the environmental information, and	First part of bi-directional communications, between base unit and remote unit reflects environmental information; e.g., temperature
wherein the second message is a second digital communications message including a command regarding the environmental device; and	Second part of bi-directional communications, between base unit and remote unit reflects a command regarding environmental conditions; e.g., command to adjust temperature
a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental	Microcontroller executes software for receiving the command from the cellular interface and forwarding the command to the appropriate environmental device; e.g., a command to adjust temperature

device via the first communication interface, and	
wherein the command is for the base unit initiated by a user from the cellular remote unit, and	Command sent from remote unit (cellular phone) to base unit in remote location (with integrated cellular receiver)
wherein the control instruction to the environmental device is associated with the command for the base unit,	Particular message sent through bi-directional communications between base unit and environmental device
wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and	First part of detecting the occurrence of an event that is communicated through event-driven/on-demand processing
determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	Second part of detecting the occurrence of an event that is communicated through event-driven processing ("determining …") Event-driven message; simple message service

From the table above, we see that Claim 1 recites bi-directional communications between a base unit and a remote unit at a geographically remote location (overcoming limitations in the art for communicating in a bi-directional manner between a base unit in a remote location and a remote unit); bi-directional communications of information and resulting commands between a base unit and an environmental device; event-driven communications involving detecting traversal of a geo-fence and sending a message in response to detecting that event; and using simple messaging service communications for communications with base unit (overcoming shortcomings in user interface technology by removing a need for user involvement in sending the message).

Additionally, Claim 19 recites the following limitations overcoming shortcomings in the art:

Limitation	Shortcoming(s) Overcome
A communication system having wireless connectivity, the communication system comprising:	Communication system employing cellular communications technology (to support communications with remote location)
a base unit operatively interfaced with an environmental device, and configured to receive a current status of an environmental device;	First part of bi-directional communications scheme between base unit and environmental device Base unit receives data from environmental device
a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity,	First part of bi-directional communications scheme between base unit and remote unit Base unit employs cellular communications technology (transmitter supports communications with remote location)
wherein the first message is a wireless message including the current status of the environmental device;	Particular message sent through bi-directional communications between base unit and environmental device
a receiver associated with said base unit, and configured to receive a second message from the remote unit,	Second part of bi-directional communications scheme between base unit and remote unit Base unit employs cellular communications technology (receiver supports communications with remote location)
wherein the second message is a wireless message including a command for the environmental device; and	Particular message sent through bi-directional communications between base unit and remote unit
a controller operatively associated with the base unit and operatively connected with the environmental device, and configured to send the command to the environmental device.	Second part of bi-directional communications scheme between base unit and environmental device Particular message sent through bi-directional communications between base unit and environmental device

From the table above, we see that Claim 19 recites bi-directional communications between a base unit and a remote unit using cellular communications (overcoming limitations in the art for

communicating in a bi-directional manner between a base unit in a remote location and a remote unit); and bi-directional communications of information and resulting commands between a base unit and an environmental device.

Thus, the Ubiquitous Claims reflect the advances over the art incorporated within the base unit.

c) No Disclosed Improvements Directly Attributable to Environmental Monitoring and Control

A conspicuous omission from the Patents-in-Suit is any suggestion that the Patents-in-Suit invented new forms of environmental monitoring or control. Additionally, the Patents-in-Suit lack any suggestion that the inventors created new ways to present data associated with environmental monitoring and control. Indeed, I see no examples of improved monitoring or control activities, within the Patents-in-Suit, other than those directly arising from improved communications.

Instead, the disclosed improvements (discussed in the preceding subsections) reflect improvements to a base unit that facilitated better ways to communicate during monitoring and control activities.

d) Conclusion

In my opinion, based on the deficiencies in the art and the technical advances over the art disclosed by the Patents-in-Suit, the "Advances in the Art" test advocated by the courts supports that the Patents-in-Suit are directed to base unit improvements that facilitated improved communication techniques during environmental monitoring and control and are not directed to an abstract idea concerning environmental monitoring and control. Thus, this test favors patentability of the Ubiquitous Claims.

iii. Considering the Character of the Claims as a Whole

Another test for identifying the subject to which the claims are directed, recommended by courts, is considering whether the claims' "character as a whole is directed to excluded subject matter." My analysis for this technique focuses on Claims 1 and 19 although Defendant asserts that all claims in the Patents-in-Suit are unpatentable.

My review of Claims 1 and 19 lead me to conclude that the dominant subject recited in those claims concerns communication rather than environmental monitoring and control. For example, Claim 1 recites a series of limitations that most directly concern communications:

- a base unit configured to communicate with an environmental device
- a base unit configured to communicate with … a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location
- a first communication interface configured to receive environmental information
- a first communication interface configured … to send a control instruction to the environmental device
- a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network
- a wireless communication interface configured to … receive a second message from the cellular remote unit via the cellular communications network
- a microcontroller configured to … send the control instruction to the environmental device via the first communication interface
- wherein the cellular remote unit is configured to transmit a notification via a simple message service

Additionally, Claim 1 recites a series of limitations that most directly concern monitoring and control:

- wherein the first message is a first digital communications message including a representation of the environmental information
- wherein the second message is a second digital communications message including a command regarding the environmental device
- a microcontroller configured to … to provide the control instruction based on the command
- wherein the command is for the base unit initiated by a user from the cellular remote unit

- wherein the control instruction to the environmental device is associated with the command for the base unit

In my opinion, in the context of Claim 1 as a whole, the significance and number of limitations that most directly concern communications is substantially greater than the significance and number of limitations that most directly concern monitoring and control. This conclusion is influenced in part by the observation that all but one of the limitations most directly concerning monitoring and control are "wherein" clauses that modify more significant limitations (which happen to be communications-directed limitations). Also, the number of communications limitations is substantially greater than the number of monitoring-control limitations. Thus, my consideration of the character of Claim 1 as a whole leads me to conclude that Claim 1 is directed to communications rather than environmental monitoring and control.

The same conclusion arose for Claim 19. As shown below, Claim 19 includes multiple limitations most directly concerning communication:

- a communication system having wireless connectivity
- a transmitter associated with said base unit,
- a transmitter … configured to send a first message to a remote unit having wireless connectivity
- a receiver associated with said base unit, and configured to receive a second message from the remote unit
- a controller configured to send the command to the environmental device

Claim 19 also includes limitations most directly concerning monitoring and control:

- a base unit operatively interfaced with an environmental device
- a base unit … configured to receive a current status of an environmental device
- wherein the first message is a wireless message including the current status of the environmental device
- wherein the second message is a wireless message including a command for the environmental device

- a controller operatively associated with the base unit and operatively connected with the environmental device

In my opinion, in the context of Claim 19 as a whole, the significance and number of the limitations that most directly concern communications is somewhat greater than the significance and number of the limitations that most directly concern monitoring and control. This conclusion is influenced in part by the observation that five communication limitations exist, with none of those limitations reflecting a "wherein" clause that modifies another limitation (and would therefore be less significant than the modified limitation). Additionally, five monitoring-control limitations exist but two are "wherein" clauses that modify more significant communication limitations. Thus, my consideration of the character of Claim 19 as a whole suggests that Claim 19 is directed to communications rather than environmental monitoring and control.

iv. Concrete and Tangible Elements in Claims

I understand that another way of evaluating whether claims are directed to an abstract idea is by considering whether the claims recite concrete and tangible elements versus mere ideas. In particular, I understand that method claims can be particularly susceptible to expressing ideas rather than concrete and tangible elements but apparatus claims can also express ideas.

As seen below, Claim 1 recites concrete and tangible limitations.

TABLE 1

Limitation	Reasons why Concrete and Tangible
A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising:	Base unit is a tangible computing device with special communications interface. Base unit is part of three-part arrangement of devices (environmental device and remote unit are other devices) configured to communicate in a particular way

a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;	Communication interface is tangible component configured in a particular way to perform a particular task – its role in on-demand, bidirectional communications
a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network,	Wireless interface is tangible component configured in a particular way to perform a particular task – its role in on-demand, bidirectional communications
wherein the first message is a first digital communications message including a representation of the environmental information, and	Recites a specific detail for how the message sent from the wireless communication interface performs a particular aspect of on-demand, bidirectional communications
wherein the second message is a second digital communications message including a command regarding the environmental device; and	Recites a specific detail for how the message sent from the remote unit performs a particular aspect of on-demand, bidirectional communications
a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and	Tangible component that receives command from remote unit and converts command into format that is compatible with environmental device as part of performing specific aspect of on-demand, bidirectional communications
wherein the command is for the base unit initiated by a user from the cellular remote unit, and	Recites a specific detail for how the command relates to communications within the three-device system of devices
wherein the control instruction to the environmental device is associated with the command for the base unit,	Recites a specific detail for how the control instruction relates to communications within the three-device system of devices
wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and	Recites that the remote unit contains tangible circuitry for determining its position
determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service	Recites a particular determination performed; receives sending a particular response to that determination in a particular way (simple message service)

responsive to determining that the cellular remote unit is outside of the geo-fence.	

Because each of the claim limitations recite concrete and tangible components or functions performed as part of on-demand, bidirectional communications system applied in the context of environmental monitoring and control, it is my opinion that this Claim 1 is not directed to an abstract idea. A similar comparison for claim 19 is shown below.

TABLE 2

Limitation	Reasons why Concrete and Tangible
A communication system having wireless connectivity, the communication system comprising:	Base unit is a tangible computing device with special communications interface. Base unit is part of three-part arrangement of devices (environmental device and remote unit are other devices) configured to communicate in a particular way
a base unit operatively interfaced with an environmental device, and configured to receive a current status of an environmental device;	Base unit has a tangible interface with environmental device and communicates with environmental device in a particular way
a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity,	Base unit has a tangible interface with cellular network (transmitter) and communicates with remote unit in a particular way
wherein the first message is a wireless message including the current status of the environmental device;	Recites a specific detail for how the first message relates to communications within the three-device system of devices
a receiver associated with said base unit, and configured to receive a second message from the remote unit,	Base unit has a tangible interface with cellular network (receiver) and communicates with remote unit in a particular way
wherein the second message is a wireless message including a command for the environmental device; and	Recites a specific detail for how the second message relates to communications within the three-device system of devices

a controller operatively associated with the base unit and operatively connected with the environmental device, and configured to send the command to the environmental device.	Tangible component within base unit that performs a specific aspect of communications within the three-device system of devices

Because each of the claim limitations recite concrete and tangible components or functions performed as part of on-demand, bidirectional communications system applied in the context of environmental monitoring and control, it is my opinion that Claim 19 is also not directed to an abstract idea.

v. Considering the Field of the Invention

In addition to the court-advocated tests for identifying to what the Ubiquitous Claims are directed, it is my opinion that the Field of the Invention for the Patents-in-Suit is somewhat helpful for understanding the focus of those patents.

The Field of the Invention section for both Patents-in-Suit states the following:[21]

> The present invention relates to a remote monitoring and control system for an environment. More specifically, the system relates to on demand bidirectional communication between a remote access unit and a multifunctional base control unit in a geographically remote location.

This statement makes clear that the inventors believed that the Patents-in-Suit were directed to improved communications within the context of environmental monitoring and control. By stating that the present invention relates to monitoring and control but more specifically relates to improved communications, the inventors made clear that improved communications was the focus of the invention.

vi. Conclusion: On-demand, Bidirectional Communications System

[21] As discussed previously, the Field of the Invention sections are the same in both patents.

In my opinion, the Ubiquitous Claims are directed to improved communications rather than environmental monitoring and control. This conclusion arises from applying the "Advances over the Prior Art" and "Considering the Character of the Claims …" tests because both tests favored improved communication over environmental monitoring and control. This conclusion was also bolstered by consideration of the Field of the Invention, because the Field of the Invention expressly discloses the inventors' view that the Patents-in-Suit were directed to improved communications within the context of environmental monitoring and control.

This conclusion is further bolstered by the observation that no disclosure in the Patents-in-Suit discloses new or better environmental monitoring or control, such as monitoring or controlling new device types or collecting new types of environmental information, other than improvements arising from better communication. Because the Patents-in-Suit do not purport to disclose new types of monitoring and control (other than such based on improved communication), the Ubiquitous Claims cannot be directed to undisclosed new types of monitoring and control.

Additionally, the Patents-in-Suit disclose specific structures for achieving the intended goal of improving communication. Although the details of these structures are too voluminous to repeat here, the specific structures for accomplishing the inventions recited in the Ubiquitous Claims are described at length earlier. *See* Section VI.C.i.

B. Step 2 of the *Alice* test: Claims of the Patents-in-Suit Reflect an Inventive Concept - Significantly more than "an Abstract Idea of Environmental Monitoring and Control" with Addition of an On-demand, Bidirectional Communications System

i. Overview

If the Court should find that the result from step one of the *Alice* test reflects that the claimed invention is directed to an abstract idea, the *Alice* test proceeds to step two. As discussed

above, it is my opinion that step one favors patentability so step two should be unnecessary under the *Alice* test. Nonetheless, should the Court determine that step one favors unpatentability, the following analysis addresses step two.

I understand that step two of the Alice test focusses on the existence of, or absence of, an "inventive concept." Moreover, I understand that an inventive concept exists if the claims at issue, when put into practice, amount to significantly more than the abstract concept identified in the first *Alice* step.

I also understand that putting existing technology to use in unconventional ways, can reflect inventive concepts that take the invention out of the realm of abstract ideas. In my opinion, the Patents-in-Suit disclose and claim inventive concepts in the way the *Alice* test uses that term and disclose and claim unconventional uses for existing technology that also establishes that the Ubiquitous Claims are not directed to abstract ideas.

a) Inventive Concepts

In my opinion, the Patents-in-Suit disclose a series of inventive concepts that, individually or collectively, represent significant improvements over the mere notion of environmental monitoring and control. Thus, in my opinion, the Ubiquitous Claims reflect patentable subject matter at least under the second *Alice* test.

(1) Two-way Digital Communications with a Cellular Phone

One inventive concept disclosed by the Patents-in-Suit was two-way digital communications with a cellular phone. This inventive concept allowed a monitored device to receive, at a remote location, a request from a user for status information on a monitored device and for the user to receive in response the requested status information about the monitored device.

Additionally, this inventive concept allowed a monitored device to receive, at the remote location, a command from a user and for the user to receive in response a confirmation that the command had been executed by the monitored device. Performing such communications digitally, rather than through analog communications techniques, dramatically improves the user's ability to remotely interact with the remote device. By contrast, analog communication techniques involving recorded audio messages played through a telephone handset, have severe limitations as discussed below.

(2) Unsolicited Event Notification with a Cellular Telephone

Another inventive concept disclosed by the Patents-in-Suit was unsolicited event notification at a cellular telephone. This inventive concept allowed a monitored device to receive event notifications at the time an event occurred rather than requiring a user to call into to check the status of a monitored device. Receipt and processing of unsolicited messages by a cellular phone dramatically improves the usability of a monitored and controlled system employing that cellular phone. Providing this capability on a cellular telephone required overcoming significant technical challenges, as discussed below, that were inventive in their own right.

(3) Geo-fence Based Communications

Yet-another inventive concept disclosed by the Patents-in-Suit was geo-fence based communications. The inventors of the Patents-in-Suit recognized that some environmental monitoring and control scenarios would benefit from knowing whether a user was within a predetermined area around the monitored location and acting when the user entered or left that area. For example, a monitoring and control system could act in a predetermined way (e.g., reduce the temperature within a building) when a user leaves a defined area around the building on the

basis that the user will probably not return to the building in the immediate future. Thus, heating requirements for the building can be reduced at present.

I discuss these concepts with an initial focus on the state of the art for monitoring and control of devices at remote locations and on how the Patents-in-Suit overcame the shortcomings in the art. My experience and interpretation of these concepts is consistent with and complementary to disclosures of the then-current art within the Patents-in-Suit.[22]

b) Unconventional Uses

Additionally, in my opinion, the Patents-in-Suit disclose several unconventional uses to which the inventors put technology. These unconventional uses reflect innovative ways to achieve the goals reflected in the innovative concepts.

(1) Use of Cellular Phone as Remote Control

For example, cellular phones at the time of the Patents-in-Suit (2004) were person-to-person communication devices. They were effective for telephoning other persons or sending basic text (SMS) messages. Cellular telephones offered voicemail but little more in terms of sophisticated communications capability. The Patents-in-Suit saw an opportunity to put cellular phones to an unconventional use as a form of a remote control for monitored and controlled devices in a remote location. Although use of a cellular phone as a remote control is not uncommon today, it was very unconventional in 2004.

(2) Controller

Another unconventional use disclosed by the Patents-in-Suit was taking an existing technology, in the form of a controller, and extending it to make the controller's capabilities

[22] In my opinion, the shortcomings in the remote monitoring and control art were well known and would be apparent even to less technical persons to whom the systems were described.

available through a cellular network. Although home monitoring and control units such as the X10 were available in 2004, those devices were intended as stand-alone units or units with which users would interact directly through pushing buttons on the unit. The Patents-in-Suit disclose using these controllers, such as the X10, in an unconventional way by interfacing that controller with a base unit with a cellular network connection. Thus, a controller that would ordinarily be limited to intra-building use becomes available for access at a remote location.

ii. Detailed Discussion of Inventive Concepts

(1) Two-way Digital Communication Session with a Cellular Phone

In my opinion, the Patents'-in-Suit disclosure (and claiming) of a two-way digital communications session between a cellular phone and a base unit ("the First Innovation") was a very inventive concept for its time. Integrating a base unit with cellular communication capability, and a cellular remote unit, into an environmental monitoring and control system dramatically changed what such systems could do at least for monitored and controlled locations that were in very remote locations. Several technical hurdles had to be overcome to achieve this result. Therefore, it is my opinion that such integration created a system that was "significantly more" than previously available systems had been prior to this integration and significantly more than a mere abstract idea. Thus, in my opinion, the Ubiquitous Claims are patentable subject matter for at least this reason.

Several reasons exist why a capability for communicating from a cellular phone, to a base unit capable of receiving cellular communications, to allow digital two-way communications, was innovative in 2004. A starting point for understanding these reasons lies in understanding the nature of devices that were monitored or controlled at that time. Those devices – at least in 2004 –

were not capable of receiving two-way digital communications from cellular phones. The then-available communications schemes either did not involve a cellular phone (so remote locations could not be monitored and controlled) or did not involve two-way digital communications (so the range of activities that could be monitored or controlled was very limited). The importance of each of these features is discussed next.

(a) Cellular Communications

The inventors of the Patents-in-Suit sought to provide monitoring and control capabilities to devices at a remote location. Remote locations in the context of monitoring and control systems are not distinguished by their relative distance from another location, they are distinguished by the relatively limited communications options that are available at such locations.

Within the context of the Patents-in-Suit, a remote location is one in which telephone, Internet, or cable TV service is not available because the service providers for those communications types do not offer service at that location. The reasons for the lack of service options at such locations are partly technological and partly economic. Although modern communications companies can extend their network to most locations if cost is not an issue, cost for installing such communications services rises dramatically as the distance for which service must be extended increases. Thus, service at most remote locations is a technical possibility but an economic impracticality.

Cellular communications have changed this calculus because cellular communications can generally reach remote areas that would be impractical to reach by wire-based technologies. For example, a valley surrounded by mountains, sparsely populated with houses on the mountainsides, can be effectively serviced with one or a few cellular towers but would require extensive custom

wiring to support traditional wire-based communications to those houses. Thus, cellular communications opens up possibilities for solving certain location-based needs if other challenges, such as two-way digital communications, can be overcome.

Other technological barriers existed, however, to deploying cellular-based communications. For example, technical challenges arising from interfacing a cellular transmitter/receiver to a conventional computing device were very substantial in 2004. Although we are presently accustomed to iPhone or Android cellular phones that routinely allow us to communicate with the Internet through cellular networks, those devices and that general capability simply did not exist in 2004. For example, the iPhone was first released in 2007.

In 2004, the way to interface a computing device with a cellular transmitter/receiver was to write substantial custom software that could communicate from the computing device to a cellular transmitter/receiver coupled to the device so that the transmitter/receiver would communicate a message through the cellular network as desired. In my opinion, this was a very substantial technical hurdle to overcome in 2004.

(b) Two-way Digital communications

Cellular technology has been commercially available for more than thirty years but it has only recently come into its own as a platform for two-way digital communications.[23] The need for performing two-way digital communications within a monitoring and control environment is apparent when viewed in the context of the goals to be achieved and the deficiencies of other solutions that fail to meet those goals.

[23] Digital cellular technology has been commercially available for less than thirty years. Earlier cellular networks were based on analog technology.

The inventors of the Patents-in-Suit recognized that meaningful monitoring and control of remote devices involved two-way *digital* communications between those devices. One aspect of this need involves two-way communications and another aspect involves digital communications.

Two-way communications can take several forms. One form is that a user inquires about the status of a device and the device responds with its status. Another form is that a device alerts a user to the existence of a condition – possibly a predetermined condition of which a user has identified before its occurrence – and the user initiates an action with the device in response to the received alert.

By contrast, a one-way communication is far less useful in a monitoring and control environment – especially when the monitored device is at a remote location. For example, a one-way communication may involve a user receiving a telephone call with a prerecorded message saying that a burglar alarm at the remote location has been activated. Although the user may appreciate receiving this information, they can take no direct action in response. In this one-way communication example, the user cannot reset the alarm remotely because no mechanism exists for directly responding to the one-way communication.

Digital communications also provide substantial benefits over non-digital (i.e., analog) communications. In some instances, digital communications allow monitoring and control capabilities that would be impractical or impossible with analog communications.

An example of an analog communication is the previously discussed example of a prerecorded message delivered to a user through an audio signal delivered by a telephone. The communication is analog because we hear it as sound, interpret it, and decide how to react based on our interpretation of the message.

By contrast, a digital communication is one in which a communication is received as data; i.e., ones and zeros. Receiving a digital communication at a device that is configured to interpret and act on such a communication is advantageous because the configured device can receive the information and immediately act on the information in a way that is appropriate for the information's content and the attendance circumstances (e.g., whether a user has indicated that they wish to receive communications of certain types at the present time).

(c) Shortcomings in the Art

The combination of needs described above were never met in a single solution until the Patents-in-Suit were invented. Although some solutions existed that met some of the needs discussed above, none of the available solutions met all of those needs. Thus, no solution existed for providing sophisticated monitoring and control of devices, at a remote location, involving two-way digital communications. I'll touch on the deficiencies in the art briefly.

(i) Landline-based Systems

One then-existing approach was to use a telephone line to dial in to a device at a home or business and, through the telephone's audio interface, offer a limited ability to check the status of a monitored system or adjust its operation.[24] In some examples, only a one-way experience was provided; the act of calling in would reflect a request for information and the receiving system would respond with a message (e.g., "the temperature in your building is sixty-three degrees").

In other then-existing, telephone-based devices, a two-way experience was provided, albeit an inconvenient one. For example, a user could call in to the device and would receive a first prompt asking what information they sought (e.g., "Press 1 for temperature. Press 2 for burglar

[24] X10 devices are widely known as examples of this type of monitoring and control.

alarm status."). In response to selecting an option through a keypad press, the system would provide the requested information (e.g., "Based on your request for temperature, the temperature in your building is sixty-three degrees.").

Whether providing one-way or two-way communications, telephone-based systems reflected severe shortcomings. For example, many users dislike automated phone systems and avoid their use when possible because they are unpleasant to use and can be difficult for some users to navigate. These concerns are dramatically magnified when the number of options presented to users are large; e.g., when a large number of devices are monitored at a location. Because a user typically lacks a predetermined identification of which monitored devices correspond to particular key selections, the user is forced to listen to many options at each call. These severe shortcomings are inherent and unavoidable in monitoring and control systems employing audio-based communications.

Another shortcoming of the telephone-based system is that it would not be available in remote locations for the reasons discussed above. Additionally, although a telephone-based system could receive calls from a cellular phone, the user calling from the cellular phone would have the same unpleasant and challenging experience – due to the inherent limitations of the audio communications used – as a caller on a landline telephone. Thus, an approach employing a landline was both unavailable for devices in remote locations and impractical for user-based reasons.

(ii) Internet-based Systems

A second then-existing approach was to use Internet communications to communicate monitoring and control information between locations. Although Internet-based communications

allowed for two-way, digital communications, other shortcomings existed. For example, as with landline-based communications, this approach was unavailable to monitored devices that were located in remote locations because economic (or possibly technical) issues made Internet access at the remote location impractical. Thus, Internet-based communications failed to meet the needs of a sophisticated monitoring and control system.

(iii) SMS-based Systems

A third then-existing approach was to use SMS technology to communicate device status from a monitored system or send a status inquiry to a monitored system. For example, in this approach, a user may send a SMS message, requesting status of a and the SMS message would route through the cellular network to the cellular network provider's gateway on the Internet to the monitored device. In effect, this approach would use a cellular network for a portion of the communication and would use the Internet for the remainder of the communication path. This approach was deficient for remotely monitored devices, of course, because it required an Internet connection at the remote location and such connections were typically not available as discussed above with regard to Internet-based approaches for remote locations.

This approach was also deficient for its relatively crude user interface – a user would type a message requesting a status, and if the text message was formatted in a way the recipient could interpret in an automated way, the monitored device would issue a response back to the user. As with examples employing audio messages and telephone lines, users' patience with such solutions was limited and these systems were impractical when involving many monitored devices.

(d) Pre-iPhone World of 2004

A key consideration when evaluating the First Innovation is that the Patents-in-Suit have a priority date of 2004 and the first iPhone was released in 2007. Our present-day understanding for the relatively pervasive nature of cellular phones interfacing with other device types is inapplicable to the period before the iPhone's release because the iPhone was a "game changer" in that regard. Competitors to the iPhone, such as Android, saw the advantages the iPhone provided and came to market shortly thereafter. Within a short period of time, the market went from having no platforms for cellular phone connectivity to other devices to having several platforms. In my opinion, the post-2007 world of electronic devices was very different than the pre-2007 world of such devices.

The iPhone's release popularized the idea of "apps" that run on the iPhone and can do a wide variety of functions while communicating with a wide variety of devices. These apps became available through what Apple called an "app store." The app store was a central location where applications for the iPhone could be found and compared. The existence of the app store led to much greater market acceptance for the iPhone and its applications, generally, and this greater market acceptance encouraged further development in software and interfacing capabilities for the iPhone; i.e., the iPhone's success encouraged further development in its software ecosystem.

Among other things, iPhones made available the capability to communicate in two-way communication sessions over cellular networks using technology similar to conventional Internet service. The iPhone included a sophisticated operating system that provided much of what was needed to perform two-way communication between an iPhone and another device connected to the Internet.

One part of the iPhone's sophisticated operating system provided TCP/IP communications over cellular networks. TCP/IP communications is a computer networking technology on which

the Internet operates. Software developers are generally well versed in writing software to communicate through TCP/IP communications. By contrast, prior to the iPhone's introduction, software developers were not well versed in developing applications that communicated through SMS. The iPhone dramatically lowered the barrier to entry for computing products that sought to communicate between devices through its inclusion of TCP/IP networking.

TCP/IP communications provide two-way communications; i.e., a first device communicating with a second device through TCP/IP communications can send information to the second device and the second device can send in response a command to the first device. A software developer can create communications between two devices through a standardized software interface and can expect that the software will operate as intended. Thus, making a TCP/IP communications capability part of the iPhone dramatically changed how software developers approached iPhone communications.

(2) Unsolicited Event Notification with a Cellular Telephone

In my opinion, the Patents'-in-Suit disclosure (and claiming) of unsolicited event notification, with a cellular telephone, was also a very inventive concept for 2004. At that time, users had experience with polling-based systems within the context of cellular phones but event-driven systems had not made their way into the cellular phone space.

For example, in 2004, users of monitoring and control systems were familiar with calling in to a system with a telephone (landline or cellular phone) and hearing the status of their system through recorded messages (e.g., "the temperature in your building is sixty-eight degrees"). Those users were also aware that the monitored conditions could change between user calls and that potentially the users may not be aware of potentially problematical or dangerous conditions that

arose between calls. The shortcomings of such polling-based systems, and the benefits of event-driven notifications, have been discussed in the Background section above. *See* Section IV.A.i.

Then-current limitations with telephone technology, including cellular phone technology, did not offer obvious solutions to overcome polling-based shortcomings – especially with remote systems. For example, users could not reasonably keep a phone connection open with a remote location to continuously hear updated conditions at the remote location. Nor would they want to.

Although then-current cellular phones supported conventional SMS messaging, remote locations such as those for which the Patents-in-Suit were meant to help, lacked telephone or Internet connectivity for the reasons discussed earlier and cellular network integration was not available for such systems so a monitored system could not send a SMS message reflecting an unsolicited event notification.

The inventors of the Patents-in-Suit recognized the benefits arising from unsolicited event notification and provided, through the Ubiquitous Claims, a way to achieve those benefits within the context of monitoring and control systems in remote locations. As noted in the Background section of the Patents-in-Suit, no such system existed at the time. *See* '655 Patent at 1:48-54.

An aspect of the unsolicited event notification capability that was particularly inventive, in 2004, was custom software operating on a remote unit that would detect reception of a text message from another device within the monitored and controlled system. Subsequent to detecting this message, software on the remote unit interpreted the message and acted upon the message. In some instances, the remote unit presented information to the user of the remote unit for potential action by that user. In other instances, the remote unit received and stored the information without taking further action.

Because software on the remote unit included a not-insubstantial level of intelligence, the software could react to incoming information based on pre-established policies. In one example of the type of more sophisticated functionality that this software made possible, new temperature readings could be displayed on the remote unit's screen if they did not reflect a value outside of an acceptable range but values outside the range could trigger an alert to the remote unit's user. This capability reflected a meaningful example of the inventors' goal of reducing the monitoring oversight burden on users while improving the quality of the results that users received.

For the reasons discussed above, I believe that incorporating unsolicited event notification into a monitoring and control system for remote locations was an innovative concept in 2004 because the idea reflects insights into better ways for meeting users' needs and because significant technical hurdles had to be overcome to achieve unsolicited event notification.

(3) Geo-fence Based Communications

In my opinion, including geo-fenced based communications into a monitoring and control system for devices at remote locations was very innovative when the Patents-in-Suit were invented. As discussed in the Background section (Section IV.C.iv), geo-fencing involves detecting when a device with location-determination technology has entered or left a predetermined geographical region. That region can be defined as a circular region around a center location or as an arbitrarily shaped region as discussed above.

A system that detects that a user (through location of the user's device) has left or entered a predetermined geographical region can provide substantial benefits to the monitoring and control system if that system is configured to act on notification of geo-fencing entry or departure. For example, if a user leaves a geo-fence region around a building whose environmental conditions

are monitored and controlled, the monitor and control system can adapt to receiving notification of that event by adjusting the environmental settings from those that are used when the building is occupied to those that are used when the building is unoccupied. For example, the temperature in the building can be reduced when the building is unoccupied.

The ability to perform this functionality, without user intervention, offers several benefits. First, the energy consumed and expense for maintaining the building's temperature can be reduced. In effect, this environmental control is optimized so that it tracks the presence or absence of people within the building.

Second, no user interaction is needed to achieve this optimization. Users want the simplicity that comes from the system adapting automatically, in predefined ways, when circumstances change.

Third, a geo-fencing solution avoids the user frustration that arises when a user forgets to adjust the environmental controls upon leaving the building. In short, the substantial benefits provided to such users and the absence of any drawbacks or shortcomings in use of geo-fencing makes this a truly compelling application of several inventive concepts (all three of the aforementioned inventive concepts).

No then-existing system could perform such functionality and the Patents-in-Suit note this deficiency in the art. *See* '655 Patent at 1:48-54. In my opinion, the presence of such substantial benefits (discussed above) and the absence of any then-existing solution reflects that the geo-fencing aspect of the Patents-in-Suit, which leverage the other inventive concepts, reflected significant innovation in the area of communications for environmental monitoring and control of remove devices.

iii. Combination of Inventive Concepts

Although I believe that each of the above-discussed inventive concepts (and unconventional uses) transforms the Ubiquitous Claims from what has been alleged to be an abstract idea into patentable subject matter, I also believe that the combination of these inventive concepts also reflects "significantly more" than an abstract idea of environmental monitoring and control.

One reason for my opinion is that interrelationships between the ideas of two-way digital communications session with a cellular phone, unsolicited event notification with a cellular phone, and geo-fence based communications provide additional features and functionality that would not be possible in the absence of one or more of those concepts. These additional features and functionality *build off each other* rather than being merely additive. Thus, "the whole is greater than the sum of its parts."

For example, the existence of a two-way digital communications session with a cellular phone makes it possible for a user to remotely communicate with a monitoring and control system at a remote location. But, integrating unsolicited event notification (i.e., event-driven notifications) into that communication session dramatically improves the convenience that the system provides to a user – especially if the user has many conditions to monitor remotely. The combination of the two inventive concepts allows a user to wait for an alert, reflecting an issue, with the understanding that the absence of an alert means that the monitored systems are operating within establishes ranges. This combination of functionality is very significant.

Additionally, adding a geo-fence capability to the above-discussed combination of functionality opens additional avenues for convenience and control. Recall that the geo-fencing capability allows the base unit to determine that a user has entered or exited a geo-fenced area.[25]

The Patents-in-Suit sought to provide better monitoring with less user effort. All of the claimed features reflect this goal.

The geo-fencing feature extends the two above-discussed inventive concepts by providing a system that adapts to a user's control goals in response to the user leaving the geo-fence area without requiring any user interaction to trigger the control changes sought by the user. For example, a user configures the base unit to maintain building temperature within a first range unless the user is outside the geo-fence, whereby the building temperature is maintained within a second range. When the user leaves the building, they want the efficiencies that come with reducing the temperature in the building and they want to achieve these efficiencies without having to manually signal the control system to make this change. The combination of the three inventive concepts reflects the ultimate expression of realizing this user's goals.

For each of these reasons, the combination of inventive concepts, as either the first and second or all three inventive concepts, reflect significantly more than the mere notion of an abstract idea of environmental monitoring and control.

C. Remaining Ubiquitous Claims

I understand that the Ubiquitous complaint asserted one claim from each of the Patents-in-Suit at present; i.e., the Ubiquitous Claims. But, I also understand that Defendant assert that the remaining claims (i.e., claims in the Patents-in-Suit other than the Ubiquitous Claims; hereinafter

[25] Claim 1 recites a message sent upon a remote device leaving the geo-fenced area.

"Remaining Ubiquitous Claims") are also directed to the purportedly abstract idea of environmental monitoring and control, and are thus unpatentable. I disagree with Defendant's assertion for the reasons discussed below. *See Rebuttal to Defendant's Assertions*.

However, the factors that led me to conclude that the Ubiquitous Claims were directed to On-demand, Bidirectional Communications System weighed strongly in favor of that conclusion. As discussed above, the "Advances over the Art" and the "Character of the Claims as a Whole" tests both strongly favored On-demand, Bidirectional Communications System over environmental monitoring and control. My consideration of the Field of the Invention also bolstered this conclusion.

Considering the Remaining Ubiquitous Claims as a whole, I note that these claims fall into two categories. A first category, hereinafter referred to as "Independent Remaining Ubiquitous Claims," comprises independent claims within the Remaining Ubiquitous Claims; e.g., claim 24 of the '655 Patent and claims 1, 11, 18, and 20-22 of the '935 Patent. A second category, hereinafter referred to as "Dependent Remaining Ubiquitous Claims," comprises claims that depend from the Ubiquitous Claims or the Remaining Ubiquitous Claims. Thus, the combination of Ubiquitous Claims, Independent Remaining Ubiquitous Claims, and Dependent Remaining Ubiquitous Claims reflects all claims of the Patents-in-Suit.

i. Remaining Independent Ubiquitous Claims

The analytical approach and conclusions reached for the Ubiquitous Claims applies equally to the Remaining Independent Ubiquitous Claims. For example, under the "Character of the Claims as a Whole" test, the analysis and conclusion is the same because the nature of the Independent Remaining Ubiquitous Claims is substantially similar to the nature of the Ubiquitous

Claims. Focusing on claim 24 of the '655 Patent: this claim has a character that concerns communications rather than environmental monitoring based on the nature and number of limitations recited therein. I reach the same conclusion for claims 1, 11, 18, and 20-22 of the '935 Patent.

Under the "Advances over the Art" test in the first *Alice* step, the conclusion is the same because one basis for the conclusion is the shortcomings in the art, disclosed in the specification, and the other basis for the conclusion is how the claims overcame the shortcomings, and as discussed above, I determined that the nature of the claims were substantially similar to the Ubiquitous Claims.

As a final consideration for the Independent Remaining Ubiquitous Claims, the Field of the Invention bolsters the conclusion discussed for the preceding two tests. Thus, in my opinion, the Independent Remaining Ubiquitous Claims are patentable under the first *Alice* step.

ii. Remaining Dependent Ubiquitous Claims

My review of the Dependent Remaining Ubiquitous Claims leads me to conclude that some such claims recite additional limitations that concern improved communications and other such claims recite limitations that concern environmental monitoring and control. A few such claims recite limitations that concern improved communications as well as environmental monitoring and control (in approximately equal proportions). None of the Dependent Remaining Ubiquitous Claims recite limitations that convert the dependent claim into one that is directed to environmental monitoring and control from an independent claim directed to improved communications. I say this because the nature and number of limitations recited in each Dependent Remaining Ubiquitous Claim do not change the result under the "Character of the Claims as a Whole" test.

Additionally, Dependent Remaining Ubiquitous Claims narrow a claim that was directed to improved communications for the reasons discussed above with regard to the Independent Remaining Ubiquitous Claims and the Ubiquitous Claims. This consideration leads me to conclude that limitation in the dependent claims should carry less weight in the "Character of the Claims as a Whole" test than limitations in independent claims.

Further, results from the "Advances over the Art" test would be the same for the Dependent Remaining Ubiquitous Claims and this conclusion is similarly bolstered by considering the Field of the Invention.

Therefore, in my opinion, the Dependent Remaining Ubiquitous Claims are patentable for the same reasons that the Ubiquitous Claims are patentable as discussed above.

D. Summary

For the reasons discussed in the preceding subsections, I believe that all claims of the Patents-in-Suit are patentable and are not directed to abstract ideas. Instead of being directed to an abstract idea, the claims are directed to an improved base station providing improved communications within the context of monitoring and controlling remote devices, which I refer to as "on-demand, bi-directional command communications."

IX. REBUTTAL TO DEFENDANT'S ASSERTIONS

Defendant made a series of assertions in its application of the *Alice* test for patentability to Defendant's interpretation of the asserted patents. Defendant's assertions are partially legal in nature and partially technical in nature. My opinions are directed to the technical aspects of Defendant's assertions.

In my opinion, Defendant has mischaracterized the Ubiquitous Claims and the Patents-in-Suit when analyzing and applying those claims and specifications to the *Alice* test. Defendant's conclusion that the Patents-in-Suit are directed to unpatentable subject matter is due to Defendant's incorrect evaluation of the Patents-in-Suit.

Under my analysis and application of the *Alice* test as explained to me by counsel for Ubiquitous, the Patents-in-Suit reflect patentable subject matter as discussed in detail above. Therefore, I disagree with the technical aspects of Defendant's assertions to the contrary as discussed in greater detail below.

My review of Defendant's assertions led me to conclude that Defendant's assertions fall into several categories. Within each category, a particular assertion is typically repeated several times, in substantially similar form, with at most minor differences in factual details. Therefore, for conciseness, I address Defendant's assertions by group, beginning with assertions addressed to the first step of the *Alice* test and concluding with assertions addressed to the second step of the *Alice* test.

A. Rebuttals to Defendant's Assertions under Alice's First Step

i. Patents-in-Suit Teach Significantly More Than Environmental Monitoring and Control

Defendant characterizes the Ubiquitous Claims as merely directed to an abstract idea of monitoring and controlling appliances. For example, Defendant asserts, "At a high level, [c]laim 19 describes the most generic functional components of a system for remotely monitoring and controlling appliances. Such a broad concept is not patent eligible because it 'recite[s] an abstraction—an idea, having no particular concrete or tangible form.'" (Defendant's Motion at

10). Defendant makes several other substantially similar characterizations of the Ubiquitous Claims so I address these characterizations collectively herein.

I disagree with Defendant's characterizations of the Ubiquitous Claims as merely directed to an abstract idea of monitoring and controlling appliances. As discussed in detail within the Alice section of this declaration, I believe that the Ubiquitous Claims are not "directed to" an abstract idea (Step 1) and that even if they were (which they are not) they would nonetheless reflect several inventive concepts that are substantially more than the abstract idea (Step 2).

In my opinion, the Ubiquitous Claims are directed to an improved base unit configured to perform on-demand, bi-directional command communications. The improved base unit and improved communications exist to facilitate environmental monitoring and control, but the claims recite significantly more than the broad notion of environmental monitoring and control.

For example, the Ubiquitous Claims recite incorporating of cellular communication into the base unit, which was beneficial for the reasons discussed above. Claim 1 recites, among other things, the following:

> A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location ….

Claim 19 recites, among other things, the following:

> A communication system having wireless connectivity … comprising:
>
> a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity …;
>
> a receiver associated with said base unit, and configured to receive a second message from the remote unit, wherein the second message is a wireless message ….

In another example, the Ubiquitous Claims recite unsolicited event notification as reflected by the limitation relating to simple message service:

> wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.

In a third example, Claim 1 recites the following geo-fencing limitation:

> wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.

Notwithstanding the specificity of this geo-fencing limitation, Defendant states the following, "All the claims explain is monitoring and controlling appliances, consisting of nothing more than a set of basic functional components like a base unit, a transmitter, a receiver, a controller, a remote unit, and an environmental device." (Defendant's Motion at 8)

I disagree, at a minimum, that the particularized cellular communication, unsolicited event notification, and geo-fencing limitations shown above are examples of mere monitoring and controlling an appliance or that its implementation is part of what Defendant calls "basic functional components" such as a base unit or a remote unit.

I note also that Defendant does not characterize the claimed geo-fencing limitation as an abstract idea in itself, and I believe that the particularized geo-fencing limitation is plainly not merely an abstract idea.

Instead, I believe that the claimed limitations reflect a particularized structure for performing monitoring and control, including geo-fencing, in a particular way. Specifically, the above-quoted limitation for geo-fencing recites that a cellular remote unit determines its position

and then determines whether that position is outside of a predetermined area; i.e., outside of a geo-fence. The limitation takes specific action (sending a notification) in a particular way (through simple message service) to achieve its intended result (not abstract monitoring/control).

The specification discloses, for geo-fencing, that the settings defining the geo-fenced region can be stored within the remote unit or stored within a base control unit. *See* '655 Patent at 8:47-52. The above-quoted limitation recites that if the cellular remote unit determines that it has left the geo-fenced area, the remote unit sends a message, using a specific communications technology (simple message service, whose relevance and implementation are discussed in detail within the specification), indicating that the cellular remote unit has left the geo-fenced area. In my opinion, none of these claimed concepts concerns generalized appliance monitoring and control as Defendant asserts.

Nor does Defendant identify any reason that the above-discussed limitation, when combined with the remainder of Claim 1, would nonetheless render Claim 1 an abstract idea. For example, Defendant does not identify which abstract idea would encompass what Defendant describes as "environmental monitoring and control" but with the above-discussed geo-fencing limitation such that the combination of concepts is still abstract. At a minimum, the additional geo-fencing limitation as discussed above extends well beyond what Defendant describes as "environmental monitoring and control" so as to confirm that Claim 1 is directed to patentable subject matter for at least this reason.

I reach the same conclusion for both Ubiquitous Claims as a whole. The remaining limitations of claim 1 recite an improved base unit with on-demand bidirectional communications system as applied to performing environmental monitoring and control of environmental devices.

For example, claim 1 recites structural details such as a base unit configured to communicate with an environmental device and also to communicate with a remote unit. Claim 1 also recites that the base unit contains a first communications interface that receives environmental information from the environmental device and a second communications interface that sends a representation of the environmental information to a cellular remote unit. *I.e.*, the base unit forwards a representation of environmental information from the environmental device on demand (in response to a received message) to the cellular remote unit and communication with the base unit occurs bi-directionally.

Claim 1 additionally recites that a user of the cellular remote unit initiates sending a command related to the environmental device to the base unit and that a microcontroller within the base unit processes the command and forms a control instruction that is sent to the environmental device via the first communications interface; *i.e.*, on-demand, bi-directional communications including a command. Thus, in my opinion, the nature of the improved base unit performing these on-demand, bi-directional communications led me to conclude that claim 1 recites a particular implementation or technical solution, employing a specific structure and communications scheme, for performing environmental monitoring and control of environmental devices rather than merely representing an abstract idea of environmental monitoring and control.

My conclusion is the same for Claim 19. As with Claim 1, Claim 19 recites an improved base unit and on-demand bidirectional communications system as applied to performing environmental monitoring and control of environmental devices. For example, claim 19 recites structural details such as a base unit configured to communicate with an environmental device and to communicate with a remote unit.

Claim 19 also recites that the base unit contains a communications interface ("operatively interfaced with an environmental device") that receives environmental information from the environmental device ("configured to receive a current status of an environmental device") and "a transmitter associated with said base unit" that sends a representation of the environmental information to a remote unit ("configured to send a first message to a remote unit" and "wherein the first message is a wireless message including the current status of the environmental device"). *I.e.*, the base unit forwards a representation of environmental information from the environmental device on demand (in response to a received message) to the remote unit and communication with the base unit occurs bi-directionally.

Claim 19 additionally recites that a receiver associated with the base unit receives a message including a command related to the environmental device and that a controller associated within the base unit sends the command within the message to the environmental device; *i.e.*, on-demand, bi-directional communications including a command. Thus, again, the nature of an improved base unit facilitating these on-demand, bi-directional communications led me to conclude that claim 19 recites a particular implementation or technical solution for performing environmental monitoring and control of environmental devices rather than merely representing an abstract idea of environmental monitoring and control.

Therefore, for the reasons discussed above, I disagree with Defendant's variously formulated assertions that the Ubiquitous Claims merely recite an abstract idea. (*See, e.g.*, Defendant's Motion at 7 and 10)

ii. Patents-in-Suit do not merely "Claim a Result" but Instead Claim a Particular Technical Solution for Generating a Result

Defendant also asserts that the Ubiquitous Claims merely recite a result rather than an implementation for generating the result. For example, Defendant asserts "by only claiming the desired result—remotely monitoring and controlling appliances—without describing any concrete, inventive roadmap for doing so, [c]laim 19 of the '935 Patent falls short of claiming eligible subject matter under § 101." (Defendant's Motion at 15-16) Defendant states this assertion in various ways that assert, in essence, that the Ubiquitous Claims recite a result rather than an implementation for generating the result. (*See*, *e.g.*, Defendant's Motion at 11, 12, and 15-16)

But, as discussed above in conjunction with Defendant's assertion that the claims merely recite abstract ideas, I have explained why I concluded that the claims do recite a particular technical solution for generating a result rather than merely reciting the result itself. The particular technical solution for generating the result lies in the improved base unit configured to perform on-demand, bi-directional command communications.[26]

The technical solution for generating the result exists in part within the particularized nature of the communications recited in the Ubiquitous Claims. For example, as previously discussed, Claim 19 recites that a base unit receives environmental information from an environmental device and "a transmitter associated with said base unit" sends a representation of the environmental information to a remote unit. *I.e.*, the base unit forwards a representation of environmental information from the environmental device on demand (in response to a received message) to the remote unit and communication with the base unit occurs bi-directionally.

[26] The improved base unit provides the inventive concepts as discussed above. The phrase "on-demand, bi-directional command communications" reflects those concepts succinctly.

Claim 19 additionally recites that a receiver associated with the base unit receives a message including a command related to the environmental device and that a controller associated within the base unit sends the command within the message to the environmental device; *i.e.*, on-demand, bi-directional communications including a command. Thus, again, the nature of the improved base unit performing these on-demand, bi-directional communications led me to conclude that claim 19 recites a particular implementation or technical solution for generating a result rather than merely claiming a result as Defendant asserts. Therefore, I disagree with Defendant's assertions in this regard as well.

iii. Geo-fencing is not a Routine and Conventional Activity within Environmental Monitoring and Control; is Fully Disclosed

Defendant additionally asserts that claim 1's recitation of a geo-fencing limitation nonetheless "does not proffer any idea that was not routine, well-known, or conventional …." (Defendant's Motion at 10) On that basis, Defendant asserts that the geo-fencing limitation is also merely directed to an abstract idea.

The geo-fencing limitation is shown below. As seen therein, this limitation is quite specific as to the structures performing geo-fencing and the way the functions are performed:

> wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.

For example, the geo-fencing limitation recites that a cellular remote unit determines its position and determines that the cellular remote unit has left the geo-fenced area. The claim does not recite how a definition of the geo-fenced area is known to the cellular remote unit because the

specification discloses several options for how the cellular remote unit would know this information. *See* '655 Patent at 8:47-52 and 9:1-9 (describing that a user enters the base unit's location into the base unit via a keypad or software interface). From the knowledge of the base station's location and the remote device's location, the remote device can be trivially be defined to be inside or outside of the geo-fence. *See* Section IV.C.iv and '655 Patent at 9:1-9. To the extent that Defendant asserts that the specification is deficient in this regard, I disagree.[27]

One benefit of this unconventional recognition is that the environmental conditions within a building could be adjusted to reflect that the previous occupant of the building is no longer near the building and is therefore unlikely to return to the building. Nothing in this determination is routine or conventional.

In another example, the geo-fencing limitation recites that a notification is communicated through use of simple message service. The specification further describes how simple message service binds a software application to a particular port to ensure that the software application receives the notification properly. *See* '655 Patent at 7:24-67. Thus, geo-fencing utilizes a particular approach to generate a particular result in direct contrast to Defendant's assertion.

Moreover, I specifically disagree with Defendant's assertion quoted herein: "The additional limitation in Claim 1 of the '655 Patent is that if the user's cellphone gets too far outside a set distance from the thermostat's control unit, the cellphone will alert the user. How that happens, however, is not disclosed, much less claimed." I disagree. *See, e.g.,* '655 Patent at 9:1-9.

[27] "There is no explanation as to how to 'program' the units to effect this system." (Defendant's Motion at 11)

As discussed above, the cellular remote unit determines its position (a first part of a geo-fencing determination) and the cellular remote unit knows the geo-fence definition from one of several alternative approaches (a second part of a geo-fencing determination). Determining whether a location is within a geo-fence definition requires no explanation to a person of ordinary skill in the art.[28] Further, the specific way that the notification is communicated is both claimed and fully disclosed in the specification. Thus, the specificity of the claim and disclosures in the specification convey the particular way in which the geo-fencing capability can be implemented.

As further seen above in the geo-fencing limitation, a specific way for communicating the geo-fencing determination is recited ("a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.") This portion of the limitation also reflects a particularized way (simple message service notification) of achieving a technical result (indicating that the cellular remote unit is outside of the geo-fence). *See* '655 Patent at 7:24-67.

For each of the reasons discussed above, I believe that the geo-fencing limitation is not an expression of "any idea that was not routine, well-known, or conventional." I disagree with Defendant's assertions to the contrary.

iv. Defendant Mischaracterizes the Problem Addressed by the Patents-in-Suit; Patents-in-Suit Concern Communication Technology not Remote Access

Defendant further asserts that the problem to be addressed by the asserted patents is merely "remote access" and that remote access, absent more, is not patentable. Specifically, Defendant

[28] For example, this determination is discussed in the Background section of this declaration. *See* Section IV.C.iv. A person of ordinary skill in the art, however, would already have the discussed knowledge.

states, "The purported problem the applicants wanted to resolve was to 'allow the end-user to finally realize true global connectivity to and control of the home.' But performing a task remotely does not confer patent eligibility." (Defendant's Motion at 11) Defendant cites to the buySafe v. Google case for the proposition that remote access is not patentable absent more. *See id.*

Defendant's comparison of the technical issues in buySafe to the Patents-in-Suit is not well taken. The issue in buySafe was that a function that was ordinarily performed without a computer network was merely performed with a computer network.[29]

Defendant's assertion is a misinterpretation of the problem addressed by the Patents-in-Suit. Moreover, the statements from the specification quoted by Defendant are not reflective of the technical shortcomings specifically set forth in the background section of the asserted patents (but not mentioned by Defendant) and specifically overcome by the Ubiquitous Claims.

For example, the Patents-in-Suit note various shortcomings in the art including that no existing system provides for monitoring whether environmental conditions are within a predetermined range, alerting a user remote from the monitoring site that the range has been violated, and providing to the user at their location an opportunity to adjust the predetermined range in response to the alert. *See* '655 Patent at 1:48-54.

This need is addressed in the asserted patents recitation of on-demand, bi-directional command communications reflected *in part as* transmitting a first message concerning environmental status from a base unit to a remote unit, receiving a command in response from the remote unit, and adjusting an environmental unit in response to the command. Although the

[29] *See* the "via a computer network" limitation in claim 1. buySafe v. Google, 765 F.3d 1350, 1352 (Fed. Cir. 2014).

asserted claims recite additional technical solutions for how to achieve such communications within the context of environmental monitoring and control, the essence of the problem to be addressed in the art was not merely "true global connectivity" in "control of the home" but rather achieving a more sophisticated goal, which was realized through an improved base unit providing the communications scheme recited in the Ubiquitous Claims.

Defendant points to the background section of the Patents-in-Suit to support Defendant's assertion that remote access was a known feature within the monitoring and control industry. (Defendant's Motion at 11) But, the type of remote access Defendant identifies was expressly identified as deficient and ineffective because it required a user to telephone into a box and potentially use keypad digits to request information or convey a command. *See, e.g.,* '655 Patent at 2:46-55 (describing use of keypad [DTMF] tones or voice-actuated systems that are not user friendly or are "cryptic").

Because the Patents-in-Suit concern a lot "more" than remote access in the form of an improved base unit configured to perform on-demand, bi-directional command communications, I disagree that the examples cited by Defendant inform the patentability of the Patents-in-Suit.

Therefore, for the reasons discussed above, I believe that Defendant's characterization of the problem to be solved and characterization of the technical solutions recited in the Ubiquitous Claims, as mere "remote access" mischaracterizes and dramatically diminishes the contribution of the Patents-in-Suit. The Patents-in-Suit are directed to solving specific shortcomings in the art and achieved their solutions using particularized communications utilizing particularized structures.

v. Patents-in-Suit do not Fall into Certain Categories of Activities that Defendant Asserts are Inherently Unpatentable

Defendant asserts that the Ubiquitous Claims and Patents-in-Suit are directed to subjects that reflect several established categories of activities that Defendant asserts are inherently unpatentable absent more. These several categories include "collection of information," "use of a computer," and "conventional business practices." (Defendant Motion at 13-14)

On their face, the Ubiquitous Claims do not merely recite collecting information, using a computer, or conventional business practices. Again, the Ubiquitous Claims recite an improved base unit performing on-demand, bi-directional command communications in a way that solves the problems identified in the art. Thus, the claims are directed to far more than collecting information, using a computer, or conventional business practices. Nonetheless, I address each of these assertions below.

a) Collecting Information

Defendant asserts that the Ubiquitous Claims merely collect information and that collecting information, absent more, is unpatentable. For example, Defendant states, "Claim 19 of the '935 Patent merely uses 'existing computers as tools in aid of processes' such as collecting, transmitting, receiving, and adjusting, to implement the abstract idea of monitoring and controlling appliances." (Defendant's Motion at 14).

I disagree with Defendant's assertion that the Ubiquitous Claims merely collect, transmit, receive, and adjust data to implement an abstract idea of monitoring and controlling appliances. Specifically, the novelty in the Ubiquitous Claims lies not in the fact of gathering and communicating information but in the improved base unit for communicating that information and in the nature and manner in which the information is communicated.

For example, as previously discussed, Claim 19 recites that a base unit receives environmental information from an environmental device and "a transmitter associated with said base unit" sends a representation of the environmental information to a remote unit. *I.e.*, the base unit forwards a representation of environmental information from the environmental device on demand (in response to a received message) to the remote unit and communication with the base unit occurs bi-directionally. Claim 19 additionally recites that a receiver associated with the base unit receives a message including a command related to the environmental device and that a controller associated within the base unit sends the command within the message to the environmental device; i.e., on-demand, bi-directional communications including a command. The nature of the improved base unit performing these on-demand, bi-directional communications led me to conclude that claim 19 recites a particular implementation or technical solution for resolving the shortcomings in the art, only a small part of which involves collecting information.

Defendant also cites to the *Electric Power Group v. Alstom* case for the proposition that collecting data, absent more, is unpatentable. (Defendant's Motion at 13-14) However, the technical issues in the *Electric Power Group* case were very different from those of the present case. For example, claim 12 discussed therein recites a series of method steps related to data collection. This data collection is not tied to any concrete structures such as particularized components providing a more effective or efficient form of the functions performed. By contrast, the Ubiquitous Claims recite concrete structures that perform specific functions in a specific way. The technical issues are simply different between the Ubiquitous Claims and those in *Electric Power Group*. Therefore, I disagree with Defendant's application of *Electric Power Group* to the technical issues associated with the Patents-in-Suit.

b) Mere Use of a Computer and Conventional Business Practices

Defendant asserts that the Ubiquitous Claims recite mere use of a computer to perform monitoring and control that was previously done without a computer, and that mere use of a computer, absent more, is unpatentable. Defendant also asserts that the Ubiquitous Claims recite automation of a conventional business practice. Because these assertions are conceptually related, I address them together herein.

For example, Defendant states, "Claim 19 of the '935 Patent merely uses 'existing computers as tools in aid of processes' such as collecting, transmitting, receiving, and adjusting, to implement the abstract idea of monitoring and controlling appliances." (Defendant's Motion at 14).

I disagree with Defendant's assertion because the Ubiquitous Claims do not merely use a computer to achieve what had been previously achieved without a computer. In particular, Defendant's assertion is founded on Defendant's mischaracterization of the technical solution provided by the Patents-in-Suit. As previously discussed and repeated briefly herein, the technical solution provided by the Patents-in-Suit is an improved base unit performing on-demand, bi-directional communications.[30]

The nature of this technical solution is contrary to merely using a computer to perform the types of activities that had been performed before the claimed invention. For example, Defendant specifically discusses the *Electric Power* case in support of Defendant's assertion that the Ubiquitous Claims merely involve using a computer for practices performed previously. (Defendant's Motion at 13-14)

[30] Recall that this phrase attempts to succinctly capture the inventive concepts discussed above.

Defendant's use of the *Electric Power* case to support its assertion is technically incorrect for at least two reasons. First, *as quoted by Defendant*, the *Electric Power* case stands for the proposition that the steps of collecting, analyzing, and displaying information absent more is merely an abstract idea concerning information analysis. Indeed, the steps of collecting, analyzing, and displaying information could be done by a human but may be done more quickly by a computer. Nonetheless, use of a computer to merely replace the human is not patentable.

Defendant has not identified, however, how a human could have achieved the technical solution disclosed by the Patents-in-Suit through solely human effort. Indeed, one benefit of the technical solution disclosed by the Patents-in-Suit was to provide a solution that could not be achieved by a human – providing on-demand rather than a polling-based response to events (and communicating the results using the improved base unit).

A polling-based response requires, for example, a person to check in to see whether a condition has arisen – usually on regular time intervals.[31] For example, a person may check their physical mailbox to see whether any letters have arrived. A shortcoming of the polling-based approach is that the timeliness of detecting that a condition has arisen depends in part on the frequency that one checks the condition and in part on how close in time the event arises to a regularly scheduled check of the condition.

By contrast, an on-demand response detects the existence of a condition and generates a message immediately in response. Because a polling-based response cannot match the effectiveness of an event-based response, the benefits of the event-based response could not be

[31] I have discussed the differences between polling-based and event-driven systems at some length in the Background section. *See* Section IV.A.ii.

achieved through known polling-based responses – whether human or computer-based. Thus, the Ubiquitous Claims recite far more than mere use of a computer to implement a process that could have been (or had been) performed by humans.

Defendants also assert – in a conceptually related discussion – that the Ubiquitous Claims are directed to automating a conventional business practice. For example, Defendant cites to the Intellectual Ventures case in support of the notion that the technical issues associated with the Ubiquitous Claims are similar. In particular, Defendant states the following with regard to conventional business practices:

> The claims in *Intellectual Ventures* were directed to "a ***conventional business practice*** . . . in the context of electronic communications" (*id*. at 1318 (emphasis added)), whereas Claim 19 of the '935 Patent is directed to a ***conventional human practice*** in the context of electronic communications. The idea underlying Claim 19 of the '935 Patent is just as abstract as that of the *Intellectual Ventures* claims because it is "directed to human-practicable concept" of monitoring and controlling appliances.

(Defendant's Motion at 14-15)

I disagree that Intellectual Ventures informs the technical issues at issue in Defendant's motion. Instead, as discussed above, I believe that the Patents-in-Suit do not recite a conventional human practice because it would have been impractical or impossible for a human to practice the event-driven, on-demand, bi-directional command communications taught by the Patents-in-Suit. Therefore, I disagree with Defendant's assertion to the contrary.

vi. Dependent Claims Add Additional Detail to Ubiquitous Claims and do not Reflect the "Same Abstract Idea" or Any Abstract Idea

Defendant asserts that the dependent claims (i.e., claims other than the Ubiquitous Claims) within the Patents-in-Suit reflect the "same abstract idea" and are therefore unpatentable for the same reasons as the Ubiquitous Claims. I disagree for several reasons.

One reason for my disagreement is that Defendant has not analyzed the patentability of all dependent claims so the bases for Defendant's conclusions cannot be evaluated or refuted. For example, Defendant offers assertions concerning claims 3, 4, 14, and 15 of the '935 Patent and assertions concerning claims 3-5 of the '655 Patent.

However, Defendant is silent as to claims 2, 5-13, 16, 17, and 20-22 of the '935 Patent. Defendant is also silent as to claims 2 and 6-24 of the '655 Patent. (Defendant's Motion at 16) Thus, I cannot evaluate and potentially opine on subjects for which Defendant's conclusion lacks support. I must therefore disagree for at least that reason.

At most Defendant incorrectly asserts that, "The other claims of the patents are substantially and substantively similar to Claim 19 of the '935 Patent and Claim 1 of the '655 Patent, and they are therefore not patent eligible for the same reasons." (Defendant's Motion at 16)

In particular, I note that at least some dependent claims recite limitations that are not conceptually similar and are in fact quite reflective of particularized ways for achieving particularized results. For example, claim 6 of the '935 Patent recites, "The base unit of claim 1, wherein the cellular communications network includes a data bearer service." A data bearer service reflects a particularized way to achieve aspects of the on-demand, bi-directional command communications disclosed by the Patents-in-Suit. Therefore, Defendant's decision to not consider most dependent claims precludes me from refuting the analysis not provided.

Additionally, claims 18 and 19 of the '655 Patent recite retrieving weather-related information and using that information in an event-driven way to adjust the environmental conditions at a location. Nothing I am aware of, at least as of the time the Patents-in-Suit were

filed, suggests that such technical solutions were routine, ordinary, or would have been not patentable for reasons not identified by Defendant.

A comparison of all claims in the Patents-in-Suit to the Ubiquitous Claims leads me to conclude that the Ubiquitous Claims are not representative of all claims in the Patents-in-Suit. This comparison is included as Appendix B.

For all of the reasons discussed above, it is my opinion that the Ubiquitous Claims (and the remaining claims of the Patents-in-Suit) are patentable under Alice's first step. I disagree with Defendant's assertions to the contrary.

B. Rebuttals to Defendant's Assertions under Alice's Second Step

Defendant asserts that the Ubiquitous Claims are directed to abstract ideas, as discussed above, so Defendant continues its analysis with *Alice*'s second step. (Defendant's Motion at 17-19) I disagree with Defendant's assertion that the Ubiquitous Claims are directed to abstract ideas for the reasons discussed in the previous section. Additionally, a determination that the claims are patentable under the first *Alice* Step precludes a need to apply the second *Alice* step. Nonetheless, I offer herein my opinions in response to Defendant's analysis under *Alice*'s second step.

i. Patents-in-Suit do not Recite a Collection of Conventional Components Performing their Ordinary Functions

Defendant asserts that, for several reasons, the Ubiquitous Claims recite a collection of conventional components performing their ordinary function and that these recitations reflect the unpatentable nature of the Ubiquitous Claims. I disagree with Defendant's reasoning.

One reason for my disagreement is that Defendant incorrectly describes cited disclosures in the Patents-in-Suit to support Defendant's view that the Patents-in-Suit disclose ordinary components operating conventionally. For example, Defendant asserts the following:

> The person uses his cellphone to connect to the control unit to check on the status of the thermostat (it is set to 65 degrees in summer, but nobody is home), and then presses an icon on the cellphone to change the thermostat's status (increase to 75 degrees to avoid wasting energy).

(Defendant's Motion at 12)

The Patents-in-Suit contain no such disclosure. What Defendant describes is a polling-based system for checking conditions. As discussed in the (Section IV.A.i) section above, a polling-based system involves an observer checking the status of a monitored condition at times of interest or on regular intervals. Drawbacks to polling-based systems include that they are inconvenient for users because the user must initiate communication (as described in Defendant's assertion) and that the user has no knowledge of the status of the monitored system between polling occurrences.[32]

The Patents-in-Suit expressly noted a need for a monitoring and control system that alerted users to important conditions on-demand (*i.e.*, in an event-driven way). *See* '655 Patent at 1:48-54 (noting that no system exists that monitored events, identifies deviations from allowable measured values, alerts the user on the occurrence of the deviation, and provides the user an opportunity to react to the deviation). To the extent Defendant described the Patents-in-Suit as a polling-based system, Defendant was describing prior art systems not the Patents-in-Suit.

[32] I discuss the disadvantages of polling-based systems at some length in the Background section. *See* Section IV.A.i.

In another example, Defendant asserts, "the claimed 'base unit' consists of 'either off-the-shelf integrated circuits combined with discreet components or complete modules provided by other original equipment manufacturers ….'" (Defendant's Motion at 3)

The Patents-in-Suit don't disclose that the base unit simply reflects a collection of off-the-shelf integrated circuits or components. The Ubiquitous Patent discloses that the base unit comprises several *subsystems* for performing specific functions and that the *subsystems* could include or reflect integrated circuits or components made by other manufacturers. *See* '655 Patent at 4:62-65 ("The subsystems contained within the base control unit 16 consist of either off-the-shelf integrated circuits combined with discreet components or complete modules provided by other original equipment manufacturers (OEMs)."). Moreover, I understand that the cellular transmitter-receiver subsystem used by the inventors in their prototype system was not even available until early 2004.[33] This is consistent with my understanding of the state of the art at that time.

The reason I believe this issue is important to clarify is that the base unit is a complicated device and the inventors recognized, as have all modern device manufacturers, that organizing complex devices into subsystems and sub-subsystems is necessary to organize this complexity into groups of related components. Otherwise, the complexity of the design becomes unmanageable unless a device is so simple that it can be created from only a couple components (not the case for the base unit).

It is commonly understood that the iPhone uses hundreds of components from other manufacturers including Qualcomm (cellular chips), LG (displays), Texas Instruments (battery

[33] Phone conversation with patent inventor Charles Shamoon.

charger subassembly), Skyworks (audio amplifier), and Toshiba (flash memory).[34] Surely, use of these third-party components does not diminish the other ways that the iPhone is innovative.

Defendant also asserts, "That the claim purports to implement the system with conventional components like 'base unit,' 'remote unit,' 'receiver,' 'transmitter,' 'controller,' and 'environmental device' does not make it any less abstract. (Defendant's Motion at 10) Defendant cites an Intellectual Ventures case in support of their assertion.

I disagree with Defendant's assertion that the claimed structural components in the Ubiquitous Claims render the Ubiquitous Claims unpatentable. As discussed above, the claims are directed to an improved base unit providing on-demand, bi-directional command communications applied to the realm of monitoring and controlling environmental devices. The terms used for identifying specific structural components within the Ubiquitous Claims reflect the contribution that the component provides within the broader scheme of on-demand, bi-directional command communications.

Defendant's citation to the Intellectual Ventures case highlights their incorrect view of the Ubiquitous Claims. In *Intellectual Ventures*, the Court viewed the claims asserted as "us[ing] generic computers to perform generic computer functions." That conclusion naturally arose from the nature of the claims in the Intellectual Ventures case as shown below for a claim agreed by the parties to be representative.

> 9. A method for identifying characteristics of data files, comprising:
>
> receiving, on a processing system, file content identifiers for data files from a plurality of file content identifier generator agents, each agent

[34] Some of the components in the current-generation iPhone are identified in reverse engineering reports publicly available. *See* https://www.ifixit.com/Teardown/iPhone+X+Teardown/98975.

> provided on a source system and creating file content IDs using a mathematical algorithm, via a network;
>
> determining, on the processing system, whether each received content identifier matches a characteristic of other identifiers; and
>
> outputting, to at least one of the source systems responsive to a request from said source system, an indication of the characteristic of the data file based on said step of determining.

As seen above, the structural components in the Intellectual Ventures claim were "a processing system" and "file content identifier generator agents" on a "source system."

The Ubiquitous Claims in the present case do not recite "generic computers … perform[ing] generic computer functions" as in the Intellectual Ventures case. By contrast, the Ubiquitous Claims in the present case recite an improved base unit providing on-demand, bi-directional communications, reflecting specific structural components, arranged to create a specific technical result. The Ubiquitous Claims are nothing like the claims in *Intellectual Ventures*.

Additionally, as discussed above, Defendant does not assert that the geo-fencing limitation is consistent with reciting a collection of conventional components performing their ordinary functions. Indeed, as discussed above, it is my opinion that the geo-fencing limitation is quite different than then-conventional solutions within the subject area of the disclosed technical solutions.

Defendants further cite cases that support rather than refute patentability of the Patents-in-Suit. For example, Defendants cite to cases that *improve* ways in which computers perform processing. One cited example is an "improved, particularized method of digital data

compression." (Defendant's Motion at 18). Another cited example is an improvement to "the way a computer stores and retrieves data in memory." (*Id.*)

In my opinion, the Patents-in-Suit provide analogous improvements to acknowledged deficiencies in the art, thereby fully reflecting something "substantially more" than an abstract idea. The improvements, as previously discussed, include an improved base unit providing on-demand, bi-directional command communications. Additionally, again, the geo-fencing limitation reflects an unambiguous improvement to what Defendant describes as "a known process (i.e., monitoring and controlling appliances)." (Defendant's Motion at 18) Defendant does not address the geo-fencing innovation in the context of Alice's second step. I must disagree with Defendant's generalizations.

Defendant also asserts "the abstract functional descriptions in Claim 19 of the '935 Patent are devoid of any technical explanation as to how to implement the purported invention in an inventive way." (Defendant's Motion at 18) I disagree for the reasons discussed above at length. In particular, the inventive concept in the Patents-in-Suit is the improved base unit providing on-demand, bi-directional command communications and those patents disclose numerous implementation details for how to implement aspects of the Ubiquitous Claims. For example, as previously discussed, the Patents-in-Suit disclose using simple message service for communications, tied to a particularized port on the mobile device and integrating that port selection with a software application to fully automate the disclosed communications scheme. Other examples of implementation details disclosed by the Patents-in-Suit are discussed at length above.

Defendant further asserts that recitation of generic hardware is indicative of a failing under Alice's second step. In support of that assertion, Defendant cites cases whose technical issues are very different from the present case. In particular, Defendant cites cases where an ordinary process was implemented through use of a computer or where a field-of-use restriction on an existing process was claimed. (Defendant's Motion at 19)

Those circumstances do not exist in the present case so Defendant's reasoning is incorrect as to the Patents-in-Suit. As previously discussed, the Patents-in-Suit do not merely implement an already existing communications scheme through use of a computer. Additionally, the Patents-in-Suit do not involve a field-of-use restriction that applies existing ideas in their present form to a new area. Indeed, the improved base unit providing on-demand, bi-directional command communications have not been identified as already existing; *see*, *e.g.*, at least the geo-fencing discussion.

Therefore, under the *Alice*'s second step, the Ubiquitous Claims are patentable. Moreover, for all the reasons discussed above, the Ubiquitous Claims are patentable under the first Alice step or the second Alice step. Thus, the Ubiquitous Claims recite patentable subject matter.

* * *

X. SIGNATURE

All of the statements made in this declaration of my own knowledge are true and all statements made on information and belied are believed to be true. These statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code.

Dated: 10/5/2018 Signature: 

Ivan Zatkovich

Ivan Zatkovich

301 W. Platt St. #365 ■ Tampa, FL 33606 ■ (813) 601-8142 ■ izatkovich@ecompconsultants.com

Ivan Zatkovich is an eBusiness Director and Technology Consultant specializing in Telecommunications, Network and Mobile Communications. Ivan brings over 30 years experience in a diverse set of technologies including, Security Network and Facility Monitoring, Mobile Geolocation, Secure wireless communications and mobile applications. Ivan has been a testifying expert for over 24 cases including 12 Network and Wireless patent litigation cases.

Mr. Zatkovich has implemented Wireless and Network infrastructure for clients including GTE / Verizon, Bell Canada, Qwest telephone, Deutsche Telekom, Citicorp, GEICO.

Director / Project Manager	13 years	Managed 6 to 35 member teams. Software development, systems Integration, critical path management, PMP/CMM methodologies.
Telecommunications, Mobile / Wireless	11 years	Computer Telephony Integration (CTI) since 1984. Wireless Messaging and Transaction Systems, Cell phone provisioning and updates (Verizon, Bell Canada, PTT Netherlands, and Mercury Communications).
Security Systems	4 years	Security Networks, Remote monitoring, Data System security, forensics analysis of financial transaction encryption/decryption, Incursion testing and detection using MITM.
Expert Witness	9 years	Expert testimony and damage assessment for ecommerce litigation, internet & software copyright, telecommunications. Over 24 cases providing expert reports, depositions, & trial testimony.

Education:

B. S. Computer Science	1980	University of Pittsburgh
Minor in E.E. digital circuit design		
Master's study and thesis in Computer Networks, Results published in Byte Magazine		

Sample Case Experience:

Bear Creek Technologies v. Verizon et.al

Jurisdiction:	Eastern District of Virginia
Client:	Bear Creek
Nature of Case:	Patent Litigation
Nature of Engagement:	Testifying expert, VoIP, IP based integrated voice, media, and data messaging. Infringement report and Deposition.
Represented by:	Cooley Manion Jones
Status:	Pending MDL aggregation

3M Futures South Africa v. STD Bank, MDT telecom

Jurisdiction:	South Africa Superior Court, Pretoria
Client:	3M Futures
Nature of Case:	Patent Litigation
Nature of Engagement:	Testified in South Africa for eCommerce technology, Transaction notification messaging, Credit Card authentication and transaction authorization.
Represented by:	Stema Lubbe, Ltd
Status:	Court ruled in favor of all 36 Infringement and Invalidity rebuttal testimony points. Defendant is appealing

Nuance Communications v. TellMe Networks (Microsoft)

Jurisdiction:	U.S. District Court, Delaware
Client:	TellMe Networks, A MicroSoft Subsidiary
Nature of Case:	Patent Litigation
Nature of Engagement:	Provided expertise in speech recognition, digital signal pattern matching, and call center technology. Performed prior art investigation, provided opinions on patent validity and non-infringement.
Represented by:	Patterson Belknap Webb & Tyler, LLP
Status:	Expert Reports and deposition completed 2009. Summary Judgment in favor of Defendant 2010.

Ronald A. Katz v. Fifth Third Bank (and expert for 5 other defendants)

Jurisdiction:	U.S. District Court, Northern California
Client:	Defendants
Nature of Case:	Patent Litigation for Call Center, and Telecom technology
Engagement:	Expertise in Call center systems for Banking, Mortgage, credit cards. Analyze client call center applications, prepare non-infringement and rebuttal reports.
Status:	Open
Represented by:	Vorys LLP, Wood Herron and Evans.

Professional Experience:

2000 to Present **Principal Consultant**
eComp Consultants ***Tampa, FL***

Provide consulting on design and development of software product development, and ecommerce technology. Provide technology consulting and expert support for telecommunications, internet, and ecommerce applications in the areas of:

- Cybersecurity audit methodology and security incursion testing
- Independent consulting for Alcatel-Lucent (AT&T Bell Labs) to review, recommend, and rate Alcatel's extensive Patent portfolio specifically in the area of telecommunications and web-based ecommerce.
- Patent litigation consulting for telecommunications and internet technology patents.
- Provide mobile geolocation for forensics analysis and event location.
- Development of Mesh Network technology, Mobile GUI interfaces for message routing and notification.
- Commercial websites, search engine, and web marketing strategies.
- Sample clients include: Alcatel-Lucent, LogicLink, NWI Corp, Jones Day, Finnegan Henderson, Fish & Richardson, Cozen O'Connors, Morrison Foerster

2007 to 2008 **Global Web Manager**
Smith & Nephew Inc. ***Clearwater, FL***

Smith & Nephew is a global manufacturer of medical, wound, orthopedic, and surgical supplies. Smith & Nephew has facilities in 33 countries and maintains 35 websites for different product areas and country marketing.

- Designed the Smith & Nephew corporate web architecture for all intranet, extranet, and internet sites.
- Directed a staff of web professionals in developing and managing 35 individual Smith & Nephew websites maintained in the US and 14 countries for both Smith & Nephew clients and internal users.
- Managed and maintain the 650 domains currently owned by Smith & Nephew
- Optimized search engine ranking and website meta tagging.
- Developed corporate technology and IT standards and policies including:
- Created web hosting agreements and IT service contracts (SLAs)
- Defined web development standards
- Researched page ranking, redirection, and domain optimization strategies.

2002 to 2007 **eBusiness Director**
Eva-Tone Inc ***Clearwater, FL***

Eva-Tone is a $45M commercial multimedia company specializing in ecommerce and marketing solutions, media and content customization, order processing and fulfillment, print & web publishing, CD & DVD manufacturing.

- Set strategic direction of client service offerings in ecommerce and content management.
- Consulted with clients on: web marketing strategy using personalized sales collateral. Defined client profile information to be used to generate customized presentations and brochures.
- Aggressively controlled project scope, managed project timelines, budgets and client expectations.
- Projects proposed and delivered included:

- McGraw-Hill – Enterprise Content Management and automated Web publishing system.
- ProMarine USA – B2B storefront, complex part search, order processing and fulfillment.
- Resource Rabbit – Sales collateral manager. This system retrieves user preferences and client profile information to generate customized electronic presentations and brochures.
- AAA Travel – CRM sales collateral system, instant customized brochures, print-on-demand.

1999 to 2002 **eBusiness Engagement Manager**
Tanning Technology and IMRGlobal

Tanning Technology is an international systems integrator specializing in network infrastructure and channel integration for financial markets and the insurance industry. Proposed and managed eBusiness and Internet infrastructure projects focused on client and user personalization, data mining, and web marketing practices.

Client web engagements proposed and managed:

- Eckerd Pharmacy – Developed eBusiness and web marketing for personalized client web content.
- GEICO – Developed a personalized policyholder web service that uses clients' account history and demographics to customize product literature for cross-sell & up-sell opportunities.
- Developed Integrated VoIP contact and messaging center, to cross-utilize call center resources for simultaneous Telephone, IVR, Chat room, and Call Back messaging and notification. (Geico Insurance)
- Hartford Insurance – Integrated 3 tier online claims processing & subrogation with legacy systems
- Citicorp Bank – Designed mortgage and loan payment system; managed sale of loan contracts
- Smith Barney – Developed remote access network infrastructure & wireless PDA financial system
- Medwerks – Created medical insurance clearinghouse, MDs centrally process insurance payments

1996 to 1999 **Director of Network & Customer Support**
Utility Partners, Inc. ***Tampa, FL***

Utility Partners developed and customized utility company software for scheduling service appointments, assigning and routing mobile workforce (field technicians), and dispatching and coordinating resources during power outages.

- Mobile data integration – Develop cellular and wireless data messaging for Mobile Field devices
- MobileUp – Wireless field dispatching system and Geolocation of mobile devices.
- Developed system and network monitors for real-time client system monitoring
- Received trouble calls & provided live client support for the following applications:
- TroubleUP – Power outage manager
- Smartnom – Web Gas Auction System for private gas auctions
- CAS – Customer Appointment and Call Center application

1987 to1996 **Project Manager: Telecom Software**
GTE Data Services (currently Verizon) ***Tampa, FL***

GTE was an $8B Telecommunications company and formed the Commercial Services

division to customize their telephone business software to sell to other telephone companies internationally.

- Managed large product implementations for Telecom billing, service order, and Switch management.
- Developed project proposals, and provided client pre-sales support.
- Created project plans, managed resources, and set expectations for customer delivery projects.
- Specific projects managed:
  - Mercury Communication – setup Service Bureau to bill their new intelligent network services.
  - PTT Netherlands – managed $5M inter-carrier billing project for PTT Netherlands
  - Bell Canada – developed Pricing Plan & Table Management system
  - Deutsche Telekom – designed and developed a German billing prototype system.
  - Received GTE personal best award.

1980 to 1987 **Software Engineer / Technical Lead**
Digital Equipment Corp. ***Maynard, MA***

As Technical Lead, led the development of manufacturing automation and control software. Projects Included:

- Supply Chain, CAD/CAM – Designed system to retrieve parts information from circuit board CAD design. Developed a parts ordering system based on expected volumes.
- Pick & place automation – Automatically program IC insertion machines. Developed system to determine IC insertion order, generate machine instructions, and download program to machine.

As Software Engineer for embedded controllers and video subsystems, designed and developed PDP-11 operating system and device drivers.

- Enhanced high-speed DecNet drivers for Synch, Asynch, and Parallel communications.
- Designed/developed disk firmware and drivers for floppy & Winchester disks.
- Developed and enhanced video controller firmware and layered graphics system for PRO-350.
- Developed Computer Telephony Integration (CTI) product for telephone answering machines.

Technical Tools & Environments:

- Unix, Windows, NT, Microsoft .NET, C#, C/C++, VB, Assembler
- Java, Java script, JSP, IBM Websphere, Microsoft Commerce engine, Blue Martini
- SQL, Oracle, Foxpro, DB2, Crystal Reports, Active-Reports, MQ Series, Tuxedo, Documentum, Interwoven

Certifications & Publications:

- Industry Speaker: Internet Publishing standards (Momentum conference)
- Department of Justice: Proposal for internet forensics technology
- IBM Websphere – Certified ecommerce Solutions Expert
- Byte Magazine – Published Network Design articles
- Sync Magazine – Published Programming Techniques and Tutorials
- IEEE SigGraph – Presented ICGS Computer Graphic Standards for IEEE SigGraph conference.

- CMM & PMP – Project management methodologies
- ISO and ANSI – On International ISO and National ANSI Committees for Disk and Media format standards

Ivan Zatkovich - Consulting, Testimony & Publications

Companies consulted for in past 5 years:

- eComp Consultants
- Alcatel – Lucent
- Verisign
- United Illuminating
- Smith & Nephew
- Evatone, Inc
- McGraw Hill
- AAA Travel
- Pro Marine
- Wachovia
- Capitol One
- Network 1 Security Solutions
- **Vaud Advisors** Social Media **Technology Funds**

Certifications & Publications:

- Industry Speaker: Internet Publishing standards (Momentum conference)
- Department of Justice: Proposal for internet forensics technology
- IBM Websphere – Certified ecommerce Solutions Expert
- Byte Magazine – Published Network Design articles
- Sync Magazine – Published Programming Techniques and Tutorials
- IEEE SigGraph – Presented ICGS Computer Graphic Standards for IEEE SigGraph conference.
- CMM & PMP – Project management methodologies
- ISO and ANSI – On International ISO and National ANSI Committees for Disk and Media format standards

Court Testimony Experience:

- *Logiclink v. Keylink*, CV07-1056-DOC(MLGx) (C.D. Cal.)
  Patent infringement dispute for the Plaintiff, concerning eCommerce for Kiosks for Hotel Business centers. Bench trial: The judge ruled in favor of, and awarded damages to the Plaintiff.

- *3M Future Africa (PTY) LTD v. The Standard Bank of South Africa LTD, MTN Group Limited and MTN Mobile Money SA (PTY) LTD,* Case #: Patent 2002/2337 (South African High Court) Testifying expert patent infringement and patent validity for the Plaintiff for Online Payments Technology. Bench trial: Testified on the stand for 2.5 days (bench trial). The judge ruled in favor of the Plaintiff on all points of contention for both Infringement and Patent Validity and cited the expert's opinion in each ruling.

- *Kenneth Nkosano Makate v Vodocom*, Case number: 08/20980 (SOUTH GAUTENG HIGH COURT, JOHANNESBURG, SOUTH AFRICA)
  Testifying Expert with Report and Trial Testimony opining on the viability of Makate's concept idea for the "Buzzing Option" that became the "Please Call Me" product; explain other similar concepts used by other service providers and how other business would reward for such a concept that significantly increase revenue and profit for the company. Technology in this case was Unstructured Supplementary Service Data (USSD) a protocol used by GSM cellular telephones to communicate with service provider's computers. USSD can be used for WAP browsing, prepaid callback service, mobile-money

services, location-based content services, menu-based information services, and as part of configuring the phone on the network. The judge ruled that Makate should be granted an arbitration hearing to receive compensation for his invention.

- *Black Hills Media, LLC v. Samsung, et al.* INV# 337-TA-882 *[ITC case]*
  Samsung, LG, Panasonic, Toshiba, Sharp
  Testifying Expert on infringement and patent validity for the plaintiff, regarding media streaming, playlists, and geolocation technology. Testified at the ITC hearing. The ITC administrative judges ruled that the accused products did meet the limitation of the claims, but where not in an infringing state at the time of importation.

- S*wapalease, Inc. v. Sublease Exchange.com, Inc.*, 1:07 CV 00045-SSB (S.D. Ohio 2007)
  Expert for Plaintiff on infringement for the Plaintiff. Patent litigation involving online auto leasing technology. Testified at *Markman* Hearing. The judge accepted 3 out of 5 of the Plaintiff's claim constructions.

- *Holt Holt v US Government* – Criminal Cell phone forensics - Testifying expert for the defendant on cell phone location and source of illegal material on the defendants device (27 counts). Jury Trial: Testified that the source of 20 if the illegal items was not as a result of the defendant's actions, therefore the jury only found the defendant guilty of 7 counts of illegal material vs. the original 27 counts.

- *CertusView v. S&N,* 2:13-cv-346 (MSD) (LRL) (Virginia)
  Testifying Expert regarding geolocation. U.S. PATENT # 8,265,344, 8,290,204, 8,340,359, 8,407,001, AND 8,532,341. Testifying Expert in inequitable conduct trial concerning impact of undisclosed prior art.

Case History:

Within the past five years, I have testified and/or provided expert services in the following matters (the underlined party identifies which party I was retained by):

• *Bid For Position v. AOL, Google, Microsoft, MIVA, et.al.* 2:07-cv-582 JBF/TEM (E.D. VA 2010) (settled 2008)
Expert for Defendant MIVA on Patent Invalidity for Internet Search Engine technology. Provided expert invalidity report regarding the auctioning of keywords in paid searches.

• *Imhoff Associates v America's Criminal Defense* (S.D. CA) (settled 2009)
Expert for Defendant ACD for accused Internet Search Engine mis-direction (fraud). Provided expert consulting and identified the unintentional actions of the defendant which caused the search mis-direction.

• *Zamora v. CBS Radio et.al.* 09-20940-CIV-MORENO (S.D. FL 2010) (settled 2010)
Last.fm, Ltd., CBS Radio, Inc., CBS Corp., Slacker, Inc., Pandora Media, Inc., Rhapsody America LLC, Realnetworks, Inc., DKCM, Inc., AOL, LLC, Accuradio, LLC, Yahoo! Inc. and Soundpedia, Inc.
Expert for Plaintiff on Patent Infringement for Internet Radio Technology. Provided expert report and deposition regarding the use of streaming media and Web Radio players.

• *Nuance v. Tellme (a Microsoft subsidiary)* C.A. No. 06-105-slr (S.D. Del 2009) (settled 2010)
Expert for Defendant on Speech Recognition software. Provided expert report and deposition on non-infringement and invalidity for speech recognition used in automated phone directories.

• *TGIP, Inc. v., IDT.*, 512 F. Supp. 2d 727 (E.D. Tex. 2007) (settled 2007).
Expert for Defendant on non-infringement. Patent and prior art dispute concerning call processing center and service provisioning in which I analyzed telephone network, call processing center, and call routing patents; developed detailed non-infringement chart; and rebutted plaintiff's expert.

• *Swapalease, Inc. v. Sublease Exchange.com, Inc.*, 1:07 CV 00045-SSB (S.D. Ohio 2007) (Pending)
Expert for Plaintiff on infringement. Patent and prior art dispute concerning commercial auto lease web site. Expert infringement report, testified at *Markman* Hearing.

• *Ronald A. Katz v. DHL Express*, 2:2007 CV 02192 (N.D. Cal.)
Patent infringement dispute concerning call processing center and call routing patents. Developed non-infringement reports and deposed.

• *Ronald A. Katz v. Cox Communications*, 2:2007 CV 02299 (N.D. Cal.)
Patent infringement dispute concerning call processing center and call routing patents. Developed non-infringement reports and deposed.

• *Ronald A. Katz v. Earthlink*, 2:2007 CV 02325 (N.D. Cal.). Patent infringement dispute concerning call processing center and call routing patents. Developed non-infringement reports and deposed.

• *Ronald A. Katz v. Fifth Third Bank*, 2:2007 CV 04960 (N.D. Cal.)
Patent infringement dispute concerning call processing center and call routing patents. Developed non-infringement reports and deposed.

• *Ronald A. Katz v. Huntington National Bank*, 2:2007 CV 04960 (N.D. Cal.)
Patent infringement dispute concerning call processing center and call routing patents. Developed non-infringement reports and deposed.

• *Ronald A. Katz v. Echostar*, 2:2007 CV 06222 (N.D. Cal.) (pending)
Patent infringement dispute concerning call processing center and call routing patents. Developed non-infringement reports and deposed.

• *ABC v. ENC, CISCO, WebEx communications, et.al.,* H-06-1032 (S.D. TX.)
Patent infringement dispute concerning computer remote control, remote command processing, and remote communication. Developed non-infringement and invalidity rebuttal reports and deposed.

• *Logiclink v. Keylink*, CV07-1056-DOC(MLGx) (C.D. Cal.)
Patent infringement dispute concerning eCommerce for Kiosks for Hotel Business centers. Developed infringement report and invalidity rebuttal report. Trial Testimony.

• *eBay v. IDT corp,* IDT 4:08-cv-4015-HFB (W.D. Ark) (settled 2010)
Patent infringement. Perform analysis of Voice Over IP providers and prior art candidates; provide non-infringement (suit) and infringement (counter suit) expert reports.

• *i2 Technologies, Inc. v. Oracle Corporation,* 6:09-CV-194-LED (E.D. Tex)
Patent infringement, testifying expert for Supply Chain Management software, Manufacturing Automation, and Sales projection system software. Provide infringement and Invalidity rebuttal.

• *IslandIP Inc. v. Deutsche Bank Corporation,* 1:09-cv-04673-VM (S.D. NY)
Patent infringement, testifying expert for Financial Transaction, Omnibus account consolidation and settlement for Banks and Broker Dealers. Provide infringement and Invalidity rebuttal reports.

• *3M Future Africa (PTY) LTD v. The Standard Bank of South Africa LTD, MTN Group Limited and MTN Mobile Money SA (PTY) LTD,* Case #: Patent 2002/2337 (South African High Court)
Patent infringement, testifying expert for Online Payments Security. Provide infringement, validity and trial support.

• *Cohen v. US,* 07-154-C (*U.S. District Court of Federal Claims*)
Copyright infringement testifying expert for Cohen. US Government FEMA distributed copy righted documents without Cohen's knowledge or approval. Provide expert report, damages and deposition.

• *SFA v. 1-800-Flowers, et.al,* 6:2009-cv-00340-LED (E.D. Tex)
• *SFA v. Barnes & Noble, et.al,* 6:2011-cv-00399-LED (E.D. Tex)
1-800-Flowers.com, Inc.,The Plow & Hearth, Inc., including D/B/A Wind & Weather, Inc.
The Popcorn Factory, Inc., Winetasting Network, Inc., The Children's Group, Inc.,
Problem Solvers, Inc., Barnes & Noble, Inc., Barnesandnoble.com LLC, Blockbuster, Inc.,
BUILD-A-BEAR WORKSHOP, INC., CDW Corporation
GameStop, Corp., GameStop, Inc., GameStop.com, Inc., Gander Mountain Company,
Overton's, Inc., J & R Electronics, Inc., Newegg, Inc., Newegg.com, Inc.
Northern Tool & Equipment Company, Inc., Northern Tool and Equipment Catalog Co.
Office Depot, Inc., Omaha Steaks International, Inc., OmahaSteaks.com, Inc.
The Timberland Company, Tupperware Brands Corporation, Tupperware.com, Inc.
Patent infringement, for Computerized Sales Force Automation System. Testifying expert for joint invalidity (9 defendants) and non-infringement (5 defendants).

• *Bloom v. Intuative*, 06 CV 6301 (S.D. NY)
Software contract dispute, testifying expert concerning Document Management and Publishing for Pharmaceuticals and Regulatory agencies. Comparison of product features and software reuse.

• *Dallal v. New York Times,* 1:2003-cv-10065 (S.D. NY) (settled 2008)
Testifying Expert, Deposition, for Web Copyright. Provided expertise in standard media publishing practices, content licensing, and web content customization.

• *LATimes v. Software AG*, 2:2007-cv-01289-SVW-JWJ (C.D. Cal.) (settled 2008)
Testifying Expert in Network & Database Software licensing dispute. Prepared expert report and deposition on software licensing practices.

• *Bear Creek Technologies v. Verizon Services Corp.,* 1:11-cv-00880-TSE -JFA (E.D. Virginia)
Testifying Expert, provided infringement and invalidity of VoIP related patents.

• *Cequint v. Apple,* 1:2011-cv-01224 (Wilmington) (pending)
Testifying Expert. Performed code review of Cequint's City ID Software product to determine if and how they are practicing the key limitations of the patents-in-suit focused on Caller ID, CND Messages, City, State lookups, WAP interfaces, Database synchronicity (automatic update of database), Display of incoming caller information and Call Answer and set-up code.

• *Tel-tron Corporation v. Stanley Security Solutions d/b/a Stanley Healthcare Solutions,* 6:2011-cv-01448 (M.D. Florida)
Testifying Expert regarding network systems for displaying data relating to emergency call systems.

• *Microsoft v 5R Processors, LTD. and Thomas Drake*, 3:12-cv-00263-slc, (W.D. Wisconsin)
Testifying Expert. Evaluate the Microsoft Windows Professional XP OEM Licensing Agreement and Microsoft Refurbished PC Licensing Guidelines and opine on 5R adherence.

• *Walker Digital, LLC v. Fandango, Inc., et al.,*1:11-cv-00313-SLR (Delaware)

Facebook Inc., Fandango, Inc., Expedia, Inc., Amazon.com, Inc., American Airlines, Inc., eBay Inc., and Zappos.com, Inc.
Testifying Expert regarding e-commerce, shopping carts, e-marketing, and the promotion of financial products such as credit and debit cards for retail, business-to-business ("B2B"), and financial industries. Provided Infringement (Amazon, Expedia, Zappos) Reports and Invalidity Rebuttal Report.

• *Trialcard v. P.S.K.W. & Associates,* 3:11-cv-05693-FLW-TJB (NewJersey)
Testifying Expert for patent re-exam concerning eCommerce technology based on a method of dispensing, tracking, and managing pharmaceutical products by communicatively linking prescribers and pharmacies to a central computing system

• *Catalina Marketing Corporation v. Coupons, Inc.*, JAMS Reference No. 11000654507 (San Francisco)
Testifying Expert to analyze the following Coupons systems, Microsite System & Brandcaster™ System and determine if either system is an "Infringing Capable System". Provided Expert Report and Mediation Trial support.

• *AKH Co., Inc. v. The Reinalt-Thomas Corp. & Southern California Discount Tire Co., Inc.*, SACV10-1626 CJC
Testifying Expert regarding trademark infringement & cybersquatting. Provided Expert Report and deposition.

• *Soverain v. Euromarket Design*, et al. 6:12-cv-00145-LED (E.D. Texas) (pending)
Testifying Expert regarding e-commerce systems/online shopping carts technology.

• *e-LYNXX Corporation v. InnerWorkings, Inc., et al.* 1:10-CV-2535 (M.D. PA)
InnerWorkings, Standard Register, Cirqit.com and R.R. Donnelley & Sons Co.
Testifying Expert regarding supply chain, custom print jobs, matching job requirements to vendors technology. Provided Infringement, Invalidity and Non Infringement Rebuttal Reports and deposition.

• *Joao Bock Transaction Services v. USAmeribank, et al,.* 8:11-cv-00887-MSS-TGW (Tampa)
USAmeribank, Everbank and BankFirst
Testifying Expert regarding secure transactions on electronic financial accounts.

• *Lodsys v. Brother Intl Group et al.,* 2:11-cv-90(JRG) (E.D. Texas)
Brother Intl Corp, Canon U.S.A., Inc., Hewlett-Packard Company, Hulu, LLC, Lenovo (United States) Inc. Lexmark International, Inc., Motorola Mobility, Inc., Novell, Inc., Samsung Electronics Co., LTD., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, Trend Micro Incorporated
Testifying Expert regarding interactive media enabling CRM technology. Provided Invalidity Rebuttal Reports and deposition testimony.

• *Progressive v. State Farm, et al.* CBM2012-00003, CBM2013-00004
State Farm Insurance, Hartford Insurance, Liberty Mutual Insurance, Safeco Insurance, Ohio Casualty Insurance, Open Seas Solutions, Octo Telematics
Testifying Expert regarding e-Commerce and vehicle telematics systems. Provided Patent Re-exam Declarations.

• *Black Hills Media, LLC v. Samsung, et al.* INV# 337-TA-882 *[ITC case]* (pending)
Samsung, LG, Panasonic, Toshiba, Sharp
Testifying Expert regarding Google Latitude running on smartphones and smart phones running software which can direct the streaming of content between, for example, a laptop and a TV or Blu-ray player. Providing device analysis and code review, Infringement Reports and Rebuttal Reports.

• *Rembrandt Social Media, LP v. Facebook, Inc. and ADDTHIS, Inc.,* 1:13cv158 (TSE/TRJ) (Virginia)

Testifying Expert regarding social media user content and 3rd party interaction -the diary page and "Like" feature. Provided Non Infringement Report and deposition.

• *Indacon, Inc v. Facebook, Inc.* 5:130cv966-OLG (TX)
Testifying Expert regarding automated creation of user-defined hyperlinks in a database. Provided Non Infringement Report and deposition.

• *GeoTag, Inc v. Frontier Communications Corp. et al.* 2:10-cv-00265 *(TX) [Multiple cases]*
Macy's, Genesco, AGCO Corp., The Rockport Company, LLC., Hennes & Mauritz LP (H&M), Gander Mountain Company, Godiva Chocolatier, DSW, National Interlock Systems
Testifying Expert regarding e-Commerce, Geo location, store locator based technology. Provided Non Infringement Reports for multiple defendants.

• *CareerFairs.com v. United Business Media, LLC, et al.,* 11-20329-CIV-KING (S.D. Florida)
Testifying Expert regarding videoconferencing, virtual career fairs technology.

• *Transauction LLC v. eBay Patent 7343339* 3:2009cv03705 (N.D. CA)
Expert regarding computerized electronic auction payment systems.

• *Ameranth v. Six Continents Hotels,* 09-CV3819 (GA)
Testifying Expert regarding Internet Advertising & Website Technology. Expert Report and deposition.

• *Carolina Power & Light Company v. Aspect Software* 5:08-cv-00449-BO (E.D. NC)
Testifying Expert in telecommunications technology.

• *Dominion v. Aspect Software,* 3:08-cv-00737-REP (Virginia)
Testifying Expert in telecommunications and IVR call processing. Provided expert declaration and testimony.

• *ComplementSoft v. SAS Institute,* 12-C-7372 (N.D. IL)
Expert regarding software development tools, database manipulation, SAS programming.

• *Moricz v. Google,* 10-cv-01240-RSL (Seattle)
Expert regarding use of deep search methodology. Claim Construction support.

• *Media Rights Technologies v. Capital One, et al.,* 1:13cv476-AJT/TRJ (Virginia)
Expert regarding secure internet Banking System technology USPatent# 7316033.

• *CertusView v. S&N,* 2:13-cv-346 (MSD) (LRL) (Virginia)
Testifying Expert regarding geolocation. U.S. PATENT # 8,265,344, 8,290,204, 8,340,359, 8,407,001, AND 8,532,341.

• *Bright Edge v SearchMetrics,* 3:14cv-01009 (San Francisco)
Testifying Expert regarding search optimization, USPatent# 8478700, USPatent# 8478746.

• *Black Hills Media, LLC v. Sonos,* 2:14-CV-00486 SJO (PJWx) (California Western Division)
Testifying Expert regarding delivery of stored and streaming audio content over wide-area and local area networks. U.S. PATENT # 6,757,517, 7,236,739, 7,742,740 and 6,826,283

• *Yamaha Corp of America v. Black Hills Media, LLC,* IPR2013-00593, IPR2013-00594, (PTO)
Testifying Expert regarding software which can direct the streaming of content between devices, for example, a laptop and a TV or Blu-ray player. Providing Inter Partes Review Declaration Reports. U.S. PATENT # 8,050,652, 8,045,952

• *Samsung Electronics, et al. v. Black Hills Media, LLC,* IPR2014-00737, IPR2015-00334, IPR2014-00740, IPR2015-00340, IPR2014-00735 (PTO)
Testifying Expert regarding software which can direct the streaming of content between devices, for example, a laptop and a TV or Blu-ray player. Providing Inter Partes Review Declaration Reports. U.S. PATENT # 8,050,652, 8,045,952, 6,618,593

• *GT Nexus v Inttra, Inc.*, 4:11-cv-02145-SBA (California Northern Division)
Testifying Expert regarding networks & systems used for logistics management. Provided Declaration for CBM petitions. U.S. Patent No. 7,761,387, 7,752,142, 7,827,119, 7,756,794

• *MyKey Technology, Inc. v. Intelligent Computer Solutions, Inc.,* 2:13-ml-02461-AG (PLAx) MDL NO. 2461 (Central California Southern Division)
Testifying Expert regarding hard drives and other mass storage devices, how to access "hidden" storage and cleaning a disk. Provided Validity Rebuttal and MSJ Declaration. U.S. Patent No. 6,813,682, 7,228,379

• *Biosignia Inc. v. Life Line Systems*, 1:12-cv-01129-UA-JEP (MDL NC)
Testifying Expert regarding Contract Dispute concerning Health Risk Assessment System.

• *Kenneth Nkosano Makate v Vodocom*, Case number: 08/20980 (SOUTH GAUTENG HIGH COURT, JOHANNESBURG, SOUTH AFRICA)
Testifying Expert with Report and Trial Testimony opining on the viability of Makate's concept idea for the "Buzzing Option" that became the "Please Call Me" product; explain other similar concepts used by other service providers and how other business would reward for such a concept that significantly increase revenue and profit for the company. Technology in this case was Unstructured Supplementary Service Data (USSD) a protocol used by GSM cellular telephones to communicate with service provider's computers. USSD can be used for WAP browsing, prepaid callback service, mobile-money services, location-based content services, menu-based information services, and as part of configuring the phone on the network.

• *Parus Holdings, Inc. v. Airtran Airways, Inc., et al.,* 8:11-cv-01685 (MDL FL)
Testifying Expert regarding expertise in voice recognition, isolated word recognition, natural speech recognition, unified messaging systems, interactive voice response systems, and travel reservation systems for invalidity analysis report. Provided invalidity report.

• *Versata Software, Inc. et al. v. Callidus Software Inc.*, C.A. No. 1:10-cv-00781-SLR (Delaware)
• *Versata Software, Inc. et al. v. Callidus Software Inc.*, C.A. No. 1:12-cv-00931-SLR (Delaware)
Testifying Expert regarding expertise in sales force automation, workflow analysis, process automation, event management and detection, rules based systems. Provided analysis for infringement report.

• *BuySafe v. Google*, 3:13-cv-00781-HEH (Richmond, VA)
Testifying Expert regarding patent litigation concerning eCommerce specifically to determining the efficacy (effectiveness, strength, success, etc.) of offers that are related to online transactions. The efficacy is determined based on a user's actions in the online environment.

• *Phoenix v. General Motors*, 2:13-cv-1093 (ED Texas)
Testifying Expert regarding patent litigation concerning US Patent 5,987,434 - Apparatus and method for transacting marketing and sales of financial products, US Patent 7,890,366 - Personalized communication documents, system and method for preparing same, US Patent 8,352,317 - System for facilitating production of variable offer communications.

• *Macropoint v. FourKites*, 1:15-cv-01002 (ND Ohio)
Testifying Expert regarding patent litigation concerning U.S. Pat. Nos. 8,604,943, 9,070,295, 9,082,097, 9,082,098, and 9,087,313. At a very high level, the patents are directed to methods and systems for monitoring and tracking the location of a vehicle or freight in transit. Evaluated the claims of the asserted patents to opine on whether the claims are: 1) directed to an abstract idea, and 2) in the event the court would find the claims directed to an abstract idea, how the limitations of the claims transform that abstract idea into patentable subject matter based on the Supreme Court Alice decision being barely a year old.

• *Longitude v. Apple*, 3:14-cv-04275 (San Francisco)
Testifying Expert regarding patent litigation concerning Flash Memory Technology. Provided claim construction support.

• *Global Tel Link Corp. v. Securus Technologies, Inc.*, CBM2015-00145 (US PTAB)
Testifying Expert regarding a CBM concerning the 7,860,222 patent titled "Systems and Methods for Acquiring, Accessing, and Analyzing Investigative Information," generally directed to acquiring, accessing, and analyzing investigative information or phone call monitoring using speech recognition/transcription of inmates within a jail.

• *Global Tel Link Corp. v. Securus Technologies, Inc.*, IPR2015-01222 (US PTAB)
Testifying Expert regarding an IRP concerning the patent 8,750,486 titled "Call Center for offering goods and services to an inmate population," generally directed to acquiring, accessing, and analyzing investigative information or phone call monitoring using speech recognition/transcription of inmates within a jail.

• *Global Tel Link Corp. v. Securus Technologies, Inc.*, IPR2015-01225 (US PTAB)
Testifying Expert regarding an IRP concerning the patent 8,886,663 titled "Multi-party Conversational analyzer and logger," generally directed to acquiring, accessing, and analyzing investigative information or phone call monitoring using speech recognition/transcription of inmates within a jail.

• *CaptionCall v Ultratec, Inc*, IPR2015-01355 (5,974,116), IPR2015-01357 (6,934,366), IPR2015-01358 (7,006,604), IPR2015-01359 (6,493,426), IPR2015-00636 (8,917,822), IPR2015-00637 (8,908,838) (US PTAB)
Testifying Expert regarding IPRs concerning call routing/switching that happens when a deaf or hearing impaired individual makes a phone call.

• *Centrak, Inc. v Sonitor Technologies*, Inc., 14-183-RGA (Delaware)
Testifying Expert regarding patent litigation concerning an application on a smart phone which allows a person to walk into a hospital, have infrastructure pick up patient information and send it to say, an MRI office, so office is ready for the patient when patient arrives. Expertise in low energy blue tooth and way finding and Ultrasonic Tags communicate with Stations. Provided infringement report and invalidity rebuttal.

• *Intellectual Ventures II LLC v. T-Mobile USA, Inc., et al.,* C.A. No. 13-1633-LPS (D. Del.)*;*
Intellectual Ventures II LLC v. Nextel Operations, et al., (on behalf of Sprint) C.A. No. 13-1635-LPS (D. Del.)*;*
Testifying Expert regarding non-infringement of US Patent No. 6,115,737 and the 5,339,352 concerning accessing customer contact services over a network and a Directory assistance call completion via mobile systems.

• *Askeladden LLC v. N5 Technologies LLC* IPR2017 – 7,197,297*;*
Testifying Expert regarding IPR of US Patent No. 7,197,297 concerning mobile messaging and authentication of mobile devuce users.

• *Askeladden LLC v. Verify Smart Corp.* IPR2017 – 8,285,648*;*
Testifying Expert regarding IPR of US Patent No. 8,285,648 concerning electronic transactions and authentication of customers using mobile devices.

Expert Consulting Experience:

• *Uniloc v Autodesk*, 2-15-cv-01187 (ED Texas)
Consulting Expert regarding non infringement of US Patent No 7783,523 & 8,515,820 concerning systems that facilitated the pricing of construction projects.

• *Bellsouth v American Infoage*, Sago Data Center (Atlanta)
Consulting Expert regarding contract dispute where Bellsouth claims they are entitled to easement / free space and power in Sago Data Center. Providing consulting expertise on telecommunication acts, and LEC / CLEC regulation and Data Center practices.

• *Kashless v BuyWithMe*, 2:11-cv-00293-MJP (Seattle)
Consulting Expert regarding eCommerce Coupon Pricing - 6 Patents involved

• *eWin Win v Groupon*, 8:10-CV-02678-SCB-AEP (Tampa)
Consulting Expert regarding patent litigation concerning eCommerce on Pricing Models.
7593871 - Multiple Price Curves & Attributes
7693748 - Price & Volume Schedule
7689469 - eCommerce Volume Pricing
7747473 - Demand Aggregation

Exhibit 2

Materials Considered

U.S. Patent No. 8,064,935
U.S. Patent No. 9,602,655
Prosecution history for U.S. Patent No. 8,064,935
Prosecution history for U.S. Patent No. 9,602,655
Defendant's motion to dismiss
MacWorld article about the iPhone's introduction in 2007: https://www.macworld.com/article/1054764/macworld-expo/liveupdate.html
Time magazine article about the IBM Simon: http://time.com/3137005/first-smartphone-ibm-simon
MIT Technical Journal article about Garmin's business after the iPhone: https://www.technologyreview.com/s/511786/a-shrinking-garmin-navigates-the-smartphone-storm
Article distinguishing GPS from assisted GPS: https://www.windowscentral.com/gps-vs-agps-quick-tutorial
Qualcomm press release concerning testing of assisted GPS: https://www.qualcomm.com/news/releases/2004/11/10/qualcomm-announces-completion-assisted-gps-test-calls-wcdma-umtsgsmgprs
Telephone discussion with named inventor Charles Shamoon
Library of Congress website article discussing SMS: https://www.loc.gov/preservation/digital/formats/fdd/fdd000431.shtml
Technical standard for SMS (text messaging): https://www.ietf.org/rfc/rfc5724.txt
Touch tone dialer utility on the Internet: https://scratch.mit.edu/projects/1981662
buySafe v. Google, 765 F.3d 1350 (Fed. Cir. 2014)
Elec. Power Group, LLC v. Alstom S.A., 830 F.3d 1350 (Fed. Cir. 2016)
Article analyzing iPhone components: https://www.ifixit.com/Teardown/iPhone+X+Teardown/98975
Intellectual Ventures v. Symantec Corp., 838 F.3d 1307 (Fed Cir. 2016)

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/163,372	10/17/2005	Charles G. SHAMOON	7192-06-05	4371

23983 7590 09/06/2006

MILLS LAW FIRM, PLLC
P.O BOX 1245
Cary, NC 27512-1245

EXAMINER	
NGUYEN, HUY D	
ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	11/163,372	SHAMOON ET AL.	
	Examiner	Art Unit	
	Huy D. Nguyen	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,21-58* is/are pending in the application.

4a) Of the above claim(s) *25-31 and 44-50* is/are withdrawn from consideration.

5)☒ Claim(s) *1-11* is/are allowed.

6)☒ Claim(s) *21-24,32-34,38,40-43,51-53 and 57* is/are rejected.

7)☒ Claim(s) *35-37,39,54-56 and 58* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species:

Species I: claims 2-11, 22-24, 32-39, 41-43, 51-58.

Species II: claims 25-31, 44-50.

The species are independent or distinct because species I is drawn to remote programming control, classified in class 455, subclass 419; species II is drawn to privacy/authentication, classified in class 455, subclass 411.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1, 21, 40 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

2. During a telephone conversation with Peter D. Sachtjen on 8/28/2006 a provisional election was made to prosecute the invention of species I, claims 2-11, 22-24, 32-39, 41-43, 51-

58. Affirmation of this election must be made by applicant in replying to this Office action. Claims 25-31, 44-50 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 21, 24, 32-33, 40, 43, 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanazawa (US 2003/0210126 A1) in view of Song (US Patent No. 6,393,297).

Regarding claims 21, 40, Kanazawa teaches a method for environmental control and information processing associated with a structure, the method comprising: receiving from a remote control unit (e.g., cell phone 3 – see fig. 1) messages comprising control information to use for controlling a plurality of environmental control units (e.g., devices 1, see figure 1) associated with the structure (e.g., home, see fig. 1); creating control commands for the plurality of environmental control units based on the control information messages; and delivering the control commands to the plurality of environmental control units (see paragraphs [0002], [0020]. Kanazawa teaches the claimed invention except the use of SMS. However, the preceding limitation is taught in Song (see column 1, lines 19-23). It would have been obvious to one

having ordinary skill in the art at the time the invention was made to apply the teaching of Song to the teaching of Kanazawa to increase system capability by adding more function/service.

Regarding claims 24, 43, the combination of Kanazawa in view of Song teaches the method of claim 21 comprising controlling environmental conditions within the structure using the plurality of environmental control units (see Kanazawa: fig. 1 and paragraph [0020]).

Regarding claims 32, 51, the combination of Kanazawa in view of Song teaches the method of claim 21 comprising accessing remote information (e.g., from monitoring center – see Song) creating a control command based on the remote information and delivering the control command to at least one of the plurality of environmental control units (see Song: fig. 2).

Regarding claims 33, 52, the combination of Kanazawa in view of Song teaches the method of claim 32 comprising sending an SMS message to the remote control unit (e.g., mobile terminal – see Song) based on the remote information (e.g., from monitoring center – see Song) and the control command delivered to the at least one of the plurality of environmental control units (see Song: fig. 2).

5. Claims 22-23, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanazawa (US 2003/0210126 A1) in view of Song (US Patent No. 6,393,297) and in further view of Haughawout et al. (US 2004/0263349 A1).

Regarding claims 22, 41, the combination of Kanazawa in view of Song teaches the method of claim 21 except sending an SMS message to the remote control unit indicating delivery of a control command to at least one of the plurality of environmental control units. However, the preceding limitation is taught in Haughawout et al. (see claim 27). It would have

been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Haughawout et al. to the teaching of Kanazawa in view of Song to maintain system performance by making sure the sequence of command codes are delivered in order.

Regarding claims 23, 42, the combination of Kanazawa, Song, and Haughawout et al.teaches the method of claim 22 wherein the SMS message includes status information for at least one of the plurality of environmental control units (see Song: fig. 2).

6. Claims 34, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanazawa (US 2003/0210126 A1) in view of Song (US Patent No. 6,393,297) and in further view of Mizuta (US 2001/0035817 A1).

Regarding claims 34, 53, the combination of Kanazawa in view of Song teaches the claimed invention except accessing a weather forecast service and the remote information relates to local weather conditions. However, the preceding limitation is taught in Mizuta (see paragraph [0062]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Mizuta to the teaching of Kanazawa in view of Song to increase system capability by adding more information services.

7. Claims 38, 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanazawa (US 2003/0210126 A1) in view of Song (US Patent No. 6,393,297) and in further view of Robinson et al. (US 2002/0177109 A1).

Regarding claims 38, 57, the combination of Kanazawa in view of Song teaches the claimed invention except accessing remote information includes accessing a school system's notification information service and the remote information includes school related information.

However, the preceding limitation is taught in Robinson et al. (see paragraph [0085]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Robinson et al. to the teaching of Kanazawa in view of Song to increase system capability by adding more information services.

Allowable Subject Matter

8. Claims 35-37, 39, 54-56, 58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims1-11 are allowed. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, Kanazawa teaches a ubiquitous connectivity and communications system for controlling operation of an environmental condition in a structure, comprising: a device for controlling the environmental condition in the structure (e.g., device 1, see figure 1); a base unit (e.g., controller 2) in said structure and operatively interfaced with said device to control the operation thereof (see figure 1); a remote device (e.g., cellular 3); wireless connectivity means providing an on-demand, private and direct communications interface between said base unit and said remote device enabling instant wireless connectivity therebetween (e.g, cellular phone transceiver); means for providing an indication of current

status of said device to said base unit (e.g., Bluetooth network); input means at said remote device for prescribing an indication of revised status for said device (e.g., WWW browser function, see paragraph [0020]); means for transmitting said indication of revised status through said connectivity means to said base unit (e.g, cellular phone transmitter); means operatively associated with said base unit and operatively connected with said device for effecting said revised status for said device (see paragraph [0020]). Kanazawa does not specifically teach means for transmitting said indication of current status through said connectivity means to said remote device and display means at said remote device for indicating said current status of said device. However, the preceding limitations are taught in Kim et al. (see figure 3 and paragraph [0045]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Kim et al. to the teaching of Kanazawa to provide convenience for users. The combination of Kanazawa and Kim et al.teaches the claimed invention except the use of SMS. However, the preceding limitation is taught in Song (see column 1, lines 19-23). It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Song to the teaching of Kanazawa and Kim et al. to increase system capability by adding more function/service.

However, the cited prior arts, either alone or in combination, fail to teach means for transmitting said second SMS message including information associated with the remote device and the indication of revised status through said connectivity means to said base unit, wherein the base unit is adapted to authenticate the second SMS message using the information associated with the remote device, in combination with all of other limitations in the claim.

Claims 2-11 depend on claim 1. Thus, they are allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huy D. Nguyen whose telephone number is 571-272-7845. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Huy D Nguyen
Patent Examiner
Art Unit 2617

ERIKA A. GARY
PRIMARY EXAMINER

APPENDIX A

Preliminary Proposed Claim Constructions for U.S. Patent Nos. 9,602,655 and 8,064,935

Patent/Claims	Term	Preliminary Proposed Construction
'655 Patent Claims 1-24; '935 Patent Claims 1, 3, 7, 10, 11, 12, 14, 18-22.	"base unit"	A base control device operatively connected to at least a power supply, display, wireless module, antenna, microcontroller, transmitter, receiver, and plurality of communications interfaces for controlling and commanding subsystems within an environment through messaging.
'655 Patent Claims 1, 3, 7, 10, 13, 17, 21, 23, 24; '935 Patent Claims 1, 4, 7, 8, 10, 11, 12, 15, 18-22.	"remote unit"/"cellular remote unit"	A remote communications device capable of cellular communications that is operatively connected to at least a microcontroller, keypad, ROM, RAM, a power supply, a battery, GPS circuit, radio frequency circuit, antenna, transmitter, receiver, audio interface circuit, and display for text and graphical icons for controlling and commanding subsystems within an environment through messaging.
'655 Patent Claims 1, 2, 9, 11, 13-15, 21, 24; '935 Patent Claims 1, 11, 13, 18-22.	"environmental device"	A device operatively connected to at least one sensor capable of measuring an environmental condition
'655 Patent Claims 1, 24; '935 Patent Claims 18, 21.	"communication interface"	An interface capable of communicating the control and command instructions to the subsystems within the environment.
'655 Patent Claims 1, 4, 5, 8, 10, 12, 18, 24.	"control instruction"	Instruction associated with environmental information
'655 Patent Claims 1, 6, 10, 16, 22; '935 Patent Claims 7, 17.	"cellular communications network"/"cellular telephone network"	cellular telephone network
'935 Patent Claims 1, 10, 11, 18.	"short message service (SMS)"	service capable of transmitting short messages between network interfaces
'655 Patent Claims 1, 16.	"simple message service"	service capable of transmitting control and command signals between network interfaces

Patent/Claims	Term	Preliminary Proposed Construction
'655 Patent Claims 1, 24.	"digital communications message"	a message capable of digital transmission
'655 Patent Claims 1, 17.	"geo-fence"	A threshold defined in the base unit or remote unit indicating an established distance between a base unit and remote unit
'655 Patent Claims 6, 10; '935 Patent Claims 12, 22	"data bearer service"	service capable of transmitting data between network interfaces

APPENDIX B

TABLES SHOWING THAT CLAIM 1 OF '655 PATENT AND CLAIM 19 OF '935 PATENT ARE NOT REPRESENTATIVE OF OTHER CLAIMS

TABLE 1 - Comparison of Patent No. 9,602,655 Claim 1 to Other Claims		
Claim	**Claim Language**	**Unique Elements Compared to Claim 1**
1	**1**. A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	[Alleged Representative Claim]
2	**2**. The base unit of claim **1**, wherein the command regards entering an energy conservation mode, and wherein the energy conservation mode is associated with multiple environmental devices.	Includes limitations of Claim 1 plus additional limitation that the "base unit" causes multiple "environmental devices" to enter a "conservation mode energy."
3	**3**. The base unit of claim **1**, wherein the command is associated with an icon on the remote unit.	Includes limitations of Claim 1 plus additional limitation that an "icon" is associated with the command on the display of the "remote unit."
4	**4**. The base unit of claim **1**, wherein the control instruction is configured to adjust a temperature of a water heater.	Includes limitations of Claim 1 plus additional limitation that the "control instruction" is configured to adjust temperature of a "water heater."

TABLE 1 - Comparison of Patent No. 9,602,655 Claim 1 to Other Claims		
Claim	**Claim Language**	**Unique Elements Compared to Claim 1**
5	**5**. The base unit of claim **1**, wherein the control instruction is configured to adjust an air handling system.	Includes limitations of Claim 1 plus additional limitation that the "control instruction" is configured to adjust an "air handling system."
6	**6**. The base unit of claim **1**, wherein the cellular communications network includes a data bearer service.	Includes limitations of Claim 1 plus additional limitation that the "cellular communication network" includes a "data bearer service."
7	**7**. The base unit of claim **1**, wherein the remote unit is a mobile remote unit.	Includes limitations of Claim 1 plus additional limitation that the remote unit be "mobile" as compared to fixed (i.e., car phone).
8	**8**. The base unit of claim **1**, wherein the control instruction includes an environmental control instruction; and wherein the command includes an environmental command.	Includes limitations of Claim 1 plus additional limitation of a specific "environmental control instruction" included in the "control instruction" that includes "an environmental command."
9	**9**. The base unit of claim **1**, wherein the command is an energy conservation command associated with multiple environmental devices.	Includes limitations of Claim 1 plus additional limitation of a specific "energy conservation command" as the "command instruction" associated with "multiple environmental devices."
10	**10**. The base unit of claim **1**, wherein the cellular communications network includes a data bearer service; wherein the remote unit is a mobile remote unit; wherein the control instruction includes an environmental control instruction; and wherein the command includes an environmental command.	Includes limitations of Claim 1 plus additional limitations of all the elements of Claims 6-9 contemporaneously.
11	**11**. The base unit of claim **10**, wherein the second message includes an energy conservation command associated with multiple environmental devices.	Includes limitations of Claim 10 (dependent on Claim 1) plus additional limitation that the second message must include an "energy conservation command" that is associated with "multiple environmental devices."

TABLE 1 - Comparison of Patent No. 9,602,655 Claim 1 to Other Claims		
Claim	**Claim Language**	**Unique Elements Compared to Claim 1**
12	**12**. The base unit of claim **10**, wherein the microcontroller is configured to process the environmental information into the representation and to process the command into the control instruction.	Includes limitations of Claim 10 (which is dependent on Claim 1 and all its limitations) plus additional limitations that the microcontroller in the "base unit" must be configured to process the "environmental information into the "representation" and to process the command into the "control instruction."
13	**13**. The base unit of claim **1**, wherein the remote unit is a cellular telephone, and wherein the environmental device comprises a thermostat.	Includes limitations of Claim 1 plus additional limitations that the "remote unit" be "a cellular telephone" and the "environmental device" comprises a thermostat.
14	**14**. The base unit of claim **1**, wherein the environmental device comprises at least one of a light, thermostat, or an alarm system.	Includes limitations of Claim 1 plus additional limitation that the "environmental device" comprise a "light, thermostat, or alarm system."
15	**15**. The base unit of claim **1**, wherein the base unit and the environmental device are contained in the same enclosure.	Includes limitations of Claim 1 plus additional limitation that the "base unit" and "environmental device" be in the same "enclosure."
16	**16**. The base unit of claim **1**, wherein the cellular communications network includes a simple message service.	Includes limitations of Claim 1 plus additional limitation requiring that the "cellular communications network" include a "simple message service."
17	**17**. The base unit of claim **1**, wherein the cellular remote unit is configured to determine when the remote control unit is within a geo-fence.	Includes limitations of Claim 1 plus additional limitation that the "base unit" be configured to determine when the remote control unit is within a "geo-fence"
18	**18**. The base unit of claim **1**, wherein the base unit is configured to receive data from an external web service, and responsive to receiving the data the base unit sends the control instruction.	Includes limitations of Claim 1 plus additional limitations that the "base unit" can receive data from an "external web service" and send the "control instruction" in response to that data.
19	**19**. The base unit of claim **18**, wherein the external web service is a weather service.	Includes limitations of Claim 18 (which is dependent on Claim 1 and all its limitations) plus additional limitation that the external web service be a "weather service."

TABLE 1 - Comparison of Patent No. 9,602,655 Claim 1 to Other Claims

Claim	Claim Language	Unique Elements Compared to Claim 1
20	**20**. The base unit of claim **1**, wherein the command includes cellular data.	Includes limitations of Claim 1 plus additional limitation that the command includes "cellular data."
21	**21**. The base unit of claim **1**, wherein the command is initiated by a user from the cellular remote unit responsive to the user interacting with an icon on the remote control unit associated with the environmental device.	Includes limitations of Claim 1 plus additional limitation that a user initiates the command from an icon (associated with the environmental device) on the display of the "cellular remote unit."
22	**22**. The base unit of claim **1**, wherein the base unit comprises a cellular module configured to communicate data over the cellular communications network.	Includes limitations of Claim 1 plus additional limitation that the "base unit" include a "cellular module" configured to communicate data over the "cellular communications network."
23	**23**. The base unit of claim **1** wherein the microcontroller is configured to send status information to the cellular remote unit on a periodic basis.	Includes limitations of Claim 1 plus additional limitation that the "microcontroller" is configured to send "status information" to the "cellular remote unit on a periodic basis."
24	**24**. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the remote unit via a communications network and to receive a second message from the remote unit via the communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message and to send the control instruction based on the command via the first communication interface to the environmental device, and wherein the wireless communication interface is configured to send a third message to a subordinate remote unit via the communications network and to receive a fourth message from the subordinate remote unit via the communications network, wherein the fourth message includes a subordinate command to the environmental device, and wherein the microcontroller is configured to process the fourth message and to send selectively a second control instruction based on the subordinate command via the first communication interface to the environmental device.	Includes substantially the limitations of Claim 1 plus additional limitations that the "base unit" be able to send a third message to a "subordinate remote unit" via the "wireless communication interface" and to receive a fourth message from that unit from the "communications network." The fourth message includes a "subordinate command" to the "environmental device," which can be processed by the microcontroller which can "send selectively" a second control instruction based on the "subordinate command" via the "first communication interface" to the "environmental device."

TABLE 2 - Comparison of Patent No. 8,064,935 Claim 19 to Other Claims		
Claim No.	**Claim Language**	**Unique Elements Compared to Claim 19**
1	**1**. A wireless system comprising: an environmental device; a base unit operatively interfaced with the environmental device and configured to control an operation of the environmental device; a remote unit having wireless connectivity and being configured to send and receive short message service (SMS) messages; and a wireless module operatively interfaced with the base unit and configured to provide wireless connectivity between the base unit and the remote unit, wherein the base unit is configured to send a first SMS message, including current environmental information, to the remote unit through the wireless module, wherein the remote unit is configured to send a second SMS message, including a command for the environmental device, to the base unit through the wireless module, and wherein the base unit is configured to receive the second SMS message, including the command, and to send the command to the environmental device to control the operation of the environmental device.	Differs from Claim 19 substantively in that this claim also has limitations that require (1) a "remote unit" that can send "short message service message" (2) a wireless module operatively interfaced with the "base unit" that can provide "wireless connectivity" between the "base unit" and the "remote unit" (3) that the "base unit" can send to the "remote unit" a first "short message service message" that includes "environmental information" through the "wireless module" (4) that the "remote unit" can send a second "short message service message," including a command for the "environmental device' to the "base unit" through the "wireless module" and (5) that the base unit can receive the second message and the command and send the command to the "environmental device" to control its operation.
2	**2**. The system as recited in claim **1** wherein said environmental device includes electronic and electromechanical switching portions interfaced with said environmental device.	Additional limitations from Claim 1 (as compared to Claim 19) plus a limitation that the "environmental device" must include "electronic and electromechanical switching portions" interfaced with the device.
3	**3**. The system as recited in claim **1** wherein said base unit is a microcontroller-based processing unit having customizable application specific software.	Additional limitations from Claim 1 (as compared to Claim 19) plus a limitation that the "base unit" be a "microcontroller-based processing unit having customizable application specific software."
4	**4**. The system as recited in claim **1** wherein said remote unit is a cellular telephone handset with custom programmability.	Additional limitations from Claim 1 (as compared to Claim 19) plus a limitation that the "remote unit" is a "cellular telephone handset with custom programmability."

TABLE 2 - Comparison of Patent No. 8,064,935 Claim 19 to Other Claims		
Claim No.	**Claim Language**	**Unique Elements Compared to Claim 19**
5	**5**. The system as recited in claim **4** wherein said custom programmability is a JAVA programming kernel.	Additional limitations from Claim 1 (as compared to Claim 19) and including the limitation of Claim 4 (because Claim 5 is dependent on it) plus a limitation that the "custom programmability" be a "JAVA programming kernel"
6	**6**. The system as recited in claim **4** wherein said custom programmability is a J2ME programming kernel.	Additional limitations from Claim 1 (as compared to Claim 19) and including the limitation of Claim 4 (because Claim 6 is dependent on it) plus a limitation that the "custom programmability" be a "J2ME programming kernel"
7	**7**. The system as recited in claim **1** wherein said wireless connectivity includes a transmitting and receiving module in said base unit and a transmitting and receiving unit in said remote unit operatively communicating with each other over a cellular telephone network.	Additional limitations from Claim 1 (as compared to Claim 19) plus the limitations that there be a "transmitting and receiving module" in the "base unit" and a "transmitting and receiving unit" in the "remote unit" that operatively communicate with each other over the "cellular telephone network."
8	**8**. The system as recited in claim **1** wherein the remote unit includes a liquid crystal display module.	Additional limitations from Claim 1 (as compared to Claim 19) plus a limitation that the "remote unit" include a "liquid crystal display module."
9	**9**. The system as recited in claim **8** wherein said liquid crystal module includes selectable graphic icons corresponding to current environmental information being monitored or controlled.	Additional limitations from Claim 1 (as compared to Claim 19) and the limitations of Claim 8 (because Claim 9 is dependent on it) plus a limitation that the "liquid crystal module" include selectable "graphic icons" corresponding to current "environmental information" being monitored or controlled.
10	**10**. The system as recited in claim **1**, wherein the remote unit is configured to selectively disable transmission of SMS messages from the base unit.	Additional limitations from Claim 1 (as compared to Claim 19) plus a limitation that the transmission of "simple message service messages" can be "selectively disable[d] on the "base unit" from the "remote unit."

TABLE 2 - Comparison of Patent No. 8,064,935 Claim 19 to Other Claims		
Claim No.	**Claim Language**	**Unique Elements Compared to Claim 19**
11	**11**. A wireless system comprising: an environmental device configured to send environmental information, and adapted to receive a command to control an operation of the environmental device; a remote unit having wireless connectivity and being configured to: receive a first short message service (SMS) message, wherein the first SMS message includes the environmental information; notify a user of said remote unit of receipt of the first SMS message; and send a second SMS message, wherein the second SMS message includes the command; and a wireless base unit configured to: receive the environmental information from the environmental device; transmit the first SMS message to the remote unit; receive the second SMS message from the remote unit; and send the command to the environmental device.	Differs from Claim 19 substantively in that this claim also has limitations that require the messages be "short message service messages" and the remote unit can "notify a user of said remote unit of receipt of the first short message service message."
12	**12**. The system of claim **11** wherein the wireless connectivity connection further comprises a first wireless connection interfacing with the base unit, a second wireless connection interfacing with the remote unit, and a non-wireless connection interfacing between the first wireless connection and the second wireless connection.	Additional limitations from Claim 11 (as compared to Claim 19) plus limitations that require that "the wireless connectivity" has "a first wireless connection interfacing with the base unit, a second wireless connection interfacing with the remote unit, and a non-wireless connection interfacing between the first wireless connection and the second wireless connection."
13	**13**. The system of claim **11** wherein the environmental device includes electronic and electromechanical switching portions for controlling the environmental information.	Additional limitations from Claim 11 (as compared to Claim 19) plus a limitation that the "environmental device includes electronic and electromechanical switching portions for controlling the environmental information."
14	**14**. The system of claim **11** wherein the base unit further comprises a microcontroller-based processing unit having customizable application specific software.	Additional limitations from Claim 11 (as compared to Claim 19) plus a limitation that the "base unit" further comprises a "microcontroller-based processing unit having customizable application specific software."
15	**15**. The system of claim **11** wherein the remote unit further comprises a cellular telephone handset.	Additional limitations from Claim 11 (as compared to Claim 19) plus a limitation that that the "remote unit" further comprises a "cellular telephone handset."

TABLE 2 - Comparison of Patent No. 8,064,935 Claim 19 to Other Claims		
Claim No.	**Claim Language**	**Unique Elements Compared to Claim 19**
16	**16**. The system of claim **15** wherein the cellular telephone handset includes at least one of a customizable JAVA programming kernel and a customizable J2ME programming kernel.	Additional limitation from Claim 15, which includes all limitations of Claim 11 (as compared to Claim 19) plus a limitation that "at least one of a customizable JAVA programming kernel and a customizable J2ME programming kernel."
17	**17**. The system of claim **11** further comprising a cellular telephone network.	Additional limitations from Claim 11, (as compared to Claim 19) plus a limitation that the system comprise "a cellular telephone network."
18	**18**. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising: a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device; a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit, wherein the first message is a first short message service (SMS) message including the environmental information, and wherein the second message is a second short message service (SMS) message including the command to the environmental device; and a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.	Differs from Claim 19 substantively in that this claim only covers a "base unit" and it includes a limitation requiring that the first message contain "environmental information" [as opposed to the "current status" of Claim 19]. The claim also includes a limitation requiring that the first message (sent by) and the second message (received by) by the "base unit" be "short message service (SMS) message[s]" including the "environmental information" and "command," respectively. Additionally, the "base unit" has a limitation requiring a microcontroller that is configured to process the second message and its command and send the command to the "environmental device."
19	**19**. A communication system having wireless connectivity, the communication system comprising: a base unit operatively interfaced with an environmental device, and configured to receive a current status of an environmental device; a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity, wherein the first message is a wireless message including the current status of the environmental device; a receiver associated with said base unit, and configured to receive a second message from the remote unit, wherein the second message is a wireless message including a command for the environmental device; and a controller operatively associated with the base unit and operatively connected with the environmental device, and configured to send the command to the environmental device.	[Alleged Representative Claim]

TABLE 2 - Comparison of Patent No. 8,064,935 Claim 19 to Other Claims		
Claim No.	**Claim Language**	**Unique Elements Compared to Claim 19**
20	**20**. A wireless system comprising: a base unit operatively interfaced with an environmental device for controlling an environmental condition in a structure; a receiver associated with said base unit, and adapted for receiving a first wireless message from a remote unit having wireless connectivity, wherein the first wireless message includes a command for the environmental device; a controller operatively associated with said base unit, and operatively connected with the environmental device for executing the command; and a transmitter operatively associated with the controller for sending a second wireless message to the remote unit, wherein the second wireless message includes information indicating that the command has been executed.	Differs from Claim 19 substantively in that this claim has a limitation requiring a transmitter that is operatively associated with the "controller" (which is operatively associated with the "base unit") that is able to send a second message to the "remote unit" that indicates the command from a first message has been executed.
21	**21**. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising: a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device; a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit, wherein the first message includes the environmental information and travels via short message and/or data bearer services, and wherein the second message includes the command to the environmental device and travels via short message and/or data bearer services; and a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.	Differs from Claim 19 substantively in that this claim only covers a "base unit" and this claim has a limitation requiring that the first message contains "environmental information" from the "environmental device" [as opposed to the "current status" of Claim 19]. The claim also has a limitation that requires that the first message (sent by) and the second message (received by) by the "base unit" travel via "short message and/or data bearer services." Additionally, the "base unit" has a limitation requiring a microcontroller that is configured to process the second message and its command and send the command to the "environmental device."

TABLE 2 - Comparison of Patent No. 8,064,935 Claim 19 to Other Claims		
Claim No.	**Claim Language**	**Unique Elements Compared to Claim 19**
22	**22**. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising: a controller configured to communicate with the environmental device; and a wireless module configured to: receive a control message from the remote unit via short message and/or data bearer services, said control message comprising control information for controlling the environmental device; create a control command for the environmental device based on the control information; send the control command to the environmental device via the controller; and send a status message indicating execution of said control information to the remote device.	Differs from Claim 19 substantively in that this claim only covers a "base unit." It also includes a limitation requiring a "wireless module" that is configured to receive a control message "via short message and/or data bearer services" that includes "control information for controlling the environmental device." The "wireless module" is additionally limited because is must be able to create a "control command" for the environmental device "based on the control information" and send that command and a status message to the "remote unit" indicating that the "control information" was executed.

APPENDIX C

SUMMARY OF CLAIMS FROM CASES MOST SIMILAR TO THE CLAIMS OF THE PATENTS-IN-SUIT

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Data Engine Technologies LLC v. Google LLC, No. 2017-1135, 2018 U.S. App. LEXIS 28412 (Fed. Cir. Oct. 9, 2018) • US 5,590,259-Claim 12 (Not Invalid) • Technology: navigating in spreadsheets	In an electronic spreadsheet system for storing and manipulating information, a computer-implemented method of representing a three-dimensional spreadsheet on a screen display, the method comprising: displaying on said screen display a first spreadsheet page from a plurality of spreadsheet pages, each of said spreadsheet pages comprising an array of information cells arranged in row and column format, at least some of said information cells storing user-supplied information and formulas operative on said user-supplied information, each of said information cells being uniquely identified by a spreadsheet page identifier, a column identifier, and a row identifier; while displaying said first spreadsheet page, displaying a row of spreadsheet page identifiers along one side of said first spreadsheet page, each said spreadsheet page identifier being displayed as an image of a notebook [*9] tab on said screen display and indicating a single respective spreadsheet page, wherein at least one spreadsheet page identifier of said displayed row of spreadsheet page identifiers comprises at least one user-settable identifying character; receiving user input for requesting display of a second spreadsheet page in response to selection with an input device of a spreadsheet page identifier for said second spreadsheet page; in response to said receiving user input step, displaying said second spreadsheet page on said screen display in a manner so as to obscure said first spreadsheet page from display while continuing to display at least a portion of said row of spreadsheet page identifiers; and receiving user input for entering a formula in a cell on said second spreadsheet page, said formula including a cell reference to a particular cell on another of said spreadsheet pages having a particular spreadsheet page identifier comprising at least one user-supplied identifying character, said cell reference comprising said at least one user-supplied identifying character for said particular spreadsheet page identifier together with said column identifier and said row identifier for said particular [*10] cell.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Apparatus Claim • Most recent Federal Circuit opinion re: 35 U.S.C. §101 • Directed to "specific method for navigating through three-dimensional electronic spreadsheets" (not abstract) • No Step 2

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Berkheimer v. HP Inc., *881 F.3d 1360* (Fed. Cir. 2018), *Pet. for reh'g en banc denied*, 890 F.3d 1369 (2018) • US 7,447,713-Claim 1 (Not Invalid) • Technology: digitally processing and archiving files in a digital asset management system	A method of archiving an item in a computer processing system comprising: presenting the item to a parser; parsing the item into a plurality of multi-part object structures wherein portions of the structures have searchable information tags associated therewith; evaluating the object structures in accordance with object structures previously stored in an archive; presenting an evaluated object structure for manual reconciliation at least where there is a predetermined variance between the object and at least one of a predetermined standard and a user defined rule.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method Claim • First Federal Circuit case where question of fact was dispositive • Step 1: "directed to the abstract idea of parsing and comparing data" • Step 2: error for District Court to conclude that there were no underlying questions of fact

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc., 880 F.3d 1356, 1362 (Fed. Cir. 2018) • US 8,713,476-Claim 1 (Not Invalid) • Technology: Improved computer	A computing device comprising a display screen, the computing device being configured to display on the screen a menu listing one or more applications, and additionally being configured to display on the screen an application summary that can be reached directly from the menu, wherein the application summary displays a limited list of data offered within the one or more applications, each of the data in the list being selectable to launch the respective application and enable the selected data to be seen within the respective application, and wherein the application summary is displayed while the one or more applications are in an unlaunched state.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Apparatus claim • Ineligibility raised post-trial • Passes Step 1 because claims directed "an improved user interface for computing devices" • No Step 2

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Visual Memory LLC v. NVIDIA Corp., 867 F.3d 1253 (Fed. Cir. 2017) • US 5,953,740-Claim 1 (Not Invalid) • Technology: Computer memory systems	A computer memory system connectable to a processor and having one or more programmable operational characteristics, said characteristics being defined through configuration by said computer based on the type of said processor, wherein said system is connectable to said processor by a bus, said system comprising: a main memory connected to said bus; and a cache connected to said bus; wherein a programmable operational characteristic of said system determines a type of data stored by said cache.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Apparatus claim • Directed to "an improved computer memory system" • No Step 2

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Amdocs (Israel) Ltd. v. Openet Telecom, Inc., 841 F.3d 1288 (Fed. Cir. 2016) • US 7,631,065-Claim 1 (Not Invalid) • Technology: merging data in a network-based filtering and aggregating platform as well as a related apparatus for enhancing networking accounting data records.	A computer program product embodied on a computer readable storage medium for processing network accounting information comprising: computer code for receiving from a first source a first network accounting record; computer code for correlating the first network accounting record with accounting information available from a second source; and computer code for using the accounting information with which the first network accounting record is correlated to enhance the first network accounting record.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• "Computer Program" claim (representative of apparatus and method claims)' • Not directed to abstract idea as claim is similar to claims in *BASCOM* and *DDR Holdings* cases • Would pass Step 2 also

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Thales Visionix, Inc. v. U.S., 850 F.3d 1343 (Fed. Cir. 2017) • US 6,474,159-Claim 1 (Not Invalid) • Technology: inertial tracking system	A system for tracking the motion of an object relative to a moving reference frame, comprising: a first inertial sensor mounted on the tracked object; a second inertial sensor mounted on the moving reference frame; and an element adapted to receive signals from said first and second inertial sensors and configured to determine an orientation of the object relative to the moving reference frame based on the signals received from the first and second inertial sensors.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Apparatus claim • Directed to "systems and methods that use inertial sensors in a non-conventional manner to reduce errors in measuring the relative position and orientation of a moving object on a moving reference frame." • No Step 2

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
McRo, Inc. v. Bandai Namco Games America, Inc., 837 F.3d 1299 (Fed. Cir. 2016) • US 6,307,576-Claim 1 (Not Invalid) • Technology: Method for synchronizing lip movement for animation	A method for automatically animating lip synchronization and facial expression of three-dimensional characters comprising: obtaining a first set of rules that define output morph weight set stream as a function of phoneme sequence and time of said phoneme sequence; obtaining a timed data file of phonemes having a plurality of sub-sequences; generating an intermediate stream of output morph weight sets and a plurality of transition parameters between two adjacent morph weight sets by evaluating said plurality of sub-sequences against said first set of rules; generating a final stream of output morph weight sets at a desired frame rate from said intermediate stream of output morph weight sets and said plurality of transition parameters; and applying said final stream of output morph weight sets to a sequence of animated characters to produce lip synchronization and facial expression control of said animated characters.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Passes Step 1 because claims directed to improved computer operation • No Step 2

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC, 827 F.3d 1341 (Fed. Cir. 2016) • US 5,987,606-Claim 1 (Not invalid • Technology: filtering internet content	A content filtering system for filtering content retrieved from an Internet computer network by individual controlled access network accounts, said filtering system comprising: a local client computer generating network access requests for said individual controlled access network accounts; at least one filtering scheme; a plurality of sets of logical filtering elements; and a remote ISP server coupled to said client computer and said Internet computer network, said ISP server associating each said network account to at least one filtering scheme and at least one set of filtering elements, said ISP server further receiving said network access requests from said client computer and executing said associated filtering scheme utilizing said associated set of logical filtering elements. Id. at 6:62–7:10. For the hybrid filtering scheme claims, BASCOM points to claim 23, which depends on claim 22, as instructive.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Apparatus claim • Decided after *Enfish* case but before *McRo* case • At Step 1, directed to abstract idea of "filtering content on the Internet." • At Step 2, inventive concept found as the "the installation of a filtering tool at a specific location, remote from the end-users, with customizable filtering features specific to each end user."

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Enfish, LLC v. Microsoft Corp., 822 F.3d 1327 (Fed. Cir. 2016) • US 6,151,604-Claim 17 (Not invalid) • Technology: Self-referential data storage system for computer	A data storage and retrieval system for a computer memory, comprising: means for configuring said memory according to a logical table, said logical table including: a plurality of logical rows, each said logical row including an object identification number (OID) to identify each said logical row, each said logical row corresponding to a record of information; a plurality of logical columns intersecting said plurality of logical rows to define a plurality of logical cells, each said logical column including an OID to identify each said logical column; and means for indexing data stored in said table.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Apparatus claim • Second Federal Circuit case (after DDR Holdings) to hold patent Not Invalid under 35 U.S.C. §101 • Passes Step 1 because claims directed to improved operation of computers • No Step 2

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
DDR Holdings, LLC v. Hotels.com, L.P. 773 F.3d (Fed. Cir. 2014) • US 7,818,399-Claim 19 (Not Invalid) • Technology: generating a composite web page	A system useful in an outsource provider serving web pages offering commercial opportunities, the system comprising: (a) a computer store containing data, for each of a plurality of first web pages, defining a plurality of visually perceptible elements, which visually perceptible elements correspond to the plurality of first web pages; (i) wherein each of the first web pages belongs to one of a plurality of web page owners; (ii) wherein each of the first web pages displays at least one active link associated with a commerce object associated with a buying opportunity of a selected one of a plurality of merchants; and (iii) wherein the selected merchant, the out-source provider, and the owner of the first web page displaying the associated link are each third parties with respect to one other; (b) a computer server at the outsource provider, which computer server is coupled to the computer store and programmed to: (i) receive from the web browser of a computer user a signal indicating activation of one of the links displayed by one of the first web pages; (ii) automatically identify as the source page the one of the first web pages on which the link has been activated; (iii) in response to identification of the source page, automatically retrieve the stored data corresponding to the source page; and (iv) using the data retrieved, automatically generate and transmit to the web browser a second web page that displays: (A) information associated with the commerce object associated with the link that has been activated, and (B) the plurality of visually perceptible elements visually corresponding to the source page.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Apparatus claim • First Federal Circuit case to hold patent claim not invalid after *Alice* decision • Considered at post-trial motion • Not abstract idea because "claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks."

APPENDIX D

SUMMARY OF CASES CITED BY CPS FOR SUPPORT OF THEIR MOTION

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Internet Patents Corp. v. Active Network, Inc., 790 F.3d 1343 (Fed. Cir. 2015) • US 7,707,505-claim 1 (invalid) • Technology: Completion of online forms	A method of providing an intelligent user interface to an online application comprising the steps of: furnishing a plurality of icons on a web page displayed to a user of a web browser, wherein each of said icons is a hyperlink to a dynamically generated online application form set, and wherein said web browser comprises Back and Forward navigation functionalities; displaying said dynamically generated online application form set in response to the activation of said hyperlink, wherein said dynamically generated online application form set comprises a state determined by at least one user input; and maintaining said state upon the activation of another of said icons, wherein said maintaining allows use of said Back and Forward navigation functionalities without loss of said state.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Decided before *Enfish* • Directed to "the idea of retaining information in the navigation of online forms" • Fails Step 2 because "additional limitations of these dependent claims do not add an inventive concept, for they represent merely generic data collection steps or siting the ineligible concept in a particular technological environment."

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Electric Power Group, LLC v. Alstom S.A., 830 F.3d 1350 (Fed. Cir. 2016) • US 8,401,710-Claim 12 (invalid) • Technology: collecting information, analyzing it, and displaying certain results of the collection and analysis related to electric power grid	A method of detecting events on an interconnected electric power grid in real time over a wide area and automatically analyzing the events on the interconnected electric power grid, the method comprising: receiving a plurality of data streams, each of the data streams comprising sub-second, time stamped synchronized phasor measurements wherein the measurements in each stream are collected in real time at geographically distinct points over the wide area of the interconnected electric power grid, the wide area comprising at least two elements from among control areas, transmission companies, utilities, regional reliability coordinators, and reliability jurisdictions; receiving data from other power system data sources, the other power system data sources comprising at least one of transmission maps, power plant locations, EMS/SCADA systems; receiving data from a plurality of non-grid data sources; detecting and analyzing events in real-time from the plurality of data streams from the wide area based on at least one of limits, sensitivities and rates of change for one or more measurements from the data streams and dynamic stability metrics derived from analysis of the measurements from the data streams including at least one of frequency instability, voltages, power flows, phase angles, damping, and oscillation modes, derived from the phasor measurements and the other power system data sources in which the metrics are indicative of events, grid stress, and/or grid instability, over the wide area; displaying the event analysis results and diagnoses of events and associated ones of the metrics from different categories of data and the derived metrics in visuals, tables, charts, or combinations thereof, the data comprising at least one of monitoring data, tracking data, historical data, prediction data, and summary data; displaying concurrent visualization of measurements from the data streams and the dynamic stability metrics directed to the wide area of the interconnected electric power grid; accumulating and updating the measurements from the data streams and the dynamic stability metrics, grid data, and non-grid data in real time as to wide area and local area portions of the interconnected electric power grid; and deriving a composite indicator of reliability that is an indicator of power grid vulnerability and is derived from a combination of one or more real time measurements or computations of measurements from the data streams and the dynamic stability metrics covering the wide area as well as non-power grid data received from the non-grid data source.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Directed to "collecting information, analyzing it, and displaying certain results of the collection and analysis" • Fails Step 2 because only conventional computer, network, or display components are claimed

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Secured Mail Solutions LLC v. Universal Wilde, Inc., 873 F.3d (Fed. Cir. 2017) • US 7,818,268-Claim 1 (invalid) • Technology: Tracking mail	A method of verifying mail identification data, comprising: affixing mail identification data to at least one mail object, said mail identification data comprising a single set of encoded data that includes at least a unique identifier, sender data, recipient data and shipping method data, wherein said unique identifier consists of a numeric value assigned by a sender of said at least one mail object; storing at least a verifying portion of said mail identification data; receiving by a computer at least an authenticating portion of said mail identification data from at least one reception device via a network, wherein said authenticating portion of said mail identification data comprises at least said sender data and said shipping method data; and providing by said computer mail verification data via said network when said authenticating portion of said mail identification data corresponds with said verifying portion of said mail identification data.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Directed to "using a marking affixed to the outside of a mail object to communicate information about the mail object" • Fails Step 2 because the claims "are not directed to an improvement in computer functionality." • Issue of questions of fact relating to Step 2 analysis were rejected where specification was sufficient to evaluate what was conventional

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Intellectual Ventures I LLC v. Symantec Corp., 838 F.3d 1307 (Fed. Cir 2016) • US 6,460,050-Claim 9 (invalid) • Technology: Filtering emails	A method for identifying characteristics of data files, comprising: identifiers for data files from a plurality of file content identifier generator agents, each agent provided on a source system and creating file content IDs using a mathematical algorithm, via a network; determining, on the processing system, whether each received content identifier matches a characteristic of other identifiers; and outputting, to at least one of the source systems responsive to a request from said source system, an indication of the characteristic of the data file based on said step of determining.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Directed to "filtering files/e-mail" • Fails Step 2 because "claims use generic computers to perform generic computer functions"

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
In re TLI Commc'ns LLC Patent Litigation, 823 F.3d 607, 615 (Fed. Cir. 2016) • US 6,038,295-Claim 17 (invalid) • Technology: Recording and administering digital images	A method for recording and administering digital images, comprising the steps of: recording images using a digital pick up unit in a telephone unit, storing the images recorded by the digital pick up unit in a digital form as digital images, transmitting data including at least the digital images and classification information to a server, wherein said classification information is prescribable by a user of the telephone unit for allocation to the digital images, receiving the data by the server, extracting classification information which characterizes the digital images from the received data, and storing the digital images in the server, said step of storing taking into consideration the classification information.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Directed to "idea of classifying and storing digital images in an organized manner" • Fails Step 2 because claim cites generic computers performing generic functions

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
buySAFE, Inc. v. Google, Inc., 765 F.3d 1350, 1355 (Fed. Cir. 2014) • US 7,644,019-Claim 1 (invalid) • Technology: Commercial transactions	A method, comprising: receiving, by at least one computer application program running on a computer of a safe transaction service provider, a request from a first party for obtaining a transaction performance guaranty service with respect to an online commercial transaction following closing of the online commercial transaction; processing, by at least one computer application program running on the safe transaction service provider computer, the request by underwriting the first party in order to provide the transaction performance guaranty service to the first party, wherein the computer of the safe transaction service provider offers, via a computer network, the transaction performance guaranty service that binds a transaction performance guaranty to the online commercial transaction involving the first party to guarantee the performance of the first party following closing of the online commercial transaction.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Decided before *Enfish* • Directed to "contractual relationship—a 'transaction performance guaranty'" • Fails Step 2 because claim cites generic computers performing generic functions

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n, 776 F.3d 1343 (Fed. Cir. 2014) • US 5,258,855-Claim 1 (invalid) • Technology: recognizing and storing information from hard copy documents using a scanner and a computer	A method of processing information from a diversity of types of hard copy documents, said method comprising the steps of: (a) receiving output representing a diversity of types of hard copy documents from an auto-mated digitizing unit and storing information from said diversity of types of hard copy documents into a memory, said information not fixed from one document to the next, said receiving step not preceded by scanning, via said automated digitizing unit, of a separate document containing format requirements; (b) recognizing portions of said hard copy documents corresponding to a first data field; and (c) storing information from said portions of said hard copy documents corresponding to said first data field into memory locations for said first data field.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Decided before *Enfish* • Directed to "1) collecting data, 2) recognizing certain data within the collected data set, and 3) storing that recognized data in a memory" • Fails Step 2 because "no 'inventive concept' in CET's use of a generic scanner and computer to perform well-understood, routine, and conventional activities commonly used in industry."

Case Citation	Claim From Case	'655 Patent Claim 1	Comment
Ultramercial, Inc. v. Hulu, LLC, 772 F.3d 709, 718–19 (Fed. Cir. 2014) • US 7,346,545-Claim 1 (invalid) • Technology: product distribution over the internet	A method for distribution of products over the Internet via a facilitator, said method comprising the steps of: a first step of receiving, from a content provider, media products that are covered by intellectual property rights protection and are available for purchase, wherein each said media product being comprised of at least one of text data, music data, and video data; a second step of selecting a sponsor message to be associated with the media product, said sponsor message being selected from a plurality of sponsor messages, said second step including accessing an activity log to verify that the total number of times which the sponsor message has been previously presented is less than the number of transaction cycles contracted by the sponsor of the sponsor message; a third step of providing the media product for sale at an Internet website; a fourth step of restricting general public access to said media product; a fifth step of offering to a consumer access to the media product without charge to the consumer on the precondition that the consumer views the sponsor message; a sixth step of receiving from the consumer a request to view the sponsor message, wherein the consumer submits said request in response to being offered access to the media product; a seventh step of, in response to receiving the request from the consumer, facilitating the display of a sponsor message to the consumer; an eighth step of, if the sponsor message is not an interactive message, allowing said consumer access to said media product after said step of facilitating the display of said sponsor message; a ninth step of, if the sponsor message is an interactive message, presenting at least one query to the consumer and allowing said consumer access to said media product after receiving a response to said at least one query; a tenth step of recording the transaction event to the activity log, said tenth step including updating the total number of times the sponsor message has been presented; and an eleventh step of receiving payment from the sponsor of the sponsor message displayed.	A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising: a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device; a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and wherein the command is for the base unit initiated by a user from the cellular remote unit, and wherein the control instruction to the environmental device is associated with the command for the base unit, wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.	• Method claim • Decided before *Enfish* • Directed to "method of using advertising as an exchange or currency" • Conventional steps performed over the internet did not add inventive concept