UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMERICAN AIRLINES , INC., DELTA AIR LINES , INC., FRONTIER AIRLINES , INC., UNITED AIRLINES , INC. AND US AIRWAYS, INC., Petitioners, v. LOYALTY CONVERSION SYSTEMS CORPORATION, Patent Owner.	CBM No. Unassigned U.S. PATENT NO. 8,511,550 **DECLARATION OF SANDEEP CHATTERJEE, PH.D. IN SUPPORT OF PETITION FOR COVERED BUSINESS METHOD PATENT REVIEW**

TABLE OF CONTENTS

Page

1. I, Sandeep Chatterjee, Ph.D., submit the following declaration on behalf of the Petitioners American Airlines, Inc., Delta Air Lines, Inc., Frontier Airlines, Inc., United Airlines, Inc. and US Airways, Inc., (hereinafter, "Airlines") in support of the Petition for Covered Business Method ("CBM") review sought against U.S. Patent No. 8,511,550 (the "'550 Patent" or "asserted patent"), owned by Loyalty Conversion Systems Corporation (hereinafter, "LCSC").

I. INTRODUCTION

2. As I explain below, based on my personal experiences in the area of distributed computing, including my academic research and professional experiences, my examinations of the '550 Patent, including its file history, as well as other documentation, I have concluded that claims 1-3 and 5-7 of the '550 Patent ("asserted claims") are invalid pursuant to 35 U.S.C. § 101-103, and 35 U.S.C. § 112. I explain the reasons for my conclusions herein.

II. BACKGROUND AND QUALIFICATIONS

3. I am the Chief Executive Officer of Experantis LLC, a consulting and advisory services company. Previously, I was the Executive Vice President and Chief Technology Officer of SourceTrace Systems, Inc., a technology and services company enabling the delivery of remote electronic services, including

banking and financial services, over landline and wireless telecommunications networks.

4. I received my bachelor's degree in Electrical Engineering and Computer Science from the University of California, Berkeley in 1995. I received my master's degree in Computer Science from the Massachusetts Institute of Technology (MIT) in 1997, and my doctorate in Computer Science from MIT in 2001. I received a certificate of completion for an executive education program on global leadership from Harvard University in 2011. My doctoral dissertation at MIT entitled "Composable System Resources for Networked Systems" and involving networked client architectures and systems, was selected as one of the top inventions in the history of MIT's Laboratory for Computer Science. This invention is preserved and showcased in a time capsule at the Museum of Science in Boston, Massachusetts. Others receiving this honor include Bill Gates, the founder of Microsoft, and Tim Berners-Lee, the inventor of the World Wide Web.

5. In 2011, I was named a Young Global Leader. This honor, bestowed each year by the World Economic Forum, recognizes and acknowledges the top leaders – all below the age of 40 – from around the world for their professional accomplishments, commitment to society and potential to contribute to shaping the future of the world.

6. From 1997, I was the Entrepreneur-in-Residence at FidelityCAPITAL, the venture capital arm of Fidelity Investments. In 1999, I founded and served as President and Chief Technology Officer (CTO) of Satora Networks, which developed tools and technologies for building appliances and services for the Internet using wireless and other technologies to extend it beyond the desktop.

7. In 2001, I joined Bluestone Software's Mobile Middleware Labs as a Senior Engineer developing applications and systems infrastructure for enterprise Java/J2EE, Web services, and enterprise mobile solutions. After the completion of Hewlett-Packard's ("HP") acquisition of Bluestone, I became a Senior Member of the Technical Staff at HP's Middleware Division. I was responsible for architecting and developing the company's next-generation Web services platform for enterprise as well as mobile environments, known as the Web Services Mediator.

8. I am the co-author, with James Webber, of the book "Developing Enterprise Web Services: An Architect's Guide" (published by Prentice-Hall in 2004). This book has been adopted by over 100 universities and colleges around the world and has been translated or reprinted in numerous countries around the world.

9. I also have served as a columnist on mobile and enterprise software systems for a number of IT magazines, including Java Boutique and Dataquest.

10. I was part of the Expert Group that developed the JSR-00172 J2ME (Java 2 Platform, Micro Edition) Web Services Specification, the worldwide standard for mobile Web services. I have been an invited speaker at conferences throughout the world, including the 2003 Automated Software Engineering Conference, the 2003 & 2004 International Multiconference in Computer Science & Computer Engineering, the 2004 IASTED International Conference on Software Engineering and Applications, and the 2004 IEEE International Conference on e-Technology, e-Commerce, and e-Service. I served as the General Chair for the 2004 International Symposium on Web Services and Applications.

11. I have attached a more detailed list of my qualifications as Appendix A. Based on my academic and professional experiences, I believe that I am qualified in the technology fields pertaining to this proceeding, at least as a person of ordinary skill in the art. The technology fields pertaining to this proceeding are currency conversions.

12. I am being compensated for my time on this proceeding at a rate of $645 per hour plus expenses. I have no financial interest in the outcome of this

litigation, and will be paid for my time regardless of whether I testify at the proceedings or whether the outcome is in accordance with my conclusions.

III. MATERIALS CONSIDERED

13. I have considered information from various sources in forming my opinions. Besides drawing from over a decade of research in the area of distributed computing systems and platforms, I have considered:

- U.S. Patent No. 8,511,550
- U.S. Patent No. 3,083,906
- U.S. Patent No. 3,795,795
- U.S. Patent Application Publication No. 2003/0200144 to Antonucci et al.
- U.S. Patent Application Publication No. 2002/0143614 to MacLean et al.
- U.S. Patent No. 8,297,502
- U.S. Patent No. 7,703,673
- Patent File History for U.S. Patent No. 7,703,673
- Patent File History for U.S. Patent No. 8,511,550
- Petition for Covered Business Method Patent Review of U.S. Patent No. 8,511,550, filed concurrently herewith

IV. LEVEL OF SKILL IN THE ART

14. I have been informed by counsel that the claims of a patent are judged from the perspective of a hypothetical construct involving "a person of ordinary skill in the art." The "art" is the field of technology to which the patent is related. I understand that the purpose of using the view point of a person of ordinary skill in the art is for objectivity.

15. To determine the level of skill that would be "ordinary" in this art, I believe that a person of ordinary skill must generally have the capability of understanding the general computer systems principles that are applicable to the pertinent art. For the asserted patent, the computer system is a general purpose computer that performs currency conversion.

16. I believe that "a person of ordinary skill in the art" regarding the asserted patent would be a person with a Bachelor of Science Degree in Computer Science (or related subjects), plus 1-2 years of related professional experience, or a person with both Bachelor and Master Degrees in Computer Science (or related subjects). Sufficient relevant professional or practical experience may substitute for academic experience.

17. During the time period in which the purported inventions of the asserted patent were made, I believe I met this definition of a person of ordinary skill in the art.

V. BRIEF OVERVIEW OF THE ASSERTED PATENT

A. Summary of the '550 Patent

18. The '550 Patent, attached as Exhibit 1001 ("Ex. 1001") was filed on April 16, 2013 as U.S. Patent Application Serial No. 13/863,556 ("the '556 Application"), and is a continuation-in-part of application Nos. 13/681,479 and 13/681,493. The '550 Patent is also a continuation of U.S. Patent No. 8,297,502, and a continuation of U.S. Patent No. 7,703,673, filed on May 25, 2006.

19. The '550 Patent relates to converting "non-negotiable credits provided by an entity to negotiable funds." '550 Patent, Ex. 1001, 2:53-55. The specification states that the "conversion can occur automatically using a Web initiated action" whereby 100 "Entertainment Rewards" are converted into "$100." *Id.* at 2:60-61 and Fig. 2. The "non-negotiable credits" are described as credits, such as "frequent flier miles, consumer loyalty points, and entertainment credits" that cannot be negotiated for goods or services with any entity other than the entity issuing them to a consumer. *Id.* at 1:40-57. "Negotiable funds" (also described as entity independent funds) are described as a monetary amount (*e.g.*, monetary currency) that can be negotiated for goods and services and are independent of any relationship to an entity. *Id.* at 5:28-34, Figure 2.

20. As shown in Fig. 1 of the '550 Patent (reproduced below), the disclosed "entity independent funds system" includes a client 110, which can be

any of a variety of interfaces including, but not limited to another *human being*, a personal computer . . . , a mobile phone, and the like." *Id.* at 4:7-9 (emphasis added).

21. The '550 Patent does not provide any detail regarding the hardware or structure of servers 120, 130, 140, and 150 other than the fact that they are part of a general purpose computer. The '550 Patent specifically states that "[a]ny kind of computer system" including a "general purpose computer system" can be used to implement such components. *Id.* at 6:18-24.

22. As the '550 Patent explains, Consumer 105 interacts with Conversion Agency Server 130 using client 110. Client 110 can "operate in a stand-alone fashion … [or] can be a device that cooperatively participates in a network of distributed computing devices." *Id.* at 4:13-15. Client 110 can be a variety of devices, including "a personal computer, a kiosk, a graphical user interface (GUI), a Web page, a telephone, a personal data assistant (PDA), a mobile phone," or may even be "another human being." *Id.* at 4:8-12.

23. Finally, the '550 Patent again reiterates that the disclosed method(s) may simply be performed by a human being, stating:

> It should also be noted that the methods detailed herein can also be methods performed at least in part by a service agent and/or a machine manipulated by a service agent in response to a service request.

Id. at 3:64-66.

B. ’550 Patent Claims

24. It is my understanding that LCSC is asserting claims 1-3 and 5-7 of the ’550 Patent against the Airlines, of which claim 1 is independent. The asserted independent claim of the ’550 Patent is set forth below:

> 1. A method comprising:
>
> a computer serving a set of one or more Web pages for a loyalty program of an entity to one or more remotely located client machines, wherein the Web pages are able to be rendered within a client-side browser as a graphical user interface on the one or more client machines, wherein upon being rendered within the client-side browser said graphical user interface shows a quantity of non-negotiable credits, wherein said non-negotiable credits are loyalty points of the loyalty program possessed by a member, wherein upon being rendered within the client-side browser the graphical user interface comprises a conversion option to convert at least a subset of the shown non-negotiable credits into a quantity entity independent funds, wherein said entity independent funds are different loyalty points of a different loyalty program of a commerce partner, wherein said entity independent funds are possessed by the member, wherein an agreement exists between the entity and the

commerce partner, wherein the agreement permits members to convert the non-negotiable credits to the entity independent funds in accordance with a fixed credits-to-funds conversion ratio, wherein the agreement specifies that the entity is to compensate the commerce partner in an agreed upon amount of cash or credit for conversions of non-negotiable credits to entity independent funds, wherein said agreed upon amount is a multiple of a quantity of converted non-negotiable credits, wherein the entity independent funds are redeemable per the different loyalty program for commerce partner goods or for commerce partner services, wherein the commerce partner is not said entity, wherein in absence of being converted the non-negotiable credits are not accepted as payment for commerce partner goods or for commerce partner services;

the computer responsive to receiving a message indicating a selection of the conversion option, processing the selection to effectuate changes in the served set of Web pages; and

responsive to the processing, the computer serving one or more Web pages or Web page updates that include the effectuated changes to the one or more remotely located client machines, wherein upon being rendered within the client-side browser the graphical user interface is updated with the effectuated changes,

wherein the updated graphical user interface shows a reduced quantity of non-negotiable credits possessed by the member in the loyalty program, said reduced quantity resulting at least in part from the subset of non-negotiable credits being converted into the quantity of entity independent funds in accordance with the fixed credits-to-funds conversion ratio.

VI. CLAIM CONSTRUCTION

25. I have been advised that the first step of assessing the validity of a patent claim is to interpret or construe the meaning of the claim.

26. I have also been advised that in post grant review proceedings before the U.S. Patent and Trademark Office, a patent claim receives the broadest reasonable construction in light of the specification of the patent in which it appears. I have also been informed that, at the same time, claim terms are given their ordinary and accustomed meaning as would be understood by one of ordinary skill in the art. I further understand that the construction of a patent claim applied during this proceeding may differ from that in a district court proceeding.

27. I have reviewed the claim construction section set forth in the accompanying petition, and the opinions set forth herein are consistent with those constructions.

VII. THE CLAIMED INVENTIONS OF THE '550 PATENT ARE NOT PATENT ELIGIBLE UNDER 35 U.S.C. §101

28. I have been advised that the Supreme Court has ruled that laws of nature, abstract ideas and natural phenomena are not patentable. *Mayo v. Prometheus*, 132 S. Ct. 1289, 1293 (2012).

29. I have been advised that the Supreme Court has explained, to be patent eligible, an "application" of an abstract idea, such as a mathematical formula, must add "significantly more" than routine, conventional activity to the underlying concept. *Mayo,* 1293.

30. I have been advised that it is not sufficient to limit the claim to "a particular technological environment" or to add "insignificant post solution activity" or "well-understood, routine, conventional activity." *Bilski v. Kappos*, 130 S. Ct. 3218, 3230 (2010); *Mayo*, 132 S. Ct. at 1294.

31. I have been advised that a claim involving an unpatentable concept must contain "other elements or a combination of elements, sometimes referred to as the 'inventive concept,'" sufficient to prevent patenting the underlying concept. *Mayo*, 132 S. Ct. at 1294.

32. I have further reviewed the legal principles for §101 set out in the Petition for CBM for the '550 Patent and have applied them here where applicable.

33. It is my opinion that all asserted claims of the ’550 Patent are not patent eligible under 35 U.S.C. §101. I begin my analysis with independent claim 1, and then I include other dependent claims.

34. Claim 1 merely recites a concept of “convert[ing] at least a subset of the shown non-negotiable credits into a quantity [of] entity independent funds . . . in accordance with a fixed credits-to-funds conversion ratio. ’550 Patent, Ex. 1001, 6:55-64. The ’550 Patent states that non-negotiable credits are “loyalty points,” such as “frequent flier miles, consumer loyalty points, and entertainment credits.” ’550 Patent, Ex. 1001, 1:41-44. The non-negotiable credits are “associated with an entity” and those non-negotiable credits are converted to “entity independent funds.” *Id.* at 3:21-34. Accordingly, the claim recites essentially the abstract concept of currency conversion.

35. The ’550 Patent does not disclose any novel hardware or software for this currency conversion. The ’550 Patent only describes the use of a “credit-to-funds ratio,” which involves a simple mathematical operation, e.g., multiplication. *Id.* at Fig. 2.

36. Currency conversion is not new. Humans have been converting different types of currencies for decades. In fact, currency conversion is nothing more than another name for the mathematical operation of multiplication. See

U.S. Patent Nos. 3,083,906 (Ex. 1002) and 3,795,795 (Ex. 1003) (showing a 1963 and a 1974 slide-rule used for currency conversion).[1]

37. In order for this conversion to occur, the patent discloses that "[a]ny kind of computer system or other apparatus adapted for carrying out the methods described herein" can be used. *Id.* at 6:18-20. More specifically, the '550 Patent identifies that a "typical combination of hardware and software may be a general purpose computer system with a computer program." *Id.* at 6:20-24. My opinion is that any hardware needed to implement the claims was generic.

38. Further demonstrating that no novel hardware or software is necessary, the patent concedes that the alleged invention can be implemented by a human being. Specifically, the patent states: "the methods detailed herein can also be methods performed at least in part by a service agent and/or a machine manipulated by a service agent." *Id.* at 3:64-66.

39. The '550 Patent essentially discloses simple mathematical calculations that can be performed (i) by general purpose computers using

[1] U.S. Patent No. 3,083,906 titled "Device for Converting Values of One Unit System into Equivalent Values in Another System" and U.S. Patent No. 3,795,795 titled "Currency Converter" disclose novel slide rule type converters to perform currency conversion even if currency conversion ratios fluctuate.

general purpose software or (ii) by human beings, without the use of any novel hardware or software.

40. In addition to the abstract idea of currency conversion, claim 1 involves several, but largely insignificant steps: (i) "show[ing] a quantity of non-negotiable credits, wherein said non-negotiable credits are loyalty points of the loyalty program possessed by a member," (ii) "an agreement . . . between the entity and the commerce partner . . . permits members to convert the non-negotiable credits to the entity independent funds in accordance with a fixed credits-to-funds ratio"; (iii) "that the entity is to compensate the commerce partner in an agreed upon amount of cash or credit for conversions of non-negotiable credits to entity independent funds"; (iv) "the entity independent funds are redeemable per the different loyalty program for commerce partner goods or for commerce partner services"; and (v) "serving . . . Web pages or Web page updates that include the effectuated changes . . . wherein . . . the graphical user interface is updated with the effectuated changes." '550 Patent, Ex. 1001 at 6:43-7:26.

41. These additional steps are insignificant because they are not novel, or inventive in any way. Each step lacks any significance to the abstract process of currency conversion. For example, all that is really described is showing loyalty points; an agreement to accept transfers; compensating a commerce

partner for granting of the requested quantity; accepting a portion of the requested quantity; and showing the result of the currency conversion. These concepts were well known before the filing of the patent, and can and are performed manually. Even the serving of Web pages simply includes showing the result of the currency conversion and can be shown on a paper identifying the exchanged amount or manually when one type of paper currency is exchanged for another type of paper currency. These concepts are far from novel, as they are simply describing the known process of entering into an agreement or contract and performing an exchange based on terms of the agreement.

42. The ’550 Patent lacks any discussion of why the claimed combination would have been novel or yielded any unexpected results or how each of these particular elements is used in the purportedly inventive process. Thus, the claims are merely directed and limited to the abstract concept of currency conversion.

43. These well-known steps are further insignificant in that they are not disclosed to be performed by a special-purpose computer or any novel hardware. The ’550 Patent acknowledges that a “general purpose computer system with a computer program” can be used to perform these steps. *Id.* at 6:20-24.

44. There are several other examples included in the '550 Patent indicating that it is merely setting forth an unpatentable abstract concept. For instance, the patent simply states that any computer or apparatus, such as a general purpose computer running a program, can accomplish the disclosed methods, stating:

> Any kind of computer system or other apparatus adapted for carrying out the methods described herein is suited. A typical combination of hardware and software may be a general purpose computer system with a computer program, that when being loaded and executed, controls the computer system such that it carries out the methods described herein…. Computer program in the present context manes any expression, in any language, code or notation, of a set of instructions intended to cause a system having any information processing capability to perform a particular function either directly or after either or both of the following: a) conversion to another language, code or notation; b) reproduction in a different material form.
>
> '550 Patent, Ex. 1001, 6:18-35.

45. These insignificant steps are well-understood, routine, or conventional activities, and do nothing to alter the abstract idea of currency conversion. Further, displaying web pages is merely post-solution activity that does not make the abstract concept of currency conversion statutory. Claim 1 does not incorporate the use of graphical user interfaces or web pages in a meaningful manner but merely recites them to provide post-solution activity.

46. Moreover, the ’550 Patent discloses that each of the steps of claim 1 are performed by a “general purpose computer” using “a program,” either for “controlling computing equipment to implement the functions” or “enabling computing equipment to perform processes.” *Id.* at 3:51-55. The patent does not claim to have invented conversion of non-negotiable credits using a credit-to-funds ratio, nor does it claim to have invented “program[s]” for implementing conversion of non-negotiable credits using a credit-to-funds ratio.

47. Indeed, the Background section of the ’550 Patent explains that conversion of non-negotiable credits into funds or percentage discounts already existed, stating:

> Entities often reward consumers for utilizing their services with non-negotiable credits, such as frequent flier miles, consumer loyalty points, and entertainment credits. These nonnegotiable credits can be applied towards products and/or services provided by a granting entity or its affiliates. For example, consumers can apply frequent flyer credits towards the purchase of airline tickets or airline upgrades. In another example, a consumer can utilize purchase points from a credit card company to receive percentage discounts on goods provided by affiliates.
>
> ’550 Patent, Ex. 1001, 1:40-49.

48. The patent further concedes that a person could – "at least in part" – perform the same claimed steps, without using a computer, stating:

> It should also be noted that the methods detailed herein can also be methods performed at least in part by a service agent and/or a machine manipulated by a service agent in response to a service request.
>
> *Id.* at 3:64-67.

49. Since the conversion of the non-negotiable credits is performed using a credit-to-funds ratio, it is evident that the conversion step can be performed by a person mentally, or at the very least using a pencil-and-paper or a calculator.

50. The claims are simply serving their routine and conventional purpose. As an example, a person (i.e., a service agent) could review the number of non-negotiable credits the consumer wishes to convert, look up the credit-to-funds conversion ratio, and perform the mathematical operation (e.g., multiplication).

51. Dependent claims 2-3 and 5-7 do not add any additional statutory components and merely add well-understood, routine, or conventional steps. These steps describe nothing more than "updated graphical user interface" and "Web pages," and can also be implemented by a conventional general purpose computer design choices.

52. In addition to the asserted claims not requiring any machine different from conventional, general-purpose computers, it is also my opinion that the asserted claims do not recite the transformation of any article into a different state or thing. The asserted claims simply recite various actions involving converting different types of currencies. For instance, using a credit-to-funds ratio to convert one currency (non-negotiable credits) to another currency (entity independent funds) is nothing more than the mere manipulation of financial information or data, using the mathematical operation of multiplication. Labeling the result of the currency conversion multiplication operation with a different name (e.g., entity independent funds instead of non-negotiable credits) is also nothing more than simple data manipulation on financial information. Further, displaying web pages to show the results of the currency conversion merely includes changing the format of data through a conventional process and is not patentable.

VIII. PRIOR ART ANTICIPATES AND RENDERS OBVIOUS THE '550 PATENT

53. I have relied on instructions from counsel for the Airlines as to the applicable legal standards to use in arriving at my opinions in this declaration. I have also reviewed the legal sections for anticipation and obviousness set out the Petition.

54. I have been informed and understand that a party in this sort of proceeding challenging the validity of a patent bears the burden of proving that it is more likely than not that the claims are invalid. I understand that this standard is the preponderance of the evidence.

55. I have been informed and understand that determination of whether a patent claim is "anticipated" is a two-step process. First, the language of the claim is construed as it would be understood by one of ordinary skill in the art at the time of the filing of the patent application. Reference is made to the intrinsic evidence of record, which includes the language of the claim itself and other issued claims, the patent specification, and the prosecution history. Words in a claim will be given their ordinary or accustomed meaning unless it appears that the inventor used them differently. The prosecution history may limit the interpretation of the claim, especially if the applicant disavowed or disclaimed any coverage in order to obtain allowance of the claim.

56. Second, I understand that after the patent claim has been construed, determining anticipation of the patent claim requires a comparison of the properly construed claim language to the prior art on an element-by-element basis.

57. I understand that a claimed invention is "anticipated" if each and every element of the claim has been disclosed in a single prior art reference, or

has been embodied in a single prior art device or practice, either explicitly or inherently (*i.e.*, necessarily present or implied). I understand that prior art includes various categories of information such as printed publications, patents, actual commercial products, and/or other physical embodiments.

58. I understand that although anticipation cannot be established by combining references, additional references may be used to interpret the anticipating reference by, for example, indicating what the anticipating reference would have meant to one having ordinary skill in the art.

A. Selected Prior Art References

59. There are a number of patents and printed publications which constitute prior art references to the '550 Patent. These prior art references, together with their filing or publication dates, are set forth in the table below.

Prior Art Reference	Publication Date
U.S. Pat. Pub. No. 2002/0143614 to MacLean et al.	October 3, 2002
U.S. Pat. Pub. No. 2003/0200144 to Antonucci et al.	October 23, 2003

60. It is my understanding that the earliest priority date that the '550 Patent can claim is May 25, 2006. Based solely on the filing or publication dates of each of the above-listed patents and printed publications, it is evident that each of them constitute prior art to the '550 Patent.

B. Brief Overview of the MacLean Prior Art Reference

61. U.S. Patent Application Publication No. 2002/0143614 to MacLean et al., titled "Apparatus and Method of Facilitating the Exchange of Points between Selected Entitles", was published on October 3, 2002 (hereinafter, "MacLean" Ex. 1005). MacLean is prior art to the asserted patent.

62. MacLean discloses a Web-based system for "exchanging" a set of "first points" for another set of "second points" using the "point withdrawal and deposit rates of the[] first and second points". Specifically, MacLean discloses:

> This invention relates to a system and method of exchanging first points held by a customer for second points, wherein the first points that are issued by a first point issuer differ from the second points that are issued by a second point issuer. This method comprises the steps of permitting the customer to set a first number of first points to be exchanged and permitting the first and second point issuers to set the point withdrawal and deposit rates of their first and second points respectively. Next, an equivalent number of the second points is determined based upon the point withdrawal and deposit rates of the first and second point issuers respectively, and the first number of the first points. Then, the first number of points is exchanged for a second equivalent number of second points.

MacLean, Ex. 1005, Abstract.

63. MacLean teaches that the disclosed systems and methods for exchanging first points for second points are targeted for loyalty programs (or "LPs"), stating:

> It is an object of this invention to enhance the effectiveness of LPs.
>
> . . .
>
> It is a still further object of this invention to enable a customer to convert points of one LP into points issued by a different LP.

MacLean, Ex. 1005, paras. 14 and 17.

64. MacLean further explains that the main types of loyalty programs are: "travel (airlines and hotels), financial (credit cards), retail and network (AirMiles, ClickRewards and WebMiles)." MacLean, Ex. 1005 para. 3. Moreover, MacLean explains that "the point management system 100 … permits a customer to effect an exchange of points from one LP to another … [f]or example, a customer may exchange points issued by American Airlines for those issued by the American Express Card." MacLean, Ex. 1005 para. 41.

65. Figure 2 (reproduced below) from MacLean is a functional block diagram of an embodiment of the system taught by MacLean, which "facilitates interaction between a customer 110, a transaction center 120 and a plurality of points issuers 130a-c." MacLean, Ex. 1005 para. 40. A "customer 110 is any entity that holds points in one or more Loyalty Programs ("LPs")", a "transaction center 120 refers to an entity capable of interacting with customers and points issuers to provide the points management capabilities" and a "point issuer 130 ("issuer") is any entity that … operates a Loyalty Program that controls a private currency of points." MacLean, Ex. 1005, para. 40.

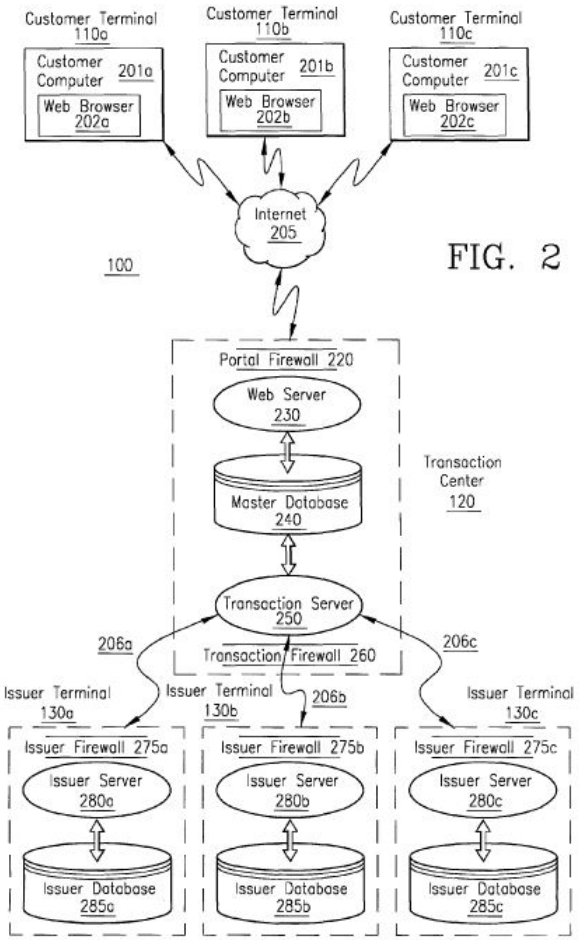

FIG. 2

66. The customer uses a "customer terminal 110, which includes a customer computer 201 and a web browser 202" to "surf" to a website provided by the transaction center, and enters information.

> Upon prompting, the customer enters the following data into the website: 1) information about itself and 2) data identifying each of the issuer LPs from which points are to be withdrawn, each of the issuer LPs to which points are to be deposited, and the number of points to be withdrawn from each of the withdrawing LPs. This data is transmitted over the Internet 205 to the transaction center 120, where the transmitted data is processed.

MacLean, Ex. 1005, para. 45.

67. MacLean teaches that "[i]n order to execute a points exchange, several sets of interactions are required." MacLean, Ex. 1005, para. 51:

> … [T]he web server 230 must accumulate the details of the requested exchange from the customer terminal110. These details are formulated into an exchange request, which is posted on a transaction queue in the master database 240. This exchange request contains all the details required to effect an exchange of points between issuer LPs. The transaction server 250 services any exchange requests found on the transaction queue by establishing

> communication with the necessary issuer terminals 130 in order to deposit or withdraw points from the appropriate customer LP accounts.

68. MacLean teaches displaying web pages in a graphical user interface of a browser and displaying updated web pages to show steps of the points exchange. MacLean, Ex. 1005, Figs. 6A-6I.

69. MacLean also teaches that each LP is able to "enter its own point withdrawal rate and point deposit rate, and to transmit and store these rates in the master database of FIG. 2." MacLean, Ex. 1005, para. 37.

70. Based on this information, MacLean teaches that the value of the points to be withdrawn from the first LP is calculated by "taking the number of points to be withdrawn from the designated first issuer and multiplying it by the point withdrawal rate for the first issuer to provide a monetized value in terms of monetary units, e.g., dollars." Then, after subtracting out transaction fees, "[t]he number of points to be deposited is computed by taking the remaining cash balance and multiplying it by the point deposit rate for the designated depositing issuer." MacLean, Ex. 1005, para. 65.

71. Therefore, MacLean teaches methods and systems that allow users to exchange first points that are issued by a first point issuer for second points that are issued by a second point issuer so that the user can purchase goods and services from second point issuer.

C. Brief Overview of the Antonucci Prior Art Reference

72. U.S. Patent Application Publication No. 2003/0200144 to Antonucci et al., titled "System and Method for the Real-Time Transfer of Loyalty Points between Accounts", was published on October 23, 2003 (hereinafter, "Antonucci" Ex. 1004). Antonucci is prior art to the asserted patent.

73. Antonucci discloses the concept of "substantially realtime transfer of loyalty points between accounts." Antonucci, Ex. 1004, Abstract. The method and system includes "receiving a transfer request (e.g., consumer request, triggering event, etc) for a transfer of a certain number of loyalty points … deducting the requested loyalty points from the transferor account … using a conversion engine to convert the point value to an appropriate point value in the transferee account and increasing the point balance in the transferee account." Antonucci, Ex. 1004, Abstract. Antonucci provides an example of such a transfer, stating at Antonucci, para. 157 (Ex. 1004):

> For example, Hilton Reward points may be transferred to a United Airlines frequent flyer account. In one embodiment, a conversion engine facilitates any point value conversions that may be appropriate. For example, if a consumer desires to transfer five hundred Hilton Reward points to a United Airlines frequent

> flyer account, the conversion engine may determine that the five hundred Hilton Rewards points only translate into one hundred United Airlines frequent flyer points. As such, the system would only increase the United Airlines frequent flyer account by one hundred points.

74. Antonucci further teaches that the conversion of points from the transferor to the transferee proceeds by the system "accessing and analyzing the total number of loyalty points in the transferor account to determine if a sufficient number of points exist, analyzing the type/level of consumer and type/level of points to be involved in the transfer, determining if any rules exist for restricting or limiting the transfer of points, using a conversion engine to convert the point value to an appropriate point value in the transferee account, deducting the requested loyalty points from the transferor account, and increasing the point balance in the transferee account." Antonucci, Ex. 1004, para. 153. The rules are implemented by an online central rewards mechanism that "may include, for example, product or service information, prices, availability of the product or service, shipping information, reward points information, available awards, information regarding points ratios and points redemption, and/or the like." Antonucci, Ex. 1004, para. 98.

75. Antonucci discloses that "some or all participants may have access to a computing unit in the form of a personal computer, although other types of computing units may be used, including laptops, notebooks, handheld computers, set-top boxes, kiosk terminals, and the like. . . . other participants may have computing systems which may be implemented in the form of a computer-server, a PC server, a networked set of computers, or any other suitable implementations which are known in the art or may hereafter be devised." Antonucci, Ex. 1004, para. 31. In Antonucci, "the system may allow a consumer to enter a webpage or call a customer service representative to request that the consumer's own account be flagged such that the system will transfer any requested number of loyalty points to a second loyalty account upon a certain condition related to setting the flag." *Id.* at para. 160.

D. Motivation to Combine the Prior Art

76. Multiple teachings, suggestions, motivations, and/or reasons to modify the prior art reference comes from many sources, including the prior art (specific and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the nature of the problem faced, and/or knowledge possessed by a person of ordinary skill. Specific motivations to combine specific prior art is further explained in the analyses that follows.

IX. THE ASSERTED CLAIMS OF THE ’550 PATENT ARE ANTICIPATED BY MACLEAN

77. It is my opinion that the MacLean prior art reference anticipates each limitation of each of the asserted claims of the ’550 patent. As I stated earlier, MacLean discloses a Web-based system for “exchanging” a set of “first points” for another set of “second points” using the “point withdrawal and deposit rates of the[] first and second points.” MacLean, Ex. 1005, Abstract. MacLean further states that the disclosed systems and methods for exchanging first points for second points are targeted for loyalty programs (or “LPs”). *Id.* at paras. 14 and 17. Therefore, Maclean discloses converting non-negotiable credits to entity independent funds, wherein the non-negotiable credits and entity independent funds are loyalty points of different rewards programs.

78. As I also stated earlier, MacLean teaches that each LP is able to “enter its own point withdrawal rate and point deposit rate, and to transmit and store these rates in the master database of FIG. 2.” *Id.* at para. 37. Essentially, this permits “each participating point issuer to set the point exchange rates of its LP.” *Id.* at para. 21. MacLean provides one example of this ratio as “3,600:10,000 or 0.36 between the first issuer 900 and the second issuer 901.” *Id.* at para. 64.

79. Based on this information, MacLean teaches that the value of the points withdrawn from the first LP is calculated by “taking the number of points

to be withdrawn from the designated first issuer and multiplying it by the point withdrawal rate for the first issuer to provide a monetized value in terms of monetary units, e.g., dollars." Then, "[t]he number of points to be deposited is computed by taking the remaining cash balance and multiplying it by the point deposit rate for the designated depositing issuer." *Id.* at para. 65. Therefore, MacLean discloses converting non-negotiable credits to entity independent funds based on credits-to-fund ratio.

80. MacLean also teaches that each loyalty program has its own redemption restrictions, stating that "[t]ypically, each kind of point is issued and redeemed by a different LP and may have a different value or liability to its LP." *Id.* at para. 41. MacLean also teaches that because users cannot redeem loyalty points earned from one LP to purchase goods or services from another LP, many loyalty points expire each year, stating at paragraph 6:

> Thus, many points will expire as a result of a lack of interest in participating in a LP plan. In 1998, 68 billion points expired. The lack of interest and participation results in part from the number of available plans, the complexity of a particular plan, the inability to readily ascertain the balances in the LPs to which a customer may belong and the relatively small value of the points. There are billions of points that sit in accounts with very limited redemption options and

> low utility to a customer, i.e., the points are kept in accounts with balance that are below redemption levels, or a levels with limited redemption options.

81. Since MacLean teaches a system for exchanging a set of first points from one LP for another set of second points from another LP and it is an object of MacLean to "render LPs more attractive to point customers by giving those point customers greater access to the rewards of their LP," MacLean discloses a commerce partner that does not accept non-negotiable credits prior to conversion, and accepts the entity independent funds to provide goods and services after the conversion. *Id.* at para. 15.

82. MacLean also discloses that "the deposit of points into an LP's accounts represents an increase in the liability of that LP." *Id.* at para. 62. As MacLean teaches, the increase in liability of the LP is associated with the compensating of the commerce partner for providing the entity independent funds. See *Id.* at para. 64:

> There are three parties involved in the exchange. A first or withdrawing issuer executing a point withdrawal 900, a second or depositing issuer executing a points deposit901 and the transaction center 902. A withdrawal of 10,000 points in step 910 from the first issuer 900 is requested. The first issuer 900 has examined its liability/points and set its point

> withdrawal rate at $0.008 per point. This means that for a withdrawal of 10,000 points from the customer's account with the first issuer 900 will pay $80 in step 911 to the transaction center 902. The transaction center 902 levies in step 912 a transaction fee in the amount of $8 that was set as a percentage of the cost of the withdrawal, leaving $72 (913) available to buy points from the second issuer 901,which has set in step 914 its point deposit rate at $0.02. In step 915, the transaction center 902 uses the available $72 to deposit 3,600 points in the customers account in the second issuer 901.

83. Therefore, MacLean discloses converting non-negotiable credits to entity independent funds, wherein the commerce partner is compensated for providing the entity independent funds to the consumer.

84. MacLean discloses that "the deposit of points into an LP's accounts represents an increase in the liability of that LP." *Id.* at para. 62. In MacLean, the administrator of one loyalty program, e.g., LP15, agrees with the administrator of another loyalty program, e.g., LP16 to exchange points in exchange of being compensated. *Id.* at para. 62 and Fig. 6C and Fig 9. This compensation is determined based on a "rate per point." *Id.* at para. 62 and Fig. 6C and Fig 9.

85. MacLean discloses that the "customer carries out point exchanges by use of its customer terminal 110, which includes a customer computer 201 and a web browser 202. . . . Upon prompting, the customer enters the following data into the website: 1) information about itself and 2) data identifying each of the issuer LPs from which points are to be withdrawn, each of the issuer LPs to which points are to be deposited, and the number of points to be withdrawn from each of the withdrawing LPs. This data is transmitted over the Internet 205 to the transaction center 120, where the transmitted data is processed." *Id.* at para. 45. In Figs. 6A-6I, MacLean discloses a series of Web pages that are updated and displayed during a web session in which a user is converting his or her loyalty points from one loyalty program to another.

86. The claim chart found in the accompanying petition sets forth where each of the limitations of each of the asserted claims of the '550 Patent are found in MacLean.

87. For at least the reasons described herein, including those set forth in the above referenced exhibit, I believe that each of the claims are anticipated by the MacLean prior art reference.

X. THE ASSERTED CLAIMS OF THE ’550 PATENT ARE OBVIOUS OVER ANTONUCCI IN VIEW OF MACLEAN

88. It is my opinion that the Antonucci in view of MacLean renders obvious claims 1-3 and 5-7 of the ’550 Patent.

89. I understand that a patent claim is rendered obvious if the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the art as of the date of invention. I understand that this determination is made after weighing the following factors: (1) level of ordinary skill in the pertinent art; (2) the scope and content of the prior art; (3) the differences between the prior art as a whole and the claim at issue; and (4) secondary considerations of non-obviousness, when present.

90. I understand that the knowledge and understanding of a person of ordinary skill in the art provides a reference point from which the prior art and claimed invention should be viewed. This reference point prevents one from using his or her own insight or hindsight in deciding whether a claim is obvious, but I further understand that if a person of ordinary skill in the art can implement the claimed invention as a predictable variation of a known product, then the claim may be rendered obvious.

91. I understand that an obviousness evaluation can be made on a single reference or a combination of multiple prior art references. I understand

that a proper obviousness analysis as to two or more references generally requires a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements of multiple prior art references in the way the claimed new invention does. I understand that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the nexus linking two or more prior art references is simple common sense. I further understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references may be supplied by the direction of the marketplace.

92. I understand that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill and common sense.

93. I further understand that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the applicant. Accordingly, I understand that any need or problem known in the

field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

94. I further understand that mere duplication of steps involves only routine skill in the art. In particular, a claim that simply recites repeating a known procedure would have been obvious to one of skill in the art as common sense dictates that the steps could be repeated as many times as were desired until a desired result is achieved.

95. In sum, my understanding is that prior art teachings are properly combined where a person of ordinary skill in the art having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims. Under this analysis, the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of multiple prior art references in the claimed manner.

96. As I stated earlier, Antonucci discloses a system of "substantially realtime transfer of loyalty points between accounts." See Antonucci, Ex. 1004, Abstract. The method and system includes "receiving a transfer request (e.g., consumer request, triggering event, etc) for a transfer of a certain number of loyalty points … deducting the requested loyalty points from the transferor

account … using a conversion engine to convert the point value to an appropriate point value in the transferee account and increasing the point balance in the transferee account." Antonucci, Ex. 1004, Abstract. Antonucci provides an example of such a transfer, stating:

> For example, Hilton Reward points may be transferred to a United Airlines frequent flyer account. In one embodiment, a conversion engine facilitates any point value conversions that may be appropriate. For example, if a consumer desires to transfer five hundred Hilton Reward points to a United Airlines frequent flyer account, the conversion engine may determine that the five hundred Hilton Rewards points only translate into one hundred United Airlines frequent flyer points. As such, the system would only increase the United Airlines frequent flyer account by one hundred points.

Antonucci, Ex. 1004, para. 157.

97. Therefore, Antonucci discloses converting non-negotiable credits to entity independent funds, wherein the non-negotiable credits and entity independent funds are loyalty points of different rewards programs.

98. Antonucci also discloses "determining if any rules exist for restricting or limiting the transfer of points, using a conversion engine to convert the point value to an appropriate point value in the transferee account, deducting

the requested loyalty points from the transferor account, and increasing the point balance in the transferee account." *Id.* at para. 153.

99. Antonucci further states that the rules are implemented by an online central rewards mechanism that "may include, for example, product or service information, prices, availability of the product or service, shipping information, reward points information, available awards, information regarding points ratios and points redemption, and/or the like." *Id.* at para. 98. As an example, Antonucci states that the "conversion engine may determine that [] five hundred Hilton Rewards points only translate into one hundred United Airlines frequent flyer points," identifying a 5:1 ratio. *Id.* at para. 157. Therefore, Antonucci discloses converting non-negotiable credits to entity independent funds based on credits-to-fund ratio.

100. Moreover, it is evident in Antonucci that the purpose of the conversion from Hilton Rewards points to United Airlines frequent flyer points is to permit the consumer to purchase airline tickets on United Airlines, which would otherwise not be available (e.g., using Hilton Rewards points). Therefore, Antonucci discloses a commerce partner that does not accept non-negotiable credits prior to conversion, and accepts the entity independent funds to provide goods and services after the conversion.

101. It is evident that as part of the conversion from Hilton Rewards points to United Airlines frequent flyer points, which permits the consumer to purchase airline tickets on United Airlines (which would otherwise not be available using Hilton Rewards points), value (or compensation of some sort) is transferred as well. For example, Antonucci states that the "system would [] increase the United Airlines frequent flyer account by one hundred points." *Id.* at para. 157. In order for United Airlines to agree to increase one of its frequent flyer accounts by one hundred points, it is clear that United Airlines must be receiving compensation. Therefore, Antonucci discloses converting non-negotiable credits to entity independent funds, wherein the commerce partner is compensated for providing the entity independent funds to the consumer.

102. It is my opinion that although it is not explicitly disclosed, the step of the commerce partner being compensated is necessarily disclosed in Antonucci.

103. Antonucci discloses allowing a consumer to convert "five hundred Hilton Reward points to a United Airlines frequent flyer account." *Id.* at para. 157. Loyalty points are a liability for an entity administrating the loyalty program. (See MacLean, Ex. 1005, para [0062] ("withdrawal of points from that LP's account represent a real reduction in liability . . . the deposit of points into an LP's account represents an increase in the liability").

104. *Anotnucci* further discloses that the conversion engine "deduct[s] the requested loyalty points from the transferor account, and increase[es] the point balance in the transferee account." Antonucci, Ex. 1004, para 153. By increasing the balance of frequent flyer miles after conversion from Hilton Reward points, United Airlines is necessarily increasing its liability and Hilton is necessarily decreasing its liability. *Id.* at para. 157.

105. In order to be willing to take on increased liability, United would necessarily require to be provided some form of compensation to account for the increased liability resulting from the deposit of points. Antonucci, Ex. 1004, para. 157 and MacLean, Ex. 1005, para. 62. Hilton would be willing to provide compensation in view of a decreased liability due to the deduction of Hilton Reward. Antonucci, Ex. 1004, para. 157.

106. It is my opinion that by disclosing a conversion between Hilton reward points and United Airlines frequent flyer miles, Antonucci necessarily discloses providing compensation to a commerce partner for taking on additional liability by providing entity independent funds.

107. Antonucci discloses that "some or all participants may have access to a computing unit in the form of a personal computer, although other types of computing units may be used, including laptops, notebooks, handheld computers, set-top boxes, kiosk terminals, and the like. . . . other participants

may have computing systems which may be implemented in the form of a computer-server, a PC server, a networked set of computers, or any other suitable implementations which are known in the art or may hereafter be devised." *Id.* at para. 31.

108. In Antonucci "the system may allow a consumer to enter a webpage or call a customer service representative to request that the consumer's own account be flagged such that the system will transfer any requested number of loyalty points to a second loyalty account upon a certain condition related to setting the flag." *Id.* at para. 160.

109. In Antonucci a user can use a computer to enter a webpage and request a conversion of loyalty points from Hilton Rewards to United frequent flyer miles and can view the current balance of the loyalty points. *Id.* at paras. 31, 71, and 153. It is my opinion that Antonucci discloses effectuating changes in web pages and displaying web pages in a graphical user interface. MacLean also discloses effectuating changes in web pages and displaying web pages. MacLean, Ex. 1005, Figs. 6A-6I.

110. Antonucci does not explicitly disclose compensating the commerce partner based upon "a multiple of a quantity of converted non-negotiable credits," as recited in claim 1. MacLean, however, discloses "[t]he first issuer 900 has examined its liability/points and set its point withdrawal rate at

$0.008 per point. This means that for a withdrawal of 10,000 points from the customer's account with the first issuer 900 will pay $80 in step 911 to the transaction center 902. The transaction center 902 levies in step 912 a transaction fee in the amount of $8 that was set as a percentage of the cost of the withdrawal, leaving $72 (913) available to buy points from the second issuer 901, which has set in step 914 its point deposit rate at $0.02. In step 915, the transaction center 902 uses the available $72 to deposit 3,600 points in the customers account in the second issuer 901. In this example, the customer sees an effective points exchange rate of 3,600:10,000 or 0.36 between the first issuer 900 and the second issuer 901." MacLean, Ex. 1005, para 64.

111. MacLean discloses compensating the commerce partner based on multiple of a quantity of converted non-negotiable credits. *Id.* at para 64.

112. It is my opinion that the combination of Antonucci and MacLean would have been obvious at least because MacLean is in the same field of endeavor as Antonucci, i.e., providing a system for converting and/or transferring loyalty points. MacLean, Ex. 1005, and Antonucci, Ex. 1004, Abstracts.

113. Both MacLean and Anotnucci purport to increase the flexibility for consumers of loyalty programs by offering a system to exchange such points. MacLean, Ex. 1005, and Antonucci, Ex. 1004, Abstracts. Compensating loyalty

program administrators who are willing to increase their liability by offering points would have been predictable and would have not resulted in any unexpected results. Tying the compensation to the amount of points converted would ensure that the received compensation is proportional to the acquired liability.

114. For example, in Antonucci "five hundred Hilton Reward points" may be converted to one hundred United Airlines frequent flyer miles resulting in United Airlines. Antonucci, Ex. 1004, para 157. As a result of this conversion United Airlines will acquire a liability proportional to one hundred United Airlines frequent flyer miles. It is my opinion that it would be obvious in Antonucci to compensate United Airlines proportional to the liability they acquired and this can be accomplished by calculating compensation based on a "rate per point" as disclosed in MacLean.

115. The claim chart found in the accompanying petition sets forth where each of the limitations of each of the asserted claims of the '550 Patent is found in Antonucci in view of MacLean.

116. For at least the reasons described herein, including those set forth in the above referenced exhibits, I believe that each of the claims are rendered obvious by Antonucci in view of MacLean.

XI. CLAIMS 1-3 AND 5-7 ARE INVALID UNDER 35 U.S.C. §112(A), (KNOWN AS 112, FIRST PARAGRAPH PRIOR TO AIA)

117. I have been advised that a patent specification must contain a "written description" of the claimed invention. 35 U.S.C. § 112, para 1.

118. In order to comply with the written description requirement, the inventor must describe the invention sufficiently to show that he or she is in possession of the invention. 35 U.S.C. § 112, para 1.

119. I have been advised that to satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. *Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003).

120. I have been advised that the specification of a patent must reasonably convey to those of skill in the art that, as of the filing date, that the inventor had possession of the claimed subject matter. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc).

121. I have been advised that the essential goal of the description of the invention requirement is to clearly convey the information that an applicant has invented the subject matter which is claimed and that this the requirement serves

both to satisfy the inventor's obligation to disclose the technologic knowledge upon which the patent is based, and to demonstrate that the patentee was in possession of the invention that is claimed." *Capon v. Eshhar*, 418 F.3d 1349, 1357 (Fed. Cir. 2005).

A. The '550 Patent Specification Fails to Describe Converting Non-Negotiable Credits Into Entity Independent Funds "wherein said entity independent funds are different loyalty points of a different loyalty program of a commerce partner."

122. After examining the '550 patent claims and specification, it is my opinion that the asserted claims fail to comply with the written description requirement of § 112, first paragraph.

123. The specification lacks any disclosure that indicates that the patentee possessed converting non-negotiable credits into entity independent funds "wherein said entity independent funds are different loyalty points of a different loyalty program of a commerce partner," as recited by independent claim 1. '550 Patent, Ex. 1001, 6:56-58.

124. The claims require a conversion of non-negotiable funds to a currency that is specific to a particular entity, *i.e.*, the currency is independent funds, "wherein the entity independent funds are loyalty points of a loyalty program of the commerce partner." There is no disclosure in the '550 Patent of a "commerce partner" or a loyalty program of the commerce partner.

125. The only conversion actually disclosed in the ’550 Patent, is the conversion of loyalty points into a negotiable funds. ’550 Patent, Ex. 1001, 4:45-47. The ’550 Patent specifically describes “non-negotiable credits” to be “frequent flier miles, consumer loyalty points, and entertainment credits.” ’550 Patent, Ex. 1001, 1:40-44. The specification repeatedly discloses “entity independent funds” as monetary currency. ’550 Patent, Ex. 1001, 2:63 to 3:8, 4:45-47, 5:23-34, and Figs. 2 and 3.

126. The specification of the ’550 Patent characterizes “non-negotiable credits” as inflexible because of (1) “the restriction on usage to goods and/or services of the entity”; (2) “redemption delay” such that “the consumer must wait for the entity to perform one ore more actions;” (3) “expir[ing] before a sufficient quantity is acquired;” and (4) “consumers often belong[ing] to multiple credit-earning programs that provide the consumer with multiple incompatible forms of non-negotiable credit.” ’550 Patent, Ex. 1001, 1:53 to 2:19.

127. The specification further explains that “different programs, values, and rules can understandably confuse and frustrate consumers, who due to their confusion elect to avoid participating in an entity sponsored program.” ’550 Patent, Ex. 1001, 2:28-32.

128. To overcome this rigidity of "non-negotiable credits" of a loyalty program that could not be negotiated for good or services from anyone other than the entity administering the loyalty program, the inventor of the '550 Patent purported to invent a system that allowed consumers to convert these "non-negotiable credits" to "entity independent funds," *i.e.*, monetary currency that is independent of any entity and can be used to purchase goods or services from any entity not just a commerce partner. '550 Patent, Ex. 1001, 2:63 to 3-8, 4:45-48, Fig. 2.

129. The asserted claims of the '550 Patent explicitly require a consumer to convert his/her non-negotiable loyalty points to currency of a commerce partner such that the consumer will face the same inflexibilities that are described in the '550 Patent as causing consumers to be "confuse[d] and frustrate[d]." '550 Patent, Ex. 1001, 2:28-32.

130. It is my opinion that these limitations of converting from loyalty points to currency of a commerce partner (loyalty points of a different program) do not appear in the specification of the '550 Patent.

131. In my opinion, the specification fails to convey possession of the claimed invention requiring such a conversion and the asserted claims of the '550 Patent are invalid for this reason.

B. The ’550 Patent Specification Fails to Describe “Wherein The Agreement Specifies That The Entity is to Compensate The Commerce Partner . . . , Wherein Said Agreed Upon Amount is a Multiple of a Quantity of Converted Non-Negotiable Credits”

132. The specification of the ’550 Patent fails to disclose that the patentee possessed converting non-negotiable credits into entity independent funds “wherein the agreement specifies that the entity is to compensate the commerce partner . . . , wherein said agreed upon amount is a multiple of a quantity of converted non-negotiable credits,” as recited by independent claim 1. (See ’550 Patent, 6:43 to 7:9).

133. There is no written description in the specification of a “commerce partner” and/or a commerce partner being compensated for providing entity independent funds for a conversion. The only disclosure of a “commerce partner” is in the Abstract of the Patent.

134. The Abstract still does not provide the required disclosure of a “commerce partner” being compensated or the compensation being a multiple of a quantity of converted non-negotiable credits.

135. The Abstract of the ’550 Patent states:

> In one embodiment, a graphical user interface includes a conversion option to convert at least a subset of non-negotiable credits earned from one into entity independent funds in accordance with a conversion ratio. The entity independent funds are accepted by a

> commerce partner as at least partial payment for goods or services provided by the commerce partner. In absence of converting the non-negotiable credits into entity independent funds, the commerce partner does not accept the non-negotiable credits as payment for goods or services. Responsive to a received selection of the conversion option, the computer presents within the graphical user interface a quantity of available entity independent funds for use as payment for the goods or services provided by the commerce partner. The quantity of available entity independent funds results from converting the subset of non-negotiable credits into the quantity of available entity independent funds in accordance with the conversion ratio.

136. The Abstract of the ’550 Patent mentions a commerce partner in the context of providing goods or services. The Abstract of the ’550 does not state that there is an agreement or that the commerce partner receives compensation for providing the entity independent funds. Further, there is no disclosure in the Abstract of a conversion from the currency of loyalty point of an entity to the currency of loyalty point of a commerce partner as required by the claims.

137. It is my opinion that the Abstract of the ’550 Patent does not provide any written description on a conversion from the currency of loyalty

point of an entity to the currency of loyalty point of a commerce partner as required by the asserted claims.

138. The Abstract of the ’550 Patent also does not provide any written description on the commerce partner receiving compensation for providing the entity independent funds as also required by the asserted claims.

139. It is my opinion that even including the disclosure of the Abstract the specification fails to disclose that the patentee possessed converting non-negotiable credits into entity independent funds “wherein the agreement specifies that the entity is to compensate the commerce partner,” as recited by independent claim 1.

140. In my opinion, the asserted claims of the ’550 Patent are invalid for this additional reason.

XII. CONCLUSION

141. For at least the preceding reasons, I believe that each asserted claim of the ’550 Patent is invalid pursuant to 35 U.S.C. §§ 101, 102, 103, and 112, first paragraph.

142. If asked to do so, I may testify about any of the preceding topics. I may also provide a general tutorial on the relevant subject matters, including distributed computing systems. I may use demonstrative exhibits or refer to

publicly-available information to aid my testimony at trial, including my book entitled "Developing Enterprise Web Services: An Architect's Guide."

143. I reserve the right to respond to any declarations that are submitted by the Loyalty Conversion's expert witnesses or to any testimony by Loyalty Conversion's fact or expert witnesses.

Sandeep Chatterjee, Ph.D.

Appendix A

Curriculum Vitae of Sandeep Chatterjee, Ph.D.
Contact: sandeep@shuvgray.com (e-mail) +1 650-759-6523 (phone)

Professional Summary

Sandeep Chatterjee, Ph.D. is a seasoned technology expert and business professional with over 10 years of hands-on contributions as a thought leader, technologist, consultant, entrepreneur, and author. He is an expert in computer software systems, with particular emphasis on distributed systems and architectures, service-oriented architectures (SOAs) and Web Services, end-to-end security, quality-of-service (QoS), as well as mobile and wireless systems and applications. He is the author of a book on developing enterprise computing systems which has been adopted by over 100 universities worldwide and also by corporate customers.

Dr. Chatterjee has extensive experience in architecting, developing, optimizing, deploying and managing complex computing systems throughout the world, and technical expertise in developing enterprise-class applications using J2EE, XML, SOAP Web services, and mobile technologies. He has invented, architected, and led the development (product, QA, documentation) as well as the initial sales & marketing efforts for key eBusiness, mobile, Web services, and J2EE middleware products and solutions at Cyndeo, Satora Networks, Bluestone Software, and Hewlett-Packard.

Awards and Honors:

- **Named a Young Global Leader for 2011 by the World Economic Forum for professional accomplishments, commitment to society and potential to contribute to shaping the future of the world.**
- **Doctoral dissertation at the Massachusetts Institute of Technology (MIT) was selected as one of the most important inventions in computing, and the invention is preserved and showcased in a time-capsule at the Museum of Science in Boston, Massachusetts.**

Expertise

- J2EE Application Servers
- Servlets/JSPs/EJBs
- Web Services & Service Oriented Architectures (SOAs)
- SOAP, WSDL, UDDI
- Portals & Portlets
- Optimized Mobile/Wireless Systems
- POS terminals, PDAs, Phones and other mobile devices
- Mobile & Wireless Data Comm.
- Remote Transactions & Comm.
- Security & Authentication
- Financial Transactioning
- Programming Languages, including C, C++ & Java, and tools including JBuilder & IntelliJ
- Operating Systems, including Windows, Linux, Palm OS

Education

College or University	Degree
Harvard University	Executive Education Program on Global Business Leadership
Massachusetts Institute of Technology	Ph.D., Computer Science

Massachusetts Institute of Technology	M.S., Computer Science
University of California at Berkeley	B.S., Electrical Eng & Computer Science

Professional Experience

From: 2007
To: present
Organization: Shuv Gray LLC
Title: Chief Executive Officer
Summary: Shuv Gray LLC is a global intellectual property firm that provides products, consultation and services in all facets of intellectual property.

From: 2007
To: 2012
Organization: SourceTrace Systems, Inc.
Title: Chief Technology Officer & Executive Vice President
Summary: SourceTrace Systems is a leading vendor of end-to-end mobile and wireless distributed transactional systems for the financial services, agricultural commodities, and product distribution markets around the world.

From: 2004
To: 2007
Organization: Cyndeo LLC
Title: Chief Executive Officer
Summary: Founded Cyndeo to be a leading provider of enterprise integration and mobilization solutions as well as technology strategy consulting and outsourcing services to global corporations, government agencies, and major not-for-profit organizations. Cyndeo provides consulting, software engineering development, and management services to companies and organizations of all sizes, from Fortune Global 100 corporations to small organizations in developing countries.

From: 2001
To: 2002
Organization: Hewlett-Packard (Palo Alto, CA)
Title: Senior Member of Technical Staff
Summary: Independently identified a need in the mobile and e-Business marketplace for a more flexible Web Services platform. Invented a patent-pending (applied) solution, and led the development as well as the initial sales and marketing efforts.

- This next-generation J2EE (HP/Bluestone app server) Web Services solution ties together the emerging Web Services standards, end-to-end transactions, and optimized mobile services & applications.
- Led and managed the entire lifecycle of the product from conception, architectural design, product development, QA, documentation, senior management approval, patent filing, preparation for marketing launch at JavaOne, as well as interfacing with early adopter customers and strategic

partners.

- Managed relationships with multiple HP organizations and teams that contributed to the overall solution.
- Positioned the product, targeted key early adopters and partners, and leveraged my own contacts to build successful strategic relationships.
- Selected to provide support to HP/Bluestone's top sales manager, and helped land a strategic account in the Asia-Pac market.
- Selected as the representative for Hewlett Packard to the JSR 172 Expert Group that is defining the worldwide standard for J2ME mobile Web Services.

From: 1999
To: 2000
Organization: Satora Networks
Title: Founder & Chief Technology Officer
Summary: Founded Satora Networks to create wireless platforms and services for Internet devices based on the technologies invented by Dr. Chatterjee as part of his Ph.D. research at MIT Lab for Computer Science.

- Raised venture funding, recruited the management and core engineering teams, set corporate and product strategy, handled customer and partner relations, and managed overall corporate affairs.
- Architected and led the development of the StrongARM-based mobile hardware platform, Linux-based mobile OS, client-side services, and server-side J2EE environment.
- Landed key customer and partner wins, managed revenue and burn rate to become profitable early on, and oversaw the growth of the company.

From: 1995
To: 2001
Organization: MIT Lab for Computer Science
Title: Doctoral Researcher
Summary: Designed a modular system architecture that supports the cost-effective development of network devices and services. The system consists of Lego-like commodity hardware and standards-based software components that are quickly composed together through a development environment into optimized end-user devices as well as client-side services.

- Architected and implemented the entire system: a Linux-based client software environment, a wireless network and StrongARM processor-based device hardware platform, as well as a Web-based design and optimization environment and tool.
- Successfully mentored and managed a research group of 6 Masters and Bachelors students.
- The technology underlying Dr. Chatterjee's thesis was selected as one of the top inventions in thirty-five year history of MIT Laboratory for Computer Science.

From: 1997

To:	1999
Organization:	FidelityCAPITAL (Boston, MA)
Title:	Entrepreneur-In-Residence
Summary:	Worked with Fidelity senior management and FidelityCAPITAL partners to source, analyze, and fund technology start-ups strategic to Fidelity interests.

- Evaluated business plans submitted to Fidelity for venture funding, and analyzed emerging market and technology trends to identify opportunities for internal spin-offs in the telecom and eBusiness spaces.
- Founded and served as President & CTO of a wireless devices and services company (Satora Networks) that was seed funded by Fidelity.

Litigation Support Experience

Expert Engagement:

Type of Matter:	Enterprise Software Patent Infringement
Law Firm:	Morrison & Foerster
Case Name:	Software AG and Software AG v. BEA Systems
Services Provided:	Retained as BEA's expert; submitted two expert reports; deposed twice; prepared for trial (exhibits, testimony, cross examination).
Disposition:	Settled (day before trial)
Date:	2004

**** Rated by Morrison & Foerster as an "A+" expert witness for deposition testimony.***

Expert Engagement:

Type of Matter:	Enterprise software intellectual property litigation.
Law Firm:	Morrison & Foerster
Case Name:	
Services Provided:	Consultant to attorney
Disposition:	Settled
Date:	2004-2005

Expert Engagement:

Type of Matter:	Mobile software intellectual property litigation.
Law Firm:	Perkins Coie
Case Name:	Esmertec v. Tao Group
Services Provided:	Retained as Esmertec's expert; submitted two expert reports.
Disposition:	Settled
Date:	2006

Expert Engagement:

Type of Matter:	Enterprise and mobile software intellectual property litigation.
Law Firm:	McDermott Will & Emery
Case Name:	Metrologic Instruments v. Symbol Technologies
Services Provided:	Consultant to attorney
Disposition:	Settled
Date:	2006-2007

Expert Engagement:
Type of Matter: Distributed and mobile computing trade secret litigation.
Law Firm: Haralson, Miller, Pitt, Feldman & McAnally
Case Name: Modular Mining Systems (Komatsu Ltd.) v. Jigsaw Systems et al.
Services Provided: Retained as Modular's expert; submitted two expert reports; deposed.
Disposition: Summary judgment
Date: 2006-2008

Expert Engagement:
Type of Matter: Distributed systems, mobile computing and object oriented programming intellectual property litigation.
Law Firm: Kirkland & Ellis
Case Name:
Services Provided: Consultant to attorney
Disposition: Settled
Date: 2007

Expert Engagement:
Type of Matter: Communications software and systems intellectual property litigation.
Law Firm: Carey Rodriguez Greenberg & Paul
Case Name: Catch Curve v. Venali
Services Provided: Retained as Venali's expert; submitted two expert reports
Disposition: Summary judgment
Date: 2008

Expert Engagement:
Type of Matter: Distributed computing and network routing systems intellectual property litigation.
Law Firm: Vinson & Elkins
Case Name: WebXChange v. Dell
Services Provided: Consultant to attorney
Disposition:
Date: 2008-2010

Expert Engagement:
Type of Matter: Communications systems intellectual property litigation.
Law Firm: Kirkland & Ellis
Case Name: Motorola, Inc. et al. v. Rembrandt Technologies, LP
Services Provided: Retained as plaintiff's expert; submitted expert report
Disposition: Settled
Date: 2009

Expert Engagement:
Type of Matter: Database and object mapping intellectual property litigation.
Law Firm: Kirkland & Ellis
Case Name: DataTern v. United Airlines
Services Provided: Consultant to attorney
Disposition: Settled
Date: 2009

Expert Engagement:

Type of Matter: Control systems intellectual property litigation.
Law Firm: Morgan Lewis & Bockius
Case Name: Finisar v. Source Photonics
Services Provided: Consultant to attorney; source code review;
Disposition: Settled
Date: 2010

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Law Firm: Agility IP
Case Name: MShift v. Digital Insight
Services Provided: Retained as MShift's expert; wrote two expert reports;
Disposition: Summary judgment
Date: 2010

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Law Firm: Morgan Lewis & Bockius
Case Name: OpenWave v. 724 Solutions
Services Provided: Consultant to attorney
Disposition: Settled
Date: 2010

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Law Firm: Winston Strawn
Case Name: Ganas v. Charles Schwab et al
Services Provided: Consultant to attorney
Disposition: Settled
Date: 2011

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Law Firm: Drinker Biddle
Case Name: De Lage Landen Operational Services v. Third Pillar Systems
Services Provided: Consultant to attorney
Disposition: Settled
Date: 2011

Expert Engagement:
Type of Matter: Mobile systems trade secret misappropriation litigation.
Law Firm: Berliner Cohen
Case Name: Damodharan Ulagaratchalan v Dhyan Infotech
Services Provided: Consultant to attorney
Disposition: Settled
Date: 2011

Expert Engagement:
Type of Matter: Control systems intellectual property litigation.
Law Firm: Morgan Lewis & Bockius
Case Name: Finisar v. Oplink

Services Provided:	Consultant to attorney; source code review
Disposition:	Settled
Date:	2011

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Ropes & Gray
Case Name:	Motorola Mobility v. Microsoft
Services Provided:	Consultant to attorney
Disposition:	
Date:	2011-2012

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Jeffer Mangels Butler & Mitchell
Case Name:	EMG Technology v. Radio Shack Corp. et al
Services Provided:	Consultant to attorney; source code review
Disposition:	
Date:	2012

Expert Engagement:

Type of Matter:	Wireless networking & management intellectual property litigation.
Law Firm:	Kirkland & Ellis
Case Name:	Netgear v. Ruckus Wireless
Services Provided:	Retained as Netgear's expert; source code review
Disposition:	
Date:	2012-2013

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Morgan Lewis & Bockius
Case Name:	XpertUniverse v. Cisco Systems
Services Provided:	Retained as Cisco's expert; submitted expert report; source code review; deposed; trial
Disposition:	
Date:	2012-2013

Expert Engagement:

Type of Matter:	Distributed computing systems contract litigation.
Law Firm:	Berliner Cohen
Case Name:	Skillnet Solutions v. Entertainment Publications
Services Provided:	Retained as Entertainment's expert
Disposition:	Stayed
Date:	2013

Non-Litigation Consulting Projects

Consulting Engagement:
Type of Matter: Enterprise software architecture and development
Client: Sevak Solutions, Inc.
Services Provided: Architect, specify, and develop enterprise-class software for secure financial transactioning in multiple markets and countries around the world
Date: 2005-2006

Consulting Engagement:
Type of Matter: Enterprise software architecture and development
Client: United States Agency for International Development (USAID)
Services Provided: Specify and develop financial transactioning and tracking software
Date: 2004-2005

Consulting Engagement:
Type of Matter: Training services
Client: South Korean Ministry of Information and Communications
Services Provided: Conducted a workshop to train selected university professors and corporate researchers on properly using mobile and distributed technology for strategic and financial growth.
Date: 2004

Consulting Engagement:
Type of Matter: Product and service strategy and development
Client: Hewlett-Packard Company
Services Provided: Analyze market opportunities for new, market-specific technology product and service offerings
Date: 2004

Consulting Engagement:
Type of Matter: Mobile enterprise software
Client: ACCION International
Services Provided: Specified, architected, and developed a mobile enterprise software system for optimizing wireless transactioning.
Date: 2003

Consulting Engagement:
Type of Matter: Market, technology and services strategy development
Client: Hewlett-Packard Laboratories
Services Provided: Analyzed multiple country-specific market needs and opportunities, and proposed technology and service offerings
Date: 2003

Professional Affiliations, Achievements & Awards

- Named a Young Global Leader for 2011 by the World Economic Forum for professional accomplishments, commitment to society and potential to contribute to shaping the future of the world.

- Doctoral dissertation at the Massachusetts Institute of Technology (MIT) was selected as one of the most important inventions in computing, and the invention is preserved and showcased in a time-capsule at the Museum of Science in Boston, Massachusetts.
- Member of the JSR 172 Expert Group that defined the worldwide standard for mobile Web services.
- Invited by the South Korean Government and the Ministry of Information and Communications to deliver a workshop in Seoul, South Korea on Mobile and Enterprise Web Service Computing with the objective of making South Korean companies and universities more globally competitive.

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11. Keckler, Stephen W., Chang, Andrew, Lee, Whay Sing, Chatterjee, Sandeep, and Dally, William J., "Concurrent Event Handling Through Multithreading," *IEEE Trans. Computers* 48(9), pages 903-916 (1999).
12. Chatterjee, Sandeep and Devadas, Srinivas, "MASC Composable Computing Infrastructure For Intelligent Environments," *Proceedings of the Industrial Electronics Conference*, pages 132-138 (1999).

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16. Chatterjee, Sandeep, "The ModuleC Network Architecture: A Novel Approach Of Computing Through Information Appliances," *IEEE International Symposium on Consumer Electronics* (1997).
17. Chatterjee, Sandeep, Masters Thesis, "Asynchronous Event Handling," Massachusetts Institute of Technology Technical Report (May 1997).
18. Tennenhouse, David L. and Chatterjee, Sandeep, "The First 10 Feet: The Missing Story For Encouraging User Investment In Universal Broadband Connectivity" (October 1996).
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20. Chatterjee, Sandeep and Donohue, Richard J., "Electron Gamma Shower Windows 2," *International Conference on Monte Carlo Simulations in Nuclear & High Energy Physics* (February 1993).