IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TERADATA OPERATIONS, INC.
Petitioner

v.
BERKLEY*IEOR, L.L.C.,
Patent Owner

_____

Case CBMR {___}

Patent 8,612,316

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PETITION FOR *COVERED BUSINESS METHOD* REVIEW OF CLAIMS 1, 3, and 8-24 OF U.S. PATENT NO. 8,612,316 UNDER 35 U.S.C. § 321, AND § 18 OF THE LEAHY-SMITH AMERICA INVENTS ACT

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1001	U.S. Patent No. 8,612,316 by Richard Tad Lepman, entitled "Process for Determining Object Level Profitability"
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1003	Second Amended Complaint for Patent Infringement, *Berkeley*IEOR d/b/a/ B*IEOR v. WW Grainger, Inc*. et al, 1-17-cv-07472, Dkt. 41 (March 26, 2018)
1004	C.J. Date, *A Guide to the SQL Standard* (2d ed. 1989) ("Date")
1005	Ernst & Young, *The Ernst & Young Guide to Performance Measurement for Financial Institutions* (1995) ("E&Y")
1006	Jonathon Blain et al., *Using SAP R/3* (1996) ("Blain")
1007	*Detailed Functions – System R/3 – IS-B – The SAP Industry Solution For Banks* (Certified Translation of *Funktionen im Detail – IS-B System R/3: Einzelgeschäftskalkulation/Meldewesen*, Walldorf, Germany: SAP AG (1996)) ("SAP-IS-B")
1008	Julie Mabberley, *Activity-based Costing in Financial Institutions* Pitman Publishing (1994) ("Mabberley")
1009	Nic Stuchfield & Bruce Weber, *Modeling the Profitability of Customer Relationships: Development and Impact of Barclays De Zoete Wedd'S Beatrice*, NYU Information Systems Working Papers Series IS-92-23 (Aug. 1992) ("Weber")
1010	Ralph C. Kimball, *Calculating and Using Risk-adjusted ROE for Lines of Business*, Bank Accounting & Finance (Fall 1993) ("Kimball")
1011	Kenneth J. McKenzie & Aileen J. Thompson, *Economic Effects of Dividend Taxation*, Tech. Committee on Bus. Tax'n, Working Paper 96-7 (Dec. 1996) ("McKenzie")
1012	Frances X. Frei, Patrick T. Harker, Larry W. Hunter, *Innovation in Retail Banking*, Wharton Financial Institutions Center (Jan. 1998) ("Frei")

1013	Charles T. Horngren et al., *Cost Accounting: A Managerial Emphasis* (9th ed. 1997) ("Horngren")
1014	C.J. Date, *An Introduction to Database Systems* (6th ed. 1995) ("Database Systems").
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1024	"SAP Advertisement." *Computerworld*, Special Editorial Supplement, vol. 31, no. 30 (July 28, 1997): 65-66.
1025	"Smooth Transitions: SAP Advertisements." *CIO*, vol. 10, no. 19 (Aug. 1997): 91-93.

I. MANDATORY NOTICES, STANDING, AND FEES

Real Party in Interest: Teradata Operations, Inc. is the Petitioner. Teradata Operations, Inc. is a wholly owned subsidiary of Teradata Corporation, a publicly traded company. Teradata's co-defendants in a suit brought by Patent Owner asserting the challenged patent include: (1) W.W. Grainger, Inc. , (2) DHL Express (USA), Inc., (3) Danzas Corporation d/b/a DHL Global Forwarding, and (4) Air Express International USA, Inc. d/b/a DHL Global Forwarding are also real parties in interest.

Related Matters: The U.S. Patent No. 8,612,316 (the "'316 Patent") is currently involved in a pending lawsuit involving Petitioner entitled *Berkeley*IEOR d/b/a B*IEOR v. WW Grainger, Inc. et al.*, in the U.S. District Court in the Northern District of Illinois, Case No. 1:17-cv-07472 (the "District Court Action"). *See* Ex[1003]. Patent Owner asserts U.S. Patent No. 8,612,316 against Petitioner and its customer defendants in the District Court Action. Ex[1003] 52-56.

Lead Counsel and Request for Authorization: Pursuant to 37 C.F.R. §§42.8(b)(3) and 42.10(a), Petitioner designates the following: Lead Counsel is Eliot D. Williams (Reg. No. 50,822) of Baker Botts L.L.P.; Back-up Counsel is Jamie R. Lynn (Reg. No. 63,666).

Service Information: Service information is as follows: Baker Botts L.L.P., 1001 Page Mill Rd., Palo Alto, CA 94304-1007 Tel. 650 739 7500; Fax

650-736-7699. Petitioner consents to service by electronic mail at eliot.williams@bakerbotts.com, jamie.lynn@bakerbotts.com. A Power of Attorney is filed concurrently herewith under 37 C.F.R. §42.10(b).

Fees: The Office is authorized to charge the fee set forth in 37 C.F.R. §42.15(b) to Deposit Account No. 02-0384 as well as any additional fees that might be due in connection with this Petition.

II. GROUNDS FOR STANDING

The undersigned and Petitioner certify that the '316 Patent is eligible for covered business method review and Petitioner meets the eligibility requirements of 37 C.F.R. §42.302.

Berkley*IEOR ("PO") sued Teradata for infringement of the '316 Patent. Ex[1003]. Thus, Teradata has standing to file this petition. 37 C.F.R. §42.302(a). Neither Petitioner nor any real party-in-interest or privy is estopped from challenging the claims on the grounds herein. 37 C.F.R. §42.302(b).

A. The '316 Patent is Directed to a CBM

The '316 Patent is a "covered business method" ("CBM") patent under §18(d)(1) of the Leahy-Smith America Invents Act, Pub. L. 112-29 ("AIA") and 37 C.F.R. §42.301. A CBM patent is "a patent that claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service, except that the term does not include patents for technological inventions." AIA

§18(d)(1). This includes claims "pertaining or related to money matters." *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1325 (Fed. Cir. 2015).

1. The Claims are Directed to a Financial Product or Service

(i) *Claim 1*

The challenged claims, including at least Claim 1, are CBM-eligible because they claim "a process" "for performing data processing ... in the practice ... of a financial product or service." Claim 1 includes a "profit database," "calculating opportunity values for funds used," "performing a profit calculus," "calculat[ing] … marginal value of profit," and creating "a measure of object level profitability." These are expressly "financial in nature" and well-within the definition of a CBM patent. The complete claim language supports this; Claim 1 produces a measure of profit as its result, expressly providing a financial service to consumers of this data.

The elements are closer to CBM-eligibility than other similar cases. *See Versata*, at 1325 (a "method for determining price"); *CareCloud Corp. v. AthenaHealth, Inc.*, CBM2014-00143, p. 12 (P.T.A.B. 2014) (" 'payment' requirements … are clearly financial in nature"); *Blue Calypso*, at 1340 (a "subsidy" is an "express financial component"); *GSN Games, Inc. v. Bally Gaming, Inc.*, CBM2015-00155, p. 7-8 (P.T.A.B Jan. 21, 2016) ("award[ing] prizes based on a desired profit level" "is financial in nature."). Recently, the PTAB rejected arguments that claims for "storing and retrieving of financial

documents" were merely "'incidental to' or 'complementary to' financial activity,"; finding them CBM claims. *Fidelity Information Services, LLC v. Mirror Imaging, LLC*, CBM2017-00066, Paper 26, p. 17-18 (P.T.A.B. Apr. 27, 2018); *see also Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, CBM2013-00009, p. 6 (P.T.A.B. 2013) (determining the "cost of insurance" renders claims CBM-eligible).

The specification confirms this:

> "The process of ***measuring profit is an important business activity***. Profit measures are the primary basis for understanding ***financial performance*** and value creation in a business."

Ex[1001] 1:17-19, 1:27-34 ("internal profit measures" is a form of "internal ***financial*** performance measures").

Figure 4 shows processing financial statement attributes and profit factors to calculate a profit. Ex[1001] Fig. 4. Another case found "storing and retrieving financial documents" to be financial. *Fidelity*, at 18.

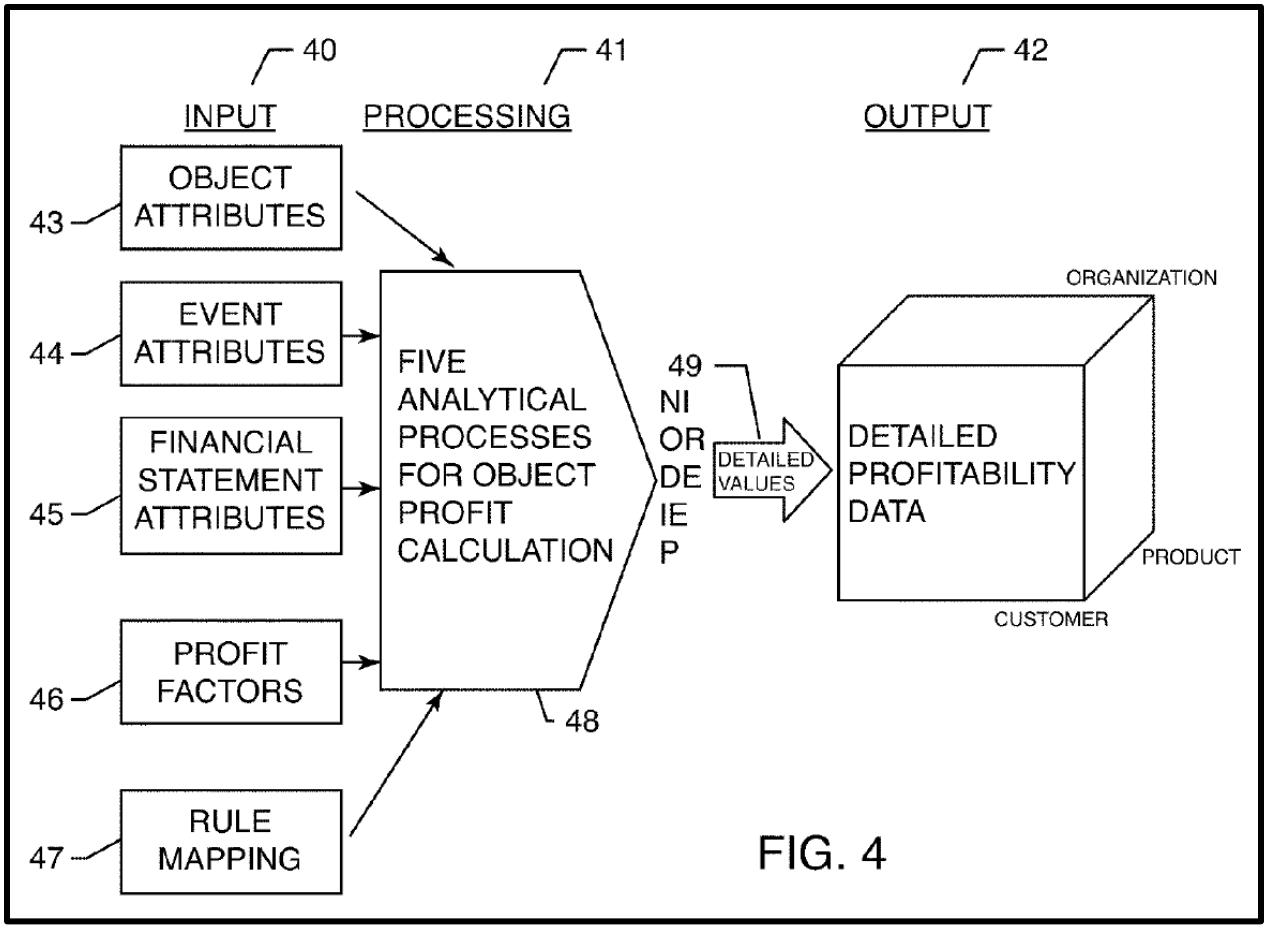


FIG. 4

Ex[1001] Fig. 4.

The inventor's statements in a parent application support this; he distinguished prior art, explaining: "[Price] does not discuss methods of marginal ***pricing*** (activity based costing or ***funds transfer pricing***) necessary for object profit measures" and "Price's scope is financial bookkeeping and not economic theory or ***market based financial concepts***." Ex[1015] 256-267.

Accordingly, Claim 1 and its dependents are directed to data processing and operation of a financial product or service.

(ii) *Dependent claims*

Several dependent claims add additional financial elements:

- Claim 3 – calculating Other ***Revenue*** ("***measure of profit contribution*** from non-interest related sources") and direct expense ("the ***profit value reduction*** due to marginal resource consumption")
- Claim 8 – "opportunity values are based on ***matched maturity funds transfer pricing theory***."

2. No Technological Invention

A patent is directed to a "technological invention" only if "the claimed subject matter as a whole" (1) "recites a technological feature that is novel and unobvious over the prior art" and (2) "solves a technical problem using a technical solution." 37 C.F.R. §42.301(b). The claims satisfy neither prong.

The only elements arguably directed to a "technological feature" are the "database", "relational database management system", and "structured query language (SQL)." But "[c]laim drafting techniques" such as "[m]ere recitation of known technologies, such as computer hardware, communication or computer networks, software, memory, computer-readable storage medium, scanners, display devices or ***databases***, or specialized machines, such as an ATM or point of sale device" do not typically "render a patent a technological invention." 77 Fed. Reg. 48,756, 48,763–64 (Aug. 14, 2012). And the claimed database features are well-known and established technologies. §§VII.A.3(ii)-(iv). Moreover, as

shown in Sections VII.B-VII.F, the claims were previously disclosed by at least *E&Y* and *Blain* and do not "recite[] a technological feature that is novel and unobvious over the prior art." 37 C.F.R. §42.301(b).

The Patent also fails the second prong; the claims are neither directed toward solving a technical problem nor provide a technical solution. Calculating profit using a general ledger is a business problem, not a technical one. Ex[1016] ¶115. Nothing in the claims recites a technical solution. Instead, the claims merely include general descriptions of desired functionality using traditional prior art structures. *Apple, Inc. v. Ameranth, Inc.*, 2016 WL 6958650, at *6 (Fed. Cir. 2016) (claims not technological, because "the claims did not recite a solution to this problem, as they do not include recitations about how to [perform the claimed function]").

III. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

Petitioner challenges Claims 1, 3, and 8-24.

A. Publications Relied Upon

The '316 Patent is not entitled to a priority date before April 9, 1999.

Petitioner relies upon the following patents and publications, which could each be found by searching for the index terms or descriptive titles:

Exhibit 1005 — *E&Y* is a printed publication and prior art under 35 U.S.C. §§102(a) and 102(b). Ex[1017] ¶¶38-43. It was:

- available in libraries by April 1995 and currently available in 73 libraries;
- indexed by the terms/codes: "Financial institutions - Management," "Bank management," "Portfolio management," and "Banks and banking – Accounting."

Ex[1017] ¶¶38-43.

Exhibit 1006 — *Blain* is a printed publication and prior art under §§102(a) and 102(b). Ex[1017] ¶¶50-55. It was/is:

- available in libraries by September 1996 and currently available in 39 libraries;
- indexed by the terms/codes: "Computer software, integrated software", "Integrated Software," "Client/server computing," "Business computer applications," and "ABAP/4 (Computer programming language)."

Ex[1017] ¶¶50-55.

Exhibit 1007 — *SAP-IS-B* ("Funktionen im Detail – IS-B – System R/3: Einzelgeschäftskalkulation/Meldewesen") is a printed publication and prior art under §§102(a) and 102(b). Ex[1017] ¶¶115-124. It was/is available:

- on SAP's website by July 1997 and currently available on the Internet Archive;

- in public libraries:
    - by September 1997 and currently available in 6 libraries;
    - indexed by the terms "SAP R/3," "Bank," and "Kalkulation" (German for calculation).

Ex[1017] ¶¶115-124. Ex[1007] contains a certified English translation and the original German version; Ex[1023] contains a scanned library copy. The text is identical, save pagination differences. Ex[1017] ¶123. An English version (Ex[1022]) with substantially similar disclosure was available on SAP's "Media Center" by July 1997. Ex[1022]; Ex[1017] ¶¶115-124. A POSITA interested in this Patent's subject matter would know to look at SAP's website (www.sap.com) and find the German and English versions by simply clicking "Industry Solutions" -> "SAP Banking" -> "Media Center." Ex[1022]; Ex[1016] ¶96. In 1997 SAP advertised this website to POSITAs. Ex[1024]; Ex[1025]. Blain also instructs POSITAs to look to SAP's website. Ex[1016] ¶96. Or a POSITA could search library databases using any combination of terms known to a POSITA interested in the subject matter of the Patent (Ex[1016] ¶96): "SAP R/3", "Bank", and "Kalkulation", yielding between 1 and 77 results. Ex[1017] ¶124.

Exhibit 1010 — *Kimball* is a printed publication and prior art under §§102(a) and 102(b). Ex[1017] ¶¶86-92. It was/is:

- available in libraries by November 1993 and currently available in 96 libraries;
- indexed by the terms/codes: "Banking," "Accounting," "Bookkeeping," "Banks and Banking."

Ex[1017] ¶¶86-92.

Exhibit 1011 — *McKenzie* is a printed publication and prior art under §§102(a) and 102(b). Ex[1017] ¶¶74-79. It was/is:

- available in libraries by April 1997 and currently available in 32 libraries;
- indexed by the terms "Dividend – Taxation" and "Dividends – Taxation – Canada," "Internal revenue," "Income tax," "Income from investments," and "Capital gains tax."

Ex[1017] ¶¶74-79.

B. Grounds

Ground	References	Basis	Claims
1		§101	1, 3, 8-24
2	*E&Y*	§102	1, 3, 8-24
3	*E&Y*	§103	1, 3, 8-24
4	*Blain*	§102	1
5	*Blain*	§103	1
6	*SAP-IS-B*	§102	1, 3, 8
7	*SAP-IS-B*	§103	1, 3, 8
8	*E&Y* in view of *Blain*	§103	1, 3, 8-24
9	*E&Y*, in view of *Blain*, and *SAP-IS-B*	§103	1, 3, 8-24
10	*E&Y* in view of *Blain*, and *Kimball*	§103	9-24
11	*E&Y* in view of *Blain*, *SAP-IS-B*, and *Kimball*	§103	9-24

IV. OVERVIEW OF THE PATENT

A. Summary of the Claimed Subject Matter

The '316 Patent claims priority to a Provisional Application filed on April 9, 1999. Ex[1001]. The Patent describes a "process for determining object-level profitability" using a relational database. Ex[1001] 4:42-43, Abstract; Ex[1016] ¶¶66-68. It explains that "[t]he process of measuring profit is an important business activity" where "[p]rofit measures are the primary basis for understanding financial performance and value creation in a business." Ex[1001] 1:17-19. It also describes using a relational database system to calculate

opportunity values, marginal values of profit, and a full absorbed profit value adjustment to calculate profitability for an object. Ex[1016] ¶¶66-68.

V. SUMMARY OF PRIOR ART

The patent claims what was well-known in the prior art. None of the prior art discussed below was considered during prosecution. Ex[1001]; Ex[1002]. These references are directed to the same field (profitability measurement systems); operate using the same architecture (generic computers and databases); and are designed to solve the same problem (calculating object level profitability).

All citations to exhibits use the internal (*e.g.*, non-Bates page numbers) except for Ex[1007] which refers to the Bates page numbers.

A. *E&Y* (Ex[1005])

E&Y is a book, published in 1995 as a guide for financial practitioners. §III.A; Ex[1017] ¶¶38-43; Ex[1016] ¶¶76-86. *E&Y* describes in great detail various methods of measuring performance in financial institutions, including object level profitability accounting. Ex[1005]; Ex[1016] ¶¶76-86.

B. *Blain* (Ex[1006])

Blain is a book written in 1996 by ASAP World Consultancy and Jonathon Blain. §III.A; Ex[1017] ¶¶50-55; Ex[1016] ¶¶87-91. *Blain* describes

the SAP-R/3 product, developed by SAP AG and launched in 1992, that provides enterprise resource planning software ("ERP") for companies using a modular suite of integrated business management applications. Ex[1016] ¶¶87-91.

C. SAP-IS-B (Ex[1007])

SAP-IS-B is a 1996 technical paper issued by SAP and publicly available on SAP's website no later than July 1997 and in libraries no later than September 1997. §III.A; Ex[1017] ¶¶115-124. *SAP-IS-B* describes SAP's "Industry Solutions – Banking" product module, which (as discussed in *Blain* (Ex[1006] 585)) integrates with the SAP-R/3 enterprise software and provides functionality specific to banking industry including the object level profitability analysis of the challenged claims. Ex[1007] 9-12; Ex[1016] ¶¶92-95.

D. Kimball (Ex[1010])

Kimball is a 1993 article written by Ralph C. Kimball published in the journal *Bank Accounting & Finance*. §III.A; Ex[1017] ¶¶86-92. *Kimball* provides additional detail on allocating equity to lines of business, enabling object level profitability accounting. Ex[1016] ¶¶544-580.

E. Other References

In addition to the prior art described above, other references will be used throughout this petition. Other than *Date*, none of the following references were considered during prosecution of the '316 Patent or any of its parents.

Horngren is a college textbook on Cost Accounting, published in 1997. Ex[1017] ¶¶44-49; Ex[1013]. It was publicly available by March 1996. Ex[1017] ¶¶44-49.

Date is the second edition of a book written by C.J. Date ("*Date*") issued by Addison-Wesley in 1989. Ex[1017] ¶¶56-61; Ex[1004]. It was publicly available by January 1989. Ex[1017] ¶¶56-61. The 1st edition of this book is incorporated by reference in the '316 Patent. Ex[1001] 2:53-55.

Database Systems is a book written by C.J. Date and released by Addison-Wesley in 1994. Ex[1017] ¶¶80-85; Ex[1014]. It was publicly available by February 1994. Ex[1017] ¶¶80-85.

Wells is an annual financial report issued by Wells Fargo & Company and available to the public in 1997. Ex[1017] ¶¶95-96; Ex[1018].

Mabberley is a book written by Julie Mabberley and issued by Pitman Publishing in 1992. Ex[1017] ¶¶62-67. It was publicly available by March 1993. Ex[1017] ¶¶62-67.

Weber is a working group paper by Nic Stuchfield and Bruce Weber and issued by New York University in 1992. Ex[1017] ¶¶68-73. It was publicly available by March 1993. Ex[1017] ¶¶68-73.

Frei is a technical paper written by Frances X. Frei, Patrick T. Harker, and Larry W. Hunter and issued by The Wharton School at the University of Pennsylvania in January 1998. Ex[1017] ¶¶93-94. It was publicly available by January 1998. Ex[1017] ¶¶93-94.

VI. CLAIM CONSTRUCTION

The claim terms are to be given their broadest reasonable interpretation, as understood by one of ordinary skill in the art and consistent with the disclosure.[1] To the extent the Applicant has expressly defined a claim term in the specification, Petitioner has used that definition. Otherwise, the following terms should be construed:

A. Level of Ordinary Skill in the Art

A person of ordinary skill in the art would have at least a Bachelor's Degree in computer science, accounting, or management information systems, or a similar field with at least two years of experience in accounting or finance software, or a person with a master's degree in computer science, accounting, or

[1] Petitioner's invalidity arguments apply regardless of what claim construction standard is used. Ex[1016] ¶72.

management information systems, or a similar field with a specialization in accounting or finance software. Ex[1016] ¶63. A person with less education but more relevant practical experience may also meet this standard.

B. "profit information" (Claim 1)

A POSITA would have understood that the term "profit information" to mean "financial and/or non-financial data related to calculating profit." Ex[1016] ¶¶73-74. The specification identifies both financial (*e.g.*, balances, rates, expected loss frequency) and non-financial (*e.g.*, product identification, dates) as information to be stored in the database, and thus is not limited to financial information. Ex[1001] 4:56-63, 6:44-48, 7:30-42, 7:51-56; Ex[1016] ¶¶73-74.

VII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Claims 1, 3, and 8-24 are Unpatentable as Patent-Ineligible Subject Matter

1. Legal Standard

Section 101 prohibits patenting abstract ideas. *Bilski v. Kappos*, 561 U.S. 593, 602 (2010); *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). Assessing subject matter eligibility follows a two-step analysis. *Alice v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014). The first step is "to determine whether the claims at issue are directed to … patent-ineligible concepts." *Alice*, at 2355; *Bilski*, at 608 (finding claims drawn to "both the

concept of hedging risk and the application of that concept to energy markets" to be patent-ineligible); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014) (claims drawn to "showing an advertisement before delivering free content" were patent-ineligible). To uncover the abstract idea, one must "identify the purpose of the claim—in other words, determine what the claimed invention is trying to achieve—and ask whether that purpose is abstract." *Enfish, LLC v. Microsoft Corp.*, 56 F. Supp. 3d 1167, 1173 (C.D. Cal. 2014).

If the claims are directed to a patent-ineligible concept, the second step is to determine whether the claim limitations, analyzed individually and as ordered combinations, contain an inventive concept transforming the claims into patent-eligible subject matter. *Mayo*, at 1293-94. "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].'" *Alice*, at 2357. Indeed, to transform an abstract idea into eligible subject matter, the recited "additional features" must be more than "well-understood, routine, conventional activit[ies]." *Mayo*, at 1298.

An abstract idea is not eligible simply because the claim is directed to a computer system or network, or involves a computing environment. "[T]he mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention … [nor] is limiting the use of an abstract idea to a particular technological environment" enough to impart patent eligibility.

Alice, at 2358; *see also CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1375 (Fed. Cir. 2011). Indeed, using a computer "for no more than its most basic function—making calculations or computations—fails to circumvent the prohibition against patenting abstract ideas and mental processes." *Bancorp Servs. LLC v. Sun Life Assur. Co. of Canada*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (distinguishing "improvements to computer technologies" (potentially patent eligible) from the use of computers to merely improve speed or efficiency (not patent eligible)).

2. Independent Claim 1 - Directed to Abstract Idea of "calculating object level profitability"

Claim 1 is directed to the abstract idea of "calculating object level profitability." Ex[1001] 4:42-43, 28:55. Claim 1 recites the primary steps of "providing a relational database management system ... calculating opportunity values for funds used or supplied ... calculat[ing] at least one marginal value of profit ... and combining the at least one marginal value of profit to create a measure for object level profitability." Ex[1001] 28:55-29:12. To be blunt, calculating object level profitability, as recited by the claims, is simply calculating a first value (opportunity value), calculating one or more second values (a marginal value of profit), and combining the one or more second values (the first value sits idle); that is it – the epitome of pen-and-paper activity. Ex[1016] ¶¶111-113. The remaining claim elements merely identify the generic technological environment ("database"

and "relational database management system") and add routine and conventional post-solution activity. Ex[1016] ¶¶111-113.

The first *Alice* step can involve asking "whether the focus of the claims is on the specific asserted improvement in computer capabilities...or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Enfish*, at 1338. The Patent admits its database is operated using "standard administration actions" and "[RDBMS] textbooks." Ex[1001] 11:14-39; Ex[1008] ¶937; Ex[1016] ¶¶111-113. The Patent does not improve the operations of a relational database or computer, but merely uses those generic components to implement the abstract idea. Ex[1016] ¶¶111-113. The Patent is thus directed to solving a business problem, not improving the performance of a database or computer such as by increasing its speed or efficiency. *Bancorp Servs.*, at 1278.

Similar to *Alice* and *Bilski*, Claim 1 is directed to the abstract idea involving an economic practice. In *Alice*, the claims were directed to the abstract idea of "intermediated settlement, *i.e*, the use of a third party to mitigate settlement risk" that was a "fundamental economic practice long prevalent in our system of commerce." *Alice*, at 2356. *Alice* also found that, in step two, the "mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Alice*, at 2358. In *Bilski*, the claims were directed to the "basic concept of hedging, or protecting against risk," and the court

held that "[h]edging is a fundamental economic practice long prevalent in our system of commerce and taught in any introductory finance class." *Bilski*, at 611. Like *Alice* and *Bilski*, Claim 1 is directed to the abstract idea of calculating object level profitability - a widely-used, fundamental economic practice. Ex[1001] 4:42-43; §VII.A.3; Ex[1016] ¶¶111-113.

In *Versata*, the claims were directed to the abstract idea of "determining a price, using organizational and product group hierarchies" – *e.g.*, a "basic conceptual framework for organizing information." *Versata*, at 1334. *Versata*'s abstract idea is similar to the challenged Patent; while *Versata* determined price using organizational and product group hierarchies, the Patent determines profit using product, customer, and organizational hierarchical objects. Ex[1001] 4:9-12. Similar to the abstract claims in *CyberSource*, the claims in *Versata* and the challenged Patent recite a "method [that] could be performed in the human mind or by a human using a pen and paper." *Versata*, at 1333 (citing *CyberSource Corp.*, at 1366).

In *Electric Power Group*, the claims were directed to the abstract idea of "collecting information, analyzing it, and displaying certain results of the collection and analysis." The Court stated that "information as such is an intangible," and accordingly "have treated collecting information, including when limited to a particular content" as "within the realm of abstract ideas." *Electric Power Group LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). They

said, "we have treated analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category." *Id.* at 1354. Similar to the claims in *Electric Power Group*, the Challenged Claims simply collect information (financial and non-financial information) and analyze that information to calculate profitability. The Challenged Claims do not even disclose displaying the results, as in *Electric Power Group*. The steps of the Challenged Claims represent a mental process, as calculating object level profitability for an organization can be calculated by a human on pen and paper. *See* Ex[1013]; *see also* Ex[1005].

In *GSN Games*, the claims were directed to the abstract idea of "profitably awarding prizes to game players." *GSN Games, Inc. v. Bally Gaming, Inc.*, CBM2015-00155, 15, (Jan. 2016). There, the "idea of profitably awarding prizes to game players represents a 'disembodied concept,' a basic building block of human ingenuity and rises to the level of an abstract idea." *Id.* The Challenged Claims recite similar limitations – calculating profitability – but fail to provide any post-calculation activity like determining a prize based on profitability. The Challenged Claims fail to provide limitations that claim patent-eligible subject matter, only claiming the basic building block of human ingenuity of calculating object level profitability.

In *BSG Tech*, a method for indexing a database by considering historical usage information was found directed to an abstract idea. *BSG Tech*

LLC v. Buyseasons, Inc., 2018 U.S. App. LEXIS 22704, at *12 (Fed. Cir. 2018). The Court dismissed arguments that the "claimed invention improves the quality of information added to the database and the organization of information in the database" because "[t]hese benefits, however, are not improvements to the database functionality. Instead, they are benefits that flow from performing an abstract idea in conjunction with a well-known database structure." *BSG Tech*, at *14-15. As in *BSG Tech*, the Challenged Claims do not improve the functionality of a database; rather, they use a conventional database to perform financial calculations. Thus, recitations of a database fail to provide limitations that claim patent-eligible subject matter.

3. Independent Claim 1 Contains No "Inventive Concept"

Claim 1 fails to recite any "inventive concept" amounting to significantly more than the abstract idea. Claim 1 recites generic technologies – "database" and a "relational database management system" – that fail to transform the abstract idea into patent-eligible subject matter. The Patent even admits its database is operated using "standard administration actions" and "[RDBMS] textbooks." Ex[1001] 11:14-39.

Prior decisions teach that generically using databases is insufficient to transform an abstract idea. *See Carecloud*; *see also BSG Tech*. For example, in *Carecloud* recitations of basic servers, databases, and client features added nothing

more than the abstract idea itself. *Carecloud*, at 20. *Carecloud* says that storing rules in a rules database, updating the rules, and applying those rules were all well-understood, conventional activities; the "mere presence of methods or steps that may be performed by these servers, database, or client does not place these features into the category of a 'technological invention.'" *Id.* at 14.

Carecloud can be distinguished from the patent-eligible rules in *McRO*. *McRO, Inc. v. Bandai Namco Games America, Inc.*, 837 F.3d 1299 (Fed. Cir. 2016). In *McRO*, rules were defined to morph a 3-D character's facial expression. Those rules were not abstract because the claimed rules "are limited to rules with certain common characteristics" that were not used by humans in the art, and solved a known problem. *Id.* at 1314. Thus, rules for character animation constituted a technological improvement that did not preempt all possible rule-based animation solutions. Unlike the rules in *McRO*, Claim 1's recitation of rules in the relational database are business rules, not addressing a technological problem. Furthermore, Claim 1's generic calculation of opportunity values and a marginal value of profit substantially preempt commonly performed calculations of profit. Thus, the recitation in Claim 1 of a computerized profit database, a relational database management system, and storing rules in the relational database fails to provide an inventive concept.

In *DDR*, the Federal Circuit explained that the claims in *Alice*, *Accenture*, *Bancorp*, and *Ultramercial* "were recited too broadly and generically to

be considered sufficiently specific and meaningful applications of their underlying abstract ideas," and noted that "[a]lthough many of the claims recited various computer hardware elements, these claims in substance were directed to nothing more than the performance of an abstract business practice on the Internet or using a conventional computer." *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014); *see also Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1345 (Fed. Cir. 2013). Moreover, in *DDR*, it was recognized that, "after *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible." *DDR Holdings*, at 1256. The *DDR* claims survived because they recited a solution that "is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks." *Id.* at 1257. By contrast, the Challenged Claims recite features that were conventional and performed by humans without computers.

The limitations of Claim 1, both individually and as an ordered combination, fail to provide "significantly more" than the abstract idea of calculating object level profitability. Each element is addressed below.

(i) *Element 1[preamble]*

If the preamble is limiting, it fails to disclose any inventive step. Ex[1016] ¶114. As discussed below, calculating object level profitability using an

RDBMS was well-known. Thus, the claim fails to add a meaningful limitation. Ex[1016] ¶114.

(ii) *Element 1[a]*

Database technology, and using databases on a computer, was well-known. Ex[1004]; Ex[1014] 2-10, 21-23; Ex[1016] ¶¶115-121; 77 Fed. Reg. 48,764 ("Mere recitation of known technologies" such as "databases" does not render a patent a technical innovation). Storing information was a primary purpose of databases. Ex[1014] 2-4, 9-10. Storing profit information in a database was well-within the routine use of a database, and calling a database a "computerized profit database" does not transform the generic technology. Ex[1016] ¶¶115-121.

The specification admits the profit database was well-known in the art—describing accounting's early adoption of "automated data processing solutions due to the match between computing capabilities of computers and the execution of the accounting process." Ex[1001] 2:1-4. The specification emphasizes the historical use of computer automation in the field:

> "The first large scale use of ***automated computing technology*** is frequently found to be the ***automation of the financial control or accounting processes***, since it is ***easy to develop software to implement accountancy rules*** and there were large benefits in staff productivity easily observable."

Ex[1001] 3:55-60.

Additionally, prior art shows 1[a] as well-known, routine and conventional as enumerated in Sections VII.B.1(ii), VII.C.1(ii), and VII.D.1(ii). Ex[1016] ¶¶115-121, 248-252, 410-413, 465-469. Prior art describes a profit database: "[m]uch of the information required for product costs and profitability reporting, can be obtained from a comprehensive financial database that holds items with some form of product indicator. This type of system is becoming much more common." Ex[1008] 88; Ex[1016] ¶119.

(iii) *Element 1[b]*

Element 1[b] describes a generic "relational database management system" and a "computerized profit database." Ex[1016] ¶¶122-125. As discussed above, a computerized profit database was well-known, routine and conventional in the field. §VII.A.3(ii). Using a relational database management system ("RDBMS") was also well-known and conventional in the art. Ex[1014] 2-10, 21-23; Ex[1016] ¶¶122-125. Prior art, incorporated by reference in the patent, admits that relational database systems were widely available in 1987, including IBM's DB2 database, Oracle's ORACLE database, and Sybase's SYBASE database. Ex[1004] 1-3; Ex[1014] 2-10, 21-23; Ex[1001] 2:53-55; Ex[1016] ¶¶122-125.

The interoperation of an RDBMS with the database also fails to provide an inventive concept. The purpose of a RDBMS is to operate with a

database, and most RDBMSs are packaged with a database. Ex[1004] 1-3; Ex[1014] 21-23.

Additionally, the prior art discloses the elements of 1[b] as well-known, routine, and conventional in the art as described in Sections VII.B.1(iii), VII.C.1(iii), and VII.D.1(iii). Ex[1016] ¶¶122-125, 253-254, 414-416, 470-472.

(iv) *Element 1[c]*

As discussed above, preparing profit information for use in a computerized database, such as a RDMS was well-known, conventional, and routine in the art. Ex[1016] ¶¶126-134.

"calculating opportunity values for funds used or supplied"

To the extent "calculating opportunity values for funds used or supplied" is not itself integral to the abstract idea, it fails to provide an inventive concept. Ex[1016] ¶¶126-134. The only reference to the term "opportunity" in the specification is:"DPM's funds transfer pricing method uses maturity opportunity rates used in valuing each object's marginal use or source of internal funds." Ex[1001] 7:61-64; Ex[1016] ¶¶127-129. Additionally, Claim 8 says: "wherein the opportunity values are based on matched maturity funds transfer pricing theory." Ex[1001] 29:41-44.

Transfer pricing theory was well-known, as described by at least six references incorporated into the Patent:

- *Controversies on the Theory of the Firm, Overhead Allocation, and Transfer Pricing*
- *The Transfer Pricing Problem*
- *Transfer Pricing*
- *Internal Transfer Pricing of Bank Funds*
- *Transfer Pricing: Economic, Managerial, and Accounting Principles*
- *International Intracorporate Pricing*

Ex[1001] 3:16-31. The specification further admits that Transfer Pricing was well-known: "***common name*** for this approach to valuing is know[n] as 'Matched Maturity Funds Transfer Pricing.'" Ex[1001] 8:43-47.

Calculating opportunity values based on transfer pricing was conventional. Ex[1013] 910-916; Ex[1016] ¶¶126-134. *Mabberley* describes the "calculation of the cost of funds and earnings credit" using interest rates applied to "balances by pool, activity, responsibility centre, product, or customer." Ex[1008] 95; Ex[1016] ¶129.

Additionally, Sections VII.B.1(iv), VII.C.1(iv), and VII.D.1(iv) describe prior art that calculates opportunity values and funds transfer pricing. Ex[1005] 175; Ex[1016] ¶¶126-134, 255-260, 417-423, 473-478.

"each object being measured"

This claim language does not add an inventive concept. Ex[1016] ¶¶131-133. The "object being measured" can be 1) a seat, policy, or account object, or 2) a customer, product, or organization. Ex[1001] 6:57-61, 7:18-37, Figs. 3-4. Calculating Transfer Pricing at a product (seat, policy, or account) and organizational level, to the extent not the abstract idea, was well-known as described by references cited in the specification. *See* Ex[1001] 3:16-31; Ex[1013]. Further, Sections VII.B.1(iv), VII.C.1(iv), and VII.D.1(iv) show that applying transfer pricing at various levels of granularity within the organization was well-known.

Additionally, consolidating/aggregating costs and revenues to an "object" was well-known. Ex[1016] ¶¶126-134. *Horngren* describes a "cost object" as "anything for which a separate measurement of costs is desired. Examples include a product, service, project, customer, brand, category, activity, department, and program." Ex[1013] 27-32, 46; Ex[1016] ¶132. *Blain* describes a "cost or profit object" as "a convenient conceptual destination that can appear in the accounts with accrued costs or revenues," and as a method that "enables an accurate system of accounting that will help you control the value-adding business processes of your company." Ex[1006] 273, 278; Ex[1016] ¶¶133, 417-423.

(v) *Element 1[d]*

As explained above (1[b], 1[c]), the claimed relational database was conventional. §VII.A.3(iii)-(iv); Ex[1016] ¶¶122-133.

"establishing ... rules for processing the prepared information"

Establishing rules for processing information is an essential component of relational databases, and a fundamental feature of any RDBMS implementing a relational language (*e.g.*, structured query language). Ex[1004] 9-13, 77-79, 95-108; Ex[1014] 79-99, 110-127; Ex[1016] ¶¶135-142. Relational databases are based on the "relational model" defined by an entity-relationship of tables and the data stored therein. Ex[1014] 52-58; Ex[1016] ¶¶136-138. To create a relational database, an entity-relationship must be defined. Ex[1014] 52-58; Ex[1016] ¶¶136-138. Defining the entity-relationship requires establishing rules in the relational database that define how the entities interrelate and how information can be inserted or used in a database, usually using a data definition file. Ex[1004] 49-56; Ex[1014] 52-58; Ex[1016] ¶¶136-138.

In the SQL standard, used in many well-known database systems, many operations are defined to establish rules for selecting and processing information. *See* Ex[1004]; *see also* Ex[1014]. Specifically, SQL provides the capability to define, in the database, stored procedures (executable programmatic logic), stored functions, macros, triggers, views, and indexes. Ex[1004] 15-17, 212; Ex[1014] 52-56, 112-123, 453, 469-470. These functions provide the capability to establish rules within the database for processing information.

Ex[1004]; Ex[1014]. SQL also permits selecting various objects in the database through the SELECT query function. Ex[1004] 78; Ex[1016] ¶138.

Blain discloses calculating profitability using rules, explaining: "cost data are allocated according to rules which are under your control" and that the system can "[a]llocate, or set up rules to allocate, activity costs." Ex[1006] 284, 311; Ex[1016] ¶¶424-431. *SAP-IS-B* discloses calculating profitability using "costing rules, regulatory reporting rules, [and] risk management rules." Ex[1007] 27; Ex[1016] ¶¶480-486. *SAP-IS-B* also discloses that "conversion rules" are "maintained by the user" and the "rules support the conversion of data structures from the external (operational) systems to the IS-B data structures." Ex[1007] 87; Ex[1016] ¶¶480-486.

"performing a profit calculus"

"[P]erforming a profit calculus" is a core part of the abstract idea, and fails to provide an inventive concept to Claim 1. Calculating profit values using a relational database was well-known and was a conventional use of a relational database. *See* Ex[1006]; *see also* Ex[1007]; Ex[1016] ¶¶140-141.

SAP-IS-B discloses that the "Bank Profitability Analysis" is performed for any "customer group, product, risk class, branch" based on user-assigned rules. Ex[1007] 60; Ex[1016] ¶¶480-486. *Blain* discloses that a user can "display a business-oriented profit and loss analysis" that is "scrutinized down to the details of the individual transactions," where the "cost data are allocated

according to rules which are under your control." Ex[1006] 311; Ex[1016] ¶¶424-431.

(vi) *Element 1[e]*

Element 1[e] recites the generic technology of an RDBMS to "independently calculate" at least one "marginal value of profit" using the rules. Ex[1016] ¶¶143-146.

SAP-IS-B discloses independently calculating marginal values of profit: "all selected costing methods are analyzed simultaneously." Ex[1007] 36; Ex[1016] ¶¶487-492. *SAP-IS-B* also discloses that "[w]ithin the Cost Accounting module, various cost accounting systems can run in parallel" and that " you can directly assign those revenues and costs which cannot be assigned to single transactions to profitability segments." Ex[1007] 10, 60; Ex[1016] ¶¶487-492. *Blain* discloses that the "system automatically updates a subtotal of a balance sheet account for every business transaction." Ex[1006] 221; Ex[1016] ¶¶432-438.

"marginal value of profit"

Calculating "at least one marginal value of profit" is also core to the abstract idea, and well-known in the art. Ex[1016] ¶145. The patent defines "marginal value of profit" in multiple ways, including by calculating "provisioning (P)," "net interest (NI), other revenue (OR) and direct expense (DE)." Ex[1001] Claims 3-4.

The prosecution history also states that "methods of marginal pricing" include "activity based costing or funds transfer pricing." Ex[1015] 256. But funds transfer pricing was well-known in the art at the time. §VII.A.3(iv). Activity-based costing is explained in detail in the prior art, by at least *E&Y*, *Mabberley*, and *Blain*. Ex[1005] 123-140; *see* Ex[1008] (entitled "Activity-based Costing in Financial Institutions"); Ex[1006] 284-298; Ex[1016] ¶145. The prior art, as described in Sections VII.B.1(vi), VII.C.1(vi), and VII.D.1(vi), also demonstrate that calculating values for provisioning, net interest, other revenue, and direct expense at a product level was well-known and routine in the art. Ex[1016] ¶¶269-276, 432-438, 487-492. *E&Y* depicts calculating NI, OR, DE, and P for a customer object:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

Net Interest

Provision

Other Revenue

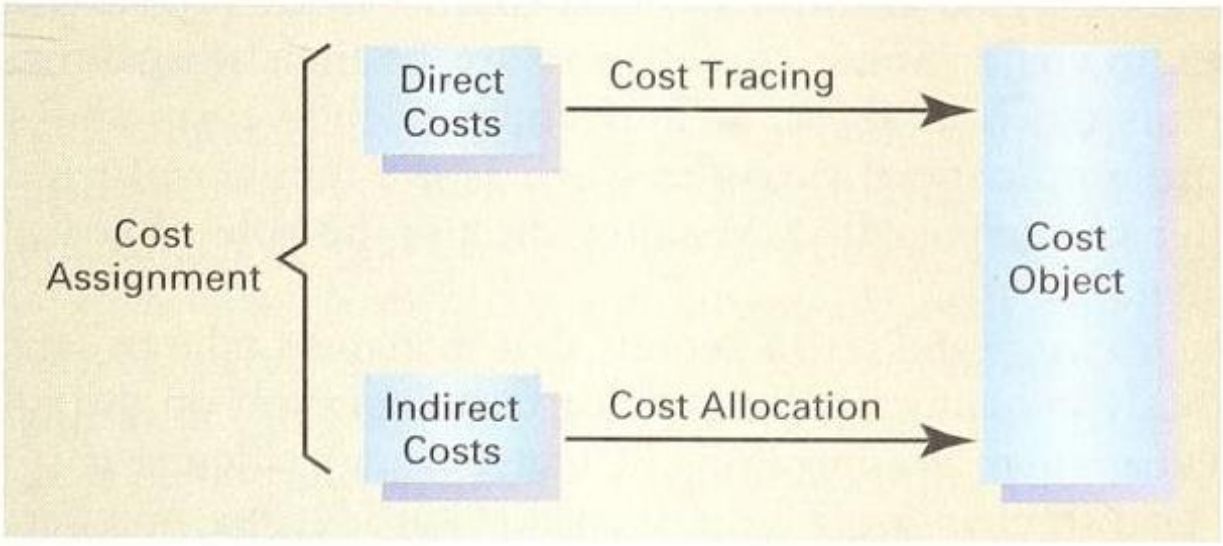
Direct Expense

Ex[1005] 45; Ex[1016] ¶¶269-276.

(vii) *Element 1[f]*

To the extent this is not part of the core abstract idea, as described above, calculating a marginal value of profit was well known, and simply combining this value in a conventional fashion does not provide an inventive step. §VII.A.3(vi); Ex[1005] 42-45; Ex[1016] ¶¶147-151.

Horngren depicts combining a marginal value of profit (*i.e.*, direct costs, indirect costs) into a cost object used for calculating object level profitability, as depicted below:



Ex[1013] 27; Ex[1016] ¶148.

E&Y depicts combining a marginal value of profit (*i.e.*, net interest income, provision for loan losses, other income, direct expense) at a product, customer, or organization level. Ex[1005] 42-45; Ex[1016] ¶¶147-150, 277-282. *SAP-IS-B*

also depicts combining a marginal value of profit for every transaction. Ex[1007] 61-63; Ex[1016] ¶¶149, 493-498.

As described for element 1[c], measuring profit at granular levels (a product, customer, or organization level) was well-known. §VII.A.3(iv). Combining a marginal value of profit to create a measure of profitability at different granular levels was also well-known. Ex[1005] 42-45; Ex[1016] ¶¶147-151.

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The particular combination of elements in Claim 1 also fails to provide an inventive concept, as they merely combine conventional components in a conventional manner to implement the abstract idea. Ex[1016] ¶151.

Since none of the elements provide an inventive concept, Claim 1 fails to provide "significantly more" than the abstract idea of "calculating object level profitability." Using the generic technologies of a computer, a relational database, and an RDBMS to calculate the well-known accounting concepts of opportunity values and marginal values of profit at various levels of granularity fails to transform Claim 1 into patent-eligible subject matter.

4. Elements recited in the dependent claims do not alter the analysis.

The elements of the dependent claims are also directed to abstract ideas and recite no "inventive concept" to save them. Instead, the recitations in the claims add nothing more than insignificant post-solution activity. *Apple*, at *8-10; *Mayo*, at 1298 ("insignificant post-solution activity" is not enough).

Claims 3 and 8-24 simply recite formulas or additional steps for calculating profit that are themselves part of the abstract idea. *Flook* holds that "a claim for an improved method of calculation, even when tied to a specific end use, is unpatentable subject matter under §101." *Parker v. Flook*, 437 U.S. 584, 595 n.8 (1978).

Additionally, Claims 3 and 8-24 simply further specify the calculations depicted in Claim 1, and fail to provide anything more the abstract idea of "collecting and analyzing information." *Electric Power Group*, at 135.

(i) *Claim 3*

(a) Element 3[a]

Claim 3 describes the step of calculating a marginal value of profit as calculating "net interest (NI), other revenue (OR) and direct expense (DE)," each of which was well-known in the art both individually and as a combination. Ex[1013]; Ex[1005] 42-45; Ex[1018] 10-11; Ex[1016] ¶¶159-167. The combination of these terms was so commonplace, that the 1996 Wells Fargo Annual Report included results, separated by lines of business, combining net

interest ("net interest income"), other revenue ("non-interest income"), and direct expense ("noninterest expense").

TABLE 3 LINE OF BUSINESS RESULTS (ESTIMATED)

(income/expense in millions, average balances in billions)	Retail Distribution Group		Business Banking Group		Investment Group	
	1996	1995	1996	1995	1996	1995
Net interest income (1)	$ 836	$463	$ 612	$372	$ 745	$ 472
Provision for loan losses (2)	10	1	99	55	4	1
Noninterest income (3)	1,046	560	265	144	475	464
Noninterest expense (3)	1,858	961	428	276	626	425
Income before income tax expense (benefit)	14	61	350	185	590	510
Income tax expense (benefit) (4)	6	26	144	79	243	216
Net income (loss)	$ 8	$ 35	$ 206	$106	$ 347	$ 294
Average loans	$ –	$ –	$ 4.3	$ 2.4	$ 1.6	$ 0.5
Average assets	1.9	1.0	6.4	3.6	2.3	0.8
Average core deposits	16.2	9.4	11.2	6.4	32.2	18.0
Return on equity (5)	1%	7%	28%	28%	50%	66%
Risk-adjusted efficiency ratio (6)	109%	103%	73%	75%	62%	54%

Ex[1018] 10-11.

(b) Element 3[b]

Element 3[b] was well-known and the calculation is commonly referred to as funds transfer pricing. Ex[1001] 8:43-55; Ex[1016] ¶¶160-161. *Wells* explains that net interest income is calculated as "the difference between actual interest earned on assets (and interest paid on liabilities) owned by a group and a funding charge (and credit) based on a Company's cost of funds." Ex[1018] 10; Ex[1016] ¶160. *Wells* also describes adjusting net interest for equity funds used: "[e]quity is allocated to the lines of business based on an assessment of the inherent risk associated with each business so that the returns on allocated equity are on a risk-adjusted basis and comparable across business lines." Ex[1018] 11; Ex[1016] ¶160. *Horngren* also describes transfer pricing and allocating the cost

of debt and equity to products, projects, and investments made within an organization: the "cost of equity capital is the opportunity cost to investors of not investing their capital in another investment that is similar in risk." Ex[1013] 904-916, 937; Ex[1016] ¶160.

As described in Sections VII.B.2 and VII.D.2, prior art establishes calculating net interest as routine, describing that "all assets will receive funding charges and all liabilities and equity will receive funding credits." Ex[1005] 178; *see also* Ex[1007] 48-49, 62-63; Ex[1016] ¶¶160-161, 294-298, 508-511.

(c) Element 3[c]

Calculating OR, as a profit contribution from non-interest related sources, was well-known, routine and conventional. Ex[1016] ¶¶162-164. *Horngren* depicts the calculation of revenue from non-interest related sources and applies those revenues to a product, customer, or organization level. Ex[1013] 576-585; Ex[1016] ¶162. *Mabberley* discloses calculating other revenue in the form of fees and commissions. Ex[1008] 70-71, 117; Ex[1016] ¶162. *Wells* also depicts calculating non-interest income allocated to each business unit. Ex[1018] 10-11; Ex[1016] ¶162.

Additionally, *E&Y* depicts calculating non-interest income as other income, noninterest revenues from fees, transactions charges, and commissions. Ex[1005] 45, 63; Ex[1016] ¶163, 299-302. *SAP-IS-B* also depicts calculating

other revenue in the form of commissions attributed to a single transaction. Ex[1007] 33; Ex[1016] ¶163, 512-514.

Thus, calculating the well-known value of other revenue was well-known, routine, and conventional.

(d) Element 3[d]

Calculating DE was well-known in the art. Ex[1016] ¶¶165-167; Ex[1018]. *Horngren* says "[d]irect costs of a cost object are costs that are related to the particular cost object and that can be traced to it." Ex[1013] 27-28, 96-102; Ex[1016] ¶165. *Mabberley* explains that "[m]arginal costs are defined as those costs incurred by the production of an additional unit of an activity, product or service." Ex[1008] 74; Ex[1016] ¶165.

E&Y discloses calculating "marginal pricing decisions" using "costs directly related to the product." Ex[1005] 42-45, 204; Ex[1016] ¶¶166, 303-307. *SAP-IS-B* discloses calculating "standard unit costs" as "direct and directly attributable costs" for each transaction. Ex[1007] 33, 55-61; Ex[1016] ¶¶166, 515-518.

(e) Element 3[e]

Calculating IE was well-known in the art. Ex[1016] ¶¶168-172. The Patent explains that "Indirect Expense (IE), is an apportioned profit value

adjustment for all non-object related resource consumption by the business." Ex[1001] 5:12-14, Claim 5.

Mabberley discloses that "[w]here full absorption costing is required, the indirect costs must also be allocated to products." Ex[1008] 134; Ex[1016] ¶170. *E&Y* describes the "*Fully Absorbed Accounting Approach*: Under this approach, the sum of the profits/losses of all reported units equals the profits/losses of the entire institution, regardless of whether the reported units are organizational units, products, customers, or any other aspect of an institution's business." Ex[1005] 46; Ex[1016] ¶¶171, 308-315. *SAP-IS-B* also discloses calculating "indirect costs" to "fully absorb the cost involved in a single transaction." Ex[1007] 55-58; Ex[1016] ¶¶171, 519-523.

(ii) *Claim 8*

Claim 8 recites that "the opportunity values are based on matched maturity funds transfer pricing theory," and defines matched maturity funds transfer pricing theory as "market alternative supplies or uses of funds having matched interest and payment characteristics." The '316 Patent admits that matched maturity funds transfer pricing was well-known by explaining that the "common name for this approach to valuing is know[n] as 'Matched Maturity Funds Transfer Pricing.'" Ex[1001] 8:43-47; Ex[1016] ¶¶187-190.

The concept of matched maturity funds transfer pricing was well-known and described in the prior art. Ex[1013] 906-916; Ex[1016] ¶¶187-190, 340-343, 538-542. Calculating opportunity values based on matched maturity funds transfer pricing theory was often required by accounting and financial regulations at the time of the invention. Ex[1013] 913-916; Ex[1016] ¶188. *Mabberley* describes the matched funding as matching rates "based on the maturity and pricing structure of the asset or liability to be matched." Ex[1008] 66; Ex[1016] ¶188.

Additionally, *E&Y* and *SAP-IS-B* both explain the process of matched maturity funds transfer pricing for various objects. Ex[1005] 180, 258; Ex[1007] 47-53, 89; Ex[1016] ¶¶187-190, 340-343, 538-542.

(iii) *Claims 9, 13, 17, and 21*

Claims 9, 13, 17, and 21 recite substantially the same equation for calculating net interest. Ex[1016] ¶¶191-194. The difference between the claims is in the calculation of the treatment rate based on one or more of product type, balance class, and tier/tenor. Ex[1016] ¶¶191-194. Moreover, this formula was well-known and routine in the art. Ex[1005] 178; Ex[1016] ¶¶191-194.

For example, *Wells* explains that net interest income is calculated as "the difference between actual interest earned on assets (and interest paid on liabilities) owned by a group and a funding charge (and credit) based on a

Company's cost of funds." Ex[1018] 10; Ex[1016] ¶192. *Mabberley* describes calculating net interest using the "average debit and credit balances" multiplied by a "rate applied to funds provided (cost of funds) or offered (earnings credit)." Ex[1008] 115; Ex[1016] ¶192.

As discussed in Sections VII.B.4 and VII.F.1, prior art establishes calculating net interest as well-known in the art, describing that "all assets will receive funding charges and all liabilities and equity will receive funding credits." Ex[1005] 178; *see also* Ex[1010] 22; Ex[1016] ¶¶191-194, 344-351, 0-550.

(iv) *Claims 10, 14, 18, and 22*

Claims 10, 14, 18, and 22 recite the exact same equation for calculating earnings on allocated equity. Ex[1016] ¶¶195-200.

E&Y discloses calculating the earnings on allocated equity using the equity ratio multiplied by a treatment rate for equity. Ex[1005] 14-15, 178, 219; Ex[1016] ¶¶199, 352-360. *Kimball* discloses calculating earnings on allocated equity as "assigned equity" times the "transfer rate." Ex[1010] 22; Ex[1016] ¶¶206, 551-557.

(v) *Claims 11, 15, 19, and 23*

Claims 11, 15, 19, and 23 recite the exact same equation for calculating earnings on allocated equity by multiplying a treatment rate of equity

(R_{equity}) by the summation of the object asset balance (Amount), an object weighting (W(Wt)), and a risk-weighted capital ratio (Cap Ratio). Ex[1016] ¶¶201-207.

Claims 11, 15, 19, and 23, and the '316 Patent, fail to specify what the "weight" of an object balance refers to, or how to calculate the weight. The '316 Patent also fails to describe what an "appropriate" risk-weighted capital ratio is. As explained by Dr. Weber, the capital ratio may refer to the same concept as the equity ratio, since both refer to the amount of equity capital allocated to an object. Ex[1016] ¶¶202. The '316 specification describes the equity allocation formula of Claims 11, 15, 19, and 23 as a "regulatory definition." Ex[1001] 8:59-64; Ex[1016] ¶202. Since the equity allocation formula of Claims 11, 15, 19, and 23 was obvious enough to be included in regulations (*e.g.*, the Basel Accords Ex[1020] which, in the United States, are implemented by regulators including the Office of the Comptroller of the Currency and the Federal Reserve, according to Dr. Weber), the equity allocation formula was well-known and routine. Ex[1016] ¶202.

The specification also explains various options "for allocating equity to objects," describing the equity allocation formula of these claims as "Option 3 Equity allocation for all assets ***following industry standards***." Ex[1001] 14:36-38,52-67; Ex[1016] ¶203. This admits that the formula was well-known within industry. Ex[1016] ¶203.

E&Y also discloses using equity allocations based on regulatory requirements, market comparables, cost of capital hurdle rates, risk-based methods, and other capital allocation methodologies. Ex[1005] 30; Ex[1016] ¶¶205, 361-368. *E&Y* discloses using a "risk-adjusted allocation of capital to product lines" in "institutions with advanced performance measurement systems." Ex[1005] 30; Ex[1016] ¶¶205, 361-368. *E&Y* also discloses calculating "equity allocations based on regulatory requirements," describing the calculations of Claims 11, 15, 19, and 23 as well-known in the art. Ex[1005] 30; Ex[1016] ¶¶205, 361-368. *Kimball* discloses calculating earnings on allocated equity as the transfer rate (R_{equity}) times the assigned equity, where the assigned equity is calculated as the regulatory capital requirement (CapRatio) times a weight ($W(Wt(o_i))$) times the asset balance (Amount(o_i)). Ex[1010] 22; Ex[1016] ¶¶206, 558-564.

(vi) *Claims 12, 16, 20, and 24*

Claims 12, 16, 20, and 24 all recite substantially the same claim language and formulas for calculating earnings on allocated equity based on the amount associated with the object, an equity allocation rule for a cohort, and treatment rate for equity. Ex[1016] ¶¶208-214.

The claims calculate earnings on allocated equity by summing all the treatment rates for equity multiplied by the equity allocation rule for the cohort of the object according to a linear function of the amounts (or balances) related to the

object. Ex[1016] ¶¶208-214. The Patent describes this equity allocation as "Option 4 Equity allocation using an economic allocation rule, based on object cohorts and modern portfolio theory's capital asset pricing model." Ex[1001] 14:39-42, 15:1-19. Modern Portfolio Theory ("MPT"), and the related CAPM, were well-known, routine, and conventional approaches to finance and accounting at the time of the invention. Ex[1005] 224; Ex[1016] ¶209. The '316 Patent further explains that "DPM's equity allocation to the object level calculations may use ... economic allocations based on econometric modeling (see book on Modern Portfolio Theory) methodologies." Ex[1001] 8:59-64. Thus, the patent admits that the equations in Claims 12, 16, 20, and 24 were well-known, routine, and conventional in the art. Ex[1016] ¶¶208-214.

As for cohorts, the Patent admits that allocating equity using cohorts with similar risk characteristics is taken from the well-known financial theories of MPT and CAPM. Ex[1016] ¶¶209-211. Cohorts of risk are defined by the Patent as a percentage of account balance or a percentage of allocated equity, referred to in the Patent as "Hurdles" or a hurdle rate. Ex[1016] ¶210. The '316 Patent also explains that SVA is a "***method financial analysts use*** to adjust profit measures for risk," admitting that the method was already well-known and routine for financial analysts. Ex[1001] 22:51-52; Ex[1016] ¶210. These admissions in the '316 Patent make it clear that the concept of allocating equity using cohorts, as recited

by Claims 12, 16, 20, and 24, was well-known, routine and conventional within the art at the time of the invention. Ex[1016] ¶¶208-214.

In the airline example provided in the '316 Patent, the patent describes the process of Claims 12, 16, 20, and 24 as "allocat[ing] equity based on mileage benefit and ***have it reduce*** NI by the ***weighted average cost of capital for the airline***." Ex[1001] 24:51-53. This demonstrates that the linear combination described in Claims 12, 16, 20, and 24 can also be considered the weighted average cost of capital ("WACC"). Ex[1016] ¶211. The concept of calculating WACC is a well-known in finance, and adjusting profit measures for WACC was widely practiced at the time of the invention. Ex[1013] 937-938; Ex[1016] ¶211.

E&Y discloses the elements of Claims 12, 16, 20, and 24 in its discussion of allocating equity according to market comparables by using regression or factor-analytic techniques to determine market betas per business line (or cohort). §VII.B.7; Ex[1005] 224-225; Ex[1016] ¶¶213, 369-376. *Kimball* also discloses allocating equity by calculating assigned equity based on capital allocations of peer businesses (external cohorts), multiplied by a transfer rate. Ex[1010] 19-22; Ex[1016] ¶¶213, 565-573.

B. Grounds 2-3: Claims 1, 3, and 8-24 are Anticipated, and Claims 1, 3, and 8-24 are Rendered Obvious, by *E&Y*

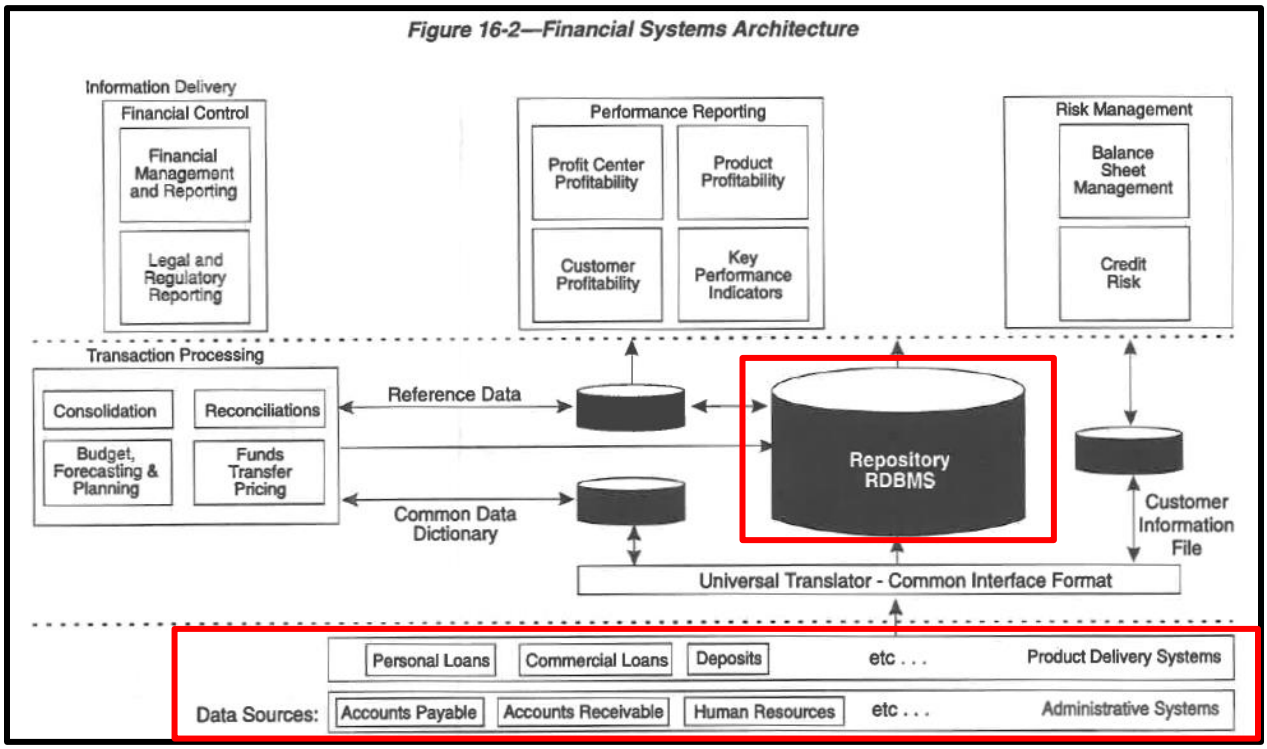
1. Independent Claim 1

(i) *Element 1[preamble]*

If limiting, the preamble is taught by E&Y. Ex[1016] ¶114, 247. *E&Y* uses an RDBMS to calculate object level profitability (VII.B.1(ii)-VII.B.1(v)) and an RDBMS would have been an obvious way to implement *E&Y*. Ex[1005]; Ex[1016] ¶¶115-142, 248-256.

(ii) *Element 1[a]*

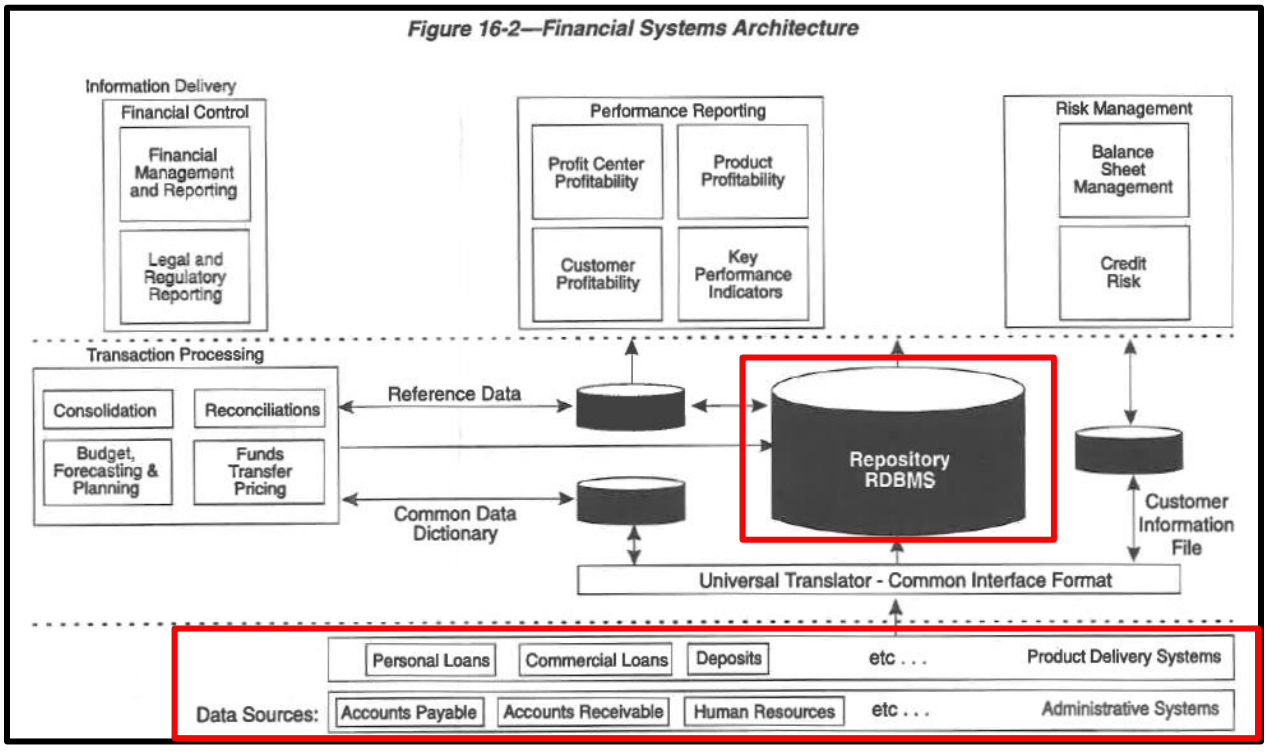
E&Y discloses element 1[a] by teaching "relational databases" which "stor[e] financial and nonfinancial data on products" and report "data on each component of total profit." Ex[1005] 29, 183; Ex[1016] ¶¶248-252. A "repository database" is "used to house the results of transfer pricing calculations, provide the basis for all allocations, and prepare detailed performance measurement reports." Ex[1005] 256. *E&Y's* database is shown below:



Ex[1005] 275; Ex[1016] ¶249-250. The database is also "computerized"; data is "acquired, processed, reported, and stored" on a "desktop" or "larger departmental server[s] or mainframe computers." Ex[1005] 270.

(iii) *Element 1[b]*

E&Y discloses element 1[b]. Ex[1005] 183, 275-277; Ex[1016] ¶¶253-254. *E&Y* teaches using a "relational database platform" for "aggregating data from many vertical, product-account-based databases into a single customer-oriented picture of behavior and profitability." Ex[1005] 277, 288. *E&Y*'s "central data repository" consists of "a data repository that spans all the applications and houses all the common data elements" and is "built upon a relational database platform." Ex[1005] 277. The Repository RDBMS interoperates with profit data sources:

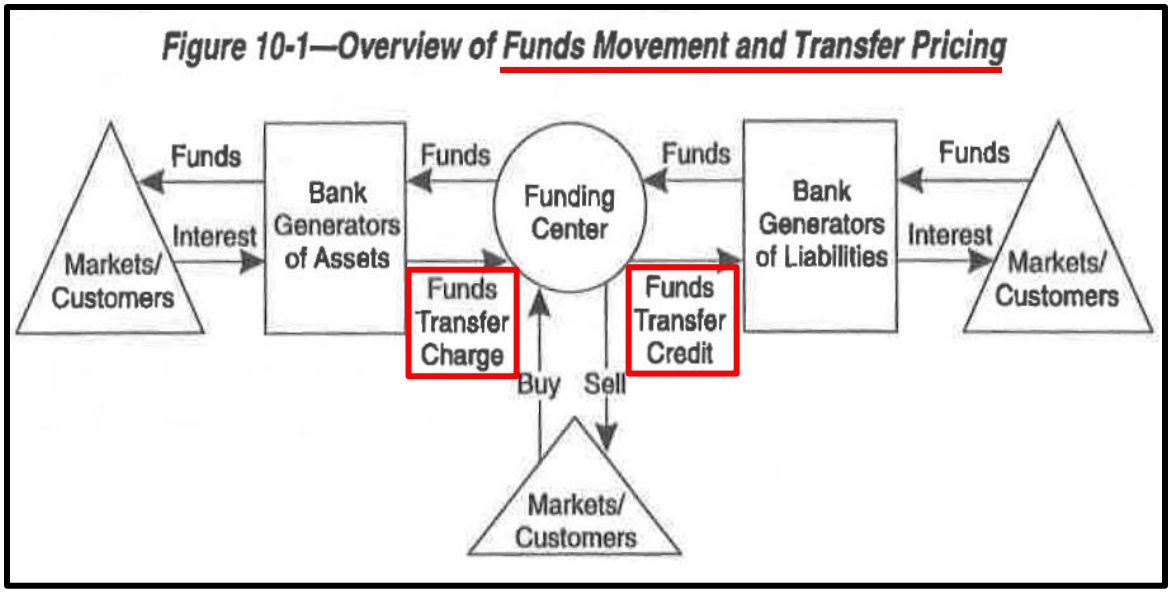


Ex[1005] 275.

(iv) *Element 1[c]*

E&Y discloses element 1[c]. Ex[1005] 125-126, 130, 175-177, 183, 274-277, 320; Ex[1016] ¶¶255-260. As shown above, *E&Y* stores profit information in the relational database. Ex[1005] 183, 275-277, 288. This profit information is prepared, including by calculating opportunity values. Ex[1016] ¶¶257-260. The Patent explains that calculating opportunity values is performed by calculation of transfer pricing, which *E&Y* shows. Ex[1001] 7:61-64; Ex[1016] ¶257.

E&Y teaches that "funds-transfer pricing represents a series of management-accounting mechanisms that measure ***the value of opportunity costs of funds provided and used***" in order to accurately determine "the profitability of business units, products, customers, etc." Ex[1005] 175. *E&Y* discloses calculating opportunity values according to funds transfer pricing in "Chapter 10: Transfer Pricing of Funds," including:



Ex[1005] 175-184.

E&Y also teaches that all costs, including opportunity costs, can be "attributed to one or more cost objects," where a "cost object is any product, service, customer, market, distribution channel, project, etc., for which a unique cost measurement is desired." Ex[1005] 125-126, Chapter 10("Transfer Pricing"); Ex[1016] ¶259. Thus, *E&Y* teaches element 1[c] by disclosing the calculation of opportunity values for each object being measured, for access through a relational database. Ex[1016] ¶¶257-260.

(v) *Element 1[d]*

E&Y discloses element 1[d] in multiple ways. Ex[1005] 137-140, 239, 268-269, 276, 320; Ex[1016] ¶¶261-268. First, relational databases are defined by database tables and the relationship between those tables in an entity-relationship model. Ex[1016] ¶262. This model requires establishing rules in the

database using the DDL language, as described by Dr. Weber, associated with SQL. Ex[1016] ¶262. Setting up a relational database satisfies "establishing, in the database, rules for processing prepared information." Ex[1005] 275; Ex[1016] ¶262.

Second, *E&Y* discloses using relational databases, establishing rules in the relational database, using the database to process information, and calculating profit at a granular level. Ex[1005] 239, 268-269; 320; Ex[1016] ¶¶262-264. *E&Y* teaches an "assignment of cost elements to pools, and then to cost objects" using "the algorithms built into the Activity Based Costing system." Ex[1005] 140; Ex[1016] ¶263. *E&Y* also teaches "developing and maintaining necessary algorithms for executing funds transfer pricing" and developing "cost and profitability information ... for any unit, product, customer or other cost object." Ex[1005] 239, 320. As discussed throughout this petition, *E&Y* teaches dozens of methods for calculating profit using defined rules. The figure below is one example of *E&Y* performing a profit calculus:

Figure 8-6—Example: Payroll Units (Category One)

Step 1. Expenses Booked to Proper Account and Step 2. Aggregated by Cost Center and by Line Item		Step 3. Costs Mapped to Process Cost Pools	Step 4. Cost Driver Determined and Cost Assigned	Step 5. Costs Driven to Cost Object
Expenses for the Period MM/YY Cost Center 10XX: Payroll		**Process Pool A: Payroll Processing** Activities determined to consume 80% of center's costs: $81,000 × .80 = $64,800	**Process Pool A Driver: Number of Payroll Checks** $64,800/10,000 checks = $6.48/check	Support unit costs are attributed to other responsibility centers on the basis of the number of checks and inquiries that they generate.
Direct Expenses				
Salaries	$42,000			
Travel & Entertainment	6,000			
Occupancy	9,000			
Telephone	3,000			
Supplies	3,000			
Printing	1,500			
Postage	1,500			
Depreciation	2,000			
Miscellaneous	4,000			
Total Direct Expenses	$72,000			
Charges from Category One Units		**Process Pool B: Investigation** Activities determined to consume 20% of the center's costs: $81,000 × .20 =$16,200	**Process Pool B Driver: Number of Inquiries** ($16,200/150 inquiries = $108/inquiry	
Computer (usage × rate)	$6,000			
Cafeteria (usage × rate)	1,080			
Etc. (usage × rate)	2,000			
Total Support Charges	$9,000			
Total Expenses	**$81,000**	**Total Expenses $81,000**	**Total Expenses $81,000**	

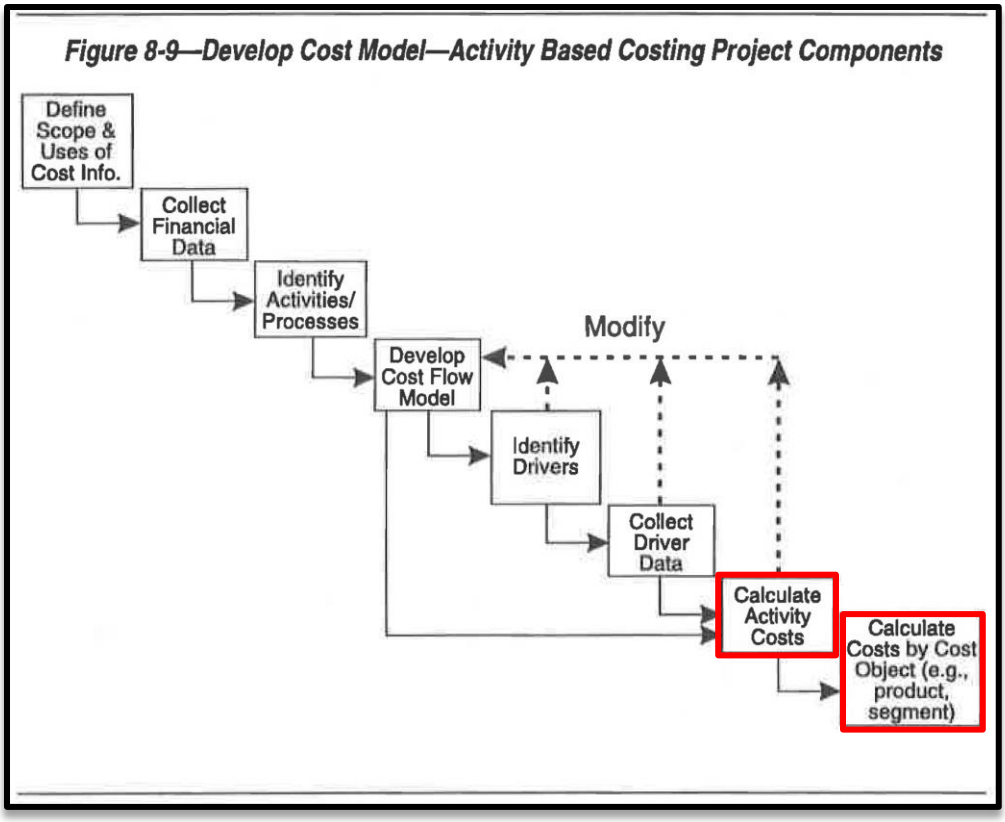
Ex[1005] 134; Ex[1016] ¶263. The rule for direct expense allocation above matches the "rule" from the '316 Patent airline example:

> Calculate DE1(seat)=tcc*(1/(total no. of seats on plane))

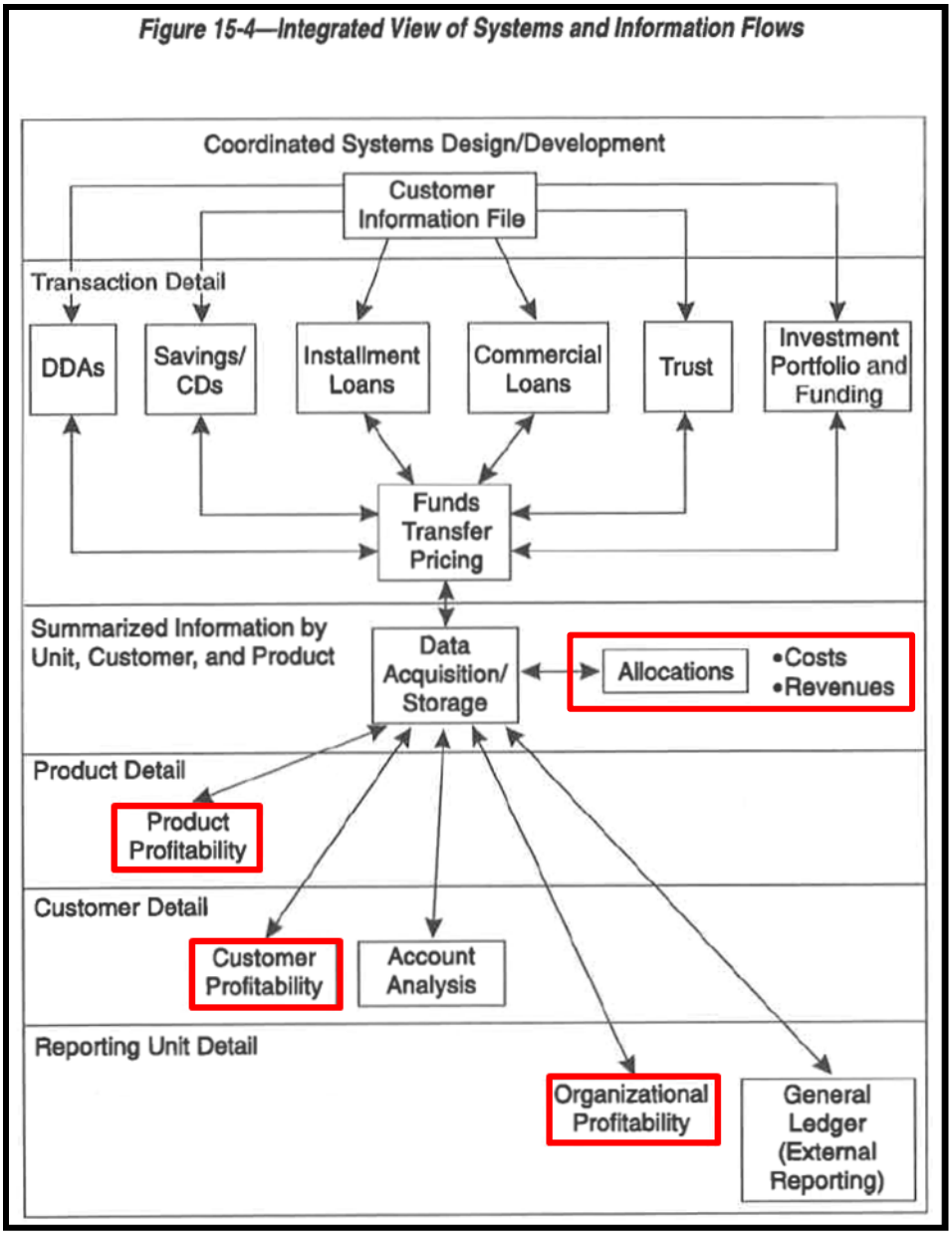
Ex[1001] 26:27; Ex[1016] ¶263.

E&Y also teaches "providing information necessary to select objects," by teaching that "it is important not only to identify the data elements but also to identify their source" when performing profit calculations. Ex[1005] 256; Ex[1016] ¶265. The "identification can be either a fixed product code or, for more flexibility, a combination of one or more existing fields." Ex[1005] 256; Ex[1016] ¶265.

E&Y teaches "performing a profit calculus" in the following figure:



Ex[1005] 139; Ex[1016] ¶267. *E&Y* teaches a profit model using identified cost drivers to allocate activity costs to cost objects. Ex[1005] 139; Ex[1016] ¶267. *E&Y* also teaches performing a profit calculus by generating profitability reports by product, customer and organization:



Ex[1005] 257; Ex[1016] ¶267.

As referenced in §VII.A.3(v), element 1[d] was well-known in the art. Ex[1016] ¶¶135-142. Thus, if it is argued that *E&Y* does not disclose "rules" it would also have been obvious for a POSITA to use the well-known elements of rules (such as SQL schema and other relationships between data), established in a

database, with the profit calculations of *E&Y* to perform the steps of element 1[d]. Ex[1016] ¶¶135-142, 261-268. Thus, *E&Y* also renders obvious element 1[d].

(vi) *Element 1[e]*

E&Y discloses element 1[e]. Ex[1005] 41-45, 56, 104, 129, 140, 183-184, 204, 253-258, 275-277, 283, 320; Ex[1016] ¶¶269-276. The Patent describes "marginal values of profit" as including any of: "provisioning (P)," "net interest (NI)," "other revenue (OR)," and/or "direct expense (DE)." Ex[1001] Claims 3-4.

E&Y teaches to "independently calculate" a marginal value of profit (direct expenses): "direct allocation approach consists of ***concurrent, independent allocations*** and distributes all expenses directly to the final beneficiaries." Ex[1005] 104; Ex[1016] ¶¶269-270.

In *E&Y* "[m]arginal costs consist of expense items incurred as a result of adding one incremental item." Ex[1005] 56. *E&Y* also shows calculating each of NI, OR, DE, and P (marginal values of profit) allocated to a customer object:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

Net Interest

Provision

Other Revenue

Direct Expense

Ex[1005] 45. Each of these comprises calculating "at least one marginal value of profit" for an object. Ex[1016] ¶¶271-274.

E&Y teaches "using the established rules as applied to a selected set of prepared information" to make these calculations. Ex[1005] 129, 140, 239, 255-257, 320; Ex[1016] ¶275. As discussed above (VII.B.1(v)), *E&Y* discloses establishing rules to calculate profit values using prepared information stored in the database. Ex[1005] 129, 239, 255-257, 320. For example, *E&Y* calculates direct expenses as the "assignment of cost elements to pools, and then to cost objects" using "the algorithms built into the Activity Based Costing system." Ex[1005] 140; Ex[1016] ¶275. The "assignment" and "the algorithms" represent rules for

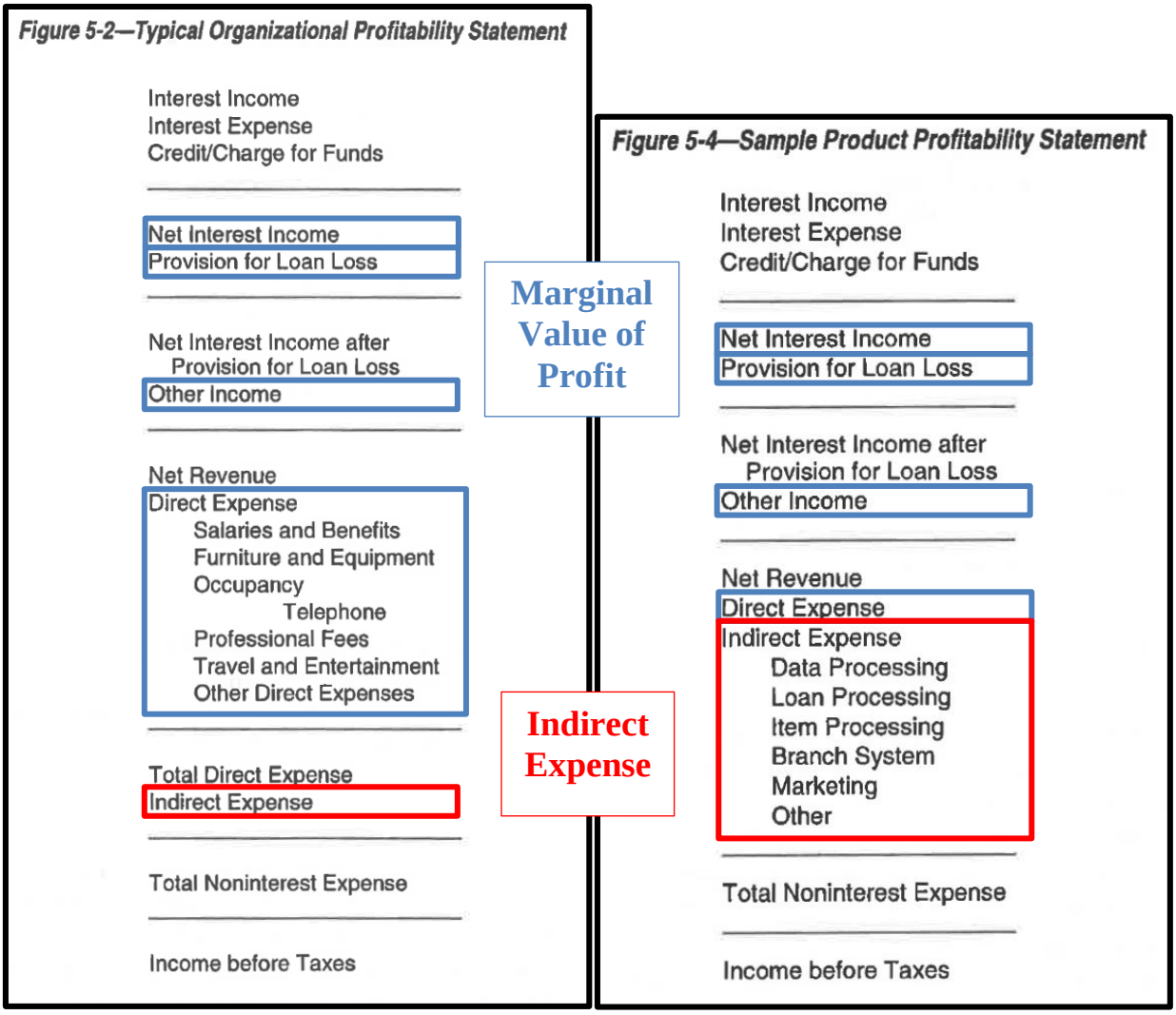
calculating profit. Ex[1016] ¶275. The "cost objects" and "pools" demonstrate that *E&Y*'s profit calculation uses a selected set of prepared information. *Id*.

The recitations of this element would also have been an obvious way to implement the teachings of *E&Y*, including its marginal value of profit calculations. For example, as discussed in §VII.A.3(vi), the use of relational databases, using rules to calculate profit values, and calculating marginal values of profit were known and predicable uses of a financial database to a POSITA. Ex[1016] ¶¶143-146. Thus, *E&Y* renders obvious element 1[e].

(vii) *Element 1[f]*

E&Y teaches this element. Ex[1005] 42-45, 253-258; Ex[1016] ¶¶277-283. As discussed in element 1[e], *E&Y* discloses calculating a marginal value of profit for each object. §§VII.B.1[e]; Ex[1005] 42-45, 253-258; Ex[1016] ¶¶269-276.

E&Y also teaches *combining* a marginal value of profit:



Ex[1005] 42-43. The figures above disclose combining marginal values of profit (blue) to create a measure of object level profitability ("Income before Taxes"). Ex[1016] ¶278. The "object" in Figure 5-4 above is an individual product, while the "object" in Figure 5-2 is an organization. Ex[1016] ¶278.

E&Y also teaches element 1[f] in the following figure:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

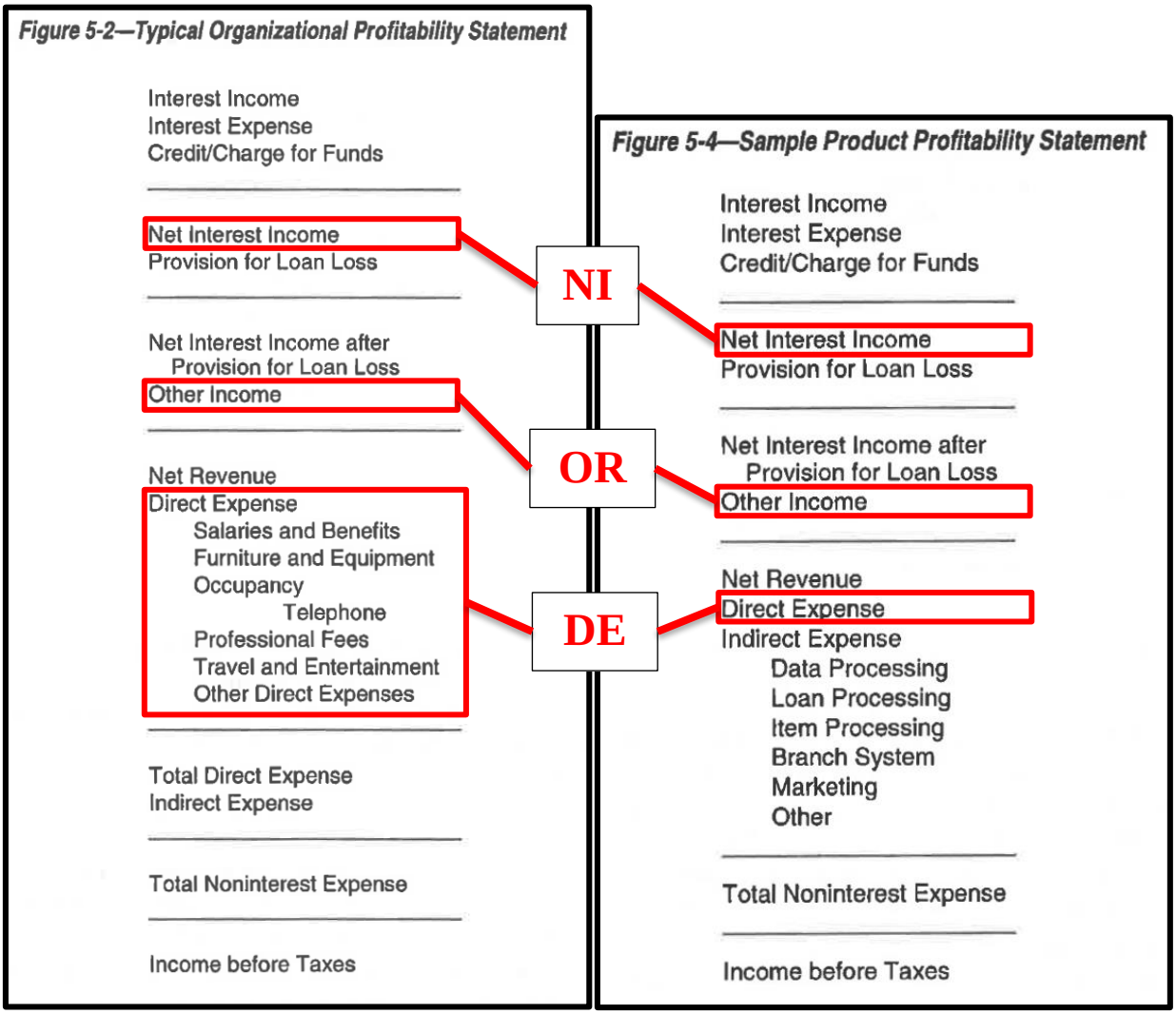
Net Interest
Provisioning
Other Revenue
Direct & Indirect Expense
Indirect Expense

Ex[1005] 45. In this case the "object" is a "customer", the marginal values of profit (blue) are combined to create a measure of object level profitability ("Income before Taxes") for an individual customer. Ex[1016] ¶¶278-281. *E&Y* expressly teaches that all costs and profit calculations can be measured at the cost object, which *E&Y* describes as "any product, service, customer, market, distribution channel, project, etc., for which a unique cost measurement is desired." Ex[1005] 125-129, 130-132, 134-140, 320-321; Ex[1016] ¶¶278-281.

2. Dependent Claim 3

(i) *Element 3[a]*

As explained above (VII.B.1(vi)), *E&Y* discloses calculating each of NI, OR, and DE for an organization or product object:



Ex[1005] 45. *E&Y* also teaches this for the customer object:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

Net Interest

Other Revenue

Direct Expense

Ex[1005] 45.

E&Y teaches several ways to calculate values, as described in elements 3[b]-3[d] below.

(ii) *Element 3[b]*

E&Y discloses calculating net interest according to funds transfer pricing, explaining that "all balance-sheet items will be transfer priced," meaning that "***all assets*** will receive funding charges and ***all liabilities and equity*** will receive funding credits." Ex[1005] 178; Ex[1016] ¶¶294-298. E&Y teaches calculating net interest by adding interest income, value of funds provided, and

earnings on equity funds, and subtracting therefrom interest expense and cost of funds used in the following figure:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

+ Interest Income
- Interest Expense
- Cost of Funds
+ Value of Funds
+ Earnings on Equity

Net Interest

Ex[1005] 45. The figure shows calculating "Net Interest" by taking the "Interest Income", subtracting the "Interest Expense", and adding (or subtracting) the "Credit/(Charge) for Funds." "Interest Income," "Interest Expense," and "Net Interest" are verbatim claim terms. The other variables – value of *funds*/cost of *funds*/earnings on equity *funds* – are found in the "Credit/(Charge) for Funds". Ex[1016] ¶¶294-298. *E&Y* teaches that "all balance-sheet items will be transfer priced," meaning that:

- "all ***assets ["Loans"] will receive funding charges,"*** ["Cost of Funds Used"] and

- "all ***liabilities ["Deposits]…will receive funding credits"*** ["Value of Funds Provided"] and
- **"**all***…equity will receive funding credits***." ["Earnings on Equity Funds Used"]

Ex[1005] 178; Ex[1016] ¶¶294-298. In Figure 5-6, the "Loans" receive 1) a funding charge for the cost of debt to provide the loan and 2) earnings on equity funds for all equity used in providing the loan. Ex[1016] ¶¶294-298. Similarly, a funding credit is provided for the value of the "Deposits". Ex[1016] ¶¶294-298.

As discussed above (§VII.B.1(iv)), *E&Y* teaches calculating NI using funds transfer pricing. *E&Y* further teaches that "allocating equity to products or business lines on a risk-adjusted basis has become important in developing strategy and measuring financial performance." Ex[1005] 218; Ex[1016] ¶¶294-298. Thus, *E&Y* teaches the NI calculation of element 3[b].

(iii) *Element 3[c]*

E&Y teaches this element. Ex[1005] 45; Ex[1016] ¶¶299-302. OR is used calculating organizational and product profitability:

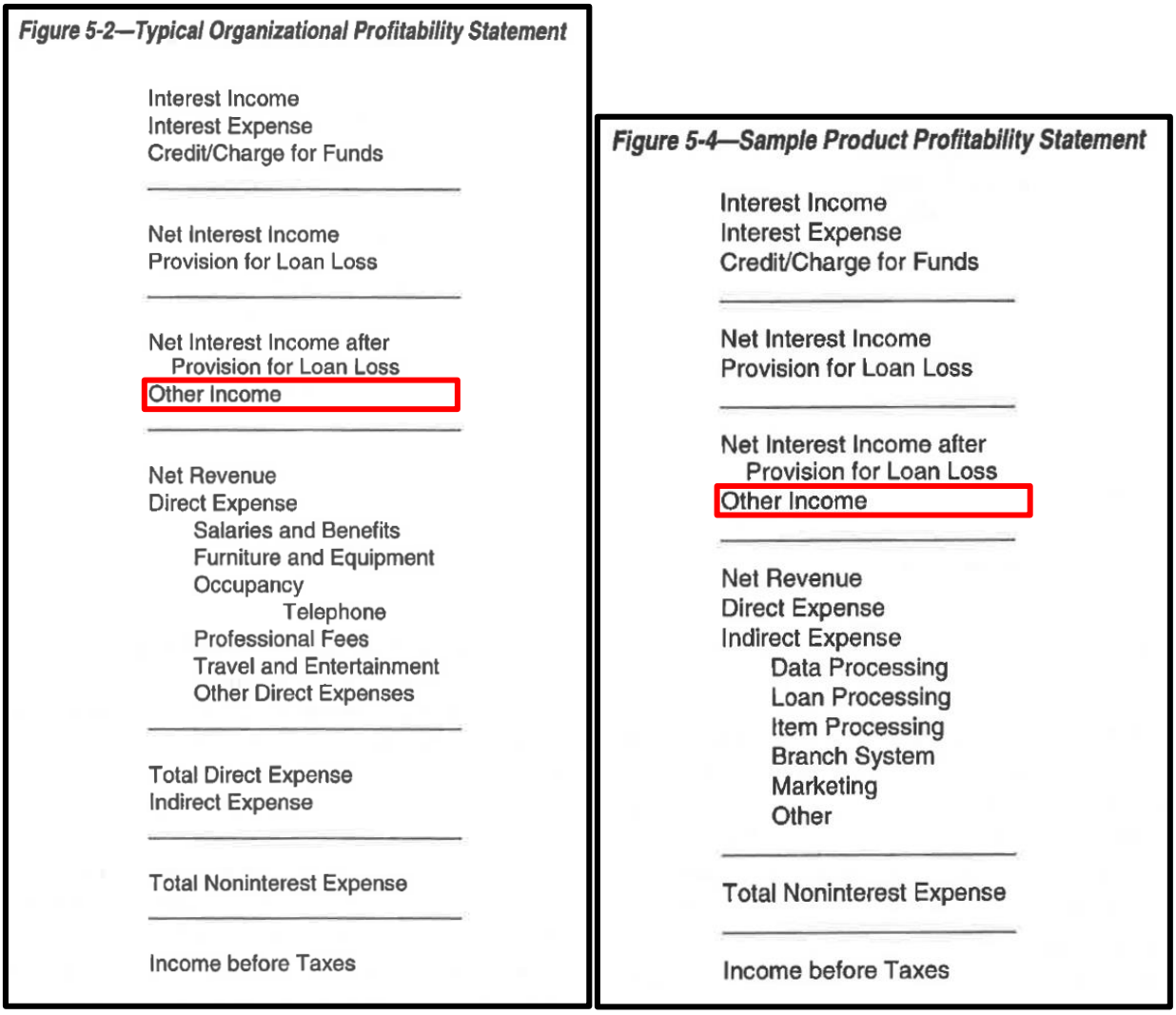


Figure 5-2—Typical Organizational Profitability Statement

Interest Income
Interest Expense
Credit/Charge for Funds

Net Interest Income
Provision for Loan Loss

Net Interest Income after
Provision for Loan Loss
Other Income

Net Revenue
Direct Expense
Salaries and Benefits
Furniture and Equipment
Occupancy
Telephone
Professional Fees
Travel and Entertainment
Other Direct Expenses

Total Direct Expense
Indirect Expense

Total Noninterest Expense

Income before Taxes

Figure 5-4—Sample Product Profitability Statement

Interest Income
Interest Expense
Credit/Charge for Funds

Net Interest Income
Provision for Loan Loss

Net Interest Income after
Provision for Loan Loss
Other Income

Net Revenue
Direct Expense
Indirect Expense
Data Processing
Loan Processing
Item Processing
Branch System
Marketing
Other

Total Noninterest Expense

Income before Taxes

Ex[1005] 45. And for a customer too:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

Other Revenue

Ex[1005] 45.

E&Y discloses additional instances of OR, including "noninterest revenue from fees," "transaction charges, and commissions," and "Commission Income." Ex[1005] 63,72; Ex[1016] ¶¶299-302.

(iv) *Element 3[d]*

E&Y teaches this element. Ex[1016] ¶¶303-307. E&Y teaches that "[m]arginal costs consist of expense items incurred as a result of adding one incremental item" and "management can use marginal cost components to develop internal marginal cost analyses." Ex[1005] 56. Specifically, a "responsibility center incurs direct expenses by carrying out its activities and tasks" and that

"[d]irect expenses also include expense that a center requires to operate, but that, for control purposes, may be budgeted and monitored elsewhere." Ex[1005] 53. Examples are below:

Figure 5-2—Typical Organizational Profitability Statement

Interest Income
Interest Expense
Credit/Charge for Funds

Net Interest Income
Provision for Loan Loss

Net Interest Income after
Provision for Loan Loss
Other Income

Net Revenue
Direct Expense
Salaries and Benefits
Furniture and Equipment
Occupancy
Telephone
Professional Fees
Travel and Entertainment
Other Direct Expenses

Total Direct Expense
Indirect Expense

Total Noninterest Expense

Income before Taxes

Figure 5-4—Sample Product Profitability Statement

Interest Income
Interest Expense
Credit/Charge for Funds

Net Interest Income
Provision for Loan Loss

Net Interest Income after
Provision for Loan Loss
Other Income

Net Revenue
Direct Expense
Indirect Expense
Data Processing
Loan Processing
Item Processing
Branch System
Marketing
Other

Total Noninterest Expense

Income before Taxes

Ex[1005] 45. Here, *E&Y* discloses examples of DE including "salaries and benefits," "furniture and equipment," etc.

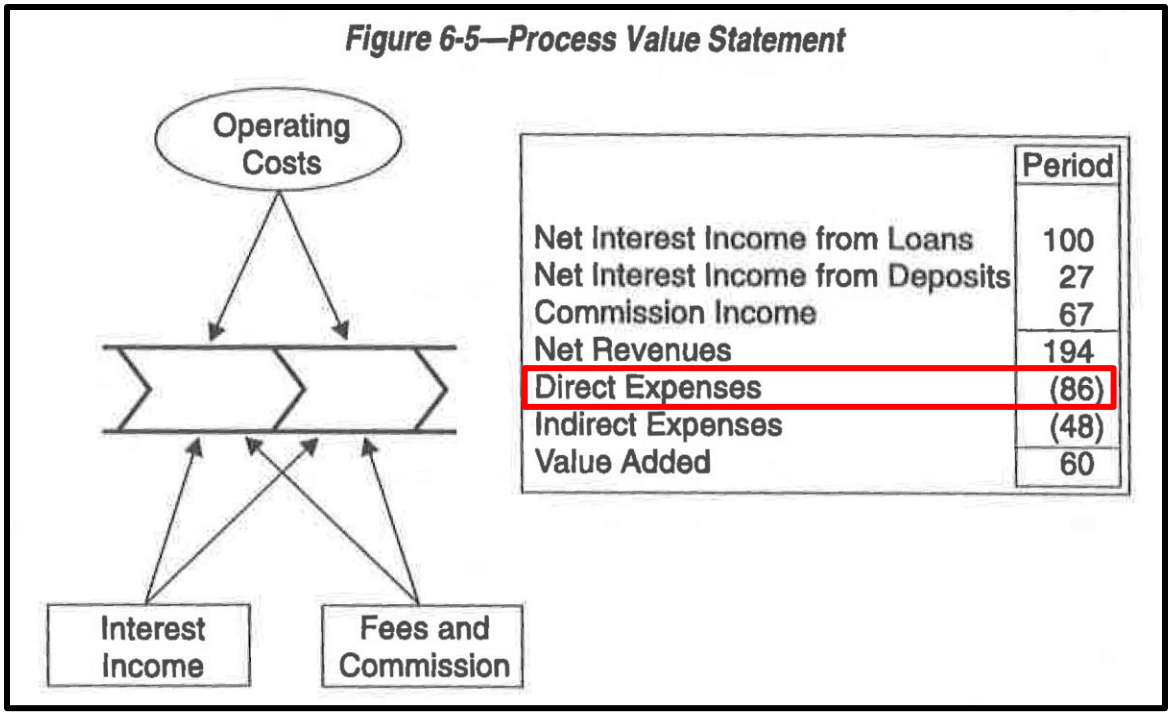
The figure also depicts "Total Noninterest Expense" as the sum of the "Direct Expense" and "Indirect Expense." Ex[1016] ¶¶304. So the "Noninterest Expense" for customer object profitability below, includes DE.:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

Direct Expense

Ex[1005] 45. *E&Y* further teaches calculating DE:



Ex[1005] 72, 134-136 (depicting calculations of DE).

(v) *Element 3[e]*

E&Y discloses element 3[e]. Ex[1005] 43-46, 81-85; Ex[1016] ¶¶308-315. The Patent describes IE as an apportioned profit adjustment for "all non-object related resource consumption." Ex[1001] 5:12-14, Claim 5.

E&Y teaches "[t]hree basic methods of reporting ***profitability***." Ex[1005] 46. In one, the "***fully absorbed approach*** requires that all expenses ultimately be distributed among the reported units of the institution" where "the reported units are ***organizational units, products, customers,*** or any other aspect of an institution's business." Ex[1005] 46. One advantage is that "the entire institution's profitability equals the sum of the profitability of its components." Ex[1005] 87.

E&Y expressly teaches calculating "indirect expense" (as part of "Total Noninterest Expense") for a product object:

Figure 5-4—Sample Product Profitability Statement

Interest Income
Interest Expense
Credit/Charge for Funds

Net Interest Income
Provision for Loan Loss

Net Interest Income after
Provision for Loan Loss
Other Income

Net Revenue
Direct Expense
Indirect Expense
- Data Processing
- Loan Processing
- Item Processing
- Branch System
- Marketing
- Other

Total Noninterest Expense

Income before Taxes

Ex[1005] 43. *E&Y* further depicts indirect expenses for a customer object:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

Indirect Expense

Indirect Expense

Ex[1005] 45. Here, indirect expenses are a portion of "Noninterest Expense" and "Overhead Expense" for a customer object. Ex[1016] ¶313.

3. Dependent Claim 8

E&Y anticipates and renders obvious Claim 8. Ex[1005] 180-183, 258; Ex[1016] ¶¶340-343. As discussed above (VII.B.1), *E&Y* teaches calculating opportunity values according to funds transfer pricing theory.

Additionally, *E&Y* teaches calculating opportunity values by "individual matched funding of assets when they are booked at their marginal opportunity costs provides the benefits of precision and timeliness." Ex[1005] 183. *E&Y* further describes "matched funding" to "identify and 'match fund'

individual assets and liabilities" so that "each individual account receives a specific transfer rate based on the account type and such specific characteristics as duration and repricing points." Ex[1005] 180. *E&Y* teaches: "[m]atched rate/cost of funds information for match-funded loans and deposits" can either "match-fund every loan or deposit" or be "driven by the pool with which the asset or liability is associated." Ex[1005] 180, 258.

4. Dependent Claims 9, 13, 17, and 21

Claims 9, 13, 17, and 21 are substantially similar and their substantive differences relate to the factors (*e.g.*, product type, balance class, tier/tenor) used to select a treatment rate. Ex[1016] ¶¶344-351. *E&Y* anticipates and renders obvious these claims. Ex[1005] 41-45, 195, 174-180, 254-260, Chapter 10; Ex[1016] ¶¶344-351.

As discussed above (VII.B.1(iv), VII.B.2(ii), VII.B.3), *E&Y* teaches calculating net interest using funds transfer pricing, including calculating interest income, interest expense, and cost/value of funds. Ex[1005] 41-45, 195, 254, Chapter 10. For example, *E&Y* teaches calculating net interest for the customer object:

Figure 5-6—Sample Customer Profitability

	Total	Lines and Commitments	Loans	Fee Services	Deposits
Interest Income	$50		$50		
Interest Expense	(10)				$(10)
Credit/(Charge) for Funds	(10)		(40)		30
Net Interest Income	30		10		20
Provision for Loan Losses	(1)		(1)		
Net Interest Income after Provisions for Loan Losses	29		9		20
Waived Fees	(29)			$(29)	
Other Income	42	$10	2	30	
Noninterest Expense	(39)	(2)	(1)	(35)	(1)
Contribution	3	$ 8	$10	$(34)	$19
Overhead Expense	(4)				
Income before Taxes	$(1)				

+ Interest Income
- Interest Expense
- Cost of Funds
+ Value of Funds

Net Interest

Ex[1005] 45. Above, *E&Y* demonstrates using interest income, interest expense, cost of funds used ("COF"), and value of funds provided ("VOF") to calculate net interest income. Ex[1016] ¶¶344-351.

E&Y: $NI = IntInc - ChargeForFunds - IntExp + CreditForFunds$

E&Y: $\$30 = \$50 - \$40 - \$10 + \$30$

'137 Patent: $NI = IntInc - CostOfFunds - IntExp + ValueOfFunds$

Ex[1016] ¶¶347. Calculating each component of net interest is based on the asset/liability balance and the applicable interest rates. Ex[1005] 41-45; Ex[1016] ¶¶344-351. The figure above can be depicted using the Claim's formula, as described by Dr. Weber:

$$\$30 = (\$1000 * 5\%) - (\$1000 * 4\%) - (\$1000 * 1\%) + (\$1000 * 3\%)$$

$$NI = (AB_{asset} * rate_{asset}) - (AB_{asset} * R_{asset}) - (AB_{liability} * rate_{liability}) + (AB_{liability} * R_{liability}) .$$

Ex[1016] ¶¶347.

E&Y further breaks down the Net Interest calculation for a particular product – loans – teaching:

Figure 11-4—Comparative Loan Profitability Calculations (for a $100,000 Loan)

	With Compensating Balance		Without Compensating Balance	
Interest Income @ 10%		$10,000		$10,000
Average Loan Balance	$100,000		$100,000	
Compensating Balance @ 10% of Average Loan Balance	(10,000)		–	
Amount Funded	$ 90,000		$100,000	
Cost of Funds @ 8%		7,200		8,000
Net Interest Income		$ 2,800		$ 2,000
Yield—Interest Income + Amount Funded	11.1%		10%	
Spread—Net Interest Income + Amount Funded	3.1%		2.%	

Ex[1005] 195. Above, *E&Y* teaches a method of calculating net interest income for a single account by combining interest income and COF. Ex[1016] ¶348. The calculation of *E&Y* discloses the interest income and COF formulas of Claims 9, 13, 17, and 21 as:

$$\$2{,}000 = (\$100{,}000 * 10\%) - (\$100{,}000 * 8\%) - 0 + 0$$

$$NI = (AB_{asset} * rate_{asset}) - (AB_{asset} * R_{asset}) - (AB_{liability} * rate_{liability}) + (AB_{liability} * R_{liability})$$

Ex[1016] ¶348. Since this is an asset product (loan), the calculation only uses interest income and COF, while a liability product (deposit account) would use interest expense and VOF provided. Ex[1016] ¶348.

Additionally, *E&Y* teaches calculating net interest by combining interest income, interest expense, COF, and VOF according to Funds Transfer Pricing theory. Ex[1005] 175-179, 256-258; Ex[1016] ¶¶349-350. *E&Y* discloses that "all assets will receive funding charges and all liabilities and equity will receive funding credits" using the "[a]verage daily balance for [a] reporting period for funds-transfer pricing calculations of yields, and reporting of profitability information." Ex[1005] 178, 256-258.

E&Y also discloses determining a treatment rate using an object's product attributes by teaching using "rates commensurate with the repricing characteristics of the asset funded or liability bought". Ex[1005] 177. *E&Y* teaches that "each individual account receives a ***specific transfer rate based on the account type and such specific characteristics as duration and repricing points***." Ex[1005] 180. *E&Y* further teaches calculating the components of net interest for an organizational unit, product, and customer, with the treatment rate determined based on duration, annualization, loan type, and/or other object information. Ex[1005] 259-260; Ex[1016] ¶¶349-350. *E&Y* thus discloses the claim elements

of determining a rate based on the product type (*e.g.*, loan type), balance class (*e.g.*, asset, liability, repricing points), and tier/tenor (*e.g.*, duration, annualization). Thus, *E&Y* teaches Claims 9, 13, 17, and 21.

The formulas of the claims would also have been an obvious way to implement the teachings of *E&Y*, including its recitation of calculating NI using an average asset/liability balance and an interest/treatment rate. Ex[1016] ¶¶344-351. For example, as discussed in §VII.A.4(iii), the use of an average asset/liability balance and an interest/treatment rate to calculate NI were known and predicable financial calculations to a POSITA, and it would have been obvious to implement the teachings of *E&Y* in that way. Ex[1016] ¶¶191-194, 344-351.

5. Dependent Claims 10, 14, 18, and 22

Dependent Claims 10, 14, 18 and 22 all recite the same claim language and formulas for calculating earnings on allocated equity (EOAE) based on the average asset balance ($AB_{(asset,t)}$), equity ratio (ER), and treatment rate for equity (R_{equity}). Ex[1016] ¶¶352-360.

E&Y teaches calculating the EOAE by describing that "all assets will receive funding charges and all liabilities and ***equity will receive funding credits***." Ex[1005] 178; Ex[1016] ¶¶352-360. *E&Y* teaches using the equity ratio (or capital ratio) to calculate EOAE:

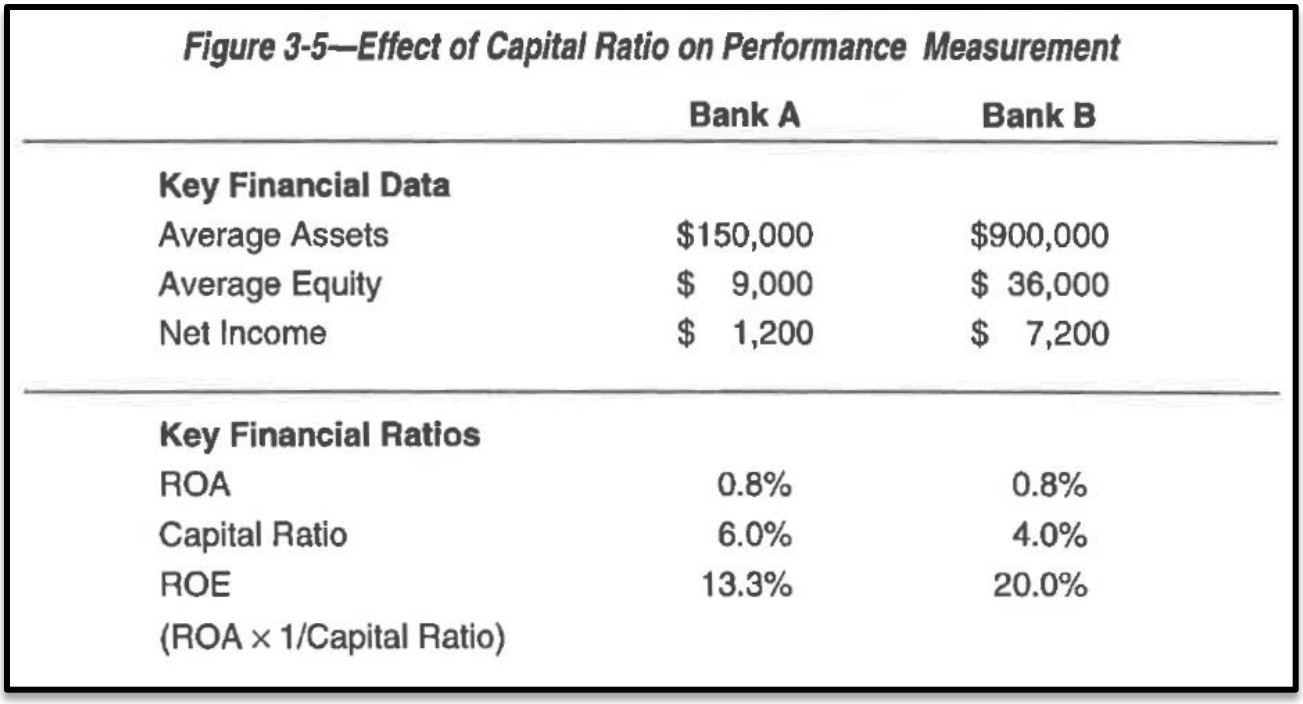


Figure 3-5—Effect of Capital Ratio on Performance Measurement

	Bank A	Bank B
Key Financial Data		
Average Assets	$150,000	$900,000
Average Equity	$ 9,000	$ 36,000
Net Income	$ 1,200	$ 7,200
Key Financial Ratios		
ROA	0.8%	0.8%
Capital Ratio	6.0%	4.0%
ROE (ROA × 1/Capital Ratio)	13.3%	20.0%

Ex[1005] 14-15. The figure above depicts the equation of the claims by:

1) summing each product's average asset balances – "$AB_{(asset,t)}(o_i)$" – into the average asset balance;	$900,000
2) multiplying by the Capital Ratio – "ER"/"equity ratio";	*4%
3) multiplying by the Rate of Equity/ROE – "Treatment Rate for equity";	*20%
4) arriving at Net Income – EOAE.	=$7,200

Ex[1016] ¶¶356-358.

E&Y teaches calculating EOAE for products/product lines, customers, and business lines: a "shift towards shareholder-value orientation in many financial institutions" has resulted in "measuring the performance of centers,

products/product lines, and customers in terms of return on equity hurdle rates and market comparable ROEs." Ex[1005] 30; Ex[1016] ¶¶358-359. Thus, the equation can be applied to wide-ranging objects.

The recitations of Claims 10, 14, 18, and 22 would also have been an obvious way to implement the teachings of *E&Y*, including its recitation of calculating EOAE using an average asset balance, equity ratio, and treatment rate. Ex[1016] ¶¶352-360. For example, as discussed in §VII.A.4(iv), the use of an average asset balance, equity ratio, and treatment rate to calculate EOAE were known and predicable financial calculations to a POSITA. Ex[1016] ¶¶195-200, 352-360. Thus, *E&Y* renders obvious Claims 10, 14, 18, and 22.

6. Dependent Claims 11, 15, 19, and 23

Dependent Claims 11, 15, 19, and 23 all recite the same claim language and formulas for calculating EOAE by multiplying a treatment rate of equity (R_{equity}) by the summation of the object asset balance (Amount), an object weighting (W(Wt)), and a risk-weighted capital ratio (Cap Ratio). Ex[1016] ¶¶361-368. The only difference between the claims is their dependencies. As explained by Dr. Weber, the capital ratio may refer to the same concept as the equity ratio, since both refer to the amount of equity capital allocated to an object. Ex[1016] ¶¶202.

The Patent does not define "weight" nor how to calculate it nor when a Cap Ratio is "appropriate" (Ex[1016] ¶363), but it does describe these formulas as "Option 3." Ex[1001] 15:12-31. "Option 3 [calculates] [e]quity allocation for all assets following ***industry standards.***" Ex[1001] 14:36-38,57-67. And the Patent also says these formulas use a "***regulatory definition***." Ex[1001] 8:57-64. These "industry standards" and "regulatory definition" means the formula was well-known. Ex[1016] ¶¶363-364.

E&Y teaches that "regulatory risk-adjusted capital guidelines" have made "allocating equity to products or business lines on a risk-adjusted basis" important "in developing strategy and measuring financial performance." Ex[1005] 218; Ex[1016] ¶365. *E&Y* also teaches using equity allocations based on "regulatory requirements," "market comparables," "cost of capital hurdle rates," "risk-based methods," and other capital allocation methodologies. Ex[1005] 30; Ex[1016] ¶367. And some advanced systems already "use a risk-adjusted allocation of capital to product lines." Ex[1005] 30. *E&Y* also teaches calculating "equity allocations based on regulatory requirements"; teaching the Patent's description of "DPM's equity allocation to the object level calculations" using "regulatory definitions." Ex[1001] 8:59-64; Ex[1005] 30; Ex[1016] ¶367.

E&Y teaches using a capital ratio for calculating EOAE:

Figure 3-5—Effect of Capital Ratio on Performance Measurement

	Bank A	Bank B
Key Financial Data		
Average Assets	$150,000	$900,000
Average Equity	$ 9,000	$ 36,000
Net Income	$ 1,200	$ 7,200
Key Financial Ratios		
ROA	0.8%	0.8%
Capital Ratio	6.0%	4.0%
ROE (ROA × 1/Capital Ratio)	13.3%	20.0%

Ex[1005] 13. *E&Y*, above, teaches taking the "Average Asset" balance (Amount) times a bank specific "Capital Ratio" (Cap Ratio) times the return on equity called "ROE" (R_{equity}). Ex[1016] ¶366. The weight can be considered to be 1, or can be considered to be contained within the capital ratio as depicted in the figures above, where the two Capital Ratios are weighted differently. Ex[1016] ¶366. The calculation of the figure above can be mapped to the Claims' formula as:

$$\boldsymbol{E\&Y}: \quad EOAE = ROE * [AverageAssets * Weight * Capital\ Ratio]$$

$$\boldsymbol{E\&Y}: \quad \$1{,}200 = 13.3\% * [\$150{,}000 * 1 * 6\%]$$

$$\boldsymbol{'137\ Patent}: \quad EOAE = R_{equity} * \sum [Amount * W(Wt) * CapRatio]$$

Ex[1016] ¶366. Thus, *E&Y* teaches calculating EOAE according to the formula of Claims 11, 15, 19, and 23.

The recitations of Claims 11, 15, 19, and 23 would also have been an obvious way to implement the teachings of *E&Y*, including its recitation of calculating EOAE using an average asset balance, object weight, capital ratio, and treatment rate. Ex[1016] ¶¶361-368. For example, as discussed in §VII.A.4(v), the use of an average asset balance, object weight, capital ratio, and treatment rate to calculate EOAE were known and predicable financial calculations to a POSITA. Ex[1016] ¶¶201-207, 361-368. Thus, *E&Y* renders obvious Claims 11, 15, 19, and 23.

7. Dependent Claims 12, 16, 20, and 24

Dependent Claims 12, 16, 20, and 24 all recite substantially the same claim language and formulas for calculating EOAE based on the amount associated with the object, an equity allocation rule for a cohort, and treatment rate for equity. The only difference between these four claims is their dependencies.

The Claims' calculation is "Option 4" (Ex[1001] 15:1-19) described as "Option 4 Equity allocation using an economic allocation rule, based on object cohorts and modern portfolio theory's capital asset pricing model [("CAPM")]." Ex[1001] 14:39-41; Ex[1016] ¶371. Thus, the formulas were well-known. *Id.*

E&Y teaches calculating EOAE using market betas, business unit betas, cost of capital hurdle rates, market comparables, and CAPM. Ex[1005] 30, 224-226; Ex[1016] ¶¶369-376. For example, *E&Y* teaches calculating a "proper hurdle rate for each business line" using "its beta coefficient, based on the …

CAPM" where "[b]eta is a measure of the risk of the business relative to overall market risk." Ex[1005] 224; Ex[1016] ¶¶374-376. Thus, *E&Y* discloses the elements of calculating a "linear (two-valued) function … of the form α+β*Amount(o)" of Claims 12, 16, 20, and 24.

E&Y also teaches calculating using "market comparables" to "find observable market betas for banking businesses" to calculate "business line (as opposed to institution-wide) equity costs" by using "regression or factor-analytic techniques to estimate the imputed return-on-equity requirements by major business segments." Ex[1005] 225; Ex[1016] ¶¶374-376. Thus, *E&Y* teaches calculating EOAE according to the equity allocation rule of Claims 12, 16, 20, and 24.

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As explained, *E&Y* teaches all of the elements in the challenged claims. To the extent that any element is alleged missing from *E&Y*, it would have been obvious to a POSITA to use the well-known teachings in the prior art, discussed above (VII.A.3-VII.A.4(vi)), to meet those elements in implementing the system of *E&Y*. Moreover, a POSITA reading the various teachings and examples of *E&Y* would at once envisage the claimed arrangements of the challenged claims Ex[1016] ¶406. It would also be obvious to combine the various teachings and examples of *E&Y* set forth above, as they are all discussed in the single reference and described as desirable approaches, and a POSITA would be motivated to

implement the teachings therein in accordance with the examples discussed in *E&Y*. A POSITA would expect success in carrying out that implementation in view of *E&Y*'s express teachings, suggestions and motivations set forth above, because it would be common sense when implementing *E&Y*'s teachings to try utilizing the approaches set forth in *E&Y*'s example implementations. Ex[1016] ¶406.

C. Grounds 4-5: Claim 1 is Anticipated and Rendered Obvious by *Blain*

1. Independent Claim 1

(i) *Element 1[preamble]*

If it is limiting, the preamble is taught by *Blain*. Ex[1016] ¶¶114, 407-408. An RDBMS as explained below (1[a]-[d]), is taught by *Blain* and would have been an obvious way to implement *Blain's* system. Ex[1006]; Ex[1016] ¶¶115-142, 409-431.

(ii) *Element 1[a]*

Blain teaches storing financial and non-financial data in a computerized profit database. Ex[1006] 41, 196-198, 209-217, 234, 329; Ex[1016] ¶¶410-413. *Blain* discloses that the SAP-R/3 system provides the three essential services of "Database Management, Application Processing, and

Presentation Services," either on different processing systems or in "a central system by itself." Ex[1006] 41.

Blain explains: "an online accounting system has to maintain a journal, a set of account balances and all the documents to support them." Ex[1006] 329. And the "general ledger is the source from which are built the external accounting documents, the balance sheet, and the profit and loss statement." Ex[1006] 196. In *Blain's* system: "[t]ransaction data are stored centrally in the document database, and the corresponding line items and details are stored in the sub-ledgers." Ex[1006] 234. This teaches element 1[a]. Ex[1016] ¶¶410-413.

(iii) *Element 1[b]*

Blain teaches element 1[b]. Ex[1006] 36-38, 41, 54-55, 71; Ex[1016] ¶¶414-416. Specifically, *Blain*, uses a database to store transactions and a database management system to search the database and generate reports. Ex[1006] 71; Ex[1016] ¶¶414-416. *Blain* describes the interaction between the raw data and the database using SQL "for open data access to R/3 ***business data stored in relational databases***." Ex[1006] 36. *Blain* further describes electronic access to the database, disclosing that the "central database can be serviced in a single processor, a multi-processor, or a cluster of processors." Ex[1006] 38.

Blain also discloses the portability of SAP-R/3 across RDBMSs including "Informix, Oracle, Software AG, Sybase." Ex[1006] 37. These database systems (*e.g.*, Oracle, Sybase) were well-known RDBMSs at the time of the invention. Ex[1014] 23; Ex[1016] ¶¶117, 414-416. Blain's database system management system for relational databases is an RDBMS and the use of concurrency in a distributed database system shows that SAP-R/3 acts as a RDBMS. Ex[1006] 54, 71; Ex[1016] ¶¶414-416.

(iv) *Element 1[c]*

Blain teaches element 1[c]. Ex[1006] 36-37, 54, 275-278, 311-314, 643; Ex[1016] ¶¶417-423. As discussed above (1[b]), *Blain* shows accessing profit information though the relational database. Ex[1006] 36-37, 54, 643; Ex[1016] ¶¶414-418. As discussed in §VII.B.1[c], the Patent's description of "opportunity values" includes at least "transfer pricing."

Blain discloses calculating transfer prices for any cost objects or goods according to a user's rules. Ex[1006] 311; Ex[1016] ¶¶419-420. *Blain* describes the CO-PA Profitability Analysis module, which uses "[b]illing documents, [s]ales quantities, [r]evenues, and [s]ales deductions" as data used to calculate transfer prices for goods issued, received, or manufactured. Ex[1006] 311.

Blain also says the CO-PA Profitability Analysis module drives profitability calculations (including transfer prices) to the object level. Ex[1006] 311; Ex[1016] ¶¶420-422. *Blain* discloses that "[c]riteria may be combined across dimensions and levels to make a business segment specification that will give you the profitability analysis" applied "in terms of products, customers, activities and organization, combined in any way you want." Ex[1006] 314. *Blain* also discloses attributing all costs and revenues to profit objects: "each of these flows via the FI-GL General Ledger account to the appropriate cost or profit object." Ex[1006] 278; Ex[1016] ¶¶420-422. Thus, *Blain* teaches element 1[c].

In addition, to the extent it is argued that element 1[c] is not taught by *Blain*, it would have been obvious to a POSITA to apply well-known opportunity value calculations (*i.e.*, transfer pricing) with the database system of *Blain* to calculate object level profitability since *Blain* discloses using transfer pricing. §VII.A.3(iv); Ex[1016] ¶¶126-134, 417-423.

(v) *Element 1[d]*

Blain teaches element 1[d]. Ex[1006] 89, 203, 284-289, 299, 308-318, 323, 356; Ex[1016] ¶¶424-431.

Blain – a reference book – is about implementing rules in a relational database system to calculate profit. Ex[1006] 323. *Blain* discloses that "***cost data are allocated according to rules*** which are under your control." Ex[1006]

311. *Blain* says the CO-ABC module includes the step to "***[a]llocate, or set up rules to allocate, activity costs*** for both planned and actual data." Ex[1006] 284. *Blain* also discloses establishing rules to process information: "***all costs are based on unified posting and settlement rules in the SAP-R/3 system***." Ex[1006] 299.

Blain's use of SQL anticipates "providing information necessary to select objects" since SQL enables/requires defining database tables and relationships, and methods for at least selecting objects. Ex[1016] ¶428. Additionally, *Blain* discloses various methods of identifying data within the system: uniform chart of accounts; company identification code; cost element identification code. Ex[1006] 203, 289; Ex[1016] ¶¶428-429. *Blain* describes the SAP-R/3 data object structure including an object identification code and fields containing information about the object. Ex[1006] 89; Ex[1016] ¶¶428-429.

Blain discloses methods for performing a profit calculus throughout the book, including allocating cost data "according to rules" to "display a business-oriented profit and loss analysis" that can be "scrutinized down to the details of the individual transactions." Ex[1006] 311; Ex[1016] ¶430. Thus, *Blain* teaches element 1[d].

(vi) *Element 1[e]*

Blain teaches element 1[e]. Ex[1006] 207, 217, 304-313; Ex[1016] ¶¶432-438. As discussed above (§§VII.C.1(iii)-VII.C.1(v)), *Blain* discloses

using rules, established in a relational database, to perform profit calculations. Ex[1016] ¶¶414-431.

Blain discloses "independently calculat[ing]" profit values: "cost object could be an entity which is quite independent of any particular SAP application." Ex[1006] 304; Ex[1016] ¶433. Blain also teaches calculating profit values by automatically distributing costs to a cost center using the "dynamic method." Ex[1006] 217; Ex[1016] ¶¶433-435.

Blain calculates any objects' profitability using "***marginal*** and absorption costing in parallel." Ex[1006] 306; Ex[1016] ¶¶435-437. *Blain* also discloses that "[p]rofitability accounting requires that ***profit and loss be calculated on the basis of both full costs and marginal costs***." Ex[1006] 309; Ex[1016] ¶¶435-437.

Blain also discloses calculating provisioning and direct expense – both marginal values of profit (§VII.B.1(vi)). Ex[1006] 207, 311-313, 1047-1053; Ex[1016] ¶¶432-438. For example, *Blain*'s calculates provisioning including reserves for: cost of complaints and sales deductions; imminent loss; and unrealized costs. Ex[1006] 1053-1059; Ex[1016] ¶¶432-438. *Blain* also discloses allocating "direct costs to other cost objects" that incur those costs. Ex[1006] 311; Ex[1016] ¶¶435-437.

(vii) *Element 1[f]*

Blain teaches this. Ex[1006] 306-318, 1054; Ex[1016] ¶¶439-442. As discussed above (§§VII.C.1(vi)), Blain teaches calculating a marginal value of profit. Blain also teaches the simple combination of these values and a POSITA would find it obvious. Ex[1016] ¶442.

Blain discloses combining a marginal value of profit (*e.g.*, all direct expenses):

> *Overhead Costing*
>
> Most common method in product cost accounting. Method as follows:
>
> - ***Assign the direct costs to the cost object***.
> - Apply the indirect (overhead) costs to the cost object in proportion to the direct costs, expressed as a percentage rate.

Ex[1006] 1054; Ex[1016] ¶440. Here, direct costs are combined together. They are also combined with indirect costs, which in this patent Claim 3 indicates can also be grouped as a marginal value of profit. *Blain* also discloses calculating and combining "***marginal and absorption costing in parallel***" and that "***[p]rofitability accounting requires that profit and loss*** be calculated on the basis of both ***full costs and marginal costs***." Ex[1006] 306-310; Ex[1016] ¶¶440-441. Further, *Blain* teaches that all costs and profit calculations, including all revenues and expenses, "flow[] via the FI-GL General Ledger account to the appropriate cost or ***profit object***." Ex[1006] 278; Ex[1016] ¶441.

*****

The elements of Claim 1 are taught by *Blain* (§VII.C.1). Additionally, it would have been obvious for a POSITA to combine the well-known concepts (§VII.A) purportedly claimed with the enterprise database profitability system of *Blain* to render the claims obvious. Moreover, a POSITA reading the various teachings and examples of *Blain* would at once envisage the claimed arrangements of the challenged claims Ex[1016] ¶461. It would also be obvious to combine the various teachings and examples of *Blain* set forth above, as they are all discussed in the single reference and described as desirable approaches, and a POSITA would be motivated to implement the teachings therein in accordance with the examples discussed in *Blain*. A POSITA would expect success in carrying out that implementation in view of *Blain*'s express teachings, suggestions and motivations set forth above, because it would be common sense when implementing *Blain*'s teachings to try utilizing the approaches set forth in *Blain*'s example implementations. Ex[1016] ¶461.

D. Grounds 6-7: Claims 1, 3, and 8 are Anticipated and Rendered Obvious by *SAP-IS-B*

1. Independent Claim 1

(i) *Element 1[preamble]*

To the extent it is limiting, the preamble is taught by *SAP-IS-B*. Ex[1016] ¶114, 462. The recitation of an RDBMS as explained below (1[a]-[d]),

is taught by *SAP-IS-B* and would have been an obvious way to implement *SAP-IS-B*'s profitability system. Ex[1007]; Ex[1016] ¶¶115-121, 465-486.

(ii) *Element 1[a]*

SAP-IS-B teaches storing financial and non-financial data in a computerized profit database. Ex[1007] 7, 14, 16, 19-21, 32-37, 58-61, 88; Ex[1016] ¶¶465-469. *SAP-IS-B* discloses that "[t]he standard R/3 System architecture consists of a three-tier hierarchy" including "a host (database server) for carrying out all functions requiring access to the database." Ex[1007] 19; Ex[1016] ¶466. Going further: "IS-B is an R/3 solution for client/server architectures based on ***relational database technology***" that "has its own databases in the form of a data pool, which is supplied with the necessary information from central R/2 or R/3 systems or from other systems implemented by the bank." Ex[1007] 21. *SAP-IS-B* describes the type of information stored in the data pool: "***[t]he database for IS-B is a data pool used by all components, which are fed with transaction data***." Ex[1007] 7. This transaction data constitutes financial information that is used for profitability analysis. Ex[1007] 32-37; Ex[1016] ¶466.

SAP-IS-B further explains that "***the data pool contains master and transaction data*** which is needed for costing, regulatory reporting and risk management" including information on banking transaction master records,

business partners, stock classes, business partner accounts, and financial terms. Ex[1007] 35; Ex[1016] ¶467. Movement/transaction data "consists of single items of information which refer to specific transactions" including account items, commercial transactions, individual purchases and sales, and cash flows. Ex[1007] 35; Ex[1016] ¶467.

In addition to storing financial and non-financial information, *SAP-IS-B* also stores calculated profit values in the database (e.g., accumulated totals records). Ex[1007] 57-61; Ex[1016] ¶468. And *SAP-IS-B* stores backdated profitability calculations, explaining that "profitability analysis results for the affected period are available in the data pool (as line items per single transaction/single position)." Ex[1007] 44; Ex[1016] ¶468.

(iii) *Element 1[b]*

SAP-IS-B teaches element 1[b]. Ex[1007] 6, 19-24; Ex[1016] ¶¶470-472. As discussed in §VII.D.1(ii), *SAP-IS-B* discloses storing profit information in a relational database or data pool for use in profitability calculations. Ex[1016] ¶¶465-469. *SAP-IS-B*'s relational database technology, in the form of a data pool, uses information from (*i.e.*, is operable in association with) the central R/3 system or other bank data systems. Ex[1016] ¶¶465-472. *SAP-IS-B* discloses that SAP-R/3 comprises "a host (database server) for carrying out all functions requiring access to the database." Ex[1007] 19; Ex[1016] ¶470.

Additionally, *SAP-IS-B* shows integrating well-known RDBMSs:

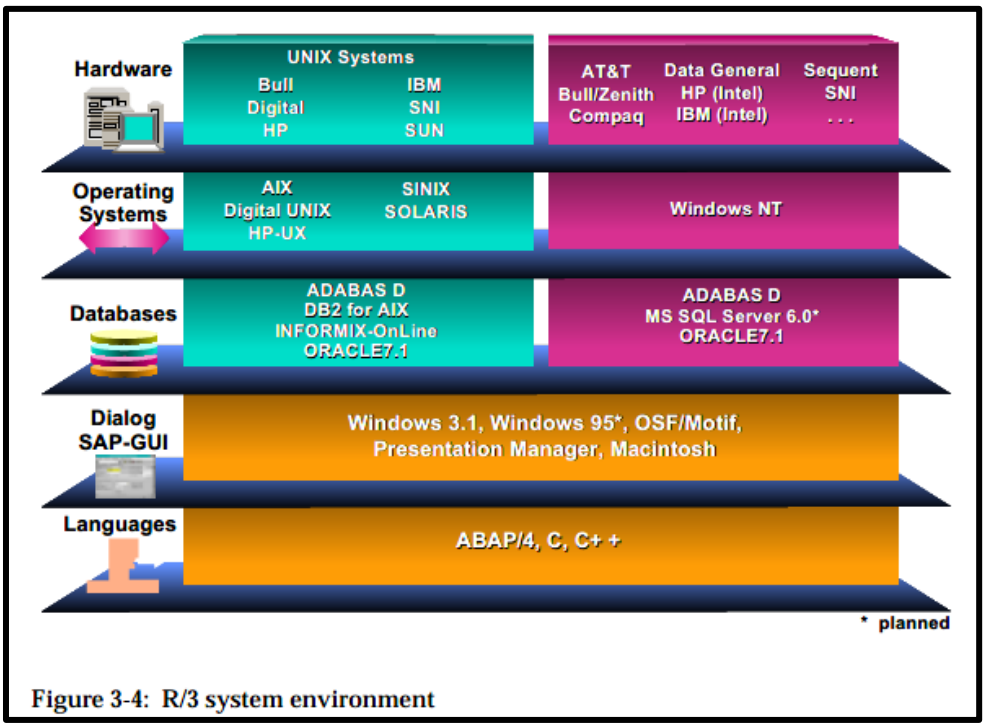


Figure 3-4: R/3 system environment

Ex[1007] 23; Ex[1016] ¶471. DB2, Oracle, and MS SQL Server databases were useable with SAP-R/3. Ex[1016] ¶471. Each of them were well-known RDBMSs. Ex[1014] 24; Ex[1016] ¶¶115-118, 471.

(iv) *Element 1[c]*

SAP-IS-B teaches element 1[c]. Ex[1007] 27, 38, 42, 47-48, 62-65, 86-90; Ex[1016] ¶¶473-479. As discussed in §VII.D.1(ii), *SAP-IS-B* discloses accessing profit information though the relational database. Ex[1016] ¶¶465-469.

SAP-IS-B also shows preparing data to be processed for profitability analysis: "process of adapting the system to the requirements of the user (named 'customizing' by SAP) primarily consists of setting up basic data" including the

"bank's organizational structure, characteristics and value fields of operating concern, product catalog, costing rules, [and] regulatory reporting rules." Ex[1007] 27; Ex[1016] ¶474. Additionally, *SAP-IS-B* uses "user-defined data structures" that are "entered into the SAP Repository" using "mapping rules for transferring data from the sender to the receiver system" to "process[] the records in IS-B." Ex[1007] 38; Ex[1016] ¶474.

SAP-IS-B also teaches calculating opportunity values for each measured object. Ex[1007] 42, 47-48, 62-65, 86-88; Ex[1016] ¶¶475-479. As discussed in §VII.A.3(iv), "opportunity values" in the Patent includes at least "transfer pricing." Ex[1016] ¶¶126-134.

SAP-IS-B calculates "opportunity interest" – "effective interest rate of the alternative transaction on the money and capital market" using the "market rate approach to transfer pricing." Ex[1007] 89; Ex[1016] ¶¶475-477. *SAP-IS-B* discloses a "procedure for matched-maturities valuation" including calculating "***opportunity interest rate, as effective interest of alternative.***" Ex[1007] 52. The "***opportunity interest*** is calculated for all balance sheet items" including "equity capital" by "offsetting the ***weighted opportunity interest for all items on the asset side*** … with the ***weighted opportunity interest for all items on the liability side***." Ex[1007] 89. Thus, *SAP-IS-B* teaches calculating opportunity interest values for all balance sheet items, including assets, liabilities, and equity.

Additionally, *SAP-IS-B* assigns all costs and revenue (including opportunity interest rates) to "various criteria within profitability analysis" including "product, customer, [and] organization unit (profit center)" as depicted:

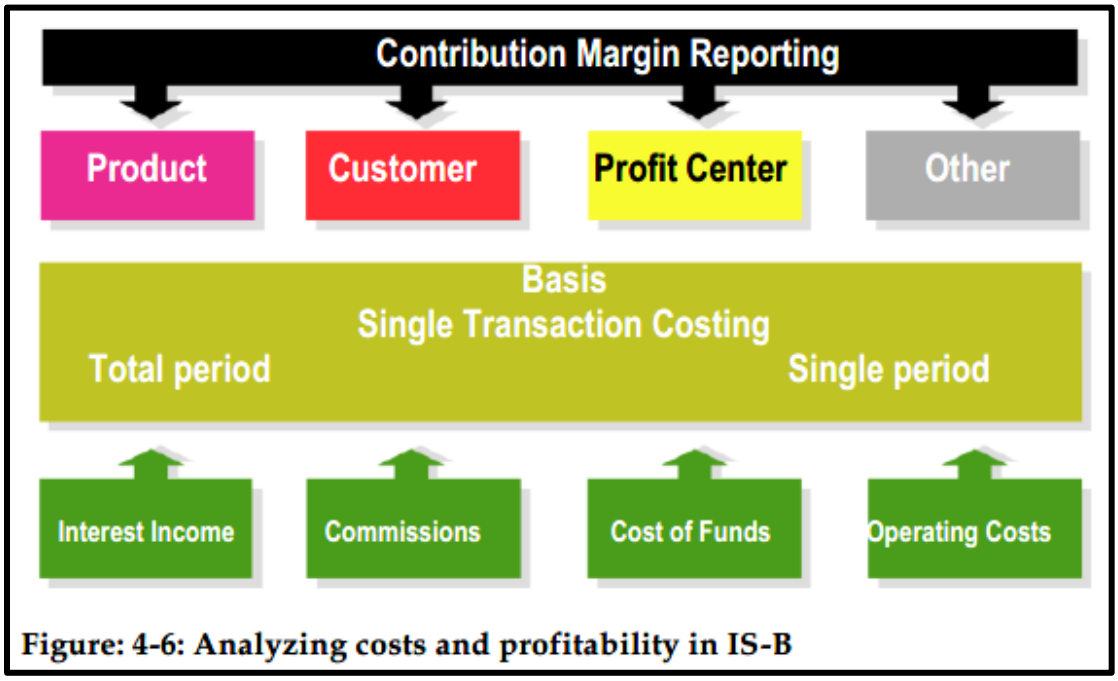


Figure: 4-6: Analyzing costs and profitability in IS-B

Ex[1007] 42; Ex[1016] ¶478. *SAP-IS-B* above depicts calculating opportunity values (*e.g.*, cost of funds) for each transaction and applied to an object (*i.e.*, Product, Customer, Profit Center, Other). Ex[1016] ¶478.

(v) *Element 1[d]*

SAP-IS-B teaches this. Ex[1007] 6-12, 17-23, 27, 31-33, 40-44, 58-72, 75-79; Ex[1016] ¶¶480-486. As discussed above (§§VII.D.1(ii)-VII.D.1(iv)), *SAP-IS-B* teaches preparing information in a relational database to perform profit calculations. Ex[1016] ¶¶465-479.

SAP-IS-B focuses on how to implement banking business rules to operate on a relational database system to provide bank profitability analysis. Ex[1007] 9-15. *SAP-IS-B* teaches establishing rules for processing information including "costing rules, regulatory reporting rules, [and] risk management rules." Ex[1007] 27. *SAP-IS-B* depicts at least "Costing," "Reporting," and "Risk management" rules:

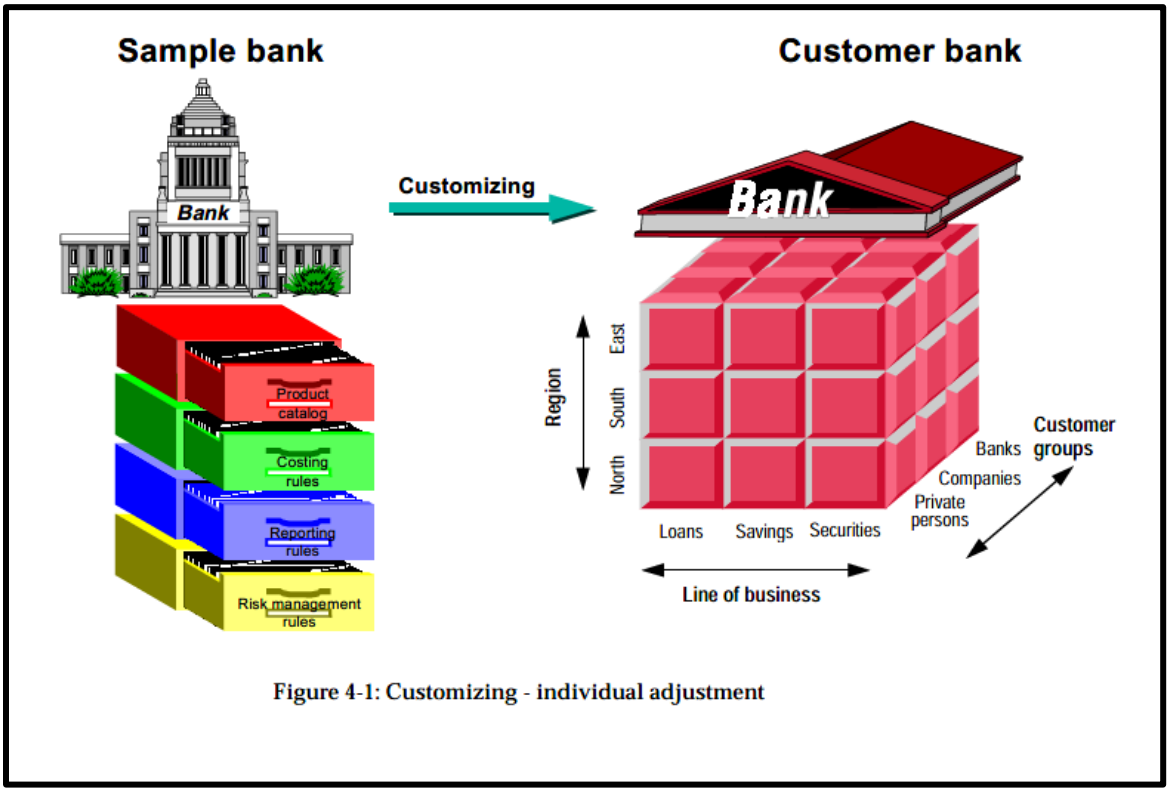


Figure 4-1: Customizing - individual adjustment

Ex[1007] 27; Ex[1016] ¶481. Here, "[u]ser-defined costing rules and costing methods" specify "the costing components (risk costs, interest terms contribution) for a single transaction" which are "then assigned to each user-defined bank product." Ex[1007] 32; Ex[1016] ¶481.

Additionally, *SAP-IS-B* establishes database rules for imported or exported data – "conversion rules" are "maintained by the user" and the "rules support the conversion of data structures from the external (operational) systems to the IS-B data structures." Ex[1007] 87; Ex[1016] ¶¶482-484.

SAP-IS-B has information necessary (*e.g.*, product catalog, number assignments, matchcodes) to select an object (*e.g.*, region, line of business, customer group) and calculate profitability for those objects using rules. Ex[1007] 75-79; Ex[1016] ¶¶482-486. Additionally, *SAP-IS-B*'s "data pool contains master and transaction data" which includes information that allows the system to select objects and allocate profitability calculations to objects (*e.g.*, business line, customer group, product group). Ex[1007] 35-36; Ex[1016] ¶484.

Finally, *SAP-IS-B*'s "Bank Profitability Analysis" is performed for any "customer group, product, risk class, branch" based on user-assigned rules. Ex[1007] 60; Ex[1016] ¶¶482-485. *SAP-IS-B* depicts this:

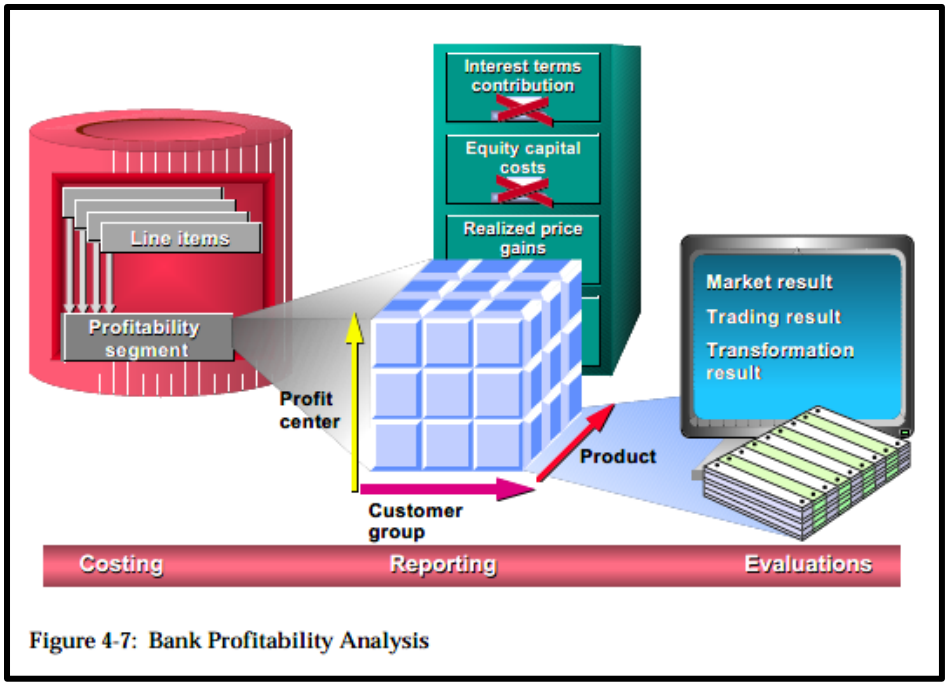


Figure 4-7: Bank Profitability Analysis

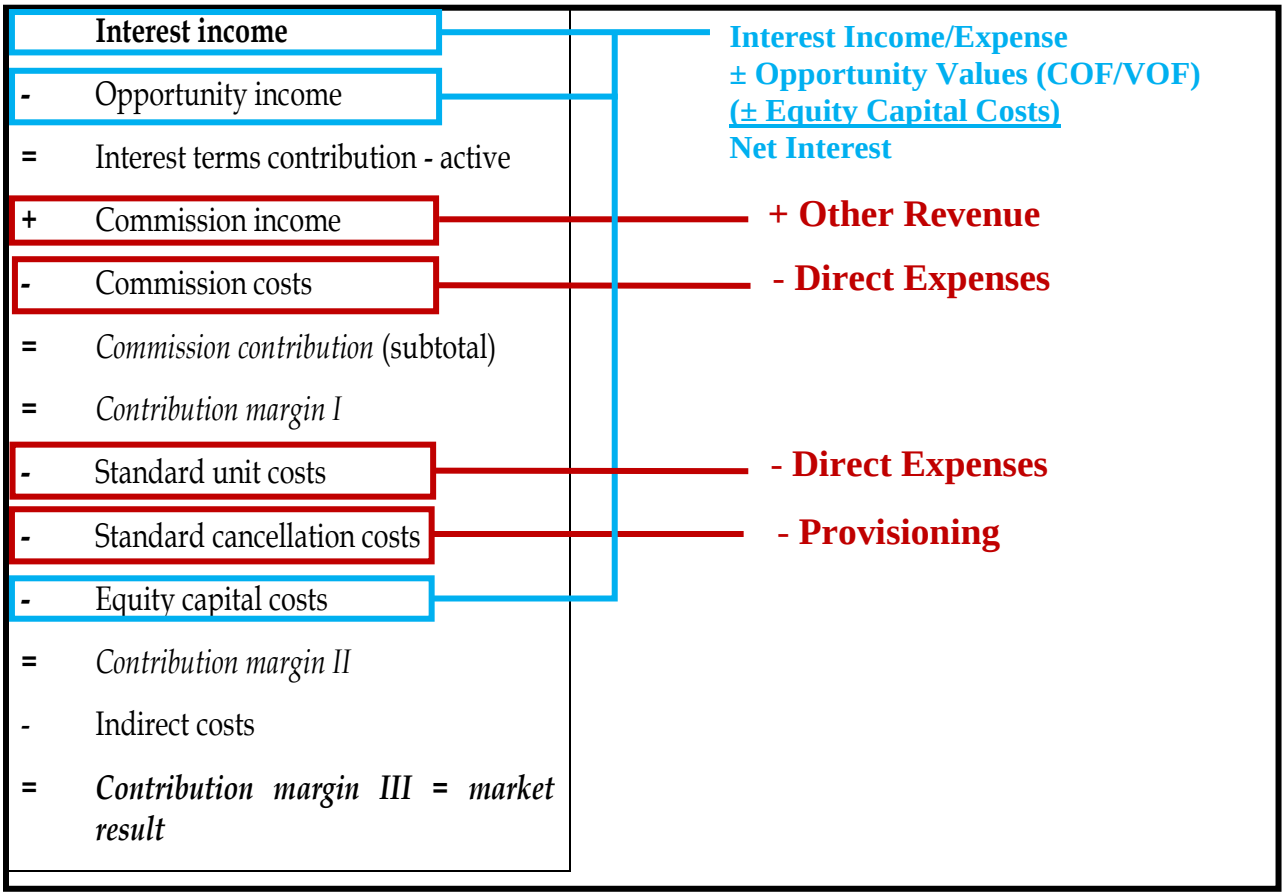
Ex[1007] 60; Ex[1016] ¶485.

(vi) *Element 1[e]*

SAP-IS-B teaches element 1[e]. Ex[1007] 10, 36-42, 63; Ex[1016] ¶¶487-492. As discussed in §VII.D.1(iii), *SAP-IS-B* uses an RDBMS to perform profit calculations. Ex[1016] ¶¶470-472. As discussed in §VII.D.1(v), *SAP-IS-B* also uses rules established in the database to calculate profit. Ex[1016] ¶¶480-486.

SAP-IS-B independently calculates marginal values of profit: "all selected costing methods are analyzed simultaneously; IS-B then issues a list of relevant fields, sorted according to tables." Ex[1007] 36; Ex[1016] ¶488. And "[w]ithin the Cost Accounting module, various cost accounting systems can run in parallel." Ex[1007] 10; Ex[1016] ¶488.

SAP-IS-B shows calculating "at least one marginal value of profit for each object being measured" in this profitability report:



Ex[1007] 63; Ex[1016] ¶¶489-491. The figure calculates multiple marginal values of profit:

- net interest (Interest Income, Opportunity Income, Equity Capital Costs),
- other revenue (Commission Income),
- direct expense (Commission costs, Standard unit costs), and
- provisioning (Standard Cancellation Costs).

Ex[1016] ¶¶489-491. *SAP-IS-B* also shows calculating marginal value of profit below:

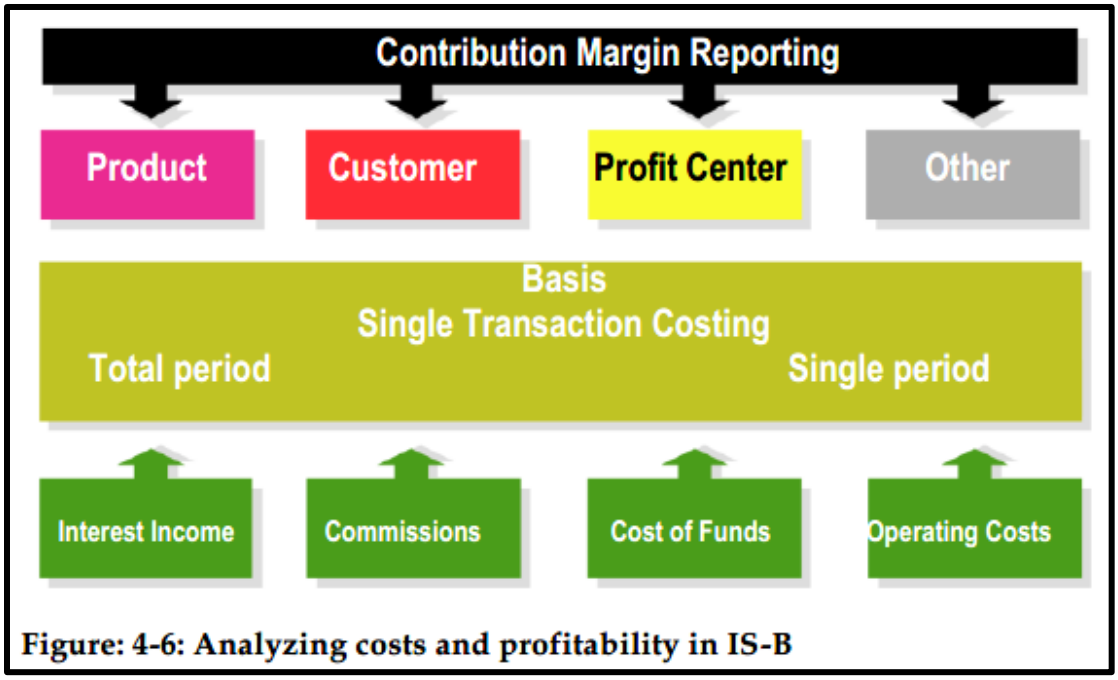


Figure: 4-6: Analyzing costs and profitability in IS-B

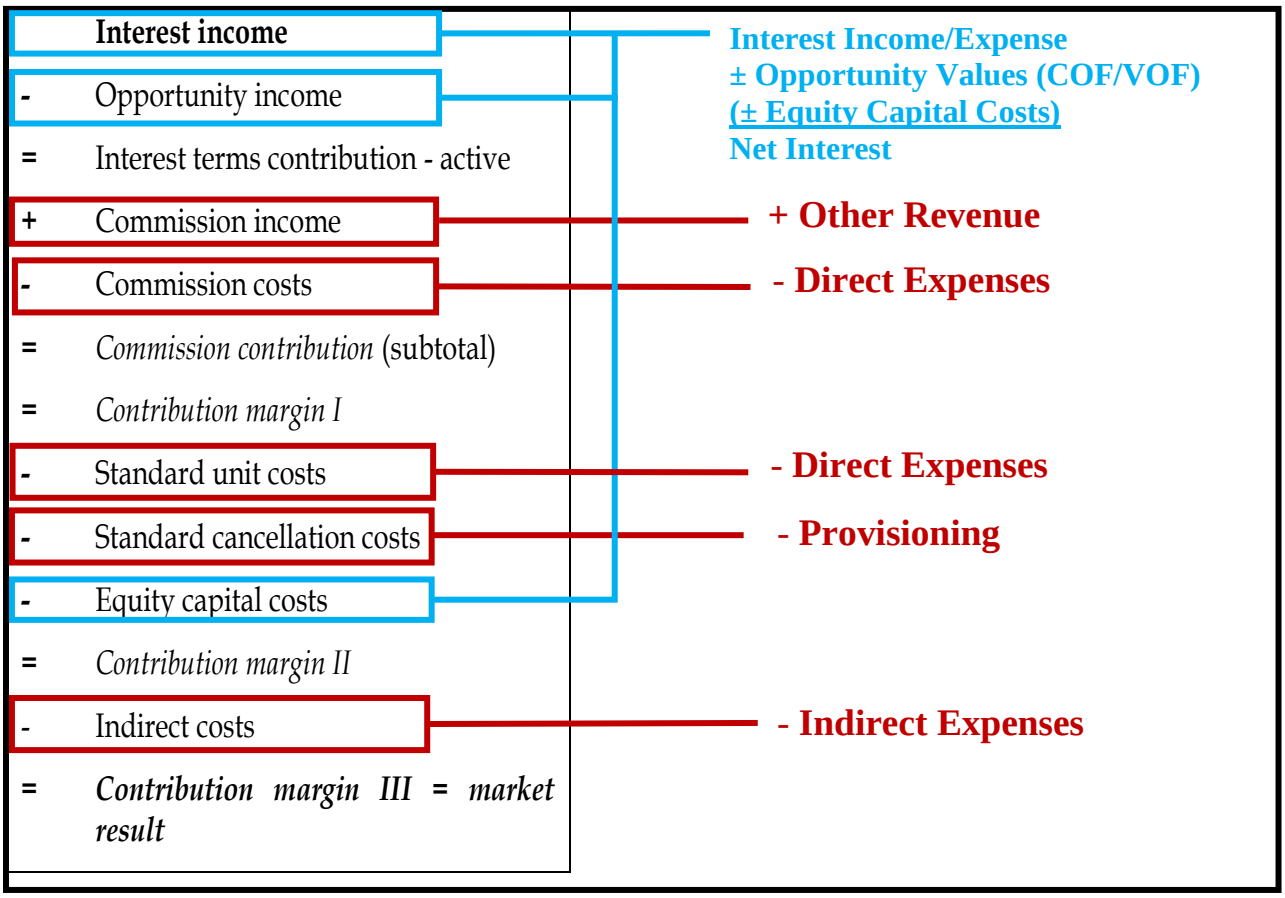
Ex[1007] 42; Ex[1016] ¶¶489-491. This shows net interest (*i.e.*, Interest Income *less* Cost of Funds), other revenue (*i.e.*, Commissions), and direct expenses (*i.e.*, Operating Costs) on a per-object basis (Product, Customer, Profit Center, Other). Since each of these comprise "at least one marginal value of profit," *SAP-IS-B* teaches element 1[e].

(vii) *Element 1[f]*

SAP-*IS-B* teaches element 1[f]. Ex[1007] 10, 36-42, 55-58, 61; Ex[1016] ¶¶493-498. As discussed above (§§VII.D.1(vi)), *SAP-IS-B* uses the SAP-R/3 database system to calculate a marginal value of profit. Ex[1016] ¶¶487-523. The simple combination of these values would have been obvious to a POSITA. Ex[1016] ¶498.

SAP-IS-B discloses combining "standard unit costs (direct and directly attributable costs)" (*e.g.*, direct expenses) and "cost center overhead rates (indirect costs of cost centers close to the market" (*e.g.*, indirect expenses) to calculate profitability. Ex[1007] 55-58; Ex[1016] ¶494. Direct costs are combined tougher, and also combined with indirect costs, which in this patent Claim 3 indicates can also be grouped as a marginal value of profit.

SAP-IS-B also combines marginal values of profit (*e.g.*, NI, OR, DE, and P below) per transaction:



Ex[1007] 63; Ex[1016] ¶495. The figure above calculates and combines:

- marginal values of profit:

- net interest (Interest Income, Opportunity Income, Equity Capital Costs)
- other revenue (Commission Income)
- direct expense (Commission costs, Standard unit costs), and
- provisioning (Standard Cancellation Costs)

with

- the indirect expenses (Indirect Costs),

to create

- a measure of object level profitability (market result).

Ex[1016] ¶495. *SAP-IS-B* further depicts the calculations:

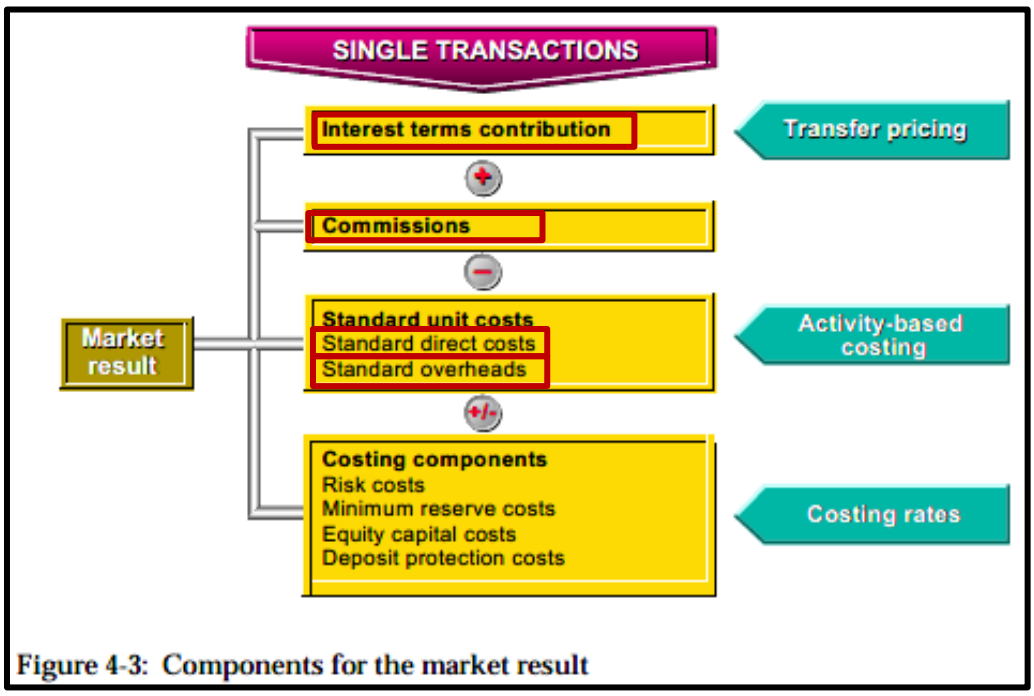


Figure 4-3: Components for the market result

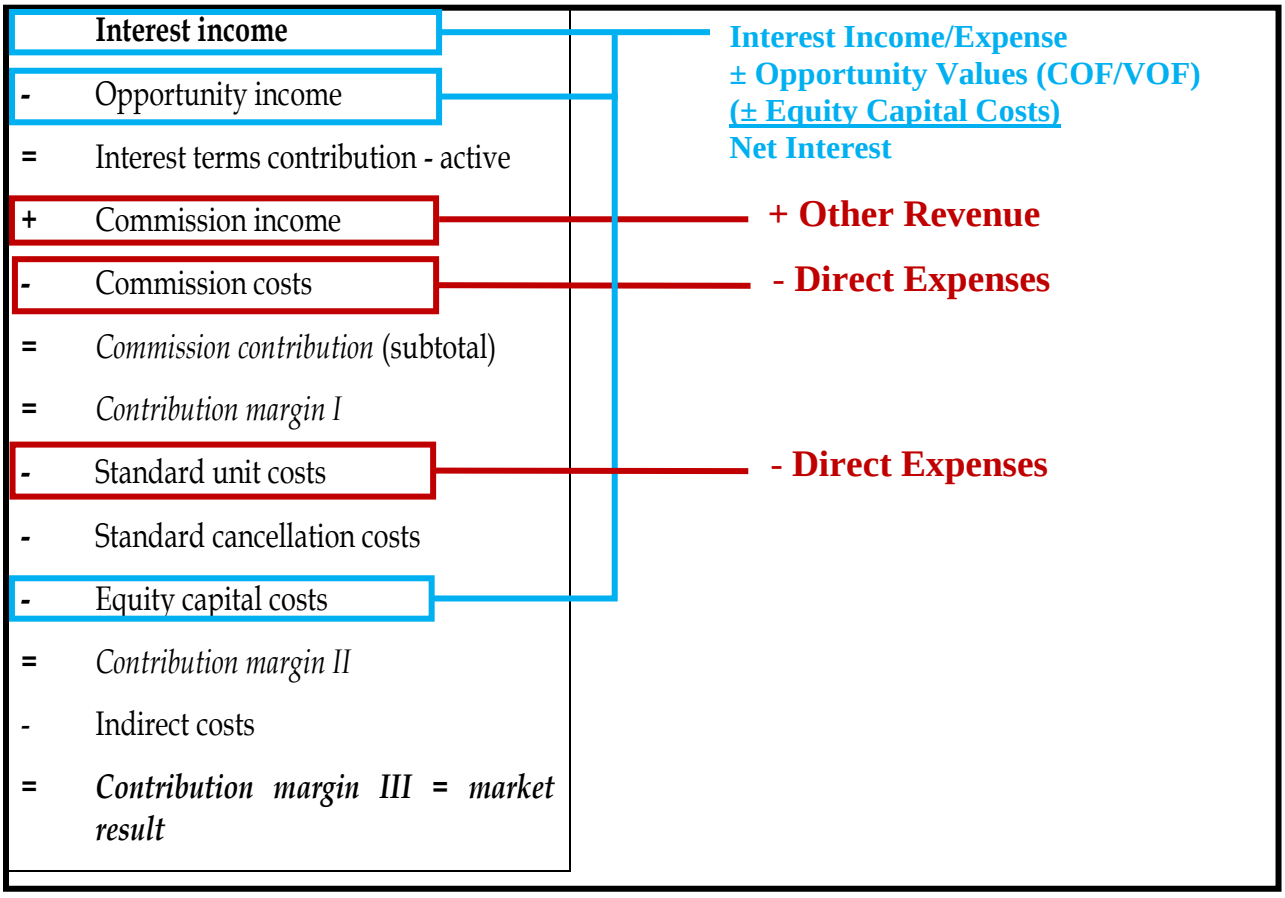
Ex[1007] 33; Ex[1016] ¶495. This also shows combining direct costs and overhead costs. Ex[1016] ¶495. And profitability is reported for each

profitability segment (*e.g.*, customer group, product, risk class, branch). Ex[1007] 57-60; Ex[1016] ¶496.

2. Dependent Claim 3

(i) *Element 3[a]*

As discussed in §VII.D.1(vi), *SAP-IS-B* calculates each of NI, OR, and DE. Ex[1016] ¶¶487-492. *SAP-IS-B* also depicts these calculations in the following figures:



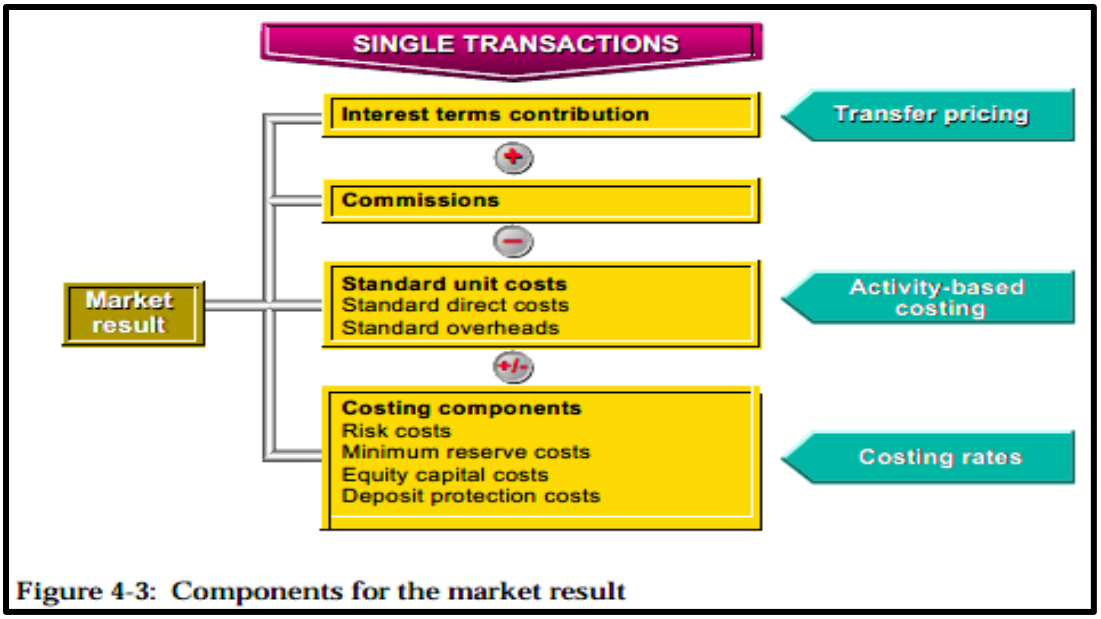


Figure 4-3: Components for the market result

Ex[1007] 33, 60; Ex[1016] ¶¶504-507. *SAP-IS-B* above discloses calculating NI, OR, and DE, and each of these the individual calculations of NI, OR, and DE are shown below.

(ii) *Element 3[b]*

SAP-IS-B calculates net interest income per transaction according to funds transfer pricing:

A ***market rate approach to transfer pricing*** is used to ***calculate the interest margin*** in interest-related business. ***Each single transaction is set against an alternative transaction*** on the money and capital market. The ***difference between the customer interest rate and the alternative market interest rate (opportunity rate) based on volume, represents the interest terms contribution***. IS-B offers schemes for ***calculating the interest terms contribution*** which are either ***based on daily balances or nominal average balances*** (in accordance with a traditional market rate approach) ***or on cash flows and effective capital*** (in accordance with the present value).

Understood as "Interest Income" or "Interest

Discussed below as including "Cost of Funds," "Value of Funds," and "Earnings on Equity Funds"

Ex[1007] 49; Ex[1016] ¶509. *SAP-IS-B* describes calculating interest margin according to a market rate approach to transfer pricing, where the interest margin is the difference between the customer interest rate (*i.e.*, interest income *less* interest expense) and the opportunity rate (including cost of funds, value of funds, and earnings on equity funds). Ex[1016] ¶¶508-511. A POSITA would have understood that the customer interest rate refers to the interest income for an asset or the interest expense for a liability. Ex[1016] ¶¶508-511. *SAP-IS-B*, above, also discloses calculating the interest terms contribution based on the interest margin and the nominal average balance of the transaction. In terms of element 3[b]:

$$NI = \sum CustInt_A + OppRate_L + OppRate_B - CustInt_L - OppRate_A$$

$$NI = \sum IntInc + VOF + EarningsOnEquityFunds - IntExp - COF$$

Ex[1016] ¶509.

Although the quote does not expressly identify the components for calculating opportunity rates, *SAP-IS-B* calculates opportunity interest rates for all balance sheet items, including equity capital, as follows:

Maturity transformation result

Calculated by ***offsetting the weighted opportunity interest for all items on the asset side*** (according to the yield curve on the money and capital market for the local currency) ***with the weighted opportunity interest for all items on the liability side***. A prerequisite for the calculation is that ***opportunity interest is calculated for all balance sheet items*** including interest-free items such as buildings, land, ***equity capital***, provisions etc.

Asset opportunity interest identifies "cost of funds"

Liability opportunity interest identifies "value of funds"

Equity capital opportunity interest identifies "earnings on equity funds"

Ex[1007] 89; Ex[1016] ¶510. *SAP-IS-B* describes the maturity transformation result used in calculating net interest income as a weighted opportunity interest for

all items on the asset side (*i.e.*, cost of funds), the liability side (*i.e.*, value of funds provided), and other balance sheet items (*i.e.*, earnings on equity funds used). Ex[1016] ¶510. When combined with the interest margin above, *SAP-IS-B* teaches element 3[b]. Ex[1016] ¶¶509-510.

In terms of element 3[b]:

$$NI = \sum CustInt_A + OppRate_L + OppRate_B - CustInt_L - OppRate_A$$

$$NI = \sum IntInc + VOF + EarningsOnEquityFunds - IntExp - COF$$

Ex[1016] ¶510.

(iii) *Element 3[c]*

SAP-IS-B teaches calculating OR as in 3[c]. Ex[1007] 33, 42, 60-66; Ex[1016] ¶¶512-514. Other revenue in banks commonly comes from commissions, fees, and charges. Ex[1016] ¶¶512-513. For example:

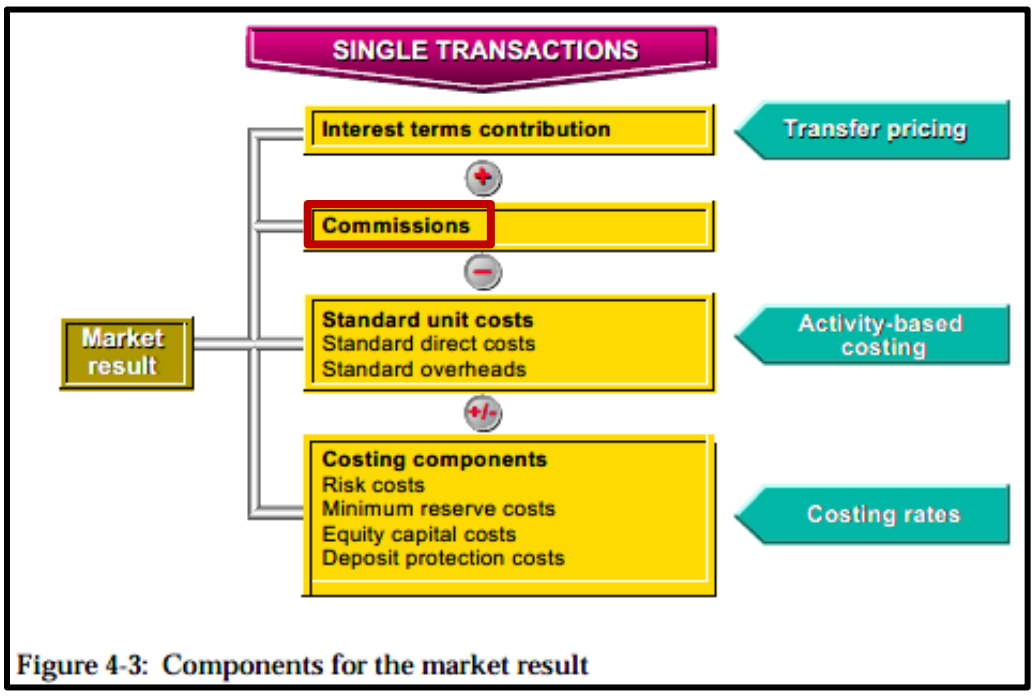


Figure 4-3: Components for the market result

Ex[1007] 33; Ex[1016] ¶¶512-513. Here, *SAP-IS-B* teaches attributing commissions ("Other Revenue") to a single transaction. Ex[1016] ¶¶512-513. *SAP-IS-B* also shows "Commissions" here:

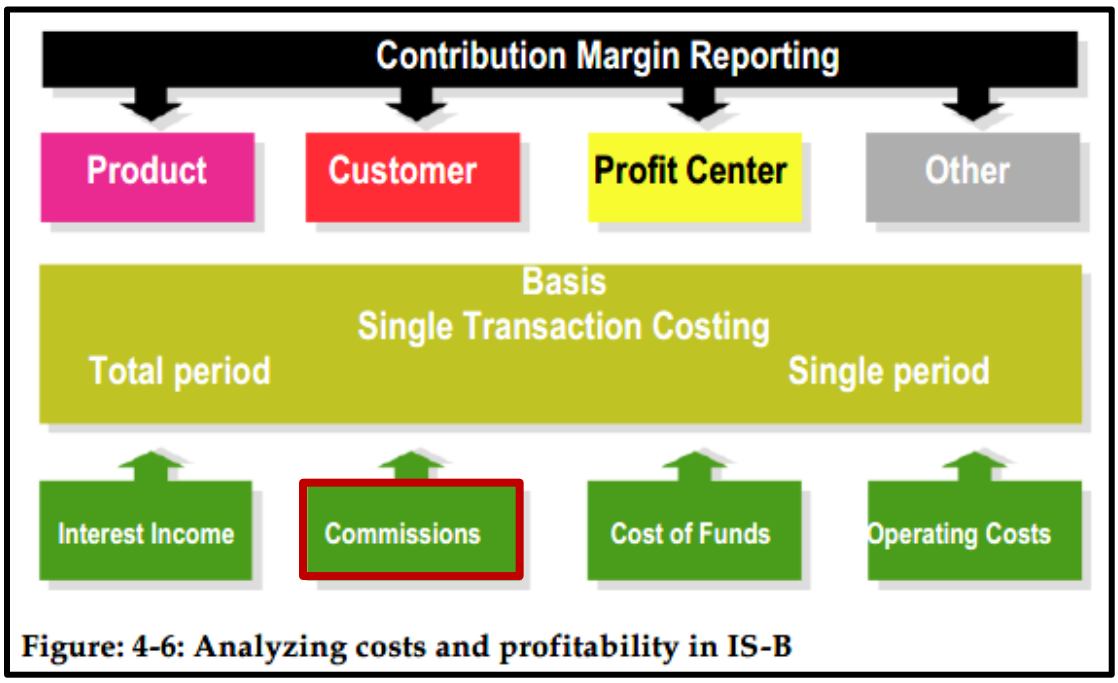


Figure: 4-6: Analyzing costs and profitability in IS-B

Ex[1007] 42; Ex[1016] ¶¶512-513. Thus *SAP-IS-B*, discloses calculating commissions for a single transaction, and allocating that transaction to a Product, Customer, and/or Profit Center – teaching element 3[c]. Ex[1016] ¶¶512-513.

(iv) *Element 3[d]*

SAP-IS-B teaches calculating DE as in 3[d]. Ex[1007] 33, 55-56; Ex[1016] ¶¶515-518. *SAP-IS-B* calculates direct expenses per transaction as "standard unit costs (direct and directly attributable costs)." Ex[1007] 55-58; Ex[1016] ¶515. *SAP-IS-B* also depicts calculating direct costs per transaction:

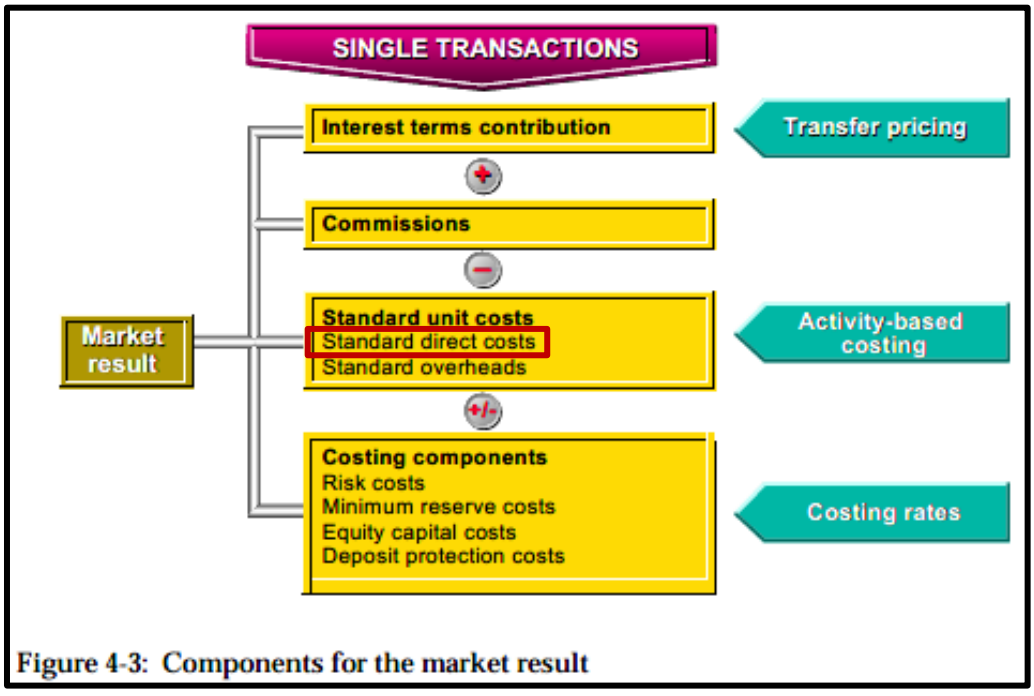


Figure 4-3: Components for the market result

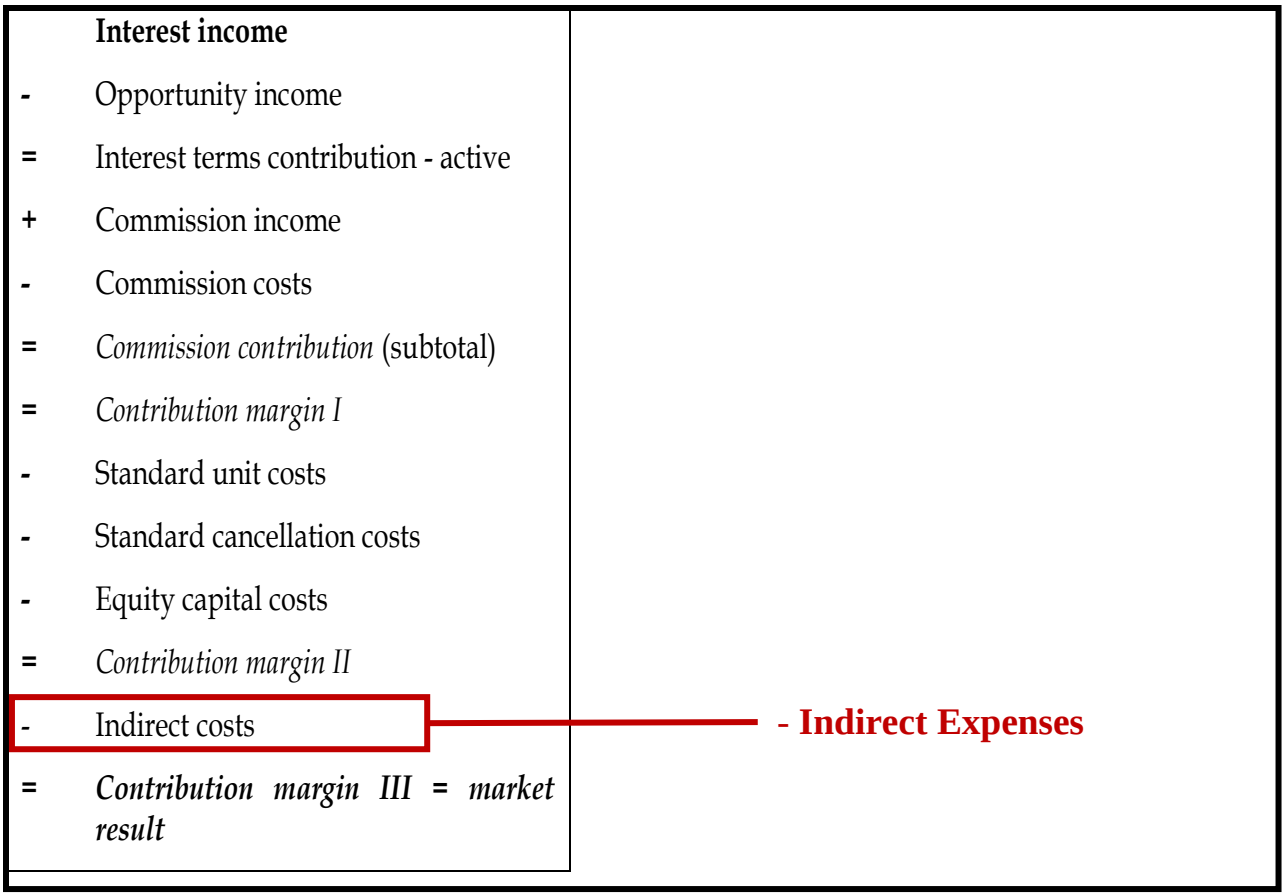
Ex[1007] 33; Ex[1016] ¶516. Here, *SAP-IS-B* calculates direct expense as "standard direct costs," which are allocated to a single transaction to calculate profit (*i.e.*, market result). Ex[1016] ¶516. This teaches element 3[d].

(i) *Element 3[e]*

SAP-IS-B teaches element 3[e]. Ex[1007] 33, 55-64; Ex[1016] ¶¶519-523. As discussed in §VII.D.1(iii), *SAP-IS-B* uses an RDBMS to perform profit calculations. Ex[1016] ¶¶470-472.

SAP-IS-B calculates indirect expense per object as "cost center overhead rates (indirect costs of cost centers close to the market)" and "overhead surcharges." Ex[1007] 55-58; Ex[1016] ¶¶521-522. And with *SAP-IS-B* "you have the flexibility to either ***fully absorb the cost involved in a single transaction*** or carry out partial, multi-level costing." Ex[1007] 54-58; Ex[1016] ¶¶521-522.

SAP-IS-B depicts a profitability report including indirect expenses for each transaction:



Ex[1007] 63; Ex[1016] ¶¶521-522. *SAP-IS-B* also calculates indirect expenses as an overhead cost:

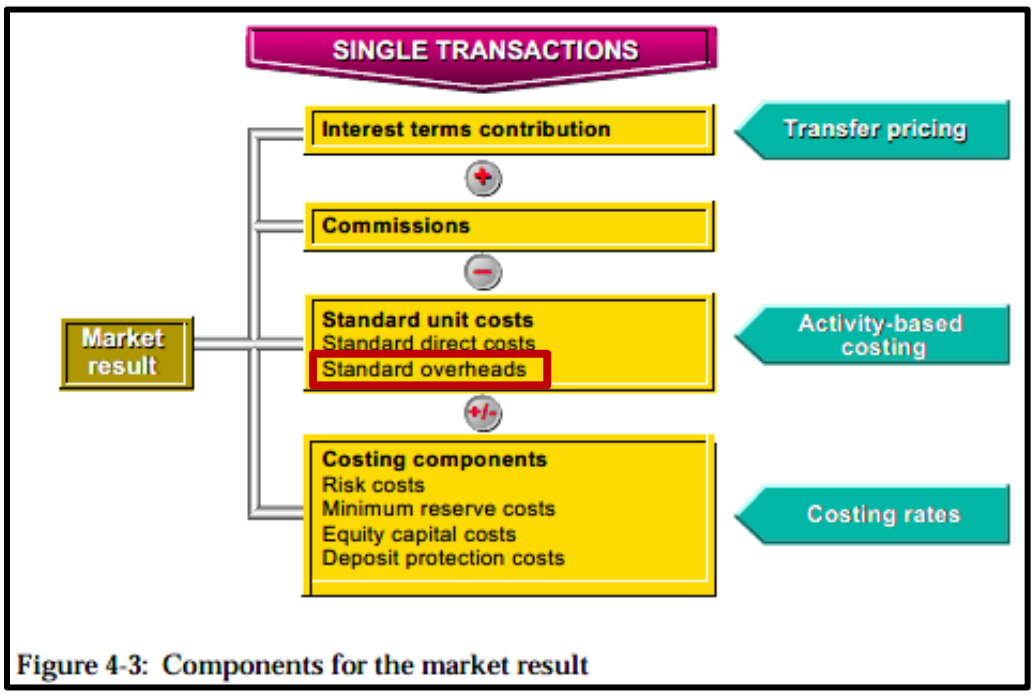


Figure 4-3: Components for the market result

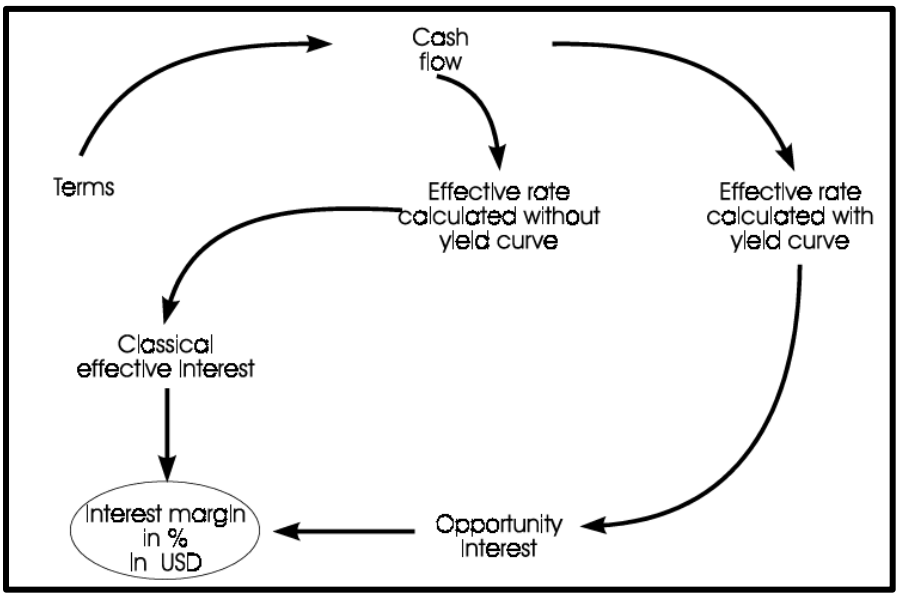
Ex[1007] 33; Ex[1016] ¶¶521-522.

3. Dependent Claim 8

SAP-IS-B teaches Claim 8. Ex[1007] 47-54, 87; Ex[1016] ¶¶538-542. As discussed in §VII.D.1(iv), *SAP-IS-B* discloses calculating opportunity values. Ex[1016] ¶¶473-479.

SAP-IS-B discloses calculating opportunity values using matched maturities funds transfer pricing, describing a "procedure for matched-maturities valuation" including calculating "***opportunity interest rate, as effective interest of alternative.***" Ex[1007] at 52; Ex[1016] ¶540. *SAP-IS-B* discloses that "***matched-maturities valuation***" matches a financial product with "***a bundle of other financial instruments with a similar duration***." Ex[1007] 89; Ex[1016] ¶540.

SAP-IS-B also depicts this below:



Ex[1007] 49; Ex[1016] ¶541. Additionally, *SAP-IS-B* discloses a method of matched maturities funds transfer pricing based on the present value of the financial instrument's cash flow, evaluated according to market alternative rates (*i.e.*, calculated with yield curves). Ex[1007] 49-53; Ex[1016] ¶541.

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The elements of Claims 1, 3, and 8 are taught by *SAP-IS-B* (§§VII.D.1-VII.D.3). Additionally, it would have been obvious for a POSITA to combine the well-known concepts (§§VII.A.3-VII.A.4) purportedly claimed with the enterprise database profitability module of *SAP-IS-B* to render the claims obvious. Moreover, a POSITA reading the various teachings and examples of *SAP-IS-B* would at once envisage the claimed arrangements of the challenged claims Ex[1016] ¶543. It would also be obvious to combine the various teachings and

examples of *SAP-IS-B* set forth above, as they are all discussed in the single reference and described as desirable approaches, and a POSITA would be motivated to implement the teachings therein in accordance with the examples discussed in *SAP-IS-B*. A POSITA would expect success in carrying out that implementation in view of *SAP-IS-B*'s express teachings, suggestions and motivations set forth above, because it would be common sense when implementing *SAP-IS-B*'s teachings to try utilizing the approaches set forth in *SAP-IS-B*'s example implementations. Ex[1016] ¶543.

E. Grounds 8-9: Claims 1, 3, and 8-24 are Rendered Obvious by *E&Y* and *Blain*, and also by *E&Y*, *Blain*, and *SAP-IS-B*

The combination of *E&Y* and *Blain* renders obvious Claims 1, 3, and 8-24. In addition, the combination of *E&Y*, *Blain*, and *SAP-IS-B* also renders obvious Claims 1, 3, and 8-24.

1. Motivation to Combine

A POSITA would be motivated to combine *E&Y* with *Blain*. Ex[1016] ¶¶585-593. It is common sense to combine *E&Y*, whose express purpose is to "assist financial institutions with the design implementation, and management of performance information," with *Blain*, describing a well-known computer-implemented financial accounting system – SAP-R/3 – for "providing continuous measurement of the profitability of everything that is going on."

Ex[1005] 5; Ex[1006] 193; Ex[1016] ¶¶585-593. Using the SAP-R/3 system of *Blain* to implement the profitability teachings of *E&Y* would be obvious for a POSITA to try due to the prevalence of the SAP system. Ex[1016] ¶¶585-593. Moreover, the SAP-R/3 system of *Blain* was known to POSITAs as an accounting and financial analysis tool and would have been one of a limited number of options when selecting software to implement E&Y's teachings. Ex[1016] ¶¶585-593. Implementing *E&Y's* teachings using the *Blain* system would also yield predictable results, because Blain's system is designed to calculate the same profitability metrics, using the same concepts, that E&Y teaches. Ex[1016] ¶¶585-593.

Additionally, E&Y suggests, and provides motivation for, using a system like *Blain* to implement the teachings of E&Y. Ex[1016] ¶¶585-593. For example, as described by Dr. Weber, *E&Y's* discussion of a "[d]atabase gateway technology," "scalable client-server processing platforms," and "packaged software" would be recognized by a POSITA as describing a system like SAP-R/3. Ex[1016] ¶587.

As for *SAP-IS-B, Blain* expressly teaches combining SAP-R/3 with the "IS-B Industry Solutions for Banks" explaining that "IS-B is fully compatible with existing R/2 and R/3 installations" and provides "[b]ank profitability analysis." Ex[1006] 585; Ex[1016] ¶¶594-595. While *Blain* does not describe IS-B's calculations in detail, *SAP-IS-B* provides precisely that implementation

detail. *SAP-IS-B* also suggests the combination, describing the installation and integration of the IS-B module into the SAP-R/3 system of *Blain*. Ex[1007] 9-12; Ex[1016] ¶¶594-595. The combination of *Blain* and *SAP-IS-B* is suggested by both references, and the combination would yield predictable results for measuring profitability of a banking institution. Ex[1016] ¶¶594-595.

A POSITA would have also known to combine *E&Y*, a guide on performance measurement in financial institutions, with the SAP module that provides a system for performance measurements in banks as described by *SAP-IS-B*. Ex[1005] 5; Ex[1016] ¶¶585-595. The combination would yield a predictable result for calculating object level profitability for a financial institution. Ex[1016] ¶¶585-595.

2. Obviousness (E&Y and Blain)

The elements of Claims 1, 3, and 8-24 are taught by *E&Y* (VII.B.1-VII.B.7) and the elements of Claim 1 are taught by *Blain* (VII.C.1). For the reasons discussed above, a POSITA would find it obvious to combine these teachings to render Claims 1, 3, and 8-24 obvious.

For example, to the extent it is argued that *Blain* does not teach 1[d], it would have been obvious for a POSITA to use the transfer pricing calculations described in *E&Y* in the *Blain* system, since *Blain* was designed to allow a user to define rules for calculating profitability. Ex[1016] ¶¶590-593. As referenced in

§VII.A.3(v), element 1[d] was well-known in the art and it would have been obvious for a POSITA to combine the rules of 1[d] with the cost allocation rules, along with the identification of data in the database, with *Blain* to render 1[d] obvious. Ex[1016] ¶¶135-142, 424-431.

Additionally, to the extent that *E&Y* is alleged to not expressly teach "rules" for its various calculations of values and profitability (1[d]-1[e]), *Blain*'s rules-based database system would be an obvious design choice to implement *E&Y*'s teachings for all the reasons discussed above (§VII.E.1) and because *Blain*'s system permitted the use of rules to process the data, select objects, and perform calculations about those objects. Ex[1016] ¶¶590-593.

To the extent that it is argued that *E&Y* does not expressly teach SQL according to Claim 2, it would have been obvious to a POSITA to use the financial calculations of *E&Y* with the RDBMS (including SQL) of *Blain* to render Claim 2 obvious, because *Blain* was designed to allow user-defined financial rules in the RDBMS for calculating profitability. Ex[1016] ¶593 Thus, the combination of *E&Y* and *Blain*, renders obvious Claims 1, 3, and 8-24.

3. Obviousness (E&Y, Blain, and SAP-IS-B)

The elements of Claims 1, 3, and 8-24 are taught by E&Y (VII.B.1-VII.B.7), the elements of Claim 1 are taught by *Blain* (VII.C.1), and Claims 1, 3, and 8 are taught by *SAP-IS-B* (VII.D.1-VII.D.3). For the reasons discussed above,

a POSITA would find it obvious to combine these teachings to render Claims 1, 3, and 8-24 obvious.

Specifically, it would have been obvious to a POSITA to combine the financial calculations of *E&Y* with the enterprise database system of *Blain* and *SAP-IS-B*. §VII.E.1. For example, with respect to Claim 1, it would have been obvious for a POSITA to use an RDBMS described by *Blain* (VII.C.1) in the *SAP-IS-B* system, since the SAP-R/3 system of *Blain* was designed to fully integrate with the IS-B module of *SAP-IS-B*. §V.C. Similarly, to the extent that it is argued that *E&Y* does not expressly teach establishing rules in the relational database (1[d]) it would have been obvious to a POSITA to use the financial calculations of *E&Y* with the rules-based system of *SAP-IS-B* (VII.D.1(v)-VII.D.1(vi)) and *Blain* (VII.C.1(v)-VII.C.1(vi)). Ex[1016] ¶¶594-595. As described above, the *SAP-IS-B* system is designed to have users input rules, like those of *E&Y*, into the enterprise system to calculate object level profitability. §V.C. Thus, the combination of *E&Y*, *Blain*, and *SAP-IS-B* renders obvious Claims 1, 3, and 8-24.

F. Grounds 10-11: Claims 9-24 are Rendered Obvious by *E&Y*, *Blain*, and *Kimball*; and *E&Y*, *Blain*, *SAP-IS-B*, and *Kimball*.

1. Claims 9, 13, 17, and 21

Claims 9, 13, 17, and 21's calculation of net interest using funds transfer pricing was well known. §VII.A.4(iii). Furthermore, *E&Y* teaches and, in combination with *Blain* and *SAP-IS-B*, renders obvious Claims 9, 13, 17, and 21. §§VII.B.4, VII.E. To the extent these combinations are alleged to be deficient, the addition of *Kimball* renders obvious Claims 9, 13, 17, and 21. Ex[1010] 22; Ex[1016] ¶¶544-550.

Kimball discloses that "[i]ncreasingly, banks use sophisticated funds-transfer-pricing systems to compute net-interest income for a business unit or product" by calculating "the difference between the rate paid on the deposits and the pool rate as net-interest income." Ex[1010] 22; Ex[1016] ¶548. *Kimball* describes the funds transfer pricing system as calculating net interest for *liabilities* (e.g., deposits), as the difference between the rate paid on deposits (interest expense), and the liability pool rate (value of funds provided). Ex[1016] ¶548. The "pool rate" is a liability pool rate for deposit accounts, which is the rate for the "value of funds provided" by the deposit accounts. Ex[1016] ¶548. *Kimball*'s discussion of "increasing[]" use at banks, indicates the systems were commonly known and used at the time of the invention. Ex[1016] ¶548. *Kimball* describes, for transfer pricing assets, that "[b]usiness units that ***generate assets purchase funds from the pool, receiving the difference between the rate received on the asset and the pool rate as net-interest income***" where the "pool rate is the rate at which the bank could raise or employ funds in the money markets" making it a

"***measure of opportunity cost to the bank***." Ex[1010] 22; Ex[1016] ¶548. *Kimball* describes calculating net interest income for *assets* as the difference between the rate received on an asset (interest income) and the asset pool rate (cost of funds used). Combining the transfer pricing system for assets and liabilities, *Kimball* discloses calculating each of Interest Income, Interest Expense, Cost of Funds used, and Value of Funds provided in order to calculate net interest for all assets and liabilities, as depicted:

$$\textbf{\textit{Kimball}}: \; NI = AB_{asset}(rate_{asset} - R_{pool}) - AB_{liability}(rate_{liability} - R_{pool})$$

$$'\textbf{137 \textit{Patent}}: \; NI$$

$$= (AB_{asset} * rate_{asset}) - (AB_{asset} * R_{asset})$$

$$- \left(AB_{liability} * rate_{liability}\right) + (AB_{liability} * R_{liability})$$

Ex[1016] ¶¶548-549. Dr. Weber explains that the R_{pool} is the $R_{asset}/R_{liability}$ of these claims, and the two equations are identical. Ex[1016] ¶¶548-549. Thus, *Kimball* discloses and renders obvious Claims 9, 13, 17, and 21.

Kimball also describes calculating treatment rates for transfer pricing based on a product's type ("automobile paper"), balance class (*e.g.*, "asset" or "liability"), and tier/tenor (*e.g.*, "duration" or "maturity"). Ex[1010] 22; Ex[1016] ¶¶548-549. *Kimball* discloses creating multiple pools for determining transfer rates based on the business unit (*i.e.*, product type), the asset or liability class (*i.e.*,

balance class), and maturity (*i.e.*, tier/tenor). Ex[1010] 22; Ex[1016] ¶¶548-549. Thus, *Kimball* teaches the elements of Claims 9, 13, 17, and 21.

2. Claims 10, 14, 18, and 22

Kimball teaches calculating earnings on (or cost of) allocated equity as recited in Claims 10, 14, 18, and 22. Ex[1010] 22; Ex[1016] ¶¶551-557. *Kimball* discloses the "role of capital as a source of funds" and to "integrate capital costs into the funds-transfer-pricing system to measure accurately the profitability of a business, product, or customer." Ex[1010] 22; Ex[1016] ¶556. *Kimball* explains that, "[t]o allow for equity's role as a source of funds, then each business would ***receive an equity credit equivalent to the assigned equity times the transfer rate in the longest maturity bucket***." Ex[1010] 22; Ex[1016] ¶556. A POSITA would have understood "assigned equity" as being the equity ratio (*i.e.*, ER) times the asset balance (*i.e.*, "AB"). Ex[1016] ¶202. A POSITA would have also understood the transfer rate to mean the treatment rate of equity (*i.e.*, "R_{equity}"). Ex[1016] ¶556. Thus, *Kimball* discloses the equation of Claims 10, 14, 18, and 22 as shown below:

$$EOAE(o_i) = TransferRate * AssignedEquity$$

$$EOAE(o_i) = R_{equity} * ER * \sum AB_{(asset,t)}(o_i)$$

Ex[1016] ¶¶551-557. Thus, *Kimball* teaches the elements of Claims 10, 14, 18, and 22. Ex[1016] ¶¶551-557.

3. Claims 11, 15, 19, and 23

As described in §VII.F.2, *Kimball* discloses calculating EOAE based on assigned equity and a transfer rate (hurdle rate). Ex[1010] 22; Ex[1016] ¶¶551-557.

Kimball explains one method of "allocat[ing] capital based on regulatory requirements": "the regulatory guidelines assign an 8% Tier 1 capital requirement to credit card assets, but based on the premiums paid in the brisk market for credit card portfolios, the market-based capital for credit card portfolios is closer to 11% than to 8%." Ex[1010] 18-19; Ex[1016] ¶¶558-564. A POSITA would understand that the Tier 1 capital requirement (*e.g.*, the Basel capital requirements) disclosed above is a risk-adjusted measure of the equity assigned to an asset class. Ex[1016] ¶559. In the example above, the 8% capital requirement (*i.e.*, risk-adjusted capital ratio or CapRatio) would have a weight of 1. Ex[1016] ¶563. Alternatively, if the market-based capital rate is the desired equity allocation, the 8% regulatory capital requirements (*i.e.*, CapRatio) may be weighted (*i.e.*, $W(\mathrm{Wt}(o_i))=1.375$) to arrive at the market-based capital allocation of 11% (*i.e.*, 1.375*8%=11%). Ex[1010] 18-19; Ex[1016] ¶563. When combined with the equity credit calculation, *Kimball* discloses calculating EOAE as the

transfer rate (R_{equity}) times the assigned equity, where the assigned equity is calculated as the regulatory capital requirement (CapRatio) times a weight ($W(\mathrm{Wt}(o_i))$) times the asset balance ($\mathrm{Amount}(o_i)$). Ex[1016] ¶563. Dr. Weber explains that, in terms of the formula of Claims 11, 15, 19, and 23, *Kimball* discloses:

$$\textbf{\textit{Kimball}}: EOAE(o_i) = TransferRate * \sum [Balance_{asset} * Weight * CapReq_{Tier\,1}]$$

$$\textit{'}\textbf{137 Patent}: EOAE(o_i) = R_{equity} * \sum [Amount(o_i) * W(\mathrm{Wt}(o_i)) * CapRatio]$$

Ex[1016] ¶563. Thus, *Kimball* teaches these the elements of Claims 11, 15, 19, and 23. Ex[1016] ¶¶558-564.

4. Claims 12, 16, 20, and 24

As described in §VII.F.2, *Kimball* discloses calculating EOAE based on assigned equity and a transfer rate (hurdle rate). Ex[1010] 22; Ex[1016] ¶¶551-557.

Kimball discloses calculating allocated equity by "[m]atch[ing] capital allocations to those of peer businesses" by explaining that "banks could base capital allocations on the capital structure of independent, stand-alone peers" where a "bank would ***construct a peer group for each line of business*** and ***allocate capital according to the capital ratios of the peer group***." Ex[1010] 19;

Ex[1016] ¶571. In terms of the equation of Claims 12, 16, 20, and 24, *Kimball* discloses:

Kimball: $EOAE(o_i) = \sum TransferRate * CapRatio_{peer} (Balance_{asset})$

'137 Patent: $EOAE(o_i) = \sum R_{equity} * E_{cohort}(o) (Amount(o_i))$

Ex[1016] ¶571. By disclosing calculating EOAE using peer groups, *Kimball* teaches the equations of Claims 12, 16, 20, and 24. Ex[1016] ¶¶565-573.

Additionally, *Kimball* teaches calculating EOAE using the CAPM. Ex[1010] 24; Ex[1016] ¶572. *Kimball* discloses that the "most common method of ***calculating risk-based hurdle rates is based on the [CAPM]***" where the "***measure of the riskiness of the individual business, or 'beta,'***" is calculated as the volatility of returns on the individual business relative to the volatility of returns on all equity," the "***risk premium for the individual business is 'beta' times the historical average difference between the return on equity and the risk-free rate***" and the "***hurdle rate is the sum of the risk premium and the risk-free rate.***" Ex[1010] 24; Ex[1016] ¶572. *Kimball* describes calculating EOAE using CAPM by determining a beta for each individual business and using that beta value to determine the hurdle rate for allocated equity for that business. Ex[1016] ¶572. Thus, *Kimball* teaches calculating EOAE using CAPM as in Claims 12, 16, 20, and 24. Ex[1016] ¶¶565-573.

5. Motivation to Combine

The combinations of *E&Y* and *Blain*, and *E&Y*, *Blain*, and *SAP-IS-B* (the "primary references") render obvious the claims from which 9-24 depend. §VII.E; Ex[1016] ¶¶586-589. A POSITA would have combined the primary references with *Kimball*. Ex[1016] ¶¶596-601. The primary references teach methods of measuring granular organizational performance.

Additionally, a POSITA implementing the profitability systems of the primary references would have looked to banking and accounting publications for the state of the art in profitability calculations. Ex[1016] ¶¶596-601. In fact, *E&Y* in Chapter 12 cites an article from the *Bank Accounting & Finance* journal. Ex[1005] 217; Ex[1016] ¶¶596-601. Dr. *Kimball*'s 1997 paper Innovations in Performance Measurement in Banking cites to both *Kimball* and *E&Y*, expressly suggesting their combination. Ex[1019] 16. The primary references discuss allocating equity and a POSITA would to look at *Kimball* for details on equity allocation in such a system. Ex[1016] ¶¶596-601.

E&Y discusses implementing equity allocations for "disaggregated business lines, products, and perhaps even transactions." Ex[1005] 228. E&Y suggests looking to references like *Kimball* to address transfer pricing and equity allocations. Ex[1016] ¶¶596-601.

SAP-IS-B discusses "equity capital costs," and *Kimball* provides detailed rules on calculating equity capital costs. Ex[1016] ¶¶596-601. Combining with *Kimball* would yield the predictable results of calculating object level profitability with equity capital costs (EOAE). Ex[1016] ¶¶596-601.

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To the extent that *Blain* does not fully disclose transfer pricing formulas, *Kimball* does. §§VII.F.1. It is obvious to integrate the calculations of *Kimball* into a user-defined rules-based system of *Blain*, to yield predictable results. Ex[1016] ¶¶424-431.

Similarly, it would have been obvious for a POSITA to implement the formulas of *Kimball* in a user-defined rules-based system of *SAP-IS-B*, to achieve expected results for calculating object level profitability. Ex[1016] ¶¶586-601.

VIII. CONCLUSION

Petitioner respectfully requests that covered business method review of the '316 Patent be instituted and that the challenged claims be cancelled as unpatentable.

Respectfully submitted,

BAKER BOTTS L.L.P.

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APPENDIX 1: CLAIM LISTING

Claim Element	Claim Language
1[preamble]	A process for determining object level profitability in a relational database management system, comprising the computer implemented steps of:
1[a]	providing a computerized profit database having profit information;
1[b]	providing a relational database management system operable in association with the computerized profit database;
1[c]	preparing the profit information to be accessed electronically through the relational database management system, including the step of calculating opportunity values for funds used or supplied by each object being measured;
1[d]	establishing, in the relational database, rules for processing the prepared information, including the steps of providing information necessary to select objects and performing a profit calculus;

1[e]	using the relational database management system to independently calculate at least one marginal value of profit for each object being measured using the established rules as applied to a selected set of prepared information;
1[f]	combining the at least one marginal value of profit to create a measure for object level profitability.
2	The process of claim 1, wherein the relational database comprises a structured query language (SQL).
3[a]	The process of Claim 1, wherein the step of calculating at least one marginal value of profit includes the steps of calculating net interest (NI), other revenue (OR) and direct expense (DE),
3[b]	wherein net interest (NI) is the summation of interest income, value of funds provided and earnings on equity funds used less the sum of interest expense and costs of funds used,
3[c]	other revenue (OR) is a measure of profit contribution from non-interest related sources, and
3[d]	direct expense (DE) is the profit value reduction due to marginal resource consumption by the object,

3[e]	and indirect expense (IE) due to non-object related resource consumption.
4	The process of claim 1, wherein the step of calculating at least one marginal value of profit includes the step of provisioning (P) for the selected set of prepared information, provisioning being the expected profit value adjustment for future outcomes related to the object.
5	The process of claim 1, including the step of calculating a profit adjustment value by calculating the value for indirect expense (IE) which is an apportioned profit value adjustment for all non-object related resource consumption.
6	The process of claim 5, wherein the combining step includes the steps of adding net interest (NI) and other revenues (OR), and subtracting therefrom direct expense (DE), provisioning (P) and indirect expense (IE).
7	The process of claim 6, including the step of adjusting the measure for object level profitability for taxes and/or object economic value.

8	The process of claim 1, wherein the opportunity values are based on matched maturity funds transfer pricing theory, where the values are market alternative supplies or uses of funds having matched interest and payment characteristics.
9	**9**. The process of claim **3**, wherein the Net Interest (NI) is calculated as: Int Inc(o_i)=Interest Income of object o_i –COF(o_i)=Cost of funds used by object o_i –Int Exp(o_i)=Interest Expense for object o_i +VOF(o_i)=Value of funds provided by object o_i according to: Int Inc(o_i)=AAB(o_i)*rate$_{asset}$(o_i), only if object attribute doesn't exist; COF(o_i)=AAB(o_i)*Rt Int Exp(o_i)=ALB(o_i)*rate$_{liability}$(o_i), only if object attribute doesn't exist, and VOF(o_i)=ALB(o_i)*Rt, wherein: AAB(o_i)=Average Asset Balance of the object o_i, ALB(o_i)=Average Liability Balance of the object o_i, rate$_{asset}$(o_i)=Effective interest rate for object o_i as an asset balance, rate$_{liability}$(o_i)=Effective interest rate for object o_i as a liability balance, and Rt=Treatment rate based on the identified treatment for the object's product attributes.

10	The process of claim 9, including the step of calculating earnings on allocated equity, where the summation is taken over all asset balances, according to: $EOAE(o_i) = R_{equity} * ER * \Sigma AB_{(asset,t)}(o_i)$, wherein: $AB_{(asset,t)}(o_i)$=Average Asset balances of the object o_i, including any allocated asset balances, ER=Equity Ratio, and R_{equity}=Treatment Rate for equity.
11	The process of claim 9, including the step of calculating earnings on allocated equity according to: $EOAE(o_i) = R_{equity} * \Sigma[Amount(o_i) * W(Wt(o_i)) * Cap\ Ratio]$, wherein: Amount($o_i$)=Amount(s) associated with object 'a' This may be the average asset balances of the object 'o_i' including any allocated asset balances, or may be an object parameter, Wt(type(o_i))=Code needed to identify the weight for object o balances, at the object-type level, W(Wt(type(o_i)))=determined by the weight code, Cap Ratio=An appropriate risk-weighted capital ratio chosen, and R_{equity}=Treatment Rate for equity.

12	The process of claim 9, including the step of calculating earnings on allocated equity according to: $EOAE(o_i)=R_{equity}*E_{cohort}(o)(Amount(o_i))$, or $\Sigma R_{equity}*[\alpha+\beta*Amount(o_i)]$, wherein: $Amount(o_i)$=An amount or amounts related to the object, such as average balances of the object (denoted $AB_{(c,s,t)}(o_i)$, $Cohort(o_i)$=The cohort of objects in which object o is a member, $E_{cohort}(o_i)$=The equity allocation rule for the cohort of object o, according to a linear (two-valued) function that operates on $Amount(o_i)$ of the form $\alpha+\beta*Amount(o)$, and R_{equity}=Treatment Rate(s) for equity for the $Amount(o_i)$ value(s).

13	**13**. The process of claim **3**, wherein Net Interest (NI) is calculated as the summations over the possible balance variables for the object, according to: $IntInc(o_i) = \sum_{\forall c,t} AB_{(asset\ c,t)}(o_i) * rate_{(asset\ c,t)}(o_i)$, calculate only if object attribute doesn't exist, $-COF(o_i) = \sum_{\forall c,t} AB_{(asset\ c,t)}(o_i) * R_{(asset\ c,t)}R_{(c,t)}(pt(o))$ $-IntExp(o_i) = \sum_{\forall c,t} AB_{(liability\ c,t)}(o_i) * rate_{(liability\ c,t)}(o_i)$, only if object attribute doesn't exist, $+VOF(o_i) = \sum_{\forall c,t} AB_{(liability\ c,,t)}(o_i) * R_{(liability\ c,t)}R_{(c,t)}(pt(o))$, wherein: $AB_{(c,t)}(o_i)$=Average Balances of the object o_i, $rate_{(c,t)}(o_i)$=Effective interest rate for the corresponding balance asset or liability, Rt(o)=Object o's product type/group as needed to identify treatment rate, $R_{(c,t)}(pt(o))$=Rate (treatment rate) for objects of this product type/group, given the balance class, and tier, Int Inc(o_i)=Interest Income of object o_i, COF (o_i)=Cost of funds used by object o_i, Int Exp (o_i)=Interest Expense for object o_i, and VOF (o_i)=Value of funds provided by object o_i.

14	The process of claim 13, including the step of calculating earnings on allocated equity, where the summation is taken over all asset balances, according to: $EOAE(o_i)=R_{equity}*ER*\Sigma AB_{(asset,i)}(o_i)$, wherein: $AB_{(asset,\ i)}(o_i)$=Average Asset balances of the object o_i, including any allocated asset balances, ER=Equity Ratio, and R_{equity}=Treatment Rate for equity.
15	The process of claim 13, including the step of calculating earnings on allocated equity according to: $EOAE(o_i)=R_{equity}*\Sigma[Amount(o_i)*W(Wt(o_i))*Cap$ Ratio], wherein: $Amount(o_i)$=Amount(s) associated with object 'a' This may be the average asset balances of the object 'o_i' including any allocated asset balances, or may be an object parameter, $Wt(type(o_i))$=Code needed to identify the weight for object o balances, at the object-type level, $W(Wt(type(o_i)))$=determined by the weight code, Cap Ratio=An appropriate risk-weighted capital ratio chosen, and R_{equity}=Treatment Rate for equity.

16	The process of claim 13, including the step of calculating earnings on allocated equity according to: $EOAE(o_i)=\Sigma R_{equity}*E_{cohort}(o)(\text{Amount}(o_i))$, or $\Sigma R_{equity}*[\alpha+\beta*\text{Amount}(o_i)]$, wherein: $\text{Amount}(o_i)$=An amount or amounts related to the object, such as average balances of the object (denoted $AB_{(c,s,t)}(o_i)$, $\text{Cohort}(o_i)$=The cohort of objects in which object o is a member, $E_{cohort}(o_i)$=The equity allocation rule for the cohort of object o, according to a linear (two-valued) function that operates on $\text{Amount}(o_i)$ of the form $\alpha+\beta*\text{Amount}(o)$, and R_{equity}=Treatment Rate(s) for equity for the $\text{Amount}(o_i)$ value(s).

17	**17**. The process of claim **3**, wherein Net Interest (NI) is calculated as the summations over the possible balance attributes for the objects, according to: $IntInc(o_i) = \sum_{\forall c,t} AB_{(asset\ c,t)}(o_i) * rate_{(asset\ c,t)}(o_i)$, only if object attribute doesn't exist, $-COF(o_i) = \sum_{\forall c,t} AB_{(asset\ c,t)}(o_i) * R_{(asset\ c,t)}(type_{p,a}(o_i))$, $-IntExp(o_i) = \sum_{\forall c,t} AB_{(liability\ c,t)}(o_i) * rate_{(liability\ c,t)}(o_i)$, only if object attribute doesn't exist, $+VOF(o_i) = \sum_{\forall c,t} AB_{(liability\ c,t)}(o_i) * R_{(c,t)}(type_{p,a}(o_i))$, wherein: $AB_{(c,t)}(o_i)$=Average Balances of the object o_i, $rate_{(c,t)}(o_i)$=Effective interest rate for the corresponding balance, $Type_{p,a}(o_i)$=Object o_i's product and object attributes as needed to identify treatment, $R_{(c,t)}(type_{p,a}(o_i))$=Rate (treatment rate) for this object's product type, given the balance class, and tier/tenor, Int Inc (o_i)=Interest Income of object o_i, COF (o_i)=Cost of funds used by object o_i, Int Exp (o_i)=Interest Expense for object o_i, and VOF (o_i)=Value of funds provided by object o_i.

18	The process of claim 17, including the step of calculating earnings on allocated equity, where the summation is taken over all asset balances, according to: $EOAE(o_i)=R_{equity}*ER*\Sigma AB_{(asset,t)}(o_i)$, wherein: $AB_{(asset,\ t)}(o_i)$=Average Asset balances of the object o_i, including any allocated asset balances, ER=Equity Ratio, and R_{equity}=Treatment Rate for equity.
19	The process of claim 17, including the step of calculating earnings on allocated equity according to: $EOAE(o_i)=R_{equity}*\Sigma[Amount(o_i)*W(Wt(o_i))*Cap\ Ratio]$, wherein: $Amount(o_i)$=Amount(s) associated with object 'a' This may be the average asset balances of the object 'o_i' including any allocated asset balances, or may be an object parameter, $Wt(type(o_i))$=Code needed to identify the weight for object o balances, at the object-type level, $W(Wt(type(o_i)))$=determined by the weight code, Cap Ratio=An appropriate risk-weighted capital ratio chosen, and R_{equity}=Treatment Rate for equity.

20	The process of claim 17, including the step of calculating earnings on allocated equity according to: $EOAE(o_i)=\Sigma R_{equity}{}^{*}E_{cohort}(o)(\text{Amount}(o_i))$, or $\Sigma R_{equity}{}^{*}[\alpha+\beta^{*}\text{Amount}(o_i)]$, wherein: $\text{Amount}(o_i)$=An amount or amounts related to the object, such as average balances of the object (denoted $AB_{(c,s,t)}(o_i)$, $\text{Cohort}(o_i)$=The cohort of objects in which object o is a member, $E_{cohort}(o_i)$=The equity allocation rule for the cohort of object o, according to a linear (two-valued) function that operates on $\text{Amount}(o_i)$ of the form $\alpha+\beta^{*}\text{Amount}(o)$, and R_{equity}=Treatment Rate(s) for equity for the Amount(o) value(s).

21	**21**. The process of claim **3**, wherein Net Interest (NI) is calculated where summations are over the possible balance variables for the object, according to: Int Inc(o_i)=$\Sigma AB_{(asset\ c,t)}(o_i)$*$rate_{(asset\ c,t)}(o_i)$ only if object attribute doesn't exist, –COF(o_i)=$\Sigma AB_{(asset\ c,t)}(o_i)$*$R_{(asset,t)}(type_{p,a,b}(o_i))$, –Int Exp($o_i$)=$\Sigma AB_{(liability,t)}(o_i)$*$rate_{(liability,t)}(o_i)$) only if object attribute doesn't exist, +VOF(o_i)=$\Sigma AB_{(liability,t)}(o_i)$*$R_{liability,t)}(type_{p,a,b}(o_i))$, wherein: $AB_{(c,t)}(o_i)$=Average Balances of the object, $rate_{(c,t)}(o_i)$=Effective interest rate for the corresponding balance amounts, $type_{p,a,b}(o_i)$=Object o_i's product, object attribute, and behavior types as needed to identify treatment rate, $R_{(c,t)}(type_{p,a,b}(o_i))$=Rate (treatment rate) for objects of this product type, balance class, and tier/tenor, Int Inc(o_i)=interest Income of object o_i, COF (o_i)=Cost of funds used by object o_i, Int Exp (o_i)=Interest Expense for object o_i, and VOF (o_i)=Value of funds provided by object o_i.
22	The process of claim 21, including the step of calculating earnings on allocated equity, where the summation is taken over all asset balances, according to: $EOAE(o_i)=R_{equity}$*ER*$\Sigma AB_{(asset,t)}(o_i)$, wherein: $AB_{(asset,\ t)}(o_i)$=Average Asset balances of the object o_i, including any allocated asset balances, ER=Equity Ratio, and R_{equity}=Treatment Rate for equity.

23	The process of claim 21, including the step of calculating earnings on allocated equity according to: $EOAE(o_i)=R_{equity}*\Sigma[Amount(o_i)*W(Wt(o_i))*Cap\ Ratio]$, wherein: $Amount(o_i)$=Amount(s) associated with object 'a' This may be the average asset balances of the object 'o_i' including any allocated asset balances, or may be an object parameter, $Wt(type(o_i))$=Code needed to identify the weight for object o balances, at the object-type level, $W(Wt(type(o_i)))$=determined by the weight code, Cap Ratio=An appropriate risk-weighted capital ratio chosen, and R_{equity}=Treatment Rate for equity.
24	The process of claim 21, including the step of calculating earnings on allocated equity according to: $EOAE(o_i)=\Sigma R_{equity}*E_{cohort}(o)(Amount(o_i))$, or $\Sigma R_{equity}*[\alpha+\beta*Amount(o_i)]$, wherein: $Amount(o_i)$=An amount or amounts related to the object, such as average balances of the object (denoted $AB_{(c,s,t)}(o_i)$, $Cohort(o_i)$=The cohort of objects in which object o is a member, $E_{cohort}(o_i)$=The equity allocation rule for the cohort of object o, according to a linear (two-valued) function that operates on $Amount(o_i)$ of the form $\alpha+\beta*Amount(o)$, and R_{equity}=Treatment Rate(s) for equity for the $Amount(o_i)$ value(s).

25	The process of claim 5, wherein the value for indirect expense (IE) is calculated as: before deferral $IE(o_i) = IE_k * \frac{F(IE_k)(o_i)}{\sum_{i \in O(IE)} F(IE_k)(o_i)}$ added over each set IE_k to which o_i is related, $= \sum_{k}^{o \in O(IE)} \left(IE_k * \frac{F(IE_k)(o_i)}{\sum_{j \in O(IE)} F(IE_k)(o_j)} \right)$ and each of these terms is deferred over its amortization period according to any of the amortization rules (cash, straight line, declining balance, or interest amortization calculations), and where $AM_1(L,R)$ is used to denote the amortization rule and its life: $IE(o_i) = \sum_{k}^{o_i \in O(IE)} AM_1(L, R)\left(IE_k * \frac{F(IE_k)(o_i)}{\sum_{j \in O(IE)} F(IE_k)(o_j)} \right)$, and the result increased by the amounts with remaining amortization life for which amortization was begun in earlier periods.

26	The process of claim 4, provisioning (P) of each object is calculated according to: $$P(o_i) = PG(o_i) * \frac{\text{Balance of } o_i}{\sum_{o_k \in RPG(o_i)} \text{Balance } o_k}, \text{ wherein:}$$ $PG(o_i)$ denotes the P group in which o_i is a member.
27	The process of claim 4, wherein provisioning (P) is calculated as: $$P(o_i) = PG(o_i) * \frac{\text{Balance } (o_i) * RF(o_i)}{\sum_{o_k \in RPG(o_i)} [\text{Balance } (o_k) * RF(o_k)]},$$ wherein: $PG(o_i)$ denotes the P group in which o_i is a member, and $RF(o_i)$ denotes the expected adjustment factor for o_i.

28	The process of claim 4, wherein provisioning (P) is calculated as: $P(o_i)$=Exposure (o_i)*$Pr(o_i)$*Expected Value Adjustment (o_i)* $\frac{1}{L}$, wherein: $Pr(o_i)$ is a probability for object o_i, and L is the expected number of reporting periods during the life of o_i.
29	The process of claim 7, wherein the step of adjusting the measure for object level profitability is calculated as: $$Profit(o_i)=\{[NIR(o_i)+OR(o_i)-DE(o_i)-IE(o_i)-P(o_i)]*(1-EffectiveTaxRate)\}-SVA(o_i),$$ where $$SVA(o_i)=\alpha(o_i)+\beta(o_i)*Amount(oii),$$ and $\alpha(o_i)$, $\beta(o_i)$ are functions for a cohort of objects in which o_i is a member, and Amount(o_i) is given by a rule which maps o_i to a data value (such as balance, or allocated equity) also defined at the cohort level.

30	The process of claim 7, wherein the step of adjusting the measure for object level profitability includes the calculation: $Profit(o_i)=[NIR(o_i)+OR(o_i)-DE(o_i)-IE(o_i)-P(o_i)]*(1-EffectiveTaxRate)$ where, for a two tier taxation system, Effective Tax Rate is calculated as: Effective Tax Rate=(1−tax rate 2)*(tax rate 1)+tax rate 2.

CERTIFICATION UNDER 37 C.F.R. §42.24(d)

Pursuant to 37 C.F.R. §42.24(d), the undersigned hereby certifies that the word count under §42.24(a)(1) for the foregoing Petition for Covered Business Method Review totals 18,348 words, within the 18,700-word limit allowed under §42.24(a)(1)(iii).

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CERTIFICATE OF SERVICE

In accordance with 37 C.F.R. §§ 42.6(e) and 42.105, the undersigned certifies that on November 12, 2018, a complete and entire copy of **the PETITION FOR COVERED BUSINESS METHOD REVIEW OF CLAIMS 1, 3, and 8-24 OF U.S. PATENT NO. 8,612,316 UNDER U.S.C. § 321, and § 28 OF THE LEAHY-SMITH AMERICA INVENTS ACT** ("Petition"), including all supporting exhibits and testimony relied upon were served on the patent owner at the correspondence address of record for the subject patent:

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