

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SALESFORCE, INC.,
Petitioner

v.

IQX CORP.,
Patent Owner

Case IPR2026-00477
U.S. Patent No. 12,200,165

**DECLARATION OF BERNARD J. JANSEN, PH.D.,
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 12,200,165**

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TABLE OF CONTENTS

I.	INTRODUCTION	7
II.	MY BACKGROUND AND QUALIFICATIONS	8
III.	SUMMARY OF OPINIONS.....	14
IV.	LIST OF DOCUMENTS CONSIDERED	15
V.	LEGAL UNDERSTANDING	18
	A. My Understanding of Claim Construction.....	18
	B. My Understanding of Obviousness	18
	C. A Person of Ordinary Skill in the Art	21
VI.	PERSON OF ORDINARY SKILL IN THE ART	22
VII.	CLAIM CONSTRUCTION	23
VIII.	STATE OF THE ART	23
	A. Mobile messaging and digital content delivery systems were well known before 2018.....	23
	B. Interactive messages containing selectable actions and links were well known before 2018.....	25
	C. Recovery of abandoned online transactions and shopping carts was well known before 2018.....	27
	D. Rich Communication Services messaging was known before 2018. .	29
	E. Mobile-device authentication and identity verification were well known before 2018.....	29
	F. Subscriber classification, profiling, and segmentation were well known before 2018.....	31
	G. Automated and model-based communication optimization and scheduling were known before 2018.....	33
IX.	SUMMARY OF THE '165 PATENT	37
	A. Overview	37
	B. Prosecution History	40
X.	OVERVIEW OF THE ASSERTED ART.....	41
	A. Balasubramanian	41

B.	Chen.....	43
C.	Sinha.....	44
D.	Bogineni	45
E.	Jakobsson.....	46
F.	Spindler.....	47
G.	Long.....	50
H.	Wang.....	51
I.	Burr.....	52
XI.	THE CLAIMED FEATURES LACK WRITTEN DESCRIPTION SUPPORT IN THE EARLIER-FILED APPLICATIONS FORMING THE CONTINUITY OF THE '165 PATENT.....	54
XII.	GROUND 1A: THE BALASUBRAMANIAN-CHEN-SINHA COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 7-8, 13-15, 20...	56
A.	Motivation to Combine	56
B.	Independent claim 1	61
1.	[1.P] A computer-implemented method comprising:	61
2.	[1.A] receiving a request to provide content to at least one authorized recipient;.....	61
3.	[1.B] generating a customized message comprising at least one action associated with the content;	64
4.	[1.C] causing transmission of the customized message to a mobile computing device associated with the at least one authorized recipient;.....	65
5.	[1.D] responsive to receiving an indication associated with selecting the at least one action, requesting authorization data corresponding to the at least one authorized recipient;	66
6.	[1.E.1] responsive to receiving the requested authorization data: verifying that the authorization data correlates to an identity of the at least one authorized recipient or an identity of the mobile computing device;.....	67
7.	[1.E.2] determining, based on the identity of the at least one authorized recipient or the identity of the mobile computing device, a classification of the at least one authorized recipient	68

8.	[1.E.3] generating a Rich Communication Service (RCS) message comprising the content	69
9.	[1.F] scheduling, using a machine learning model and based on the determined classification, delivery of the RCS message to the mobile computing device.....	71
C.	Claim 2: delivering the RCS message to the mobile computing device according to the scheduled delivery.....	74
D.	Claim 7: wherein the at least one action associated with the content comprises one or more options to: perform a transaction, select a suggested response, return to a prior browsing session, or return to a prior application session.....	74
E.	Independent claim 8	75
1.	[8.P] An automated messaging subscription and distribution system, the system comprising:	75
2.	[8.A] a processor; and.....	77
3.	[8.B] memory configured to store program instructions, wherein, when executed by the processor, the program instructions cause the processor to perform operations comprising:	78
4.	[8.C]–[8.H].....	79
F.	Claim 13	79
G.	Independent claim 14	79
1.	[14.P] A non-transitory computer-readable storage medium for use in conjunction with a computer, the computer-readable storage medium storing program instructions that, when executed by the computer, cause the computer to carry out one or more operations comprising:	80
2.	[14.A]–[14.F]	80
H.	Claims 15, 20.....	81
XIII.	GROUND 1B: THE BALASUBRAMANIAN-CHEN-SINHA-BOGINENI COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 5, 7-8, 11, 13-15, 18, AND 20.....	81
A.	Motivation to Combine	81
B.	Claims 1, 2, 7, 8, 13-15, and 20	84

C.	Claims 5, 11, and 18: wherein the content comprises send and receive indicators provided in a user interface of the mobile computing device that indicate real time typing between an RCS message provider and the mobile computing device or between another computing device and the mobile computing device.	85
XIV.	GROUND 1C: THE BALASUBRAMANIAN-CHEN-SINHA(-BOGINENI)-BURR COMBINATIONS RENDER OBVIOUS CLAIMS 3, 9, AND 16.....	87
A.	Motivation to Combine	87
B.	Claims 3, 9, and 16: wherein the content comprises a carousel of selectable options in a user interface of the mobile computing device, the selectable options including performing at least one secure transaction, scheduling an appointment, or resuming at least one abandoned user journey.....	90
C.	Claims 4, 10, and 17: wherein the content is provided in the user interface and the user interface is within a browser executing on the mobile computing device.	92
XV.	GROUND 1D: THE BALASUBRAMANIAN-CHEN-SINHA(-BOGINENI)-JAKOBSSON COMBINATIONS RENDER OBVIOUS CLAIMS 6, 12, 19	93
A.	Motivation to Combine	93
B.	Claims 6, 12, and 19: further comprising: determining a sender of the RCS message; responsive to failing to authorize the determined sender of the RCS message, delivering, according to the scheduled delivery, an SMS message indicating a warning about the RCS message.	97
XVI.	GROUND 2A: THE SPINDLER-LONG-WANG COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 7-8, 13-15, AND 20	98
A.	Motivation to Combine	98
B.	Independent Claim 1	108
1.	[1.P] A computer-implemented method comprising:	108
2.	[1.A] receiving a request to provide content to at least one authorized recipient;.....	109
3.	[1.B] generating a customized message comprising at least one action associated with the content;	110

4.	[1.C] causing a transmission of the customized message to a mobile computing device associated with the at least one authorized recipient;.....	112
5.	[1.D] responsive to receiving an indication associated with selecting the at least one action, requesting authorization data corresponding to the at least one authorized recipient;	113
6.	[1.E.1] responsive to receiving the requested authorization data: verifying that the authorization data correlates to an identity of the at least one authorized recipient or an identity of the mobile computing device;	114
7.	[1.E.2] determining, based on the identity of the at least one authorized recipient or the identity of the mobile computing device, a classification of the at least one authorized recipient	115
8.	[1.E.3] generating a Rich Communication Service (RCS) message comprising the content	116
9.	[1.F] scheduling, using a machine learning model and based on the determined classification, delivery of the RCS message to the mobile computing device.	120
C.	Claim 2 The computer-implemented method of claim 1, further comprising: delivering the RCS message to the mobile computing device according to the scheduled delivery.	123
D.	Claim 7 The computer-implemented method of claim 1, wherein the at least one action associated with the content comprises one or more options to: perform a transaction, select a suggested response, return to a prior browsing session, or return to a prior application session.....	124
E.	Independent Claim 8	124
1.	[8.P] An automated messaging subscription and distribution system, the system comprising:	125
2.	[8.A] a processor; and	126
3.	[8.B] memory configured to store program instructions, wherein, when executed by the processor, the program instructions cause the processor to perform operations comprising:	127
4.	[8.C]–[8.H].....	128

F.	Claim 13 The system of claim 8, wherein the at least one action associated with the content comprises one or more options to: perform a transaction, select a suggested response, return to a prior browsing session, or return to a prior application session.	128
G.	Independent Claim 14	129
1.	[14.P] A non-transitory computer-readable storage medium for use in conjunction with a computer, the computer-readable storage medium storing program instructions that, when executed by the computer, cause the computer to carry out one or more operations comprising:	129
2.	[14.A]–[14.F]	129
H.	Claims 15 and 20.....	130
XVII.	GROUND 2B: THE SPINDLER-LONG-WANG-BOGINENI COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 5, 7-8, 11, 13-15, 18, AND 20.....	131
A.	Motivation to Combine	131
B.	Claims 1-2, 7-8, 11, 13-15, and 20.....	134
C.	Claims 5, 11, and 18.....	134
XVIII.	GROUND 2C: THE SPINDLER-LONG-WANG(-BOGINENI)-BURR COMBINATIONS RENDER OBVIOUS CLAIMS 3-4, 9-10, AND 16-17	135
A.	Motivation to Combine	135
B.	Claims 3, 9, and 16.....	139
C.	Claims 4, 10, and 17.....	143
XIX.	GROUND 2D: THE SPINDLER-LONG-WANG(-BOGINENI)-JAKOBSSON COMBINATIONS RENDER OBVIOUS CLAIMS 6, 12, AND 19.....	144
A.	Motivation to Combine	144
B.	Claims 6, 12, and 19.....	148
XX.	CONCLUSION.....	150

I, Bernard J. Jansen, Ph.D., hereby declare as follows.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of Petitioner Salesforce, Inc. for the above-captioned *inter partes* review (IPR). I am being compensated for my time in connection with this IPR at my standard consulting rate. My compensation is not contingent on either my expert opinion or the outcome of this litigation. I have no other interest in this proceeding.

2. I understand that this Declaration accompanies a petition for IPR involving U.S. Patent No. 12,200,165 (“the ’165 patent”) (EX1001), which resulted from U.S. Patent Application No. 18/896,197 (“the ’197 application”), filed on September 25, 2024. I understand that the ’165 patent alleges a priority date of September 27, 2018. I also understand that the ’978 patent may only be entitled to a priority date of September 25, 2024. Although my analysis would not change based on either date, in preparing this Declaration, I have reviewed the ’165 patent and each of the documents cited herein in light of general knowledge in the art before September 27, 2018.

3. In formulating my opinions, I have relied upon my experience, education, and knowledge in the relevant art. In formulating my opinions, I have also considered the viewpoint of a person of ordinary skill in the art (“POSA”) (i.e., a person of ordinary skill in the field of e-commerce, telecommunications, or

computer networking, as defined further below in § VI) prior to September 27, 2018.

II. MY BACKGROUND AND QUALIFICATIONS

4. My analysis is based on my experience, training, knowledge, and education, and it is formed through the application of that experience, training, knowledge, and education in the principles of search engines, Web search, keyword advertising, display advertising, online advertising, Web analytics, network communications, and related areas.

5. I received my B.S. in Computer Science from the United States Military Academy in 1985, my M.S. in International Relations from Troy State University in 1994, my M.CS. in Computer Science from Texas A&M University in 1996, and my Ph.D. in Computer Science from Texas A&M University in 1999.

6. I am currently a Visiting Professor at the Department of Information Management, Peking University¹. From 1 January 2017 to 31 July 2026, I was a principal research scientist at the Qatar Computing Research Institute and a full professor at the College of Science and Engineering, Hamad Bin Khalifa

¹ Peking University is continuously ranked as one of the top universities in the world, ranking 40th of more than 21,000 universities worldwide in 2026 <https://cwur.org/2026/peking-university.php>

University (HBKU). Prior to that, I was a tenure-track professor at The Pennsylvania State University (Penn State) from 2002 through 2016, departing as a tenured, full-time professor on 1 January 2017. I was a Senior Fellow at the Pew Internet & American Life Project, which is part of the Pew Research Center, from 2010 through 2012. I was a University Expert at the National Ground Intelligence Center from 2011 through 2014. Before my professorship at Penn State, I was a Lecturer in the Computer Science Program at the University of Maryland (Asian Division) for one year. Before that, I was an Assistant Professor in the Department of Electrical Engineering and Computer Science at the United States Military Academy (a.k.a., West Point) for three years.

7. In addition to my academic credentials, my professional experience includes twenty years of practice in the U.S. military, serving in the Infantry as an enlisted soldier and then as a communications officer, upon commissioning, working primarily in a variety of information technology-related positions, planning and establishing communication networks from portable ground radios to large satellite communication radios, and evaluating the performance of these networks. I also led a large multimedia team at a major U.S. Army educational facility, responsible for designing, providing, and assessing multimedia products, including the organizational website. I employed various software programs and databases for interactive products and website design for these tasks. I used these

programs and others to develop interactive websites and multimedia applications, including employing analytics for the performance evaluation of these websites and applications. During this time, the team received several product awards and honors, including one award for website development, four for multimedia applications development, and one for software development.

8. I am the editor-in-chief of the international academic journal *Information Processing and Management*, a premier journal in computing science and information science, including computational science, online analytics, and social media computing. I am a former Editor-in-Chief of the journal *Internet Research*, a top-ranked journal in the Web science and business domains that examines the Internet's social, ethical, economic, and political implications.

9. I have authored approximately 400 academic publications on Web searching, search engines, keyword advertising, online advertising, branding, Web analytics, social media, social networks, and related fields. Many of my publications address user experience, search analytics, Web analytics, online advertising, keyword advertising, search engines, or Web searching. My recent research focuses on online analytics, investigating the qualitative and quantitative attributes of digital content usage and social computing analytics, which investigates social behavior using algorithmic methods. I have authored, co-authored, or co-edited four books, including Web Search: Public Searching of the

Web (2007), Understanding User – Web Interactions via Web Analytics (2009), Understanding Sponsored Search (2011), Data-Driven Personas (2021), and Understanding Audiences, Customers, and Users via Analytics – An Introduction to the Employment of Web, Social, and Other Types of Digital People Data (2023). In a 2025 study, as well as in previous versions, I was ranked in the top 2% of researchers in my field. EX1026. In the 2026 edition of the Best Computer Science Scientists in the World, my research was ranked 1281st worldwide (~top ten percent of the top computer science researchers). EX1024.

10. My professional expertise includes user experience, search engine optimization, Web analytics, search engines, Web searching, social media, online advertising, online reputation management techniques, and related computer science and data science areas, including programming and networks. Throughout my academic career, I have worked with various search engines and information searching applications to understand user information behavior on the Web and other environments. For example, as part of my Master's program in Computer Science, I designed and coded a text-based search engine, and my thesis involved the building of a tool for network performance monitoring. For my Doctorate program in Computer Science, I developed a program interface for Web search engines and implemented it on the Gigabyte search engine. I have been invited to

present research at major search engine companies, including Google and Yandex, and many search marketing agencies.

11. As a computer scientist, I have engaged in and am experienced with classic computer science areas, such as programming, software development, algorithms, and networking, along with non-traditional areas, such as data analytics, keyword advertising, and online advertising. I have taught various computer courses at the undergraduate and graduate levels, including micro-computing, programming (in various programming languages), and the Web/Internet. I have taught a Web technology overview course (websites, mobile, social media, Web metrics, market analysis, etc.) and a graduate-level research course for professional Master's students. Previously, I taught courses in keyword and display advertising where student teams engaged with small-medium-sized enterprises (SMEs) to implement online advertising campaigns. I have supervised students with SMEs on various online advertising platforms, including Google Ads and Facebook Ads. I have experience with several online marketing platforms, including Google Ads, Facebook Ads, LinkedIn Ads, and Microsoft Advertising.

12. I have conducted research and teaching concerning search engines and websites, including search engine optimization, content creation, search engine keyword advertising, Web searching, and Web analytics. In the field of online searching, online advertising, and Web analytics, I have worked directly with real

user searching data from several Web search engines. I have also analyzed Web data of traffic and other attributes from various websites and social media accounts. I have analyzed real user data from a multi-million-dollar online advertising marketing campaign that spans multiple years, involving thousands of ads and key terms. I have also analyzed user referral traffic to websites and monetized this traffic via online advertising. A 2015 review of keyword advertising research reported that I was the predominant researcher in the field of search engine advertising, EX1025, 12, along with co-authors. I have developed Web analytics models and processes to analyze business goals and have used Web and online advertising analytics data in my research and teaching.

13. I have advised government agencies and private companies in consulting and expert witness matters, including online searching, online advertising, search engines, locating relevant information, and disseminating defaming statements, among other related areas.

14. I have personal knowledge or have developed knowledge of the technologies discussed in this Declaration based upon my education, training, or experience with the matters discussed herein.

15. I understand that a copy of my complete *Curriculum Vitae* has been submitted as Exhibit 1004, which includes a list of publications I have authored in the past ten years, a list of cases in which I have testified as an expert in deposition

or trial in the past four years, and other details regarding my expertise and qualifications

III. SUMMARY OF OPINIONS

16. In forming my opinions about the '165 patent, I have considered the following grounds of unpatentability. Based on my review of the prior-art references that form the basis of these grounds, it is my opinion that claims 1-20 of the '165 patent would have been obvious to a POSA prior to September 27, 2018, let alone by September 25, 2024.

17. I understand that the Petitioner, Salesforce, requests *inter partes* review based on the following grounds.

Ground	35 U.S.C. §	Claims	References
1A	103	1-2, 7-8, 13-15, 20	Balasubramanian, Chen, Sinha
1B	103	1-2, 5, 7-8, 11, 13-15, 18, 20	Balasubramanian, Chen, Sinha, Bogineni
1C	103	3-4, 9-10, 16-17	Balasubramanian, Chen, Sinha, Burr, with or without Bogineni
1D	103	6, 12, 19	Balasubramanian, Chen, Sinha, Jakobsson, with or without Bogineni
2A	103	1-2, 7-8, 13-15, 20	Spindler, Long, Wang

2B	103	1-2, 5, 7-8, 11, 13-15, 18, 20	Spindler, Long, Wang, Bogineni
2C	103	3-4, 9-10, 16-17	Spindler, Long, Wang, Burr, with or without Bogineni
2D	103	6, 12, 19	Spindler, Long, Wang, Jakobsson, with or without Bogineni

18. I have been asked to consider how a POSA would have understood the challenged claims in light of the disclosures of the '165 patent. I have also been asked to consider how a POSA would have understood the prior art references Balasubramanian, Chen, Sinha, Bogineni, Jakobsson, Spindler, Long, Wang, and Burr.

19. Further, I have been asked to consider and provide my technical review, analysis, insights, and opinions regarding whether a POSA would have understood that the combinations of the prior-art references listed in the table above render obvious claims 1-20 of the '165 patent.

IV. LIST OF DOCUMENTS CONSIDERED

20. In forming my opinions, I have considered the documents listed below in addition to any other documents cited in this Declaration. To the best of my knowledge, these documents are true and accurate copies of what they purport to be. An expert in the field would reasonably rely on them to formulate opinions such as those set forth in this Declaration.

Exhibit No.	Description
1001	U.S. Patent No. 12,200,165 to Spindler <i>et al.</i> , issued January 14, 2025 (“the ’165 patent”)
1002	File History of U.S. Patent No. 12,200,165 (“’165 Patent File History”)
1005	U.S. Patent Application Publication No. 2011/0178897 A1 to Balasubramanian <i>et al.</i> (“Balasubramanian”)
1006	U.S. Patent Application Publication No. 2022/0006895 A1 to Spindler <i>et al.</i> (“Spindler”)
1009	U.S. Patent No. 10,264,413 B1 to Bogineni <i>et al.</i> (“Bogineni”)
1011	U.S. Patent No. 7,020,685 B1 to Chen <i>et al.</i> (“Chen”)
1012	U.S. Patent Application Publication No. 2016/0239867 A1 to Sinha <i>et al.</i> (“Sinha”)
1014	International Patent Application Publication No. WO 2018/103039 to Wang <i>et al.</i> (“Wang”)
1015	U.S. Patent Application Publication No. 2020/0067976 A1 to Jakobsson <i>et al.</i> (“Jakobsson”)
1016	U.S. Patent Application Publication No. 2016/0005070 A1 to Burr <i>et al.</i> (“Burr”)
1019	U.S. Patent Application Publication No. 2012/0191546 A1 to Phelan <i>et al.</i> (“Phelan”)
1022	File History of U.S. Application No. 18/483,670 (U.S. Patent No. 12,126,752)
1024	“Best Computer Science Scientists 2026” - Data Sources for the 11th Edition of the Research.com Best Computer Science Scientists Ranking (Page 13), accessed at https://research.com/scientists-rankings/computer-science?page=13

Exhibit No.	Description
1025	Jafarzadeh, H., "A Systematic Review on Search Engine Advertising," Pacific Asia Journal of the Association for Information Systems, 7(3):1-32
1026	Ioannidis, John P.A. (2025), "August 2025 data-update for "Updated science-wide author databases of standardized citation indicators"", Elsevier Data Repository, V8, doi: 10.17632/btchxktzyw.8
1032	RCS Universal Profile Service Definition Document, GMS Association, Nov. 16, 2016
1037	U.S. Patent Application Publication No. 2011/0078762 A1 to Bijlsma ("Bijlsma")
1038	U.S. Patent Application Publication No. 2013/0254036 A1 to Trinh <i>et al.</i> ("Trinh")
1039	U.S. Patent Application Publication No. 2015/0142906 A1 to Tolcher ("Tolcher")
1040	U.S. Patent Application Publication No. 2005/0278231 A1 to Teeter ("Teeter")
1041	U.S. Patent Application Publication No. 2014/0052562 A1 to Oliveira <i>et al.</i> ("Oliveira")
1042	U.S. Patent Application Publication No. 2003/0101345 A1 to Nyberg ("Nyberg")
1043	U.S. Patent Application Publication No. 2015/0373200 A1 to Zitnik <i>et al.</i> ("Zitnik")
1044	U.S. Patent Application Publication No. 2007/0124399 A1 to Gillespie <i>et al.</i> ("Gillespie")
1045	U.S. Patent Application Publication No. 2011/0314287 A1 to Escott <i>et al.</i> ("Escott")

V. LEGAL UNDERSTANDING

21. I have also relied upon various legal principles (as explained to me by Salesforce's counsel) in formulating my opinions. My understanding of these principles is summarized below.

A. My Understanding of Claim Construction

22. I understand that during an *inter partes* review proceeding, claims are to be construed in light of the specification as would be read by a person of ordinary skill in the relevant art at the time the application was filed. I understand that claim terms are given their ordinary and customary meaning as would be understood by a person of ordinary skill in the relevant art in the context of the entire disclosure. A claim term, however, will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the claim term in the specification. In this case, the claim term will receive the definition set forth in the patent.

B. My Understanding of Obviousness

23. I understand that a patent claim is invalid if the claimed invention would have been obvious to a POSA at the time the application was filed. This means that even if all of the requirements of the claim cannot be found in a single prior art reference that would anticipate the claim, the claim can still be invalid.

24. To obtain a patent, a claimed invention must have, as of the priority date, been nonobvious in view of the prior art in the field. I understand that an

invention is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a POSA.

25. I understand that to prove that prior art or a combination of prior art renders a patent obvious, it is necessary to:

(1) identify the particular references that, singly or in combination, render the patent obvious;

(2) specifically identify which elements of the patent claim appear in each of the asserted references; and

(3) explain how the prior art references could have been combined in order to create the inventions claimed in the asserted claim.

26. I also understand that prior art references can be combined under several different circumstances. For example, it is my understanding that one such circumstance is when a proposed combination of prior art references results in a system that represents a predictable variation, which is achieved using prior art elements according to their established functions.

27. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to combine the references exists so as to avoid impermissibly applying hindsight

when considering the prior art. I understand this test should not be rigidly applied, but that the test can be important to avoid such hindsight.

28. I understand that certain objective indicia can be important evidence as to whether a patent is obvious or nonobvious. Such indicia include: (1) commercial success of products covered by the patent claims; (2) a long-felt need for the invention; (3) failed attempts by others to make the invention; (4) copying of the invention by others in the field; (5) unexpected results achieved by the invention as compared to the closest prior art; (6) praise of the invention by the infringer or others in the field; (7) the taking of licenses under the patent by others; (8) expressions of surprise by experts and those skilled in the art at the making of the invention; and (9) the patentee proceeded contrary to the accepted wisdom of the prior art.

29. At this point, I am not aware of any objective indicia of non-obviousness. However, I reserve the right to review and opine on any evidence of objective indicia of non-obviousness that may be presented during this proceeding.

30. I also understand that “obviousness” is a legal conclusion based on the underlying factual issues of the scope and content of the prior art, the differences between the claimed invention and the prior art, the level of ordinary skill in the prior art, and any objective indicia of non-obviousness.

31. For that reason, I am not rendering a legal opinion on the ultimate legal question of obviousness. Rather, my testimony addresses the underlying facts and factual analysis that would support a legal conclusion of obviousness or non-obviousness, and when I use the term obvious, I am referring to the perspective of one of ordinary skill at the time of invention.

C. A Person of Ordinary Skill in the Art

32. I understand that a POSA is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity—not an automaton.

33. I have been asked to consider the level of ordinary skill in the field that someone would have had at the time the claimed invention was made. In deciding the level of ordinary skill, I considered the following:

- the levels of education and experience of persons working in the field;
- the types of problems encountered in the field; and
- the sophistication of the technology.

34. My opinion below explains how a POSA would have understood the technology described in the references I have identified herein around the September 27, 2018, timeframe, which I have been advised is the earliest possible effective filing date for the '165 patent. However, my opinions herein would not be

affected if the '165 patent is found to only be entitled to the later effective filing date of September 24, 2025, or any other later effective filing date.

35. Regardless of whether I use “I” or a “POSA” during my technical analysis below, all of my statements and opinions are always to be understood to be based on how a POSA would have understood or read a document at the time of the alleged invention.

VI. PERSON OF ORDINARY SKILL IN THE ART

36. In my opinion, a person of ordinary skill in the art (“POSA”) at the time of the '165 patent would have had a Bachelor's degree in Computer or Electrical Engineering, Computer Science, or equivalent discipline, and approximately two years' experience in e-commerce, telecommunications, or computer networking. Additional education could substitute for professional experience, and significant work experience could substitute for formal education.

37. I am well qualified to determine the level of ordinary skill in the art. I am very familiar with the technology of the '165 patent during the September 2018 timeframe, and further during the September 2024 timeframe. As mentioned above, by 2018, I had earned tenure as a professor at Penn State University, had left that position to serve as a principal research scientist at the Qatar Computing Research Institute, and had acquired extensive experience relating to computer

networking and telecommunications from teaching research and my military experience as a communications officer.

VII. CLAIM CONSTRUCTION

38. I have been informed that the challenged claims of the '165 patent are to be given their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention in light of the specification and the prosecution history pertaining to the patent. In my analysis herein, I have applied the plain and ordinary meaning of all claim terms in the context of the '165 specification.

VIII. STATE OF THE ART

A. Mobile messaging and digital content delivery systems were well known before 2018.

39. Mobile messaging originated with systems for sending short text communications to telephone numbers associated with mobile devices. Typically, a mobile telephone's telephone number is associated with a particular subscriber and is generally assigned to no more than one telephone at a time. EX1037, ¶¶4-5. Mobile telephones and other network-based devices can communicate with service providers (e.g., financial service providers, other third parties) through the Internet, public or private telephone networks, cellular networks, and wireless networks. EX1037, ¶¶21-22.

40. Well before 2018, mobile messaging systems supported numerous formats for delivering messages, including delivering advertising content to consumers. EX1038, ¶¶4, 5, 15. For example, short message service (“SMS”), Short Message Peer-to-Peer (“SMPP”), multimedia message service (“MMS”), over-the-air (“OTA”) notifications, push notifications, QR codes, hyperlinks, image-embedded hyperlinks, click-to-call hyperlinks, redirected web video, and social-media messages were all established mechanisms for delivering electronic content to “wireless handheld devices, smartphones,” and the like. EX1038, ¶15. Such messaging formats were well-known for being able to deliver text, images, audio, video, and other types of data. EX1038, ¶15. Furthermore, they were commonly used to direct targeted electronic advertising content to consumers. EX1038, ¶¶14, 16-17.

41. Mobile messaging has also long been used for initiating commercial transactions. As an example of such a commercial transaction, it was known that a purchaser could send an SMS message containing a product code to initiate the purchase of goods or services. EX1039, ¶¶170-72, FIGs. 7a, 7b. In the example described in Tolcher, the product code identifies a particular parking machine (as a “product”), and the SMS communication initiates a transaction with the consumer through the messaging system’s backend infrastructure. EX1039, ¶¶170-72, FIGs. 7a, 7b.

42. As early as 2005, electronic messages were used to direct consumers to individualized transaction content. In some cases, stored shopping-cart information and a hyperlink, through which a recipient could access the merchant's website and recommence checkout, were automatically sent as an electronic message. EX1040, Abstract, ¶¶6, 14. If the user selected the hyperlink, the cart was "reinitiated" and the stored contents were made available to the shopper. EX1040, ¶¶14, 17. Such techniques were well known for "provid[ing] ecommerce merchants with a second chance to get consumers to complete their sales." EX1040, ¶17.

43. Accordingly, before 2018, mobile messaging systems were well known for distributing text and multimedia content, delivering personalized commercial communications, providing links to remotely stored content, and initiating commercial (or "e-commerce") transactions from a recipient's mobile device. EX1037, ¶¶21-22; EX1038, ¶¶14-17; EX1039, ¶¶170-72; EX1040, ¶¶6, 14, 17.

B. Interactive messages containing selectable actions and links were well known before 2018.

44. Long before 2018, it was known that electronic messages could include hyperlinks and other interactive elements through which a recipient could obtain content or initiate an action. For example, in 2013, Trinh specifically identified hyperlinks (e.g., "Click-to-Call hyperlinks," conventional "hyperlinks,"

and “image embedded hyperlinks”) as being “common” for use with personal communication devices such as “smartphones.” EX1038, ¶15.

45. One use for such interactive message links was to return a recipient to an incomplete online transaction. For example, Teeter describes an example in which a personalized electronic message containing a hypertext link could be sent to a consumer who left a merchant’s website without completing checkout.

EX1040, Abstract, ¶¶6, 14. When selected, the link would return the consumer to the merchant’s website and reinitiate the checkout process, using cart information stored from the consumer’s earlier browsing session. EX1040, ¶¶14, 17.

Alternatively, the destination of a link could be “to whatever page the merchant chooses.” EX1040, ¶23. As also described, multiple actionable links could serve different functions, such as one link may direct the consumer to view the contents of the abandoned cart while another link may direct the consumer to checkout. EX1040, ¶24. Similarly, an unsubscribe link may allow the recipient to prevent further messages. EX1040, ¶¶14-16, 24.

46. Such interactive messaging was known to be combined with shopping or transaction interfaces using conventional computing and mobile-device components. EX1041, ¶¶63, 75-76. FIGs. 14C-15. These components included, for example, a processor, memory, display, transceiver, operating system, and applications for implementing the desired functionality. EX1041, ¶¶63, 75-76.

47. Before 2018, mobile messages could, by themselves, supply all of the information required to identify and perform a purchase. EX1039, ¶¶170-72. For example, an SMS message containing a hash or product code could identify the goods or services being purchased. EX1039, ¶171. A single message could provide all the information required for “the service administrator [to enter] into dialogue or handshaking with the sender/buyer.” EX1039, ¶172.

48. Thus, well before 2018, interactive messages containing links, product codes, and other selectable or actionable content were used to open web content, restore earlier transaction information, initiate checkout, and purchase goods or services. EX1038, ¶15; EX1040, ¶¶14-17, 23-24; EX1039, ¶¶170-72.

C. Recovery of abandoned online transactions and shopping carts was well known before 2018.

49. E-commerce systems have conventionally used virtual shopping carts to store products selected by a shopper before checkout. *See* EX1040, ¶3. Virtual shopping cart information could be stored on the merchant’s server or locally on the shopper’s computer in a persistent data file, such as a cookie. EX1040, ¶3. To avoid the contents of the virtual shopping cart becoming abandoned when the shopper left the website before completing the sale, systems could preserve abandoned-cart information so that the transaction could be resumed during a later session. EX1040, ¶¶3, 13. Shoppers who had abandoned virtual shopping carts could be contacted via a personalized electronic message containing the stored

virtual shopping cart information and a hyperlink for initiating the checkout process. EX1040, ¶¶6, 14. When the shopper selected the hyperlink, the system reinitiated the virtual shopping cart on the merchant's website. EX1040, ¶14. The recovery link, which could be sent according to a configurable sequence and schedule, could return the shopper to the transaction process. EX1040, ¶¶15-16, 23.

50. It was also known that personalized-message systems also could use earlier shopping behavior to select follow-up content. EX1044, ¶39. For example, Gillespie described a rule for sending a personalized message encouraging a customer to purchase an item based on an item previously discarded from the customer's shopping cart. EX1044, ¶39.

51. Persistent shopping carts permitted shoppers to return to items left in their carts during earlier shopping sessions. *See generally*, EX1012. A persistent shopping cart could retain unpurchased items over multiple shopping sessions and allow a returning shopper to view and edit the items left in the cart during an earlier session. EX1012, ¶2. Sinha further describes collecting historical interaction and cart data and using a model to determine the likelihood that a shopper would return to purchase the unpurchased items. EX1012, ¶¶5-6, 18-21.

52. Accordingly, before 2018, published systems had progressed from preserving shopping-cart contents across sessions, to sending scheduled messages

containing direct recovery links, to personalizing those messages based on customer behavior, and to using predictive models to select a marketing treatment for a shopper who had abandoned a cart. EX1040, ¶¶13-17, 23-24; EX1044, claims 8-12; EX1012, ¶¶2, 5-6, 18-21.

D. Rich Communication Services messaging was known before 2018.

53. By at least 2015, Rich Communication Services (“RCS”), also called Rich Communication Suite, existed alongside multiple established mobile-message formats, such as SMS, MMS, synchronized multimedia, and other protocols used to transmit text, images, audio, video, and other data to mobile devices. EX1043, ¶¶5-8; EX1038, ¶15. Accordingly, the pre-2018 mobile-messaging environment already included both conventional text messaging and richer communication formats, for example, RCS, capable of carrying multimedia and interactive content. The ability to deliver multimedia and actionable content was not limited to any one particular messaging protocol. *See, e.g.*, EX1038, ¶15. Accordingly, RCS was one part of a broader pre-2018 technological progression from basic SMS communications toward network-based messaging services supporting richer content and interactions. EX1043, ¶¶5-8; EX1038, ¶15.

E. Mobile-device authentication and identity verification were well known before 2018.

54. Authentication has long been an integral part of mobile communications. It has long been known that radio communications (e.g., cellular

radio, wireless radio, etc.) inherently presented security risks and that a mobile station should be authenticated by a mobile network upon registering with the network. EX1042, ¶¶4-5.

55. Under the Global System for Mobile Communications (“GSM”) standard, systems performed subscriber authentication using information stored in the subscriber identity module (“SIM”). EX1042, ¶5. Authentication algorithms and a subscriber identity could be “stored both in the subscriber identity module SIM and in the authentication center.” EX1042, ¶5. In response to a random challenge generated by the authentication center, the mobile station calculates and returns an authentication response to the network, which was compared to an authentication response independently calculated by the authentication center. EX1042, ¶5. If the responses matched, the mobile station passed authentication, and communications over the radio path could be encrypted. EX1042, ¶5.

56. Various pieces of information have been used to identify either a device or a subscriber for authentication purposes. For example, Bijlsma identifies a SIM identifier, an International Mobile Subscriber Identity (“IMSI”), an International Mobile Equipment Identity (“IMEI”), an IP address, and a telephone number as identifying information associated with a mobile device. EX1037, ¶¶4-8. In some cases, device information could be correlated or mapped with identity records stored in a database. *See* EX1037, ¶¶11-13. During later visits, such a

mapping would allow a service provider to recognize a mobile device. EX1037, ¶19.

57. Authentication techniques were also capable of distinguishing between the identity of a subscriber and the identity of the physical device. For example, separate subscriber authentication, using a subscriber-specific key, and device authentication, using a device-specific key, could be performed, and the device and subscriber could be bound together. EX1045, Abstract.

58. Accordingly, before 2018, mobile systems were known that used subscriber identification information and device-specific identifiers, that correlated authorization data with stored identity records, and that combined subscriber and device authentication in a common security procedure. EX1042, ¶5; EX1037, ¶¶4-13, 19-20; EX145, Abstract.

F. Subscriber classification, profiling, and segmentation were well known before 2018.

59. Before 2018, electronic-messaging systems maintained customer profiles and used those profiles to select different content for different recipients.

60. As early as 2007, Gillespie described a database containing customer-profile records that included an email address and at least one customer demographic or shopping behavior. EX1044, Abstract, ¶¶39-40. Gillespie's software dynamically determined the content of a personalized message based on that profile data. EX1044, ¶¶39-40. Gillespie also described organizing subscribers

into groups or segments, explaining that personalized content may be developed for different subscriber groups and that each message may be personalized based on the subscriber lists to which the recipient belongs. EX1044, ¶¶35, 37-38.

Different content, such as text, images, hyperlinked images, and HTML content could be created for each subscriber segment. EX1044, ¶47.

61. In addition, content-selection rules could account for subscribers who belonged to multiple segments or to no identified segment. For example, Gillespie's rules could instruct the system to provide all applicable content, provide only the highest-ranked content, or provide default content to recipients who did not fit within a selected segment. EX1044, ¶¶49-52. The message creator could rank subscriber segments by importance when determining which content to provide to a subscriber belonging to more than one segment. EX1044, ¶¶50-52.

62. Trinh likewise describes generating profiles and classifying users to select targeted electronic content. EX1038, ¶17. Trinh explains that the profiling process was intended to classify each user based on a profile so that the system could select an electronic advertising message tailored to the classified user. EX1038, ¶17. Trinh identifies several types of information that could be used to build the profile and select content, including websites visited, pages viewed, time spent on individual pages, links selected, searches performed, demographics, geographic information, and information supplied by the consumer. EX1038, ¶17.

Trinh also describes tracking or storing a recipient's age, geographic region of interest, industry, frequency of access, time of access, location at the time of access, prior electronic purchases, payment information, and web-browsing habits. EX1038, ¶31. Profile information from multiple sources could be combined, and a targeted electronic advertising message could be selected by the system for delivery to the user's device. EX1038, ¶¶33-34.

63. Thus, before 2018, messaging systems were known to classify recipients using profile information, place recipients into subscriber segments, establish rules for recipients belonging to multiple or no segments, and select different message content according to the recipient's demographics, browsing activity, purchasing history, and recorded interactions. EX1044, ¶¶35, 38, 45-52; EX1038, ¶¶17, 31, 33-34.

G. Automated and model-based communication optimization and scheduling were known before 2018.

64. By 2018, automated systems for personalizing and scheduling electronic communications had developed from rule-based campaign tools, to event-triggered follow-up systems, and then to predictive and machine-learning systems that used historical and contextual data to control message distribution.

65. As early as 2005, Teeter described controlling the delivery of electronic communications in response to a particular event: the abandonment of an electronic shopping cart. EX1040, ¶¶6, 14-16. After obtaining the shopper's

email address and determining that the shopper did not complete the transaction, Teeter's system could send a personalized electronic message containing stored cart information and a hyperlink through which the shopper could resume checkout. EX1040, ¶¶13-14. The timing and number of recovery messages were configurable by the merchant. EX1040, ¶24. The message could include a personalized greeting, a link for viewing the abandoned cart, and a link for proceeding to checkout. EX1040, ¶24.

66. Teeter's system could also determine whether to deliver later messages based on the recipient's response to an earlier message. If the recipient did not select the hyperlink in the initial message but did not unsubscribe, the system could send a second message containing another recovery link. EX1040, ¶15. If the recipient again did not select the second link, the system could send a third message again encouraging completion of the purchase. EX1040, ¶16. Thus, as early as 2005, subsequent message delivery could be conditioned on the recipient's interactions with previously delivered content. EX1040, ¶¶15-16.

67. Only two years later, Gillespie expanded upon automated messaging by combining campaign scheduling with customer profiles, subscriber segments, and dynamically selected content. EX1044, ¶¶37-40. Gillespie explained that targeted email systems used databases and statistical modeling to communicate with recipients based on prior purchases. EX1044, ¶8. Recipients were organized

into subscriber segments, and different content was prepared for each segment.

EX1044, ¶¶35, 38, 45-48. The system then automatically personalized each message according to the subscriber lists. EX1044, ¶38.

68. Gillespie combined the above recipient-specific content selection with automated scheduling. For example, Gillespie explained that its dynamic-content system could operate in conjunction with event-triggered messaging capabilities and subscriber lists “to schedule communications based on the sales cycle and the customer’s service needs.” EX1044, ¶40. After preparing a message containing dynamic fields, the sender could schedule transmission of the message. EX1044, ¶57, FIG. 15.

69. Teeter and Gillespie thus disclosed complementary aspects of automated message delivery. For example, Teeter disclosed scheduling messages following a defined event and conditioning later transmissions on earlier user interactions. EX1040, ¶¶14-16, 24. Furthermore, Gillespie disclosed selecting message content according to customer profiles and subscriber segments and scheduling communications according to the additional criteria (e.g., the sales cycle and customer-service needs). EX1044, ¶¶35-40, 45-57.

70. By 2016, Sinha described applying predictive modeling to determine the marketing treatment for customers. EX1012, ¶¶5-6, 18. Sinha’s model was constructed from historical data concerning earlier customers’ interactions with an

online store and the attributes of unpurchased items left in their carts. EX1012, ¶¶5, 18-21. Sinha's model considered the customer's browsing and clickstream behavior, shopping-cart interactions, attributes of unpurchased items, and interactions with cross-channel communications, including emails concerning the online store. EX1012, ¶¶18-21. The model used those inputs to calculate the likelihood that the customer would return and purchase the abandoned items. EX1012, ¶¶5-6, 18. The customer was then assigned to an advertising segment based on the model's output. EX1012, ¶¶6, 19. Sinha, therefore, used predictive modeling to control the marketing treatment directed to an individual customer. EX1012, ¶¶6, 19.

71. By early 2018, Wang described using machine learning specifically in the context of an online message-distribution platform. EX1014, Title, Abstract. Wang explained that computers could be trained, using historical data, to identify behavior patterns and relationships among multiple factors, predict future behavior under particular conditions, and guide machine decision-making. EX1014, ¶¶1-2. Wang's platform used historical and contextual data to determine a relevancy score between a user and a message. EX1014, ¶¶17-18. The historical information could include the user's online shopping activities, purchased product categories, brands, and shopping times, while the contextual information could include geographic information and current online activity. EX1014, ¶17. The relevancy scores were

used to select recipients and generate a delivery schedule. A target group could be defined by comparing each user's relevancy score with a threshold, after which the message was delivered to users satisfying the threshold. EX1014, ¶¶25-28. Wang also monitored actual message delivery and user reactions, such as selections of a message, time spent on a linked content page, product inquiries, and purchases, and used the resulting information to modify subsequent distribution. EX1014, ¶¶29-35.

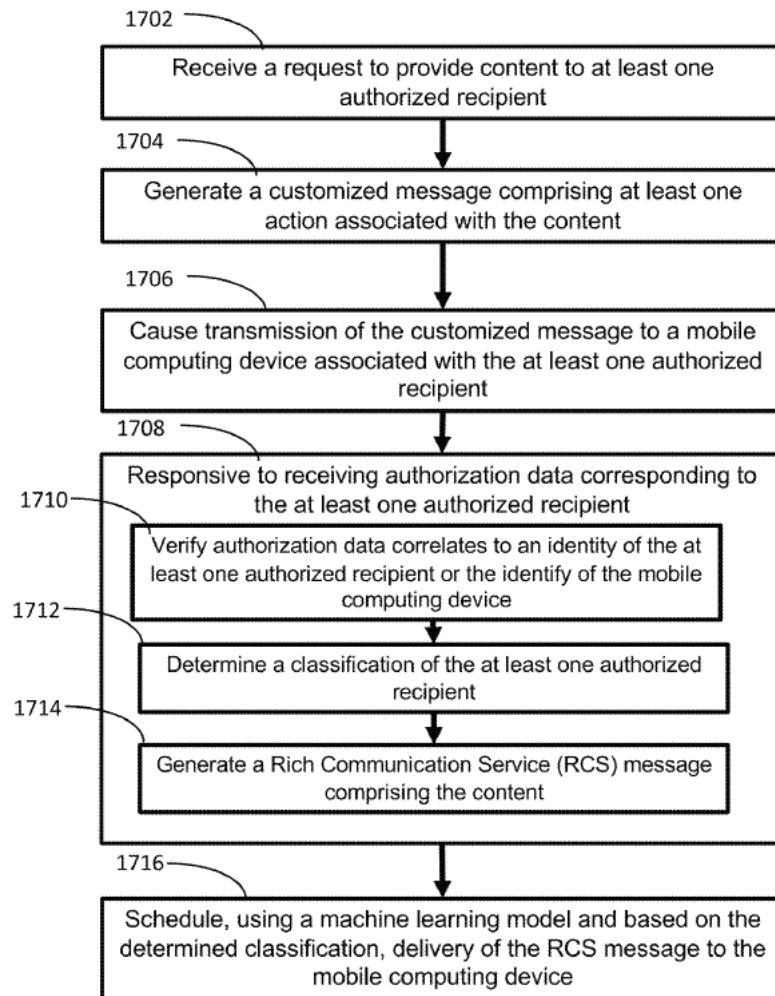
IX. SUMMARY OF THE '165 PATENT

A. Overview

72. I understand the '165 patent issued on January 14, 2025, from U.S. Patent Application No. 18/896,197 ("the '197 application"), which was filed on September 25, 2024. EX1001, (45), (21), (22). I understand that the '165 patent purports to claim priority to U.S. Provisional App. No. 62/737,315, which was filed on September 27, 2018. EX1001, (60), 1:9-18. I also understand that the '165 patent may only be entitled to a priority date of no earlier than the filing of the '197 application.

73. The '165 patent relates to "security and access control for cellular handheld devices." EX1001, 1:30-31. The '165 patent purports to provide "new and useful systems and methods for providing secure access and authentication when using mobile devices to access and/or purchase content." EX1001, 1:61-63.

74. The '165 patent describes one such method as a “process 1700 for generating and sending [RCS] messages,” as shown in Figure 17 below. EX1001, 39:66-40:2.



EX1001, FIG. 17.

75. The process begins by “receiving a request to provide content to at least one authorized recipient,” such as “a subscriber that has authorized marketing and/or promotional type messages, a user that has authorized transactional type messages, reminders, alerts, delay notifications, or the like.” EX1001, 40:10-23.

Next, “a customized message comprising at least one action associated with the content” is generated. EX1001, 40:24-26. The “customized message” may be generated “according to preferences of a user (subscriber, authorized recipient, etc.), location of the user, time zone of the user, etc.” and “may include a secure link to access additional content.” EX1001, 40:26-31, 40:38-42. The “action” may be “an action to perform a purchase, view content, opt into receiving additional messages or content, or the like” or “one or more options to perform a transaction, select a suggested response, return to a prior browsing session, or return to a prior application session.” EX1001, 40:31-38.

76. Once the user “select[s] upon or otherwise request[s] execution of instructions associated with the action,” such as, for example, selecting the link, the “identity of the at least one authorized recipient or an identity of the mobile computing device” is verified via authorization data. EX1001, 40:54-41:3. A “classification of the at least one authorized recipient” is determined, an RCS message is generated “based on the determined classification,” and “delivery of the RCS message to the mobile computing device” is scheduled based on the classification. EX1001, 41:4-57.

77. The claims of the ’165 patent recite only well-known concepts related to a messaging subscription service. For example, claim 1 recites steps including “*generating a customized message comprising at least one action associated with*

the content,” “causing transmission of the customized message to a mobile computing device,” “requesting authorization data,” and “verifying ... an identity” of the authorized recipient or mobile computing device. EX1001, 46:48-47:5 (Claim 1). The claims further recite generating an RCS message, a well-known implementation of text messaging for more than a decade. EX1001, 46:48-47:5 (Claim 1). Finally, the claims combine the previous steps with machine learning, reciting steps including *“determining ... a classification of the at least one authorized recipient”* and *“scheduling, using a machine learning model and based on the determined classification, delivery of the RCS message to the mobile computing device.”* EX1001, 46:48-47:5 (Claim 1). However, these elements were all well known in the prior art long before the filing of the ’165 patent. *See below*, Sections XII-XIV; *see above* Section VIII.

B. Prosecution History

78. I understand that prosecution of the ’165 patent was exceptionally short. *See generally*, EX1002. I understand that the Examiner did not issue a single Office Action, and the claims were not formally rejected at any point during prosecution. *See generally*, EX1002. In my review of the file history of the ’165 patent, it appears that the Examiner, in allowing the claims, merely conclusively stated that “the prior art fails to teach the claimed limitation wherein responsive to receiving an indication associated with selecting the at least one action, requesting

authorization data corresponding to the at least one authorized recipient and scheduling, using a machine learning model and based on the determined classification, delivery of the RCS message to the mobile computing device.”

EX1002, 27. Thus, it appears that the Examiner believed that the *combination* of these features was allowable over the prior art. It is my opinion, however, that such concepts were well-known prior to either the earliest priority date or the correct priority date of the '165 patent. *See above*, Section VIII.

79. I believe the Examiner failed to appreciate how well-known the concept of using a machine learning model to schedule and deliver marketing messages was, even by 2018, *see, e.g.*, EX1012, EX1014, and thus materially erred by allowing the claims of the '165 patent. *See above*, Section VIII.G.

X. OVERVIEW OF THE ASSERTED ART

A. Balasubramanian

80. Like the '165 patent, Balasubramanian is directed to “a system and method for facilitating electronic commerce over a network.” EX1005, Abstract. Balasubramanian’s system includes a user device that allows a user to conduct financial transactions with merchant devices and a service provider over a network. EX1005, ¶¶21-22, 24, FIG. 1. The network can be the Internet, a mobile communication network, a wireless telecommunications network, a landline network, or other types of communication networks. EX1005, ¶¶21-22. A user can

use the user device to conduct financial transactions with the merchant device and the service provider over the network. EX1005, ¶24. For example, the user can use the user device “for viewing, searching, and/or purchasing items, products, and/or services over the network.” EX1005, ¶24.

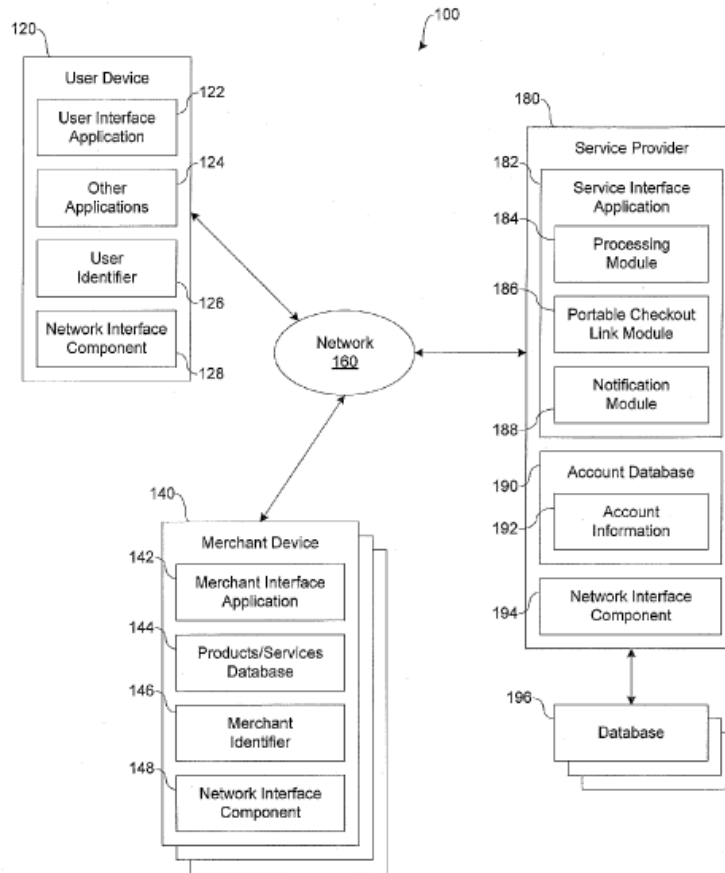


Fig. 1

EX1005, FIG. 1

81. Balasubramanian further discloses that when shopping at a particular website, users select items to be placed in a virtual shopping cart, but the user “may withdraw from purchase or abandon the checkout prior to payment.”

EX1005, ¶6. Balasubramanian teaches that, when this occurs, the shopping cart and the selected items in it may be deleted, resulting in lost revenue for the online merchant and the payment service provider. EX1005, ¶6.

82. To solve this issue, Balasubramanian's service provider sends a notification to the user regarding the incomplete purchase transaction. EX1005, ¶¶9, 45, 47, 55, 72. The notification includes selectable links (e.g., "portable checkout link[s]" or "PCLs") that link to incomplete and/or abandoned transactions, and can be sent via an email, an alert, a text message, or a voice message. EX1005, ¶¶9, 20, 42, 48, 55, 72-74, 84. When the user selects a selectable link, the user returns to and accesses a previously abandoned or incomplete purchase transaction from where it was left off. EX1005, ¶¶42, 45, 55, 74-76. The user can then complete the purchase transaction. EX1005, ¶¶45, 55, 75-76, 79.

B. Chen

83. Chen is directed to "using a wireless device to access hypermedia content on a network such as the Internet," and more particularly to "facilitating access to Internet-based hypermedia content by wireless devices that are not equipped with a browser." EX1011, 1:11-16. Chen explains that "many devices used to access the Internet" can display "hypermedia content, such as web pages," including content using "standard web protocols and mark-up languages," such as

“Hypertext Transport Protocol (HTTP)” and “Hypertext Markup Language (HTML).” EX1011, 1:33-39. However, because “many earlier-generation wireless devices are not equipped with microbrowsers,” “[t]he lack of a microbrowser restricts the ability of such devices to access hypermedia content on the Internet.” EX1011, 1:49-52.

84. To solve this issue, Chen discloses that the “wireless device 100 is enabled to receive remotely stored hypermedia information, such as WML documents, HTML documents, Compact HTML (cHTML) documents, Extensible Markup Language (XML) documents, or HDML documents, from one or more network servers...” EX1011, 3:55-61. Chen explains that “[t]he retrieved hypermedia information is provided to wireless device 100 in the form of SMS messages.” EX1011, 3:61-62.

C. Sinha

85. Sinha discloses that when shopping online at “e-commerce websites,” customers often “add items to an online shopping cart” and then “terminate their shopping session without purchasing those items,” such that the customer has “‘abandoned’ the online shopping cart.” EX1012, ¶1. With a “persistent online shopping cart,” a customer may later “view and edit items that were left in the online shopping cart when an earlier shopping session was terminated,” but “merely sending a reminder email” can “lead to brand irritation and potentially lost

customers.” EX1012, ¶¶2, 4. To solve this issue, Sinha discloses computing a likelihood and when the likelihood “indicate[s] that there is some uncertainty as to whether a customer will [] return,” tailored advertising is sent to the customer. EX1012, ¶24.

86. In particular, Sinha discloses that “a model” is built to compute “a likelihood of a given customer to return to an online store to purchase items the customer abandoned in an online shopping cart,” based on “interactions of the given customer at the online store,” “attributes of the items left in the abandoned shopping cart,” and “interactions of the given customer with cross-channel information.” EX1012, ¶18. The “customer classification model module 212” generates the model from “online shopping cart data 206, online store browsing data 208, and the cross-channel advertising data 210,” and “employs a machine learning technique” to correlate historic customer interactions, cart-item attributes, and cross-channel information. EX1012, ¶51. Once the likelihood is computed, “the customer is associated with an advertising segment,” and “advertising content that is customized for the advertising segment is then delivered to the customer.” EX1012, ¶19.

D. Bogineni

87. Bogineni evidences that RCS messaging was well known prior to the ’165 patent. EX1009, 1:6-7. Bogineni explains that although “RCS provides a text-

message system similar to [SMS] messages,” RCS is also capable of providing additional services. EX1009, 1:7-12.

E. Jakobsson

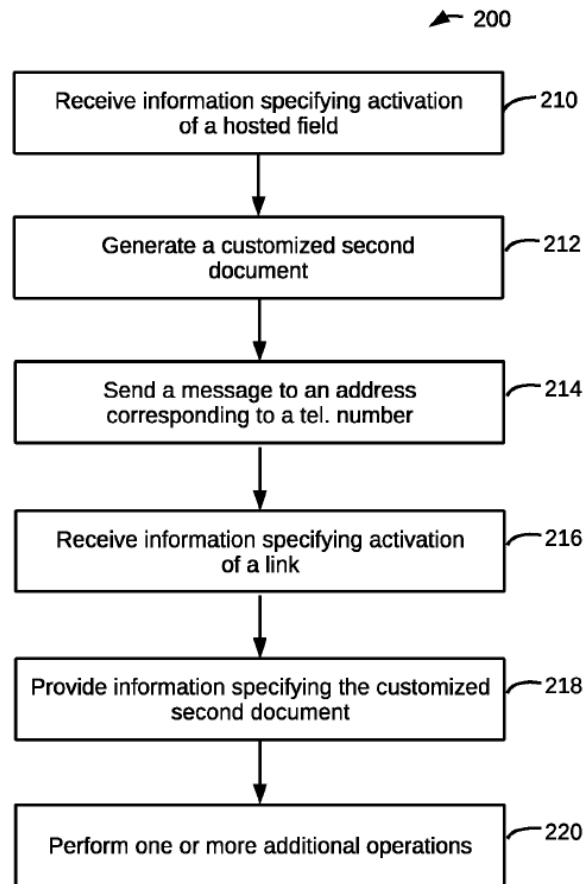
88. Jakobsson discloses “techniques for detecting a large class of phishing-attempt communications (e.g., emails, SMSes, and other messages) ...” EX1015, ¶33. Jakobsson “combine[s] an assessment of the likely end-user interpretation of the message” with “an assessment of whether the apparent sender matches the actual sender.” EX1015, ¶34. The system assesses “the likelihood that the received communication was in fact transmitted with the authorization of the purported authoritative entity” and determines whether “the sender information” matches identifiers associated with that entity. EX1015, ¶54. If the message appears associated with an authoritative entity but “the message is not sent by” that entity or “any whitelisted entity,” Jakobsson makes a security determination and selects an action for the message. EX1015, ¶¶74-75.

89. Based on the security determination, Jakobsson’s verification service may indicate that the message should be “delivered, not delivered, deleted, not deleted, [or] placed in a special folder such as a spam folder.” EX1015, ¶99. The verification service is connected to a warning module that “sends at least one warning to a user associated with [the] message recipient,” among other possible recipients. EX1015, ¶99. The warning “may be sent by email, by SMS or conveyed

in another appropriate electronic manner” and may describe “an individual email that was filtered out” or provide information explaining scam messages. EX1015, ¶99.

F. Spindler

90. Being in the same family as the ’165 patent, Spindler discloses many of the same concepts as the ’165 patent. Indeed, Spindler discloses a computer system that includes one or more electronic devices 110 connected, by a network 116, to a hosting computer 114 and a cloud-based computer 112. EX1006, ¶31. Spindler’s computer 112 may perform method 200 for dynamically generating a customized document, shown in Figure 2 below. EX1006, ¶48.



EX1006, FIG. 2.

91. Spindler’s hosting computer 114 may host “a webpage associated with a third party” which “may allow a user of electronic device 110-1 ... to indicate a willingness to receive one or more messages from computer 112 and [] specifies a telephone number associated with electronic device 110-1.” EX1006, ¶¶32, 48, 57, 71.

92. In response to receiving this information from the hosted field at step 210, Spindler’s computer 112 (in the form of an “Amplify Decision Delivery Processor (ADDP)”) may check if the telephone number is included in a data

structure (e.g., “with information about subscribers”) and, if not, “may send a text message ... to confirm that [the subscriber] want[s] to receive text messages.”

EX1006, ¶¶38, 54, 69, 71-73. If the computer confirms the telephone number by either means, Spindler’s computer 112 “may dynamically generate a customized second document (such as a webpage) that includes information about one or more transactions (such as one or more upcoming events) of interest to the individual or subscriber customer associated with the telephone number.” EX1006, ¶¶34, 49, 59, FIG. 2, step 212. “The customized webpage may pull in or incorporate additional events that may be of interest to the given subscriber customer.” EX1006, ¶68.

93. Computer 112 then “send[s] a message to an address corresponding to the telephone number” that “includes a link to the customized second document.” EX1006, ¶¶34, 50, 60, 84, FIG. 2, step 214. The message “may include [an SMS] message (which is sometimes referred to as a ‘text message’).” EX1006, ¶¶34, 50.

94. In response to the subscriber selecting the link, computer 112 provides “authentication information (such as an authentication cookie) to electronic device 110-1 to authenticate completion of a given transaction.” EX1006, ¶¶36, 53. In some cases, the “cookie” may be a “hot cookie” that “may include information specifying the keyword, client, subscriber customer, and protocol” and that is active for a given period of time. EX1006, ¶¶75, 92. In

addition, Spindler describes using various “biometric authentication operation[s]” “to thwart SIM swapping.” EX1006, ¶78. Although “the customized second document may allow completion of a given transaction,” “a purchase request ... may be rejected by computer 112 if the authentication information is not stored on electronic device 110-1.” EX1006, ¶¶37, 52, 93.

G. Long

95. Like the ’165 patent, Long is directed to e-commerce on a mobile device, and specifically to “a technology platform for messaging-based subscriptions and payments initiated from a website viewed on a mobile device or a mobile application.” EX1013, 2:48-51.

96. Long discloses “dynamic application deeplinking to transition from one user interface to another user interface at a mobile device.” EX1013, 1:40-44. A link is presented to a user within a promotional message displayed in, e.g., “a mobile website, a mobile application, a link, an email, a mobile advertisement, a text message, and/or the like.” EX1013, 3:1-4, 6:57-60. “When the link is clicked, a custom-rendered deeplink is initiated, and a mobile messaging application is opened on a user’s mobile device” with a message “pre-populated with purchase or subscription information and a recipient’s phone number.” EX1013, 3:4-9, 7:4-8. The pre-populated purchase information may “include a shopping cart identifier, a product identifier, a product name, a product description, a price of each product, a

total price for the shopping cart, and/or the like.” EX1013, 15:28-31. The user then need only send the pre-populated message to complete the subscription or purchase, such that “a transaction can be completed by two touch screen taps.” EX1013, 2:63-67, 3:28-34, 3:40-45. Long explains that this technique provides “continued and improved user experience and engagement” and “increases customer engagement with the promotional messages/marketing efforts by the client.” EX1013, 1:40-44, 9:7-16.

H. Wang

97. In the context of e-commerce, Wang describes an “[o]n-line message distribution/publishing” platform that applies “machine learning in message distribution.” EX1014, (54), ¶12. Wang’s machine learning techniques guide the platform to “deliver[] the message to the relevant target users” while “ensuring that the desired amount of message deliveries ... is achieved for the client.” EX1014, ¶14.

98. To begin, Wang’s machine learning system determines “a relevancy level between a user and an advertisement content” based on “historical shopping data and/or contextual information of a user,” such as “details of a user’s on-line shopping activities,” “geo-targeting information,” and “social media activities.” EX1014, ¶¶12, 17, 48. Wang’s “[u]ser group determination unit” may use this information to determine “a target group of users to deliver the advertisement

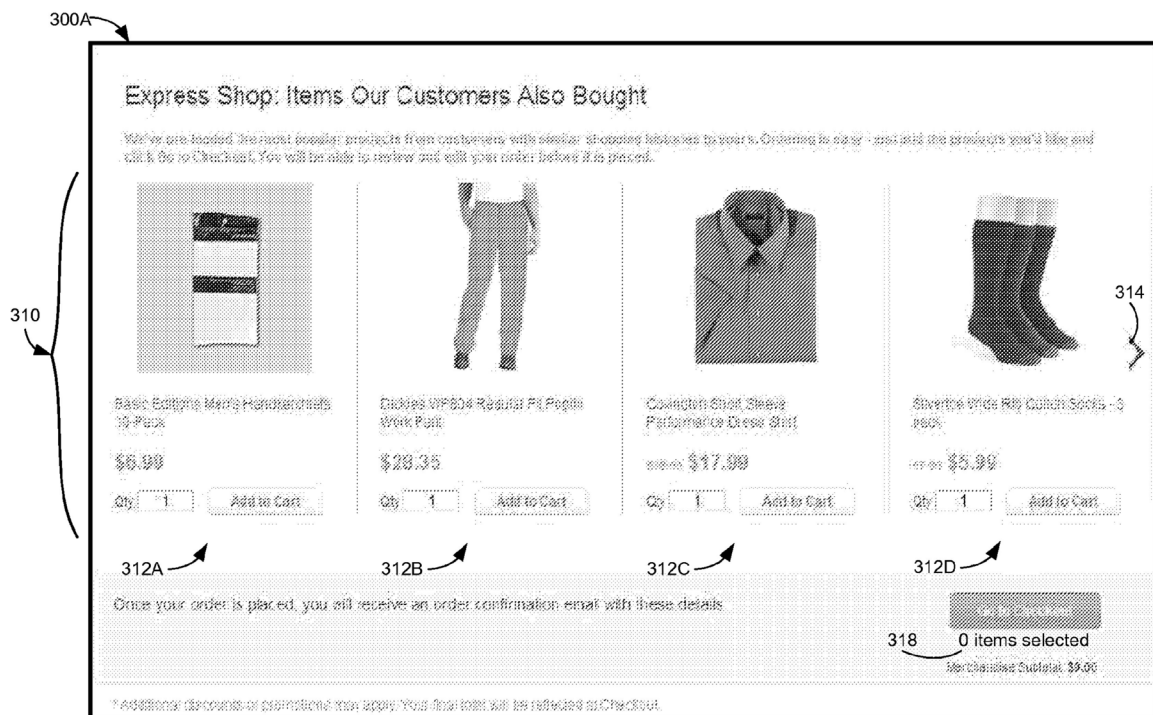
item” “based on a grouping criterion” such as “a threshold on a relevancy level or a relevancy score.” EX1014, ¶41. Wang’s “[d]isplay slot determination unit” next “determine[s] a specific display slot to deliver the advertisement item to [the] target user group,” and the message is delivered “based on the received delivery schedule.” EX1014, ¶¶42, 50-51.

99. Wang’s platform also monitors delivery of the message, including “a total amount of delivery (exposure)” and “user reactions to the advertisement item,” such as “a click,” “user enquiries in relation to the advertisement content,” and “[t]he actual number of purchases of the advertised product.” EX1014, ¶¶30, 52-53. Using this information, Wang’s platform may “adjust[] a grouping criterion and/or a delivery manner” by, for example, “lower[ing] the relevancy threshold to include more users into the new target user group.” EX1014, ¶¶54-55; *see also* EX1014, ¶59.

I. Burr

100. Burr discloses an e-commerce system for “processing on-line purchases by consumers” that identifies and promotes additional product items specifically selected for a consumer. EX1016, ¶¶1, 21. Burr explains that, after a user places an online order, additional products may be identified as having “a high likelihood of being of interest to, and therefore a high likelihood of purchase by the consumer.” EX1016, ¶40.

101. The recommended products may be displayed “as a carousel of product information,” from which “the consumer may select one or more items” and complete a purchase using payment and fulfillment information provided for the prior order. EX1016, ¶47. The carousel may display “a limited, but scrollable subset of the most likely items to be purchased by the user,” and each displayed item may have “an associated button or other user interface element” that enables the user to add the item to the shopping cart for purchase. EX1016, ¶60, FIG. 3A. Additional products may be viewed from the carousel by using a right arrow 314 or a left arrow (not shown). EX1016, ¶67.



EX1016, FIG. 3A.

XI. THE CLAIMED FEATURES LACK WRITTEN DESCRIPTION SUPPORT IN THE EARLIER-FILED APPLICATIONS FORMING THE CONTINUITY OF THE '165 PATENT

102. I understand that a later patent application can claim the benefit of the filing date of an earlier-filed application only if the earlier-filed application satisfies the written description requirement of 35 U.S.C. § 112. I understand that if the earlier-filed application fails to provide a written description supporting any element recited by a claim of the later-filed application, that claim is not entitled to the benefit of the filing date of the earlier-filed application. I have also been informed that a description in the earlier-filed application that merely renders the claimed invention obvious is not sufficient to provide written description support for that invention.

103. It is my opinion that U.S. Application No. 18/483,670 (“the ’670 application”) fails to provide written description support for all of the elements recited by independent claims 1, 8, and 14 of the ’165 patent. In particular, the ’165 patent includes figures and written support (e.g., FIG. 17 and the related description thereof) that provide verbatim support for the elements recited by claims 1, 8, and 14 of the ’165 patent that are not included in the ’670 application. *See, e.g.*, EX1001, 39:66-42:52; *compare, e.g.*, EX1022 (file history of the ’670 application), 0342-0359, FIGs. 1-18, *with* EX1002, 0006-0013 (Figures 1-8).

104. Specifically, the computer-implemented method, automated messaging subscription and distribution system, and storage medium of claims 1, 8 and 14 determine “*a classification of the at least one authorized recipient,*” generate “[*an RCS*] *message comprising the content,*” and schedule, “*using a machine learning model and based on the determined classification, delivery of the RCS message to the mobile computing device.*” EX1001, 46:48-47:5.

105. In my opinion, the ’670 application does not disclose any steps that in any way resemble at least the claimed determining “*a classification of the at least one authorized recipient*” and scheduling “*delivery of the RCS message*” “*using a machine learning model and based on the determined classification.*” Indeed, the ’670 application does not even use the terms “classification,” “schedule,” “machine learning,” or “Rich Communication Service (RCS)” at all. *See generally*, EX1022. In fact, I observe that no part of the ’670 application in any way suggests using machine learning, let alone using it to schedule delivery of an RCS message. A POSA reading the ’670 application would not understand the ’670 application as providing written description support for the classification of a user and scheduling and delivery of RCS messages by a machine learning model.

106. Because the ’670 application fails to provide written description support for all of the features recited by independent claims 1, 8, and 14 of the ’165 patent, it is my understanding that the ’165 patent is entitled to priority only

as of the disclosure of these features in the filing of the '197 application on September 25, 2024.

XII. GROUND 1A: THE BALASUBRAMANIAN-CHEN-SINHA COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 7-8, 13-15, 20.

A. Motivation to Combine

107. In my opinion, a POSA would have been motivated to combine Balasubramanian, Chen, and Sinha to arrive at the techniques claimed by the '165 patent.

108. To start, Balasubramanian and Chen are in the same field of endeavor as each other and as the '165 patent. The '165 patent is directed to “techniques for performing transactions using dynamically generated customized webpages,” such as online transactions including “purchasing products or services (which are sometimes referred to as ‘e-commerce’).” EX1001, 1:35-41. Balasubramanian is also directed to “facilitating electronic commerce over a network.” EX1005, ¶¶2, 8. Likewise, Chen is related to a user performing Internet activities using a user device. EX1011, 1:11-16.

109. Furthermore, a POSA would have been motivated to combine Chen with Balasubramanian. Balasubramanian teaches that a user may “select items to purchase by clicking on a link for a specific item,” but withdraw from purchase prior to payment. EX1005, ¶¶5, 6. In that case, a service provider sends a notification that includes one or more PCLs to the user reminding the user of the

abandoned checkout. EX1005, ¶¶9, 20, 45, 55, 72. Balasubramanian teaches that when the user selects or clicks on a PCL in the notification, the user may review and request processing of the one or more incomplete and/or abandoned transactions. EX1005, ¶55. Furthermore, clicking on a PCL may cause the shopping cart to be regenerated similar to its original state with additional information. EX1005, ¶¶43, 75. A POSA would have understood that the user may access the shopping cart via the user device, e.g., via a web browser of the user device. EX1005, ¶25.

110. However, Chen explains that many earlier-generation wireless devices are not equipped with web browsers and thus are restricted on accessing hypermedia content on the Internet. EX1011, 1:49-52. Because Balasubramanian's service provider may connect with various types of user devices including "generally known types of wired and/or wireless computing devices," a POSA would have understood that the service provider can also be configured to serve the earlier generation wireless devices that lack web browsers as discussed in Chen. EX1005, ¶23; EX1011, 1:49-52. Furthermore, SMS "does not require that the wireless device is active and within range when a message is sent" and "an SMS message generally will be held for a time until the wireless device is active and within range." EX1011, 1:58-62. Thus, the SMS can serve user devices that have either weak or temporarily lost connections.

111. In Chen, user devices can access a webpage (e.g., the shopping cart) without using a web browser or while having connection issues, by enabling a wireless device “to receive remotely stored hypermedia information, such as WML documents, HTML documents, Compact HTML (cHTML) documents, Extensible Markup Language (XML) documents, or HDML documents, from one or more network servers” “in the form of SMS messages.” EX1011, 3:55-61. A POSA would have understood that Chen’s solution would have enabled Balasubramanian’s service provider to serve more types of user devices, especially user devices that do not have a web browser and/or with bad connections, thereby benefiting both the user and the service provider. Thus, a POSA would have been motivated to modify Balasubramanian’s service provider to send the shopping cart, such as HTML documents of the shopping cart, to the user device via a text message.

112. In my opinion, a POSA would have had a reasonable expectation of success in modifying Balasubramanian’s system according to Chen because the modification would have involved only the routine application of a known processing and transmission technique. As discussed above, Chen teaches that a wireless device 100 is enabled to receive documents, such as HTML documents, from network servers 116 and 120 in the form of SMS messages. EX1011, 3:55-61. Balasubramanian explains that Balasubramanian’s service provider may also

comprise a network server. EX1005, ¶¶92. Thus, Balasubramanian's service provider is capable of performing functionalities of Chen's network servers 116 and 120, such as transmitting HTML documents to the user device via a text message. EX1005, ¶¶9, 20, 48, 55, 72. Thus, a POSA would not have been presented with any unreasonable technical challenges in making this combination.

113. In my opinion, a POSA would have been further motivated to combine Sinha with the Balasubramanian-Chen combination. To start, Sinha is also in the same field of online shopping on websites as Balasubramanian, Chen, and the '165 patent and is thus analogous art to each. *Compare* EX1012, ¶¶29, 37, *with* EX1001, 1:36-57, 28:53-9:10, 29:14-24, 29:64-30:2, 35:9-36; EX1005, ¶¶6, 7, 56, 63. In Balasubramanian, when the user abandons the checkout of the selected items, this usually results in lost revenue. EX1005, ¶¶5, 6. To resolve this issue, the service provider sends a notification to the user reminding the user of the abandoned checkout. EX1005, ¶¶9, 20, 45, 55, 72. Such abandoned-cart recovery messaging was well known before 2018. *See above*, Section VIII.C. Sinha explains that sometimes the "customer adds the same items to online shopping carts at each of the different online stores and compares a total price" and "then choose[s] to purchase the items from one of the online stores based on the comparison." EX1012, ¶3. Thus, each online store wants to be the one that the customer eventually chooses. EX1012, ¶3.

114. To improve the chance of being chosen, Sinha teaches an approach to calculate a likelihood indicating “that there is some uncertainty as to whether a customer will [] return to purchase items left in an abandoned cart” and send tailored advertising content to the customer to convince the customer to purchase the items in the shopping cart. EX1012, ¶24. Thus, a POSA would have been motivated to modify the service provider in the Balasubramanian-Chen combination to send such targeted advertising content as taught by Sinha in order to improve the chance that the user returns to the abandoned shopping cart and completes the checkout. For example, when the user receives the notification and accesses the abandoned shopping cart, the user would have access to the target advertising content that may convince the user to complete the checkout.

115. Finally, it is my opinion that a POSA would have had a reasonable expectation of success in combining the Balasubramanian-Chen combination with Sinha. Sinha explains that a customer classification model module 212 “employs a machine learning technique” and “generate[s] models that are usable for predicting whether a customer will return to the online store to purchase the items [] left in an abandoned cart.” EX1012, ¶51. Sinha further explains that the customer classification model module 212 is a part of the online shopping cart analysis module 108, which is “implementable as a software module, a hardware device, or using a combination of software, hardware, firmware, fixed logic circuitry, etc.”

EX1012, ¶¶34, 50. For example, the online shopping cart analysis module 108 can be included in a computing device, which can be implemented as a server.

EX1012, ¶¶28, 50. Balasubramanian's system includes a service provider, which includes a network server. EX1005, ¶¶21, 92, FIG. 1. Thus, Balasubramanian's service provider is readily available to perform the functionalities of Sinha's computing device including the machine learning functions of the customer classification model module 212. Moreover, the use of predictive and machine-learning models to control the distribution of marketing messages was known before 2018. *See above*, Section VIII.G.

B. Independent claim 1

1. [1.P] A computer-implemented method comprising:

116. In my opinion, Balasubramanian discloses the preamble.

Balasubramanian's "service provider," which can be implemented as a computer system, "provide[s] processing for network based transactions including online information and/or financial transactions on behalf of the user." EX1005, ¶40.

Balasubramanian's service provider 180 implements the methods described with respect to Figures 2A-2C. EX1005, ¶¶62-86.

2. [1.A] receiving a request to provide content to at least one authorized recipient;

117. In my opinion, the Balasubramanian-Chen-Sinha combination teaches element [1.A].

118. First, Balasubramanian teaches “*at least one authorized recipient.*” In Balasubramanian, a user (“*at least one ... recipient*”) is prompted “to establish a user account for login with the service provider.” EX1005, ¶26. Balasubramanian explains that “[w]hen establishing a user account, the user may be asked to provide personal information, ... and financial information ...” EX1005, ¶26. This personal and financial information, such as the user identifier 126, are passed from the user device to the service provider so that the service provider can verify the user. EX1005, ¶¶28, 58, 65-66. Thus, the user is an “*authorized recipient*” because the user registers with and is verified by the service provider.

119. Second, Balasubramanian teaches “*receiving a request to provide content.*” As discussed above, Balasubramanian teaches that the user registers with and sends user information to the service provider. EX1005, ¶¶26, 28, 58, 65. When shopping at a particular website, users select items to be placed in a virtual shopping cart, but the user “may withdraw from purchase or abandon the checkout prior to payment.” EX1005, ¶6. Once the user is verified, Balasubramanian’s service provider sends a notification to the user (“*to at least one authorized recipient*”) that directs the user to the abandoned shopping cart (“*content*”). EX1005, ¶¶9, 28, 45, 47, 55, 65, 66, 72. In my opinion, a POSA would have found it obvious that, during the registration process, the service provider would receive a registration request from the user to receive messages regarding the abandoned

shopping cart (“*receiving a request to provide content*”). Indeed, it was well known that a user signs up for a service by providing a telephone number in order to subscribe to receive messages, including messages with personalized links, at that number. *See, e.g.*, EX1010, ¶¶66-67; *see also above*, Section VIII.F.

120. To the extent Patent Owner argues that Balasubramanian does not teach or suggest “*receiving a request to provide content*,” Chen includes explicit teaching of this feature. Chen teaches a pull mode of operation where a network server, which includes a proxy server, receives an SMS request for Internet-based content from a wireless device that does not have a browser. EX1011, 3:13-19, 4:7-10. The network server transcodes the Internet-based content and sends the transcoded content to the wireless device as an SMS message. EX1011, 3:31-40. Thus, a POSA would have understood that the network server receiving the SMS request for the Internet-based content corresponds to “*receiving a request to provide content*.”

121. Furthermore, a POSA would have been motivated to modify Balasubramanian’s service provider to receive the SMS request taught by Chen. Balasubramanian teaches that a user may “select items to purchase by clicking on a link for a specific item,” but withdraw from purchase prior to payment. EX1005, ¶¶5-6. In that case, a service provider sends a notification that includes one or more PCLs to the user, reminding the user of the abandoned checkout. EX1005, ¶¶9, 20,

45, 55, 72. When the user selects or clicks on a PCL in the notification, the user may review and request processing of the one or more incomplete and/or abandoned transactions. EX1005, ¶55. Balasubramanian explains that the user can browse information on the network using a web browser. EX1005, ¶25. However, Balasubramanian does not expressly address how user devices without a web browser or with connection issues access the network, such as to access abandoned shopping carts. Chen addresses this issue. As I explain above (Section XII.A), a POSA would have been motivated to modify Balasubramanian's service provider to send the HTML documents of the shopping cart in the form of SMS messages to user devices ("*provide content to at least one authorized recipient*") that do not have a web browser and/or with bad connections.

3. [1.B] generating a customized message comprising at least one action associated with the content;

122. In my opinion, Balasubramanian teaches element [1.B].

123. Balasubramanian's service provider sends a notification ("*a ... message*") that includes PCLs, i.e., selectable links ("*comprising at least one action*") that lead the user to the abandoned shopping cart ("*associated with the content*"). EX1005, ¶¶9, 20, 47, 55, 63, 72, 74. Furthermore, because the notification is sent to the user to remind the user of the user's abandoned shopping cart, the notification is "*a customized message*" for the user. EX1005, ¶¶9, 20, 47, 55, 63, 72, 74. A PCL is a "portable checkout link," i.e., a user-selectable link,

such as a “URL link,” through which the saved state of the user’s specific shopping cart may be “accessed.” EX1005, ¶42. When the user selects a PCL, the user “may review the one or more incomplete and/or abandoned transactions and request processing of the incomplete and/or abandoned transactions,” including by “selecting one or more of the selectable links 304A, 304B, 314A, 314B” “related to one or more corresponding incomplete transactions.” EX1005, ¶¶55, 76.

Because each PCL is a selectable link whose selection initiates review and completion of the corresponding transaction, the PCLs are “*at least one action.*” Finally, a POSA would have understood that, in order to **send** the notification to the user, the service provider would first need to “*generat[e]*” the notification. Messages containing selectable links through which a recipient could initiate an action or return to an incomplete transaction were well known before 2018. *See above*, Section VIII.B.

4. [1.C] causing transmission of the customized message to a mobile computing device associated with the at least one authorized recipient;

124. In my opinion, Balasubramanian teaches element [1.C].

125. Balasubramanian teaches that the service provider sends (“*caus[es]* *transmission of*”) a notification (“*the customized message*”) to the user “via a user device,” which, e.g., “may be implemented as a mobile communication device (e.g., wireless cellular phone) adapted for communication with the network” or

other types of “wired and/or wireless computing devices” (*“to a mobile computing device associated with the at least one authorized recipient”*). EX1005, ¶¶9, 20, 23, 47, 55, 72.

5. [1.D] responsive to receiving an indication associated with selecting the at least one action, requesting authorization data corresponding to the at least one authorized recipient;

126. In my opinion, Balasubramanian teaches element [1.D].

127. Balasubramanian teaches that “if the service provider 180 determines that the user selected at least one incomplete transaction [by selecting the selectable links (e.g., PCLs)] to process” (*“responsive to receiving an indication associated with selecting the at least one action”*), “then the service provider 180 prompts the user to login from the user device 120 over the network 160” (*“requesting authorization data corresponding to the at least one authorized recipient”*). EX1005, ¶¶55, 76, 78. Balasubramanian explains that the service provider then “receive[s] user information, such as identity information, from the user via the user device.” EX1005, ¶78. The service provider then verifies a user account related to the user based on the user information. EX1005, ¶78.

Balasubramanian further explains that the service provider verifies the user account using personal information, such as “usernames, passwords, photograph images, biometric ids, addresses, phone numbers, etc.”, and banking information, such as “banking institutions, credit card issuers, user account numbers, security

information, etc.” EX1005, ¶¶65-66. Thus, a POSA would have understood that because the user information is used to verify the user account, it is the

“authorization data corresponding to the at least one authorized recipient.”

EX1005, ¶78.

6. [1.E.1] responsive to receiving the requested authorization data: verifying that the authorization data correlates to an identity of the at least one authorized recipient or an identity of the mobile computing device;

128. In my opinion, Balasubramanian teaches element [1.E.1].

129. Balasubramanian teaches that the service provider “receive[s] user information, such as identity information, from the user via the user device” (*“responsive to receiving the requested authorization data”*) and “verif[ies] a user account related to the user in the account database 190 based on user information” (*“verifying that the authorization data correlates to an identity of the at least one authorized recipient or an identity of the mobile computing device”*). EX1005, ¶78.

In particular, a POSA would have understood that because the user information includes the identity information and the service provider verifies the user account related to the user using the user information, the service provider verifies that the user information correlates to an identify of the user (*“verifying that the authorization data correlates to an identity of the at least one authorized recipient”*). Verifying user-supplied identity information against stored account records was well known before 2018. *See above*, Section VIII.E.

7. [1.E.2] determining, based on the identity of the at least one authorized recipient or the identity of the mobile computing device, a classification of the at least one authorized recipient

130. In my opinion, Balasubramanian teaches element [1.E.2].

131. Balasubramanian teaches “*determining ... a classification of the at least one authorized recipient.*” The ’165 patent explains that the classification options include three tiers. EX1001, 42:8-23. In a second tier out of the three tiers, the user has selected one or more actions but has not completed a transaction. EX1001, 42:16-20. Balasubramanian similarly teaches that the user may “select items to purchase by clicking on a link for a specific item,” but withdraw from purchase prior to payment. EX1005, ¶¶5, 6. In my opinion, a POSA would have understood that such a user would be classified in the second tier in the ’165 patent’s definition (“*a classification of the at least one authorized recipient*”).

132. Furthermore, the service provider monitors the user’s shopping activities and maintains user accounts in an account database 190 that includes account information 192 associated with a user. EX1005, ¶¶56, 57. For the user who abandoned the checkout of the selected items, Balasubramanian’s service provider sends a notification to the user reminding the user of the abandoned checkout. EX1005, ¶¶9, 20, 45, 55, 72. Once the user completes the purchase transaction, the service provider stores information related to the completed purchase transaction and changes the status from incomplete to complete. EX1005,

¶¶10, 79. A POSA would have understood that the service provider would not send the notification to the user at least for the same purchase transaction because it is now completed. Such a user is classified in the first tier of the three tiers defined by the '165 patent. EX1001, 42:12-19. In addition, the service provider also would not send the notification to the user who has not selected any items because there is nothing to remind the user about. Such a user is classified in the third tier of the three tiers defined by the '165 patent. EX1001, 42:20-23. Thus, the service provider selectively sends the notification to the user based on the determination that the user has selected items but abandoned the checkout (*“determining ... a classification of the at least one authorized recipient”*). Classifying message recipients according to their shopping behavior and recorded interactions was likewise well known before 2018. *See above*, Section VIII.F.

133. Finally, the service provider's determination is based on the identity of the user because the service provider verifies the user account based on the user information (*“based on the identity of the at least one authorized recipient”*).

EX1005, ¶78.

8. [1.E.3] generating a Rich Communication Service (RCS) message comprising the content

134. In my opinion, Balasubramanian teaches element [1.E.3].

135. Balasubramanian's notification can be a text message, but Balasubramanian does not explicitly explain a specific type of text message to be

used to send the notification. EX1005, ¶¶9, 20, 48, 55. In my opinion, a POSA would have known that it was well known at the time of filing of the '165 patent that a “text message” may include, for example, a “Rich Communication Services” message, a well-known successor to SMS text messaging. *See above*, Section VIII.D. Thus, a POSA would have understood Balasubramanian’s text message renders obvious, “*generating [an RCS] message*,” which was a well-known type of text message. Additionally, a POSA would have known that there were only a finite number of text message protocols in widespread use at the time of the '165 patent—RCS being one of them. *See above*, Sections VIII.A, VIII.D. Therefore, a POSA would have also found it obvious to try the RCS protocol to implement RCS messages in Balasubramanian’s system.

136. Furthermore, as I discuss above, a POSA would have been motivated to modify Balasubramanian’s service provider to “*generate*” and send the HTML documents of the shopping cart (“*the content*”) in the form of SMS messages to user devices that do not have a web browser or have connection issues, thus the “*message compris[es] the content*”). *See above*, Section XII.B.2. As I discuss immediately above, a POSA would have found it obvious that the service provider would generate and deliver the HTML documents of the shopping cart (“*the content*”) in the form of an RCS message instead of as an SMS message (“*[an RCS] message comprising the content*”).

137. Finally, in my opinion, a POSA would have understood that the service provider would generate and deliver the HTML documents in the form of an RCS message (“*generating [an RCS] message comprising the content*”) in addition to sending the initial notification to the user device. In such a case, the service provider provides the user device with two alternative approaches to access the shopping cart regardless of whether the user device has a web browser or connection issues. For example, when the user device is equipped with a web browser and has no connection issues, the user device can access the shopping cart via the PCL within the notification. EX1005, ¶¶9, 20, 47, 55, 63, 72, 74. On the other hand, when the user device has no web browser or has connection issues, the user device can still access the shopping cart via the HTML documents of the shopping cart in the RCS message.

9. [1.F] scheduling, using a machine learning model and based on the determined classification, delivery of the RCS message to the mobile computing device.

138. In my opinion, the Balasubramanian-Chen-Sinha combination teaches element [1.F].

139. The Balasubramanian-Chen-Sinha combination teaches “*scheduling, ... based on the determined classification, delivery of the RCS message to the mobile computing device.*” In the combination, Balasubramanian’s service provider sends the HTML documents of the shopping cart via SMS messages to the user

device, as taught by Chen. *See above*, Section XII.B.2. In my opinion, a POSA would have found it obvious to send the RCS message (“*delivery of the RCS message to the mobile computing device*”) instead of or in addition to the text message, in order to provide the additional functionality that RCS messages provide. *See above*, Section XII.B.6.

140. Furthermore, as I discuss above, Balasubramanian’s service provider selectively sends the notification to the user based on the determination that the user abandoned the checkout of the selected items to remind the user of the abandoned checkout (“*based on the determined classification*”). EX1005, ¶¶9, 20, 45, 55, 72; *see above*, Section XII.B.7. Furthermore, the service provider sends the notification based on a schedule, such as sending the notification periodically or when one or more items in the shopping cart are about to run out of stock (“*scheduling, ... based on the determined classification*”). EX1005, ¶¶9, 47; *see also above*, Sections VIII.C, VIII.G. In addition, a POSA would have understood that the service provider schedules the RCS message that includes the HTML documents of the shopping cart based on the schedule of the notification. That is, because the notification goes out according to the schedule, the user is more likely to select the PCL and request the content according to that schedule, which means that the content, in the form of the RCS message, is delivered based on that schedule. Thus, the service provider schedules and sends the RCS message based

on determining that the user has selected items but abandoned the checkout (*“scheduling, ... based on the determined classification, delivery of the RCS message to the mobile computing device.”*).

141. Furthermore, as I discuss above, Balasubramanian’s shopping cart represents *“the content.”* See above, Section XII.B.2. Balasubramanian further teaches that the user can return to the shopping cart to complete an abandoned checkout. EX1005, ¶¶45, 75. And as I discuss in Section XII.A above, a POSA would have been motivated to modify Balasubramanian to include the advertising content taught by Sinha in the shopping cart (*“the content”*) so that the user is more likely to complete the checkout. EX1012, ¶24.

142. Finally, Sinha teaches that the tailored advertising content *t* is sent to the customer, who is associated with a “likelihood” of purchase that indicates “uncertainty as to whether a customer will [] return to purchase items left in an abandoned cart.” EX1012, ¶24. The likelihood is computed using various machine learning modeling techniques (*“using a machine learning model”*). EX1012, Abstract, ¶¶5, 6, 18, 32, 49, 51, 52; see also above, Section VIII.G. Because the RCS message that includes the shopping cart is sent based on the likelihood determined using a machine learning model, the service provider in the Balasubramanian-Chen-Sinha combination schedules delivery of the RCS message

to the user device using a machine learning model (*“scheduling, using a machine learning model ..., delivery of the RCS message to the mobile computing device”*).

C. Claim 2: delivering the RCS message to the mobile computing device according to the scheduled delivery.

143. In my opinion, the Balasubramanian-Chen-Sinha combination teaches claim 2.

144. In the Balasubramanian-Chen-Sinha combination, the service provider *“schedule[s], ..., delivery of the RCS message to the mobile computing device.”* See above, Section XII.B.9. Furthermore, the service provider sends the RCS message that includes the HTML documents of the shopping cart to the user device (*“delivering the RCS message to the mobile computing device”*). See above, Section XII.B.9. Because the service provider determines a schedule for the RCS message and also sends the RCS message, it is my opinion that a POSA would have found it obvious that the service provider would send the RCS message according to that determined schedule (*“delivering the RCS message to the mobile computing device according to the scheduled delivery”*).

D. Claim 7: wherein the at least one action associated with the content comprises one or more options to: perform a transaction, select a suggested response, return to a prior browsing session, or return to a prior application session.

145. Balasubramanian teaches claim 7.

146. As I discuss above, Balasubramanian's PCLs that lead the user to the abandoned shopping cart correspond to the "*at least one action.*" EX1005, ¶¶9, 20, 47, 55, 63, 72, 74; *see above*, Section XII.B.3. The PCLs lead the user to and, thus, are associated with the abandoned shopping cart ("*associated with the content*"). EX1005, ¶¶9, 20, 47, 55, 63, 72, 74. Furthermore, the user can check out and purchase the items "from where the user previously left-off, withdrew, abandoned, or failed to complete the checkout" in the shopping cart. EX1005, ¶¶42, 45, 75. Thus, it is my opinion that a POSA would have understood that the PCLs that lead the user to the shopping cart in order to checkout previously selected items, which at least represent "*one or more options to*" "*perform a transaction*" and "*return to a prior browsing session.*"

E. Independent claim 8

1. [8.P] An automated messaging subscription and distribution system, the system comprising:

147. In my opinion, Balasubramanian discloses the preamble. Balasubramanian discloses a system including a user device, one or more merchant devices, and a service provider. EX1005, ¶21, FIG. 1. Balasubramanian teaches that a user is prompted "to establish a user account for login with the service provider." EX1005, ¶26. Furthermore, the service provider verifies the user and then sends a notification to the user regarding an incomplete transaction periodically or when items the user previously selected are about to run out of

stock, have price changes, or have discounts and coupons (automated messaging).

EX1005, ¶¶20, 47, 66, 70. In my opinion, a POSA would have understood that it is obvious that the user receiving the notification has agreed to receive messages, via the registration process, and thus subscribed to receive messages from the service provider. For example, when a user registers or signs up with a marketer, the user opts in and becomes a subscriber to receive messages from the marketer. EX1019, ¶5; *see also above*, Section VIII.F. Because the service provider sends the notification to the user who subscribes to receive the notification, Balasubramanian's system that includes the service provider teaches the "*messaging subscription and distribution system*." Finally, because the service provider sends the notification periodically or when items the user previously selected are about to run out of stock, have price changes, or have discounts and coupons, Balasubramanian's system represents "[a]n automated messaging subscription and distribution system." EX1005, ¶¶20, 47.

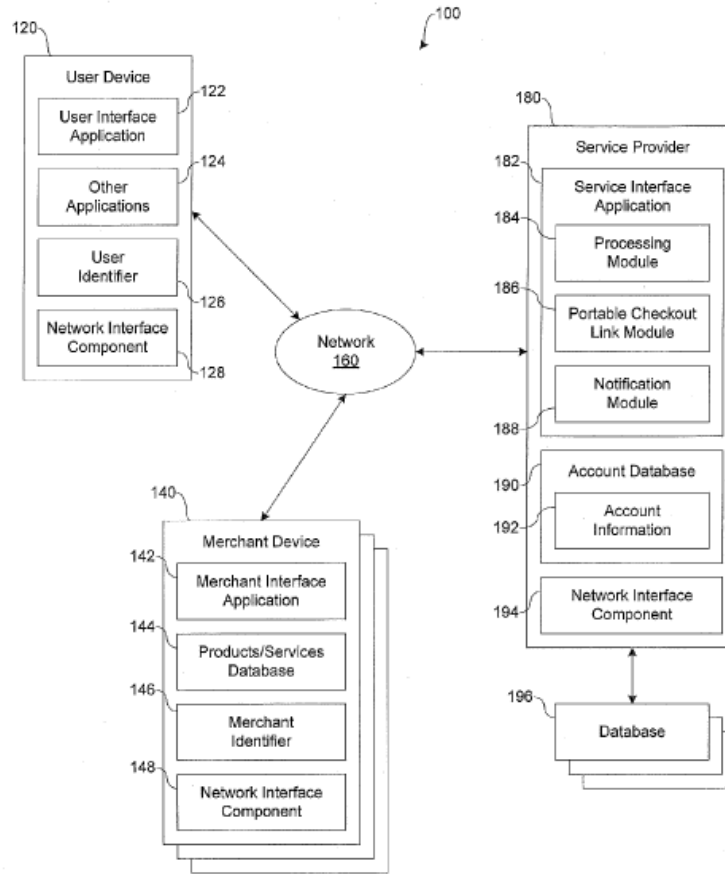


Fig. 1

EX1005, FIG. 1.

2. [8.A] a processor; and

148. In my opinion, Balasubramanian discloses element [8.A].

Balasubramanian's user device 120, one or more merchant devices 140, and service provider 180 can each be implemented as a computer system 400. EX1005, ¶92, FIG. 4. The computer system includes a processing component, such as a "processor, micro-controller, digital signal processor (DSP), etc." EX1005, ¶93.

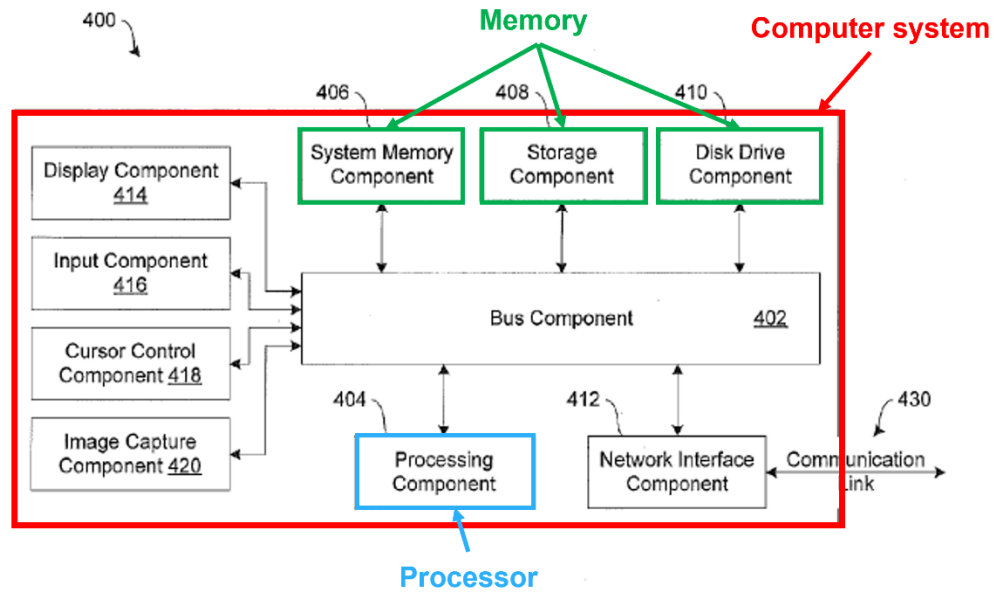


Fig. 4

EX1005, FIG. 4 (annotated).

3. [8.B] memory configured to store program instructions, wherein, when executed by the processor, the program instructions cause the processor to perform operations comprising:

149. In my opinion, Balasubramanian discloses element [8.B].

150. Balasubramanian's computer system includes "*memory*," e.g., "system memory component 406 (e.g., RAM), static storage component 408 (e.g., ROM), disk drive component 410 (e.g., magnetic or optical)." EX1005, ¶93, FIG.

4. Balasubramanian's computer system "**performs specific operations** by processor 404 executing ... **instructions** contained in system memory component." EX1005, ¶94 (emphasis added).

4. [8.C]–[8.H]

151. Claim elements [8.C]–[8.H] correspond to claim elements [1.A]–[1.F], respectively. In my opinion, the Balasubramanian-Chen-Sinha combination teaches or renders obvious these elements for the same reasons I explain above regarding claim 1. *See above*, Section XII.B. Claim 8’s recitation of a “*service subscriber*” (rather than an “*authorized recipient*”) and “*subscription data*” (rather than “*authorization data*”) does not change the analysis. The ’165 patent uses these terms interchangeably, and Balasubramanian’s registered user and verified user information satisfy these terms for the same reasons I discuss above. EX1001, 40:1-10.

F. Claim 13

152. Claim 13 is a system claim that otherwise recite limitations that are identical to the method steps recited in claim 7. In my opinion, the Balasubramanian-Chen-Sinha combination teaches or renders obvious these elements for the same reasons as I explain for claim 7 above. *See above*, Section XII.D.

G. Independent claim 14

153. Independent claim 14 recites a “*non-transitory computer-readable storage medium for use in conjunction with a computer, the computer-readable storage medium storing program instructions that, when executed by the computer,*

cause the computer to carry out one or more operations comprising” substantially the same as those recited in claim 1.²

1. **[14.P] A non-transitory computer-readable storage medium for use in conjunction with a computer, the computer-readable storage medium storing program instructions that, when executed by the computer, cause the computer to carry out one or more operations comprising:**

154. In my opinion, Balasubramanian discloses the preamble.

155. Balasubramanian’s “computer system 400 performs specific operations by processor 404 executing one or more sequences of one or more instructions contained in system memory component 406.” EX1005, ¶94. “Such instructions may be read into system memory component 406 from another computer readable medium, such as static storage component 408 or disk drive component 410.” EX1005, ¶94. In my opinion, a POSA would have understood that at least Balasubramanian’s static storage component is a “*non-transitory computer-readable storage medium*.”

2. **[14.A]–[14.F]**

156. Claim elements [14.A]–[14.F] correspond to claim elements [1.A]–[1.F], respectively. In my opinion, the Balasubramanian-Chen-Sinha combination

² Claim 14 is met when any one of the operations is carried out because claim 14 only requires “*caus[ing] the computer to carry out one or more operations*.”

teaches or renders obvious these elements for the same reasons I explain above regarding claim 1. *See above*, Section XII.B. Likewise, claim 14’s recitation of “*at least one authorized recipient or subscriber*,” “*at least one link*,” and “*subscription data*” does not change the analysis for the same reasons; indeed, Balasubramanian’s PCLs are links. EX1005, ¶42.

H. Claims 15, 20

157. Claims 15 and 20 are storage medium claims that otherwise recite limitations that are identical to the method steps recited in claims 2 and 7. In my opinion, the Balasubramanian-Chen-Sinha combination teaches or renders obvious these elements for the same reasons as I respectively explain for claims 2 and 7 above. *See above*, Sections XII.C-XII.D.

XIII. GROUND 1B: THE BALASUBRAMANIAN-CHEN-SINHA-BOGINENI COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 5, 7-8, 11, 13-15, 18, AND 20.

A. Motivation to Combine

158. Claims 1, 2, 5, 8, 11, 14, 15, and 18 recite limitations related to RCS messages. Bogineni includes an explicit discussion of an “*RCS message*.” In my opinion, a POSA would have been motivated to modify the Balasubramanian-Chen-Sinha combination in further view of Bogineni to include an RCS message.

159. To start, Bogineni and Balasubramanian are in the same field of mobile device communication and are thus analogous art to each other and the

'165 patent. *Compare* EX1009, 1:6-7, 1:47-2:22, *with* EX1001, Abstract, 5:46-48; EX1005, ¶¶21, 23, 24, 29, 31.

160. In Balasubramanian, the service provider sends a notification to the user device. EX1005, ¶¶9, 20-21, 48, 55. This notification can be sent in various ways, including as a text message. EX1005, ¶¶9, 20, 48, 55. Furthermore, in the Balasubramanian-Chen-Sinha combination, the service provider sends the HTML documents of the shopping cart (“*the content*”) in the form of SMS messages. *See above*, Section XII.B.8. However, the Balasubramanian-Chen-Sinha combination does not explicitly discuss details about how the messages are implemented. One well-known technique for sending text messages to a mobile device like Balasubramanian’s user device is via RCS messages, as taught by Bogineni. *See also above*, Section VIII.D. Bogineni teaches that “RCS provides a text-message system similar to [SMS] messages.” EX1009, 1:7-9. “However, RCS is capable of providing services that SMS cannot provide, such as phonebook polling for service discovery, transmitting in-call multimedia, and/or the like.” EX1009, 1:9-12. A POSA would have been motivated to modify the service provider to send the message that includes the HTML documents of the shopping cart (“*the content*”) as an RCS message instead of a text message in order to provide the additional functionality available with RCS messages.

161. Furthermore, a POSA would have had a reasonable expectation of success in combining Balasubramanian with Bogineni. Bogineni explains that the RCS messaging can be supported by Internet protocol (IP) multimedia subsystem (IMS)-based RCS messaging or non-IMS RCS messaging supported by application programming interfaces (APIs) on the device or hypertext transfer protocol (HTTP) communications. EX1009, 1:47-2:4. Balasubramanian's system can support both options. Balasubramanian's system includes a network that supports the Internet, a mobile communication network, one or more intranets, landline networks, wireless networks, and/or one or more other appropriate types of communication networks. EX1005, ¶¶21-22. In my opinion, a POSA would have understood that Balasubramanian's network would support the IMS and therefore support IMS-based RCS messaging. Because Balasubramanian's network can be the Internet, the network also supports HTTP communications, which enables non-IMS RCS messaging. Finally, because Balasubramanian's user device, merchant devices, and service provider can be implemented as computer systems, they are readily available to install APIs and thus support non-IMS RCS messaging via the APIs. EX1005, ¶92. In my opinion, a POSA would therefore not have experienced any unreasonable technical hurdles in implementing these modifications.

162. Such a combination would merely amount to combining prior art elements according to known methods to yield the predictable (yet improved)

result of sending text messages having the additional functionality available with RCS messages, such as “phonebook polling for service discovery, transmitting in-call multimedia, and/or the like.” EX1009, 1:9-12.

B. Claims 1, 2, 7, 8, 13-15, and 20

163. In my opinion, the Balasubramanian-Chen-Sinha-Bogineni combination teaches claims 1, 2, 7, 8, 13-15, and 20.

164. As I discuss above, the Balasubramanian-Chen-Sinha combination teaches, or at least renders obvious, these claims. *See above*, Section XII. To the extent Patent Owner argues that the Balasubramanian-Chen-Sinha combination does not teach “[an RCS] message” recited in independent claims 1, 8, and 14 and “the RCS message” recited in claims 2 and 15, the combination with Bogineni does. Specifically, in the combination, the message that includes the HTML documents of the shopping cart (“*comprising the content*”) is specifically scheduled and transmitted as “[an RCS] message” in order to provide the additional functionality that RCS messages provide. EX1009, 1:7-9; Section XII.B.2.

165. Claims 2, 7, 13, 15, and 20 depend from claims 1, 8, and 14, and the Balasubramanian-Chen-Sinha-Bogineni combination teaches these claims for the reasons I discuss above. *See above*, Section XII.

- C. Claims 5, 11, and 18: wherein the content comprises send and receive indicators provided in a user interface of the mobile computing device that indicate real time typing between an RCS message provider and the mobile computing device or between another computing device and the mobile computing device.**

166. In my opinion, the Balasubramanian-Chen-Sinha-Bogineni combination teaches claims 5, 11, and 18.

167. As I discuss above, in the Balasubramanian-Chen-Sinha-Bogineni combination, the service provider can send the message that includes the shopping cart (“*the content*”) as “[*an RCS*] message,” as taught by Bogineni. *See above*, Section, XII.B. Bogineni further teaches various APIs for using the RCS message service, including “a send read report API for sending a read report for an RCS message” and “a receive read report for receiving a read report for an RCS message.” EX1009, 4:4-16. Bogineni’s “send read report” and “receive read report” for RCS messages are the claimed “*send and receive indicators provided in a user interface of the mobile computing device.*” In particular, a POSA would have understood that when the user device receives “a read report” using the “receive read report API,” it indicates that an RCS message has been sent to another device (“*the content comprises send ... indicator[]*”) and when the user device transmits a “read report” using the “send read report API,” it indicates that an RCS message has been received from another device (“*the content comprises ... receive indicator[]*”). Furthermore, Balasubramanian teaches that the user device

includes applications 124 that interface with “appropriate application programming interfaces (APIs)” and “may interface with the user interface application 122 for improved efficiency and convenience” of the user device. EX1005, ¶27. Thus, a POSA would have understood that the transmitted and received “read report[s]” supported by the APIs are provided to the user interface application of the user device via the applications 124 (*“provided in a user interface of a mobile computing device”*).

168. Finally, in my opinion, a POSA would have understood that Bogineni’s RCS message shows real-time typing status between the sender and the receiver (*“indicate real time typing between an RCS message provider and the mobile computing device or between another computing device and the mobile computing device”*), because this is part of the RCS standard. In particular, the RCS standard “RCS Universal Profile Service Definition Document, Version 1.0,” published November 16, 2016, mandates, as standard elements, the use of indicators that inform a user of *“real time typing.”* For example, standard element US5-7 explains that “[a]s a user, I want to see when the other party is currently writing a message,” and standard element R5-7-1 instructs that “[t]he other party shall be able to see an ‘is typing’ notification whenever the creator of a message is typing.” EX1032, 47. Because the RCS Universal Profile Definition mandates

these functions, a POSA would have understood that they would be included in the RCS functionality of Bogineni.

XIV. GROUND 1C: THE BALASUBRAMANIAN-CHEN-SINHA(-BOGINENI)-BURR COMBINATIONS RENDER OBVIOUS CLAIMS 3, 9, AND 16.

A. Motivation to Combine

169. Dependent claims 3, 9, and 16 recite that “the content comprises a carousel of selectable options in a user interface of the mobile computing device, the selectable options including performing at least one secure transaction, scheduling an appointment, or resuming at least one abandoned user journey.” The respective independent claims 1, 8, and 14 would have been obvious in view of the Balasubramanian-Chen-Sinha combination (Ground 1A) and/or the Balasubramanian-Chen-Sinha-Bogineni combination (Ground 1B), as I discuss above. *See* Sections XII, XIII. In my opinion, a POSA would have been motivated to modify these combinations further in view of Burr to include such a carousel of selectable options.

170. To start, Balasubramanian, Chen, Sinha, Bogineni, and Burr are in the same field of mobile device communication and e-commerce as the ’165 patent and are thus analogous art to each other and to the ’165 patent. *Compare* EX1016, ¶¶Title, 2, 29, 49, 79-80, *with* EX1001, Abstract, 5:46-48; EX1005, ¶¶2, 8, 20, 21; EX1011, 1:11-16; EX1012, ¶¶29, 37.

171. In the Balasubramanian-Chen-Sinha(-Bogineni) combinations, the shopping cart includes multiple “*selectable options*” such as items to select, options to checkout each item, and options to provide payment. For example, Balasubramanian teaches that “when shopping at a particular website, users select items to purchase by clicking on a link for a specific item” and “[t]he selected items are placed on reserve in some type of virtual shopping cart.” EX1005, ¶5. The user can also check out and provide some form of payment for the selected items. EX1005, ¶5. However, Balasubramanian does not discuss details about how these multiple selectable options would be arranged and displayed within the user interface of the user device. Thus, a POSA would have looked to the prior art for guidance as to specific user-interface formats that could be used to display the multiple selectable purchase options in Balasubramanian’s system.

172. In my view, one well-known technique for displaying multiple product options to a consumer on a computing device is via a carousel, such as the one taught by Burr. Burr teaches an e-commerce system that identifies and promotes “additional products items for purchase that have been specifically selected for the consumer,” based on the consumer’s personal information, and ranks the identified items “in order of likelihood of purchase by the user.” EX1016, ¶¶21, 59. Burr explains that the selected items “may be displayed in any of a number of ways including ... as a carousel of product information” such as “a

carousel or other mechanism that display[s] a limited, but scrollable subset of the most likely items to be purchased by the user.” EX1016, ¶¶47, 60. According to Burr, “[e]ach of the items displayed may have an associated button or other user interface element, to enable the user to add the associated product item to an electronic ‘shopping cart.’” EX1016, ¶¶47, 60. Burr describes that such a “carousel” permits the user to view additional recommended items in the collection. EX1016, ¶¶67-69.

173. In my opinion, a POSA would have been motivated to implement the multiple selectable options of Balasubramanian as a carousel of selectable options in a user interface, as taught by Burr. Such a modification would have a predictable result in a user interface that presents “a limited, but scrollable subset” of the options most relevant to the user. EX1016, ¶¶21, 60. Thus, such a “scrollable” carousel would be particularly advantageous in the context of Balasubramanian’s user device (e.g., a wireless cellular phone), which is well-known to have restricted display areas.

174. Furthermore, a POSA would have had a reasonable expectation of success in modifying the Balasubramanian-Chen-Sinha(-Bogineni) combinations further in view of Burr. Burr’s carousel is displayed on consumer devices including “a cell phone; a smart phone; a tablet, laptop, or desktop computer.” EX1016, ¶49. Balasubramanian’s user device “may be implemented as a mobile communication

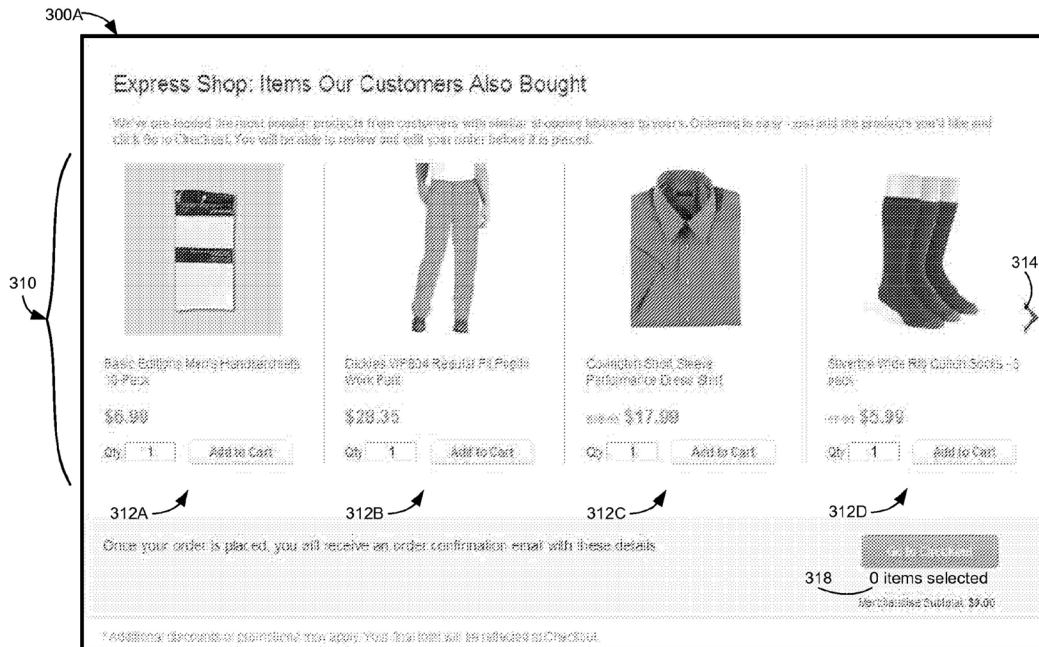
device (e.g., wireless cellular phone)” and thus is readily available to perform functions of Burr’s consumer device. EX1005, ¶23.

175. In the Balasubramanian-Chen-Sinha(-Bogineni) combinations, a POSA would have been motivated to display the multiple selectable options of Balasubramanian’s shopping cart on the user device “as a carousel or other mechanism that display[s] a limited, but scrollable subset of the most likely items to be purchased by the user.” EX1005, ¶5; EX1016, ¶¶47, 60, 65, 67. In my view, such a modification would enable Balasubramanian’s user to order the promoted items “with minimum additional effort” and with “a high likelihood of the recommended product items being of interest to, and therefore being purchased by the consumer.” EX1016, ¶21. Such a combination would merely amount to combining prior art elements according to known methods to yield the predictable (yet improved) result of presenting Balasubramanian’s customized, selectable options as “a carousel ... that display[s] a limited, but scrollable subset of” items. EX1016, ¶60.

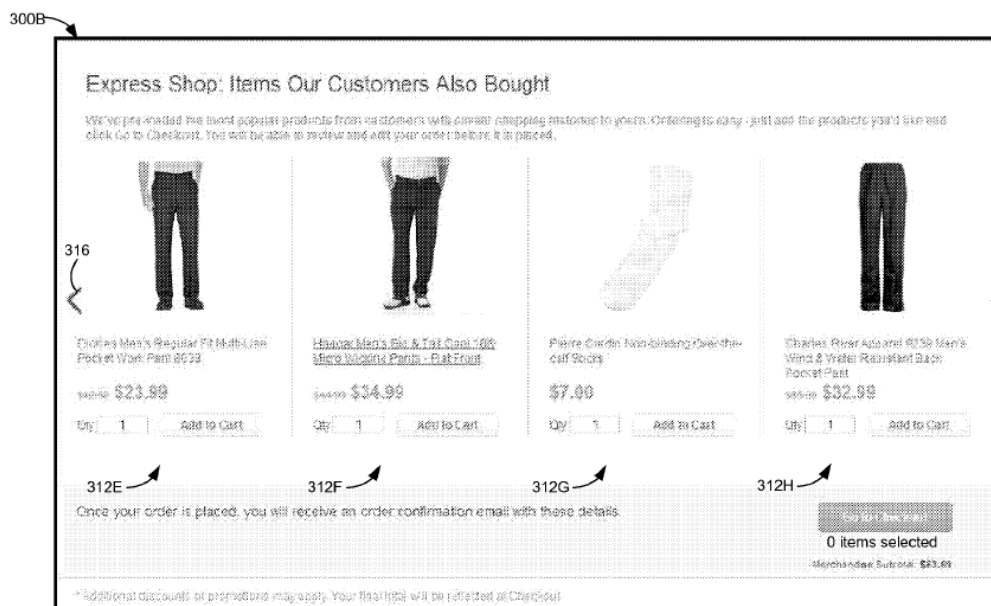
B. Claims 3, 9, and 16: wherein the content comprises a carousel of selectable options in a user interface of the mobile computing device, the selectable options including performing at least one secure transaction, scheduling an appointment, or resuming at least one abandoned user journey.

176. In my opinion, claims 3, 9, and 16 are rendered obvious by the Balasubramanian-Chen-Sinha(-Bogineni)-Burr combinations.

177. As I discuss above, Burr teaches using “a carousel or other mechanism that display[s] a limited, but scrollable subset” of items (*a carousel of selectable options*). EX1016, ¶60. Burr’s “carousel” is shown in FIGs. 3A-3B:



EX1016, FIG. 3A.



EX1016, FIG. 3B.

178. In the combination with Burr, Balasubramanian's shopping cart with multiple selectable options would be displayed as a "scrollable" "carousel" of the items. EX1016, ¶60; *supra*, Section XIV.A. As taught by Burr, each selectable option would be displayed with, for example, a product image, description, price, quantity box, and "[a]dd to cart" button, and arrows would enable the user to scroll among the options. EX1016, ¶¶47, 60, 67-69, FIGs. 3A-3B; *supra*, Section XIV.A. Thus, a POSA would have understood that, in the Balasubramanian-Chen-Sinha(-Bogineni)-Burr combinations, the shopping cart includes selectable options in the form of a carousel (*"the content comprises a carousel of selectable options"*).

C. Claims 4, 10, and 17: wherein the content is provided in the user interface and the user interface is within a browser executing on the mobile computing device.

179. In my opinion, claims 4, 10 and 17 are rendered obvious by the Balasubramanian-Chen-Sinha(-Bogineni)-Burr combinations.

180. As I discuss above, in the combination with Burr, Balasubramanian's shopping cart, including the carousel of selectable options, is displayed on the user's device (*"the content is provided in the user interface"*). See above, Section XIV.A-XIV.B. Balasubramanian further teaches that the user interface application of the user device may be implemented "as a web browser to view and search information available over the network 160" (*"the user interface is within a browser executing on the mobile computing device"*). EX1005, ¶25. In the

combination, the content is included in the RCS message (see Section XII.B.8) but may also be accessed in a browser as disclosed in Balasubramanian when a browser is available.

XV. GROUND 1D: THE BALASUBRAMANIAN-CHEN-SINHA(-BOGINENI)-JAKOBSSON COMBINATIONS RENDER OBVIOUS CLAIMS 6, 12, 19

A. Motivation to Combine

181. Dependent claims 6, 12, and 19 recite limitations related to sender verification and warning messages: “*determining a sender of the RCS message*” and, “*responsive to failing to authorize the determined sender of the RCS message, delivering, according to the scheduled delivery, an SMS message indicating a warning about the RCS message.*” The respective independent claims 1, 8, and 14 would have been obvious in view of the Balasubramanian-Chen-Sinha combination (Ground 1A) and/or the Balasubramanian-Chen-Sinha-Bogineni combination (Ground 1B), as I discuss above. *See* Sections XII, XIII. In my opinion, a POSA would have been motivated to modify the Balasubramanian-Chen-Sinha(-Bogineni) combinations in further view of Jakobsson to perform these features.

182. To start, Balasubramanian, Chen, Sinha, Bogineni, and Jakobsson are in the same field of electronic commerce and are thus analogous art to each other

and to the '165 patent. *Compare* EX1015, ¶¶52, 53, *with* EX1001, 1:35-41; EX1005, ¶¶2, 8, 20, 21.

183. As I discuss above, in the Balasubramanian-Chen-Sinha(-Bogineni) combination, the service provider schedules and sends the HTML documents of the shopping cart in the form of an RCS message. *See above*, Sections XII.B.8-9. Balasubramanian explains the website of the shopping cart that allows for “viewing, searching, and selecting of items, products, and/or services for purchase” can be provided by merchant devices. EX1005, ¶¶25, 33, 63. Thus, a POSA would have understood that the HTML documents of the shopping cart originate from the merchant devices. However, the Balasubramanian-Chen-Sinha combination does not discuss verifying the origination of the HTML documents of the shopping cart prior to sending them to the user. In my opinion, a POSA would have understood that such verification is important to protect users from fraudulent messages that appear to originate from a trusted merchant or service provider or to identify unwanted messages, such as spam. This need would have led a POSA to Jakobsson, which discloses such verification techniques.

184. Jakobsson explains that “unscrupulous individuals” can use electronic messaging “for nefarious purposes, such as to send unwanted advertising email (e.g., SPAM) and perpetrate fraud against victims.” EX1015, ¶2. To solve that issue, Jakobsson discloses “techniques for detecting a large class of phishing-

attempt communications (e.g., emails, SMSes, and other messages)” that impersonate “an authoritative entity (such as a bank or other financial services provider, shipping/postal carrier, cellular or other utility provider, etc.) to appear to be legitimate/trustworthy to a recipient.” EX1015, ¶33.

185. Jakobsson’s platform evaluates “the sender/originator of the communication (including email address and friendly/display name)” and assesses “whether the apparent sender matches the actual sender.” EX1015, ¶¶34, 48, 54, 100. When the sender cannot be verified, “a warning module” determines an action for the message, such as “erasing the message, marking up the message by adding a warning or explanation, flagging the message, [or] forwarding the message to a third party.” EX1015, ¶96. Jakobsson’s warning module “sends at least one warning to a user associated with message recipient 1508.” EX1015, ¶99.

186. Thus, in my opinion, a POSA would have been motivated to modify the service provider in the Balasubramanian-Chen-Sinha(-Bogineni) combinations to verify that the RCS message originates from the merchant device to prevent phishing-attempt communications as Jakobsson discloses.

187. Furthermore, a POSA would have had a reasonable expectation of success in combining the Balasubramanian-Chen-Sinha(-Bogineni) combinations with Jakobsson. Jakobsson explains that “communications are examined and classified by a classification platform 200, which can be operated as a single,

standalone device, and can also be at least partially incorporated into a variety of the components shown in FIG. 1.” EX1015, ¶35. In particular, “[t]he techniques herein can also be provided by service providers (e.g., operating embodiments of platform 200 or configuring their infrastructure to cooperate with embodiments of platform 200).” EX1015, ¶41. In the Balasubramanian-Chen-Sinha(-Bogineni) combinations, Balasubramanian’s service provider is capable of performing functions of Jakobsson’s platform 200, which is also a service provider. EX1015, ¶41.

188. Finally, Jakobsson explains that “[t]he invention can be implemented in numerous ways, including as a process; an apparatus; a system; a composition of matter; a computer program product embodied on a computer readable storage medium; and/or a processor, such as a processor configured to execute instructions stored on and/or provided by a memory coupled to the processor.” EX1015, ¶31. As I discuss above, Balasubramanian’s service provider includes a processor, a memory, and can be implemented as a computer-readable storage medium.

Sections XII.E, XII.G. Thus, a POSA would have understood that Balasubramanian’s service provider is readily available to perform functions, such as scanning and filter, disclosed in Jakobsson. In my opinion, a POSA would not have experienced any unreasonable technical hurdles in making this combination, which simply involves implementing a known verification technique into a known

system to yield the predictable (yet improved) result of “detecting a large class of phishing-attempt communications.” EX1015, ¶33.

B. Claims 6, 12, and 19: further comprising: determining a sender of the RCS message; responsive to failing to authorize the determined sender of the RCS message, delivering, according to the scheduled delivery, an SMS message indicating a warning about the RCS message.

189. In my opinion, the Balasubramanian-Chen-Sinha(-Bogineni)-Jakobsson combinations teach claims 6, 12, and 19.

190. Jakobsson discloses “techniques for detecting a large class of phishing-attempt communications (e.g., emails, SMSes, and other messages)...” EX1015, ¶33. In particular, “when platform 200 receives a communication for processing,” information such as “the sender/originator of the communication” is evaluated. EX1015, ¶48. As I discuss above, a POSA would have been motivated to modify Balasubramanian’s service provider to perform the functions of the platform 200, such as evaluating the sender or originator of the RCS message (*“determining a sender of the RCS message”*). Section XV.A.

191. Furthermore, platform 200 performs an assessment to verify the sender or the originator of the communication. EX1015, ¶¶54, 96. If the sender is not authorized, the process transfers to a warning module (*“responsive to failing to authorize the determined sender of the RCS message”*). EX1015, ¶¶96, 99, claim 1. The warning module sends “at least one warning to a user associated with [a]

message recipient 1508” “by email, by SMS or conveyed in another appropriate electronic manner” (“*delivering, ..., an SMS message indicating a warning about the RCS message*”). EX1015, ¶99, claim 2. Jakobsson explains that the message recipient 1508 “corresponds to an account or mail box where a message will be delivered.” EX1015, ¶99. Thus, a POSA would have understood that the warning module sends the at least one warning to the user.

192. Finally, Jakobsson explains that the warning can describe the message that was filtered out, statistics related to the message and the message sender, and “other information related to or explaining scam messages.” EX1015, ¶99. When this occurs, the message may not be delivered, and the warning is sent instead. In this instance, a POSA would have found it obvious to send the warning based on the schedule of delivery of the message so that the user has the information of the not delivered message (“*delivering, according to the scheduled delivery*”). *Id.*

XVI. GROUND 2A: THE SPINDLER-LONG-WANG COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 7-8, 13-15, AND 20

A. Motivation to Combine

193. It is my opinion that a POSA would have been motivated to modify Spindler in view of Long and Wang to arrive at the computer-implemented method, system, and non-transitory computer-readable storage medium claimed by the ’165 patent.

194. Spindler, Long, and Wang are in the same field of endeavor as each other and the problem addressed by the '165 patent. The '165 patent purports to address the problem that “the popularity of such online transactions has resulted in increased incidents of fraud and other criminal activity,” which “constrains people’s willingness to conduct transactions via networks,” and that a “one-size-fits-all approach ... often results in a cumbersome user experience.” EX1001, 1:41-54. The '165 patent claims priority to U.S. Patent App. No. 17/279,188 to Spindler et al., which published as U.S. Patent Application Publication 2022/0006895 (“Spindler” herein). Spindler is identically directed towards “techniques for performing transactions using dynamically generated customized webpages” (e.g., “purchasing products or services”) that may include authenticating a user’s electronic device (e.g., a computer or a cellular telephone). EX1006, ¶¶2-3, 9, 31. Wang is directed towards “[o]n-line message distribution/publishing” in the context of e-commerce. EX1014, ¶12. Long is likewise directed towards messaging-based subscriptions and payments initiated from a website viewed on a mobile device. EX1013, 2:48-51.

195. Spindler teaches a technique for dynamically generating customized content for a subscriber that “may provide an efficient and secure way for the individual to receive relevant content and to conduct one or more transactions.” EX1006, ¶46. Spindler’s technique alleviates “a cumbersome user experience” in

which “visitors are forced to navigate through the content on a webpage or website in an attempt to find relevant or interesting information.” EX1006, ¶6. Such an experience “restricts use and, thus, people’s willingness to conduct transactions.” EX1006, ¶6. However, as I discuss above, Spindler does not disclose “*generating a ... message comprising the content.*” See above, Section XI. Nonetheless, based on my experience, a POSA would have known that not all mobile devices are equipped with web browsers and that user devices can have connection issues (such as weak or temporarily lost connections), thus, mobile devices may at times be restricted from accessing hypermedia content on the internet. See Chen (EX1011); see also Section XII.A. Thus, it is my opinion that a POSA would have looked to the prior art for guidance as to specific techniques for extending Spindler’s teachings to sending (or causing to have sent) the content to mobile devices without relying on a web browser. Long is such a reference.

196. Like Spindler, Long recognizes that a user experience that causes the user to “pause[] its previous activities ... on the mobile device and [be] redirected to the vendor’s application or website” to complete a purchase is “time-consuming and burdensome” and “results in many users leaving the purchase before the transaction is completed.” EX1013, 1:32-39. To avoid this, Long discloses a technique of “dynamic application deeplinking to transition from one user interface to another user interface at a mobile device.” EX1013, 1:40-44. Such deeplinking

allows a user to “click[]” “a link” on the user’s mobile device, thereby initiating “a custom-rendered deeplink” that opens “a mobile messaging application ... on [the] user’s mobile device.” EX1013, 3:4-9. The mobile messaging application may be provided “with the purchase information pre-populated for the user to initiate a purchase,” to thereby allow the user to “initiate a process to purchase a product or service from the recipient when the message is sent,” thereby simplifying the transaction to a sequence of only two clicks by the user. EX1013, 3:40-45, 3:65-4:2, 2:63-67. Long describes that this process results in an “improved user experience and engagement when interacting with the mobile device.” EX1013, 1:40-44.

197. More specifically, Long, like Spindler, describes a technique for “completing mobile subscriptions, communications, and/or purchases.” EX1013, 2:48-54. Long’s technique begins when a user of a mobile device clicks a link in a promotional message on “a mobile website, a mobile application, a link, an email, a mobile advertisement, a text message, and/or the like.” EX1013, 3:1-4, 6:57-60. This link may be “a custom-rendered deeplink.” EX1013, 3:4-7. Clicking the deeplink causes a server to “initiate a messaging application at the user mobile device 150 with a message pre-populated with purchase or subscription information.” EX1013, 7:4-8. The information for the message “can be communicated to the messaging application using the deeplink” and may “include

a shopping cart identifier, a product identifier, a product name, a product description, a price of each product, a total price for the shopping cart, and/or the like.” EX1013, 3:19-20; 15:28-31. Thus, in my opinion, in Long, the message generated at the messaging application itself comprises the content of interest (e.g., the product and purchase information), which is distinct from the link (i.e., the action) that the user selects to cause that message to be generated.

198. It is my opinion that a POSA would have been motivated to modify Spindler in view of Long for the predictable result of an e-commerce technique having reduced user friction and increased conversion of sales. Long, like Spindler, seeks to improve the user experience in e-commerce. EX1013, 1:32-44; EX1006, ¶¶4-6. Like Spindler, Long’s technique sends a link with customized content to a user’s mobile device. EX1013, 6:57-66; EX1006, ¶¶34-35. Like in Spindler, the activation of this link provides the user with the opportunity to “subscribe to a messaging-based marketing service” or “purchas[e] a product or service, provided by the client.” EX1013, 7:11-16; EX1006, ¶37. The difference between Long and Spindler is that, whereas Spindler describes that the link provides a user access to a “customized second document” that “may allow completion of the given transaction,” EX1006, ¶37, Long’s technique generates a message that itself contains the customized transaction content in the user’s mobile messaging

application, so that the user can complete the transaction with just one more click.

EX1013, 15:22-37.

199. It is also my opinion that a POSA would have had a reasonable expectation of success in modifying Spindler in view of Long because the modification would have involved only the routine application of Long's well-known "click-to-text" communication scheme to the application of "purchasing one or more tickets to an upcoming event" described by Spindler. EX1013, 7:4-17; EX1006, ¶37. Long's communication scheme requires nothing more than the electronic device 110, client 404, and ADDP 410 already disclosed by Spindler. EX1006, ¶¶31, 80-81.

200. In the Spindler-Long combination, in my opinion, a POSA would have been motivated to implement Spindler's "link to the customized second document" that is sent in the text message to the user as Long's deeplink that, when activated, would cause the user mobile device to open the messaging application and pre-populate a message with the content (e.g., event tickets, shopping cart information, etc.) from the customized second document. EX1006, ¶¶34-35; EX1013, 15:22-37. In my opinion, a POSA would have understood that such a modification would allow the user to "initiate a process to purchase a product or service from the recipient when the message is sent," as taught by Long, instead of simply linking to a webpage that would then allow the user to complete

a transaction, as in Spindler. EX1013, 3:40-45. A POSA, in my opinion, would have understood that this modification would avoid a user having to “pause[] its previous activities (e.g., viewing a website, reading an email) on the mobile device” to be “redirected to the vendor’s application or website to purchase the products and services via many user input[s].” EX1013, 1:33-37. As a result, in my opinion, a POSA would have known that such a modification would result in “improved user experience and engagement,” as explicitly taught by Long. EX1013, 1:40-44.

201. In the Spindler-Long combination, in my opinion, it also would have been obvious to a POSA to perform the user authentication and verification “responsive to receiving the requested authorization data”. EX1001, claim 1. Spindler conditions the provision of transaction content on successful authentication: “a purchase request received from electronic device 110-1 and associated with the customized second document may be rejected by computer 112 if the authentication information is not stored on electronic device 110-1,” and Spindler’s computer confirms “that the telephone number is included in a data structure ... prior to dynamically generating the customized webpage.” EX1006, ¶¶37-38. This authentication information is checked when the user activates the link: “a fraudulent user that does not have the ‘hot’ cookie will not be able to access transaction information in the customized webpage or conduct a transaction

when they activate the link.” EX1006, ¶78. Long discloses the same sequence: “in response to receiving the message 513, the click-to-text server can authenticate the user based on a user identifier,” and Long’s server provides the user with transaction content only after that authentication. EX1013, 15:58-16:2; *see also* EX1013, 16:17-22. It is my opinion that a POSA would have been motivated to preserve this authenticate-first ordering in the combination—performing Spindler’s verification upon activation of Long’s deeplink, before the message comprising the content is generated and rendered at the user’s device—to prevent the “fraud and other criminal activity” that “undermines people’s trust,” consistent with Spindler’s stated purpose. EX1006, ¶4; *see also above*, Section VIII.E.

202. As I further discuss above, Spindler also does not disclose determining “*a classification of the at least one authorized recipient*” and scheduling “*delivery of the RCS message*” “*using a machine learning model and based on the determined classification.*” *See above*, Section XI. Nonetheless, based on my experience, the use of machine learning to schedule and deliver marketing messages for e-commerce was well-known in the art prior to the September 25, 2024 priority date. *See above*, Section VIII.G. Further, based on my experience, it was known that using machine learning techniques provided many benefits, including more relevant content for subscribers, better targeting of potential transactions to subscribers, and improved engagement and reaction rates. *See*

EX1014, ¶¶46-48 (relevancy threshold), 40-43 (targeting relevant user group), 53 (adjusting relevancy levels). Thus, it is my opinion that a POSA would have been motivated to further incorporate such well-known machine learning techniques into the Spindler-Long combination and would have looked to the prior art for guidance as to specific techniques for the use of machine learning to schedule and deliver promotional messages. Wang is such a reference.

203. Wang describes that “[m]essage distribution platforms may strive to improve the experience of clients and users involved in the message distributions through the platform.” EX1014, ¶13. To this end, Wang describes “[t]echniques for machine learning a message distribution platform.” EX1014, ¶14. Wang’s platform may be “provided with various data regarding a user relevant to on-line shopping activities,” such as “details of a user’s on-line shopping activities,” “geo-targeting information,” “social media activities,” “group shopping,” etc. EX1014, ¶17. This information may then be used to determine “a relevancy level between a user and an advertisement content.” EX1014, ¶48. Users may be grouped together and scheduled to receive delivery of one or more advertisements based on the relevancy level. EX1014, ¶¶39, 41. In addition, “adjusting unit 114 may determine an adjusted grouping criterion to form a new target user group,” and the “relevancy score threshold of each advertisement item” may be “dynamically adjust[.]” EX1014, ¶¶55, 59.

204. It is my opinion that a POSA would have been motivated to modify the Spindler-Long combination in view of Wang for the predictable result of an e-commerce technique that better optimizes advertising messages sent to users. *See* EX1014, ¶13. Wang is directed towards providing advertising messages to users of mobile devices. EX1014, ¶49. Spindler is directed towards providing event information to subscribers via a mobile device. EX1006, ¶¶11, 30. Thus, in my opinion, a POSA would have realized that the message comprising the content in the Spindler-Long combination could be scheduled and delivered using a machine learning algorithm, such as the one disclosed by Wang, to thereby optimize the messages sent to the subscribers in Spindler's system.

205. It is also my opinion that a POSA would have had a reasonable expectation of success in modifying the Spindler-Long combination further in view of Wang because the modification would have involved only the application Wang's machine learning and scheduling and distribution scheme to the subscription-based system described by the Spindler-Long combination. Here, Wang specifically describes that such machine learning and scheduling and distribution are applicable to users of, for example, a "Mobile Computing Device 210-3" and that "a user may have multiple user devices 210 available to receive an advertisement message." EX1014, ¶¶49, 50.

206. In the Spindler-Long-Wang combination, in my opinion, a POSA would have been motivated to schedule delivery of the message comprising the content using Wang's techniques of determining "a relevancy level between a user and an advertisement content based at least in part on the historical shopping data and/or contextual information of a user," determining "a target group of users to deliver the advertisement item," and, based on the target group determination, to determining "a specific display slot to deliver the advertisement item to [the] target user group." EX1014, ¶¶41-42, 48. In my opinion, a POSA would have understood that the use of such grouping, scheduling, and delivery of the message comprising the content in the subscription service system of Spindler-Long would "improve the experience of clients and users involved in the message distributions through the platform." EX1014, ¶13. In the combination, scheduling unit 130 would determine the delivery schedule for that message, including its time frame, and load balancing unit 112 would then control delivery of the message according to that schedule. EX1014, ¶¶40, 44.

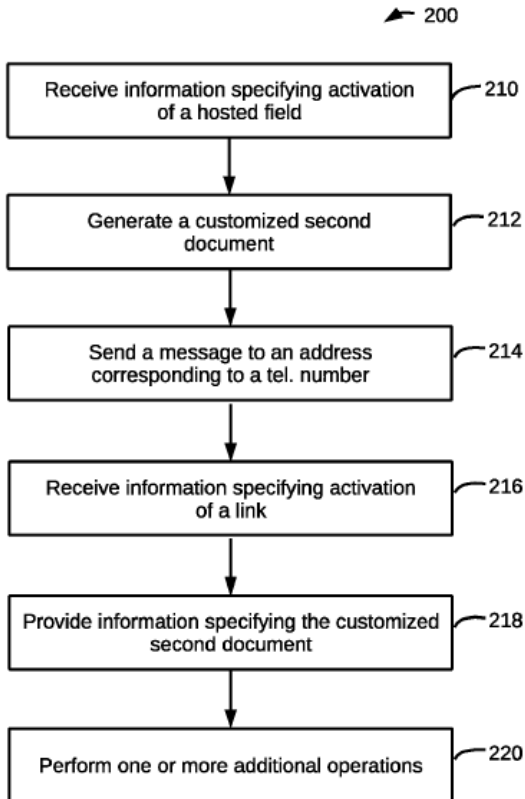
B. Independent Claim 1

1. [1.P] A computer-implemented method comprising:

207. In my opinion, Spindler discloses the preamble.

208. Specifically, Spindler's "method 200" "may be performed by a computer" ("*computer-implemented method*"). EX1006, ¶48, FIG. 2. By

performing method 200, Spindler's cloud-based computer 112 "dynamically generates [the] customized second document." EX1006, ¶¶28, 31, 48-51.



EX1006, FIG. 2.

2. [1.A] receiving a request to provide content to at least one authorized recipient;

209. In my opinion, Spindler discloses element [1.A].

210. First, in my opinion, Spindler discloses "*at least one authorized recipient*." The '165 patent describes that an "*authorized recipient*" "may be a subscriber that has authorized marketing and/or other promotional type messages." EX1001, 40:19-23. Spindler's computer "receives information" from a user ("*authorized recipient*") that "specifies a willingness to receive one or more

messages from the computer,” which Spindler refers to as “opt-in.” EX1006, ¶¶28, 32, 88. As a result of this “opt-in,” Spindler’s subscriber customer receives promotional messages related to “transactions (such as one or more upcoming events) of interest to the individual or subscriber.” EX1006, ¶34.

211. Second, in my opinion, Spindler discloses “*receiving a request to provide content*” to the subscriber customer. When a subscriber customer indicates “they would like to receive text messages,” this “input may be provided to the ADDP.” EX1006, ¶71. In response, Spindler’s computer generates and sends the requested messages, which provide “a link to the customized document showing events of interest” (“*content*”). EX1006, ¶¶34, 72. Thus, it is my opinion that Spindler’s computer receives the subscriber customer’s request to be provided with text messages regarding content of interest (“*receiving a request to provide content to at least one authorized recipient*”).

3. [1.B] generating a customized message comprising at least one action associated with the content;

212. In my opinion, the Spindler-Long combination teaches element [1.B].

213. First, in my opinion, Spindler discloses “*generating a ... message comprising at least one action associated with the content*.” After receiving the request, Spindler’s computer “dynamically generates a customized second document that includes information about one or more transactions (such as one or more upcoming events) of interest to an individual (or potential subscriber

customer) associated with the telephone number.” EX1006, ¶¶28, 34, 49. The information included in the customized second document is “*the content*.”

Spindler’s computer sends a message to the subscriber customer, “where the message includes a link to the customized second document.” EX1006, ¶50. The link is an “*action*” associated with that content: “[t]he message may include an actionable item, e.g., a link to purchase tickets or view a customized webpage.”

EX1006, ¶84; *see also above*, Section VIII.B. Thus, it is my opinion that Spindler’s message “*compris[es] at least one action*” (the link/actionable item) that is “*associated with the content*” (the customized document and the transactions of interest it contains). In the Spindler-Long combination, Spindler’s link is implemented as Long’s deeplink, which remains the claimed “*action*” that is associated with, but distinct from, the “*content*” (the transaction information of interest), which is pre-populated into the message generated upon activation of the deeplink. *See above*, Section XVI.A; *see below*, element [1.E.3].

214. Second, in my opinion, Spindler’s message is also “*a customized message*.” The message includes “a unique e-commerce micro-website (e.g., a UEMWEB) abstract link” generated for the specific subscriber customer. EX1006, ¶82. The linked webpage is “created de novo for each subscriber customer” and “is tailored, at a particular time, to the specific interests of the individual or subscriber

customer.” EX1006, ¶¶40, 68. Because each message includes a unique, subscriber-specific link, in my opinion, the message is “*a customized message*.”

215. *Third*, in my opinion, a POSA would have understood that, to send the message to the subscriber customer, Spindler’s computer first “*generat[es]*” the message. *See, e.g.*, EX1006, ¶60, FIG. 3 (processor 320 instructs interface circuit 318 to send message 326, “such as an SMS message,” including the link).

4. [1.C] causing a transmission of the customized message to a mobile computing device associated with the at least one authorized recipient;

216. In my opinion, Spindler discloses element [1.C].

217. Spindler’s computer “*caus[es] transmission of the customized message*” by “sending a message ... to an address corresponding to the telephone number.” EX1006, ¶¶34, 50 (operation 214). The telephone number is “associated with electronic device 110-1” of the subscriber customer, which may be “a cellular telephone,” “a tablet computer,” or other mobile device (“*a mobile computing device associated with the at least one authorized recipient*”). EX1006, ¶¶31-32; *see also* EX1006, ¶106. For example, “the message may include [an SMS] message (which is sometimes referred to as a ‘text message’)” that is received and displayed at the subscriber customer’s cellular telephone. EX1006, ¶¶34-35, 83.

5. **[1.D] responsive to receiving an indication associated with selecting the at least one action, requesting authorization data corresponding to the at least one authorized recipient;**

218. In my opinion, Spindler discloses element [1.D].

219. Spindler discloses “*receiving an indication associated with selecting the at least one action.*” “If the individual or subscriber customer **activates the link, electronic device 110-1 may provide ... information specifying activation of the link to computer 112.**” EX1006, ¶¶35, 51 (operation 216) (emphasis added). When the link is activated, “processor 312 may **provide information 332**” that “**specif[ies] activation of the link**” by the user. EX1006, ¶¶61-62 (emphasis added). In my opinion, Spindler’s information specifying activation of the link is “*an indication associated with selecting the at least one action*” (the link/actionable item).

220. “*Responsive to*” receiving such an indication, in my opinion, Spindler’s computer “*request[s] authorization data corresponding to the at least one authorized recipient.*” After receiving the “information specifying activation of the link” (“*responsive to receiving an indication associated with selecting the at least one action*”), and in delivering the customized content, Spindler’s ADDP may perform a “security check and hold.” EX1006, ¶¶35-36, 90. Here, the subscriber may be required to provide various types of authorization data, including, for example, a “4-digit PIN code” that is sent the subscriber “via MMS/SMS” and a

“hot cookie” that has been “stored locally on the device of the subscriber customer for a defined period of time.” EX1006, ¶¶90, 92. Spindler may also “require a client ID 502, a client keyword 504, a client third-party API platform identifier, and a subscriber customer telephone number 422.” EX1006, ¶91. Successfully authenticating the subscriber by one or more of these methods may result in “an access link [being] generated 512.” EX1006, ¶92. Thus, it is my opinion that Spindler’s PIN code and hot cookie are “*authorization data*” corresponding to the subscriber (“*authorized recipient*”).

6. [1.E.1] responsive to receiving the requested authorization data: verifying that the authorization data correlates to an identity of the at least one authorized recipient or an identity of the mobile computing device;

221. In my opinion, Spindler discloses element [1.E.1].

222. After (“*responsive to*”) receiving the requested authorization data (e.g., the PIN code input into the purchase form or the hot cookie), in my opinion, Spindler’s system verifies the identity of the subscriber and/or the electronic device. For example, Spindler explains that “the identity of the subscriber customer transmitting the form is confirmed” via 2FA form 616 (“*verifying that the authorization data correlates to an identity of the at least one authorized recipient*”) and “[o]nce the identity is confirmed using the hot cookie,” which is stored on the subscriber’s electronic device, (“*verifying that the authorization data correlates to ... an identify of the mobile computing device*”) “the commerce is

validated ..., which may allow financial information (such as credit-card charges) to process.” EX1006, ¶93. Thus, Spindler discloses verifying both the identity of the authorized recipient (via the 2FA form) and the identity of the mobile computing device (via the hot cookie). Authentication techniques that distinguished between the identity of a subscriber and the identity of the physical device were well known before 2018. *See above*, Section VIII.E.

7. [1.E.2] determining, based on the identity of the at least one authorized recipient or the identity of the mobile computing device, a classification of the at least one authorized recipient

223. In my opinion, the Spindler-Long-Wang combination renders obvious element [1.E.2].

224. As I discuss above, in my opinion, it would have been obvious to a POSA to modify the Spindler-Long combination in view of Wang to schedule delivery of the message comprising the content to subscribers. *See above*, Section XVI.A. Wang describes that the scheduling of messages may be to “a target group of users” that is “determine[d] based on a grouping criterion.” EX1014, ¶41. Wang’s “grouping criterion” (“*classification*”) “may include a threshold on a relevancy level or a relevancy score of a user to a content of the advertisement item.” EX1014, ¶41. Thus, it is my opinion that Wang teaches determining “*a classification of the at least one authorized recipient.*”

225. In the Spindler-Long-Wang combination, in my opinion, the determining of the classification is “*based on the identity of the at least one authorized recipient or the identity of the mobile computing device.*” To determine the relevancy level *for each user*, Wang’s historical behavior determination unit 142 “collect[s] historical shopping data of [the] user,” including “the user’s past shopping behavior/experience.” EX1014, ¶¶47, 63, 66. Because this information is *particular to each user*, in my opinion, a POSA would have understood, or at least found it obvious, that such information would be associated with the identity of the user. Accordingly, it is my opinion that Wang’s “grouping criterion” that is determined based on a user’s historical shopping behavior is at least a classification that is “*based on the identity of the at least one authorized recipient.*” Classifying recipients based on identity-linked profile information and shopping history was well known before 2018. *See above*, Section VIII.F.

8. [1.E.3] generating a Rich Communication Service (RCS) message comprising the content

226. In my opinion, the Spindler-Long combination renders obvious element [1.E.3].

227. As I discuss above for element [1.B], Spindler’s “computer 112 may **send a message** to an address corresponding to the telephone number, where **the message includes a link to the customized second document.**” EX1006, ¶34 (emphasis added). In the Spindler-Long combination, Spindler’s link is

implemented as Long's deeplink such that, when the user activates the link, a messaging application is opened at the user's mobile device "with a message pre-populated with purchase or subscription information." EX1013, 3:4-9, 7:4-8; *see above*, Section XVI.A. The pre-populated purchase information may "include a shopping cart identifier, a product identifier, a product name, a product description, a price of each product, a total price for the shopping cart, and/or the like." EX1013, 15:28-31. This purchase information corresponds to the transactions of interest contained in Spindler's customized second document ("*the content*"). EX1006, ¶¶28, 34, 49; *see above*, element [1.B]. Thus, in my opinion, in the combination, the generated message does not merely include a link to the content; rather, the message is itself pre-populated with the content and is therefore a "*message comprising the content.*" In my opinion, a POSA would have understood, or at least found it obvious, that the message pre-populated with the content is "*generat[ed]*" at the user's mobile device when activation of Long's deeplink causes the messaging application to open and pre-populate the message, as claimed.

228. Moreover, Long discloses that the click-to-text server itself generates and sends messages comprising the content to the user's mobile device. Long's server can "generate a response message including the URI of the second user interface and send the response message to the user mobile device to cause the

second user interface to open with message and phone number pre-populated.”

EX1013, 10:23-27; *see also* EX1013, Abstract (server “sending a HTTP response message including the URI of the second user interface and the purchase information” to the mobile device). Further, “in response to receiving the message 513, the click-to-text server can authenticate the user based on a user identifier” and determine whether “the user is a new customer of the client or an existing customer of the client.” EX1013, 15:58-16:2. If the user is an existing customer, Long’s server sends, “via the second user interface, a message(s) 562 including the product information in the shopping cart, and a message 563 informing the user of the shipping information and the payment information on file associated with the user.” EX1013, 16:17-22, FIG. 5G; *see also* EX1013, 17:37-43, FIG. 6G (message 609 “including the product information in the shopping cart, the shipping information and the payment information on file associated with the user”). In my opinion, each of these messages (1) is “*generat[ed]*” after Long’s server authenticates the user, (2) “*compris[es] the content*” (e.g., the product, price, shipping, and payment information), and (3) is delivered to the user’s mobile device. Thus, it is my opinion that, whether the message comprising the content is pre-populated at the mobile device upon activation of the deeplink or generated and sent by the server, the Spindler-Long combination renders obvious generating

a “*message comprising the content*” responsive to authorization of the user, as claimed.

229. In either implementation, in my opinion, the message comprising the content is generated “*responsive to receiving the requested authorization data*,” as claimed. Claim 1 recites the generating of the RCS message as one of the steps performed “*responsive to receiving the requested authorization data*,” together with the verifying and determining steps of elements [1.E.1]-[1.E.2]. EX1001, claim 1. In the Spindler-Long combination, in my opinion, that ordering is satisfied. Spindler rejects a purchase request when the required authentication information is not stored on the recipient’s device and confirms that the recipient’s telephone number is included in its data structure “prior to dynamically generating the customized webpage” from which the content is drawn. EX1006, ¶¶37-38. Long’s click-to-text server likewise authenticates the user upon receiving the purchase request and only then transmits the messages comprising the cart, shipping, and payment information. EX1013, 15:58-16:2, 16:17-22. In my opinion, a POSA implementing the combination, therefore, would have generated the message comprising the content only after the recipient was authorized. *See above*, Section XV.A.

230. Further, in my opinion, the Spindler-Long combination renders obvious that the generated message comprising the content is an “[RCS] message.”

In the combination, the message comprising the content appears in the native messaging application of the user's mobile device under either implementation: Long explains that "a proper deeplinking ... can direct the user to the native text messaging application." EX1013, 10:36-40; *see also* EX1013, 3:4-9, 7:4-8. Based on my experience, a POSA would have known that RCS was one of only a finite number of text-messaging protocols in widespread use in such native messaging applications prior to the '165 patent, alongside, for example, SMS and MMS. *See above*, Sections VIII.A, VIII.D. At minimum, it is my opinion that a POSA implementing the Spindler-Long combination therefore would have found it obvious to implement the message generated in the mobile device's messaging application as a well-known RCS message in order to obtain the additional functionality that RCS provides. At a minimum, in my opinion, a POSA would have found it obvious to try the RCS protocol as one of the finite number of known, predictable options for messages generated in a native messaging application.

9. [1.F] scheduling, using a machine learning model and based on the determined classification, delivery of the RCS message to the mobile computing device.

231. In my opinion, the Spindler-Long-Wang combination renders obvious element [1.F].

232. First, in my opinion, the Spindler-Long-Wang combination renders obvious “*scheduling ... delivery of the RCS message to the mobile computing device.*” Wang describes a message distribution system in which a message is scheduled for delivery “to users of a user group.” EX1014, Abstract, ¶50. Wang’s scheduling unit 130 “is configured to determine an advertisement delivery schedule,” which “may include at least one of a time frame, a display slot and a delivery budget for delivering the advertisement.” EX1014, ¶40. Wang’s delivery schedule specifies a “delivery manner,” which “may include a time frame and a display slot for delivering the advertisement item to a user of the target user group.” EX1014, ¶50. A “load balancing unit 112 causes the advertisement to be delivered to users of the target user group through relevant application(s) based on the received delivery schedule.” EX1014, ¶51. Wang further describes that the “advertisement item” may be a message delivered to a user’s “Mobile Computing Device 210-3.” EX1014, ¶49. In the Spindler-Long-Wang combination, in my opinion, the RCS message comprising the content (*see above*, element [1.E.3]) would be scheduled for delivery to the user’s mobile computing device (e.g., a smart phone), as taught by Wang. Wang thus separates the scheduling of delivery from the delivery itself: scheduling unit 130 determines the delivery schedule, including the time frame, and load balancing unit 112 then “control[s] delivery of

the advertisement item based [on] a delivery schedule received from scheduling unit 130.” EX1014, ¶¶40, 44, 51.

233. This scheduled delivery is consistent with the Spindler-Long combination. As I explain above regarding element [1.E.3], in my opinion, the message comprising the content is “delivered” to the mobile computing device when it is made to appear at the device, i.e., rendered, pre-populated, in the device’s messaging application upon activation of Long’s deeplink. EX1013, 3:4-9, 7:4-8; *see above*, element [1.E.3]. In the combination, in my opinion, Wang’s machine-learning scheduler determines when that delivery occurs. EX1014, ¶¶50-51.

234. Second, in my opinion, the Spindler-Long-Wang combination renders obvious that the delivery is scheduled “*using a machine learning model and based on the determined classification.*” Wang describes that the entire system comprises “machine learning” to schedule and deliver messages to groups of users. EX1014, Title, Abstract, ¶¶14, 40. Wang further describes that the scheduling of messages may be to “a target group of users” that is “determine[d] based on a grouping criterion.” EX1014, ¶41; *see above*, Section XVI.B.7. Thus, it is my opinion that Wang teaches a machine learning system that determines classifications of users and based on that classification, generates a delivery schedule for advertisement messages. *See also above*, Section VIII.G.

235. As I discuss above, in my opinion, it would have been obvious to modify Spindler in view of Wang. In my opinion, the resulting combination would be the scheduling of delivery of the message comprising the content using a machine learning model to classify users into various groups based on relevancy levels between each user and the advertisement, as taught by Wang.

C. Claim 2 The computer-implemented method of claim 1, further comprising: delivering the RCS message to the mobile computing device according to the scheduled delivery.

236. In my opinion, the Spindler-Long-Wang combination renders obvious claim 2.

237. The Spindler-Long-Wang combination, in my opinion, renders obvious “*delivering the RCS message to the mobile computing device according to the scheduled delivery.*” Wang describes that, after the messages are scheduled, “load balancing unit 112 **causes the advertisement to be delivered to users** of the target user group through relevant application(s) **based on the received delivery schedule.**” EX1014, ¶51. Wang further describes that the “advertisement item” may be a message delivered to a user’s “Mobile Computing Device 210-3.” EX1014, ¶49. In the Spindler-Long-Wang combination, in my opinion, the RCS message comprising the content (*see above*, element [1.E.3]) would be delivered to the user’s mobile computing device (e.g., a smart phone), i.e., caused to appear in

the device's messaging application, according to the scheduled delivery, as taught by Wang.

D. Claim 7 The computer-implemented method of claim 1, wherein the at least one action associated with the content comprises one or more options to: perform a transaction, select a suggested response, return to a prior browsing session, or return to a prior application session.

238. In my opinion, Spindler discloses claim 7.

239. The activation of Spindler's link implemented as Long's deeplink (*"the at least one action associated with the content"*) results in the computer sending "information specifying the customized second document to electronic device 110-1" to the user device, which "may allow **completion of a given transaction** ... such as purchasing one or more tickets to an upcoming event." EX1006, ¶¶36, 52. Thus, it is my opinion that at least Spindler's link implemented as Long's deeplink *"comprises one or more options to: perform a transaction."*

E. Independent Claim 8

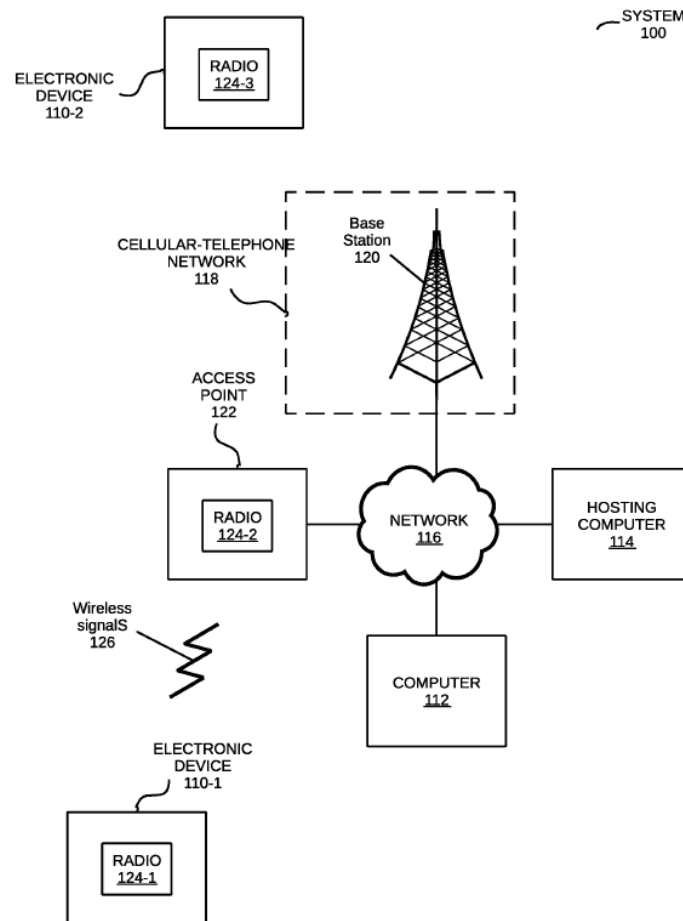
240. I understand that independent claim 8 recites "[a]n automated messaging subscription and distribution system" comprising "a processor" and "memory configured to store program instructions" that, when executed by the processor, cause the processor to perform operations substantially the same as those recited in claim 1.

1. [8.P] An automated messaging subscription and distribution system, the system comprising:

241. In my opinion, Spindler discloses the preamble.

242. Spindler discloses **system 100**, which includes electronic devices 110 (e.g., a cellular telephone), hosting computer 114, network 116, and cloud-based computer 112 that may perform method 200. EX1006, ¶¶31, 48, FIG. 1.

243. In my opinion, Spindler's system is an "*automated messaging subscription and distribution system*." Spindler's subscriber customers subscribe to receive text messages: a customer opts in by activating the hosted field ("they may select a box that indicates 'yes' they would like to receive text messages"), and "[w]hen opt-in occurs, the customer becomes a subscriber" that is "added to the Amplify data structure" ("*subscription*"). EX1006, ¶¶71, 88. The ADDP automatically generates and distributes messages to subscriber customers. EX1006, ¶¶71-73.



EX1006, FIG. 1.

2. [8.A] a processor; and

244. In my opinion, Spindler discloses element [8.A].

245. Spindler's computer 112 includes a **processor 320** ("*a processor*"), which "may dynamically generate a customized second document 322" and "may instruct 324 interface circuit 318 to send a message 326 ... to an address corresponding to the telephone number." EX1006, ¶¶59-60, FIG. 3; *see also* EX1006, ¶97 (processing subsystem 810 "can include one or more microprocessors").

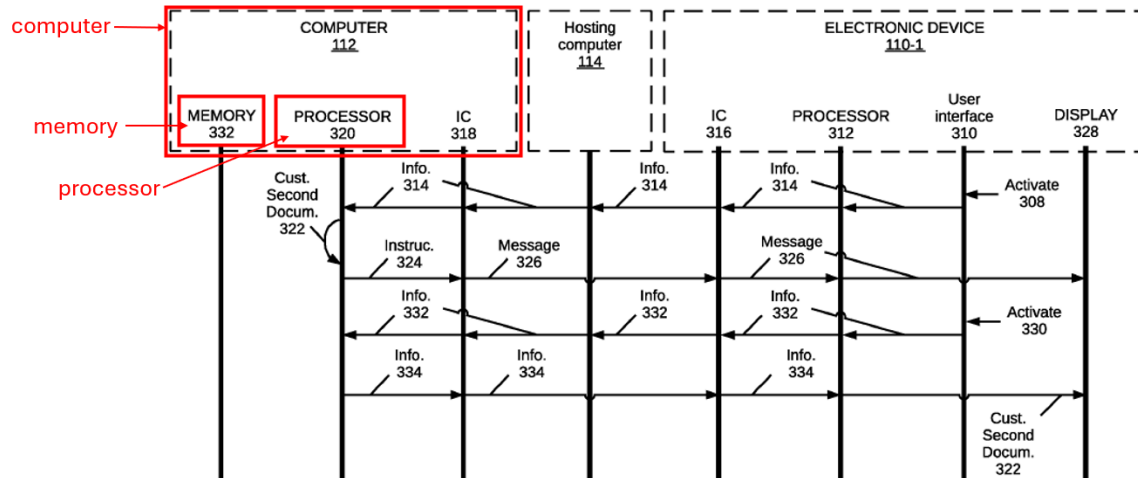


FIG. 3

EX1006, FIG. 3 (abridged, annotated).

3. [8.B] memory configured to store program instructions, wherein, when executed by the processor, the program instructions cause the processor to perform operations comprising:

246. In my opinion, Spindler discloses element [8.B].

247. Spindler's computer 112 includes **memory 332** ("memory"). EX1006, FIG. 3 (reproduced above). The memory may be "configured to store program instructions" such that, "when the program instructions are executed by the processor, they cause the computer to perform" operations including receiving the information specifying activation of the hosted field, dynamically generating the customized second document, sending the message, and providing the customized second document upon activation of the link. EX1006, ¶113; *see also* EX1006, ¶98.

4. [8.C]–[8.H]

248. Claim elements [8.C]–[8.H] correspond to claim elements [1.A]–[1.F], respectively. In my opinion, the Spindler-Long-Wang combination discloses or renders obvious these elements for the same reasons I explain above regarding claim 1. *See above*, Section XVI.B.

249. In my opinion, claim 8’s recitation of a “*service subscriber*” (rather than an “*authorized recipient*”) and “*subscription data*” (rather than “*authorization data*”) does not change the analysis. The ’165 patent uses these terms interchangeably. EX1001, 40:2-10 (“Each recipient of such content may be **an authorized recipient, service subscriber, or other subscriber** to content.”). In my opinion, Spindler’s subscriber customer—who subscribes to receive messages—is “*at least one service subscriber*,” and the PIN code, 2FA-form information, and hot cookie constitute “*subscription data corresponding to the at least one service subscriber*” for the same reasons I explain for elements [1.D] and [1.E.1]. *See above*, Sections XVI.B.4-XVI.B.5; EX1006, ¶¶85-88, 90-93.

F. Claim 13 The system of claim 8, wherein the at least one action associated with the content comprises one or more options to: perform a transaction, select a suggested response, return to a prior browsing session, or return to a prior application session.

250. Claim 13 is a system claim that otherwise recites limitations that are identical to the computer-implemented method steps recited in claim 7. In my opinion, the Spindler-Long-Wang combination discloses or renders obvious this

claim for the same reasons as I explain for claim 7 above. *See above*, Section XVI.D.

G. Independent Claim 14

251. I understand that independent claim 14 recites a “*non-transitory computer-readable storage medium for use in conjunction with a computer, the computer-readable storage medium storing program instructions that, when executed by the computer, cause the computer to carry out one or more operations comprising*” operations substantially the same as those recited in claim 1.

1. **[14.P] A non-transitory computer-readable storage medium for use in conjunction with a computer, the computer-readable storage medium storing program instructions that, when executed by the computer, cause the computer to carry out one or more operations comprising:**

252. In my opinion, Spindler discloses the preamble.

253. Spindler discloses “a non-transitory computer-readable storage medium for use in conjunction with a computer, the computer-readable storage medium storing program instructions that, when executed by the computer, cause the computer to carry[] out one or more operations,” including the operations of method 200. EX1006, ¶127; *see also* EX1006, ¶98.

2. **[14.A]–[14.F]**

254. Claim elements [14.A]–[14.F] correspond to claim elements [1.A]–[1.F], respectively. In my opinion, the Spindler-Long-Wang combination discloses

or renders obvious these elements for the same reasons I explain above regarding claim 1. *See above*, Section XVI.B.

255. In my opinion, claim 14's recitation of "*at least one authorized recipient or subscriber*" and "*subscription data*" does not change the analysis, for the reasons I explain for claim 8 above. *See above*, Section XVI.E. Moreover, whereas claim 1 recites a customized message comprising "*at least one action*," claim 14 recites a customized message "*comprising at least one link associated with the content*" and "*receiving an indication associated with selecting the at least one link*." Spindler discloses that its customized message "**includes a link to the customized second document**" and that the computer "receives information ... **specifying activation of the link**." EX1006, ¶¶34-35, 50-51, 84; *see above*, Sections XVI.B.2, XVI.B.4.

H. Claims 15 and 20

256. Claims 15 and 20 are storage medium claims that otherwise recite limitations that are identical to the computer-implemented method steps recited in claims 2 and 7, respectively. In my opinion, the Spindler-Long-Wang combination discloses or renders obvious these claims for the same reasons as I respectively explain for claims 2 and 7 above. *See above*, Sections XVI.C-D.

**XVII.GROUND 2B: THE SPINDLER-LONG-WANG-BOGINENI
COMBINATION RENDERS OBVIOUS CLAIMS 1-2, 5, 7-8, 11, 13-15,
18, AND 20**

A. Motivation to Combine

257. I understand that claims 1, 2, 5, 8, 11, 14, 15, and 18 recite limitations related to RCS messages. Bogineni includes explicit discussion of an “*RCS message*.” It is my opinion that a POSA would have been motivated to modify the Spindler-Long-Wang combination further in view of Bogineni to include RCS messages.

258. To start, in my opinion, Bogineni, Spindler, Long, and Wang are in the same field of mobile device communication as the ’165 patent and are thus analogous art to each other and to the ’165 patent. *Compare* EX1009, 1:6-7, 1:47-2:22, *with* EX1001, Abstract, 5:46-48; EX1006, ¶30; EX1014, ¶¶14-15; EX1013, 2:48-51.

259. In the Spindler-Long-Wang combination, the text messages sent to a user “may include [an SMS] message (which is sometimes referred to as a ‘text message’).” EX1006, ¶34. That message is generated in, and rendered by, the native messaging application of the user’s mobile device. *See above*, Section XVI.B.8(Ground 2A, element [1.E.3]); EX1013, 10:36-40. However, in my opinion, neither Spindler nor Long discusses any details about how these messages would be implemented. Thus, in my opinion, a POSA would have looked to the

prior art for guidance as to specific text message types that could be used in the Spindler-Long-Wang combination.

260. Based on my experience, one well-known technique for sending messages to a mobile device like Spindler's electronic device is via RCS messages, as taught by Bogineni. EX1009, 1:7-12; *see above*, Section X.D; *see also above*, Section VIII.D. Bogineni teaches that "RCS provides a text-message system similar to [SMS] messages." EX1009, 1:7-9. However, Bogineni explains that "RCS is capable of providing services that SMS cannot provide, such as phonebook polling for service discovery, transmitting in-call multimedia, and/or the like." EX1009, 1:9-12. It is my opinion that a POSA would have been motivated to implement RCS messages as the specific text message type used for the text message of the Spindler-Long-Wang combination in order to provide the additional functionality available with RCS messages.

261. Furthermore, it is my opinion that a POSA would have had a reasonable expectation of success in further modifying the Spindler-Long-Wang combination in view of Bogineni. Bogineni explains that its RCS messaging can be supported by Internet protocol (IP) multimedia subsystem (IMS)-based RCS messaging or non-IMS RCS messaging supported by application programming interfaces (APIs) on the device or by hypertext transfer protocol (HTTP) communications. EX1009, 1:47-2:4. In my opinion, Spindler's system can support

both options. Spindler's system includes at least a mobile communication network and a wireless network that supports the internet. EX1006, ¶¶30-31. A POSA, in my opinion, would have understood that Spindler's "internet" would support the IMS and, therefore, support the IMS-based RCS messaging. Because the network can be the Internet, in my opinion, a POSA would understand that the network also supports HTTP communications that enable the alternative, non-IMS RCS messaging. Finally, in my opinion, because Spindler's electronic devices, hosting computer, and cloud-based computer can be implemented as computer systems, a POSA would have understood they are readily available to install APIs and thus support non-IMS RCS messaging via the APIs. EX1006, ¶31. Spindler even explicitly relies, to at least some extent, on the use of such APIs for implementation. EX1006, ¶80. A POSA, in my opinion, would therefore not have experienced any unreasonable technical hurdles in implementing these modifications.

262. In my opinion, such a combination would merely amount to combining prior art elements according to known methods to yield the predictable (yet improved) result of sending a text message having the additional functionality available with RCS messages, such as "phonebook polling for service discovery, transmitting in-call multimedia, and/or the like." EX1009, 1:7-9.

B. Claims 1-2, 7-8, 11, 13-15, and 20

263. In my opinion, the Spindler-Long-Wang-Bogineni combination teaches claims 1-2, 7-8, 11, 13-15, and 20. As discussed above, the Spindler-Long-Wang combination teaches, or at least renders obvious, these claims. *See above*, Section XVI.

264. To the extent Patent Owner argues that the Spindler-Long-Wang combination does not teach “[*an RCS*] message” recited in independent claims 1, 8, and 14 and “*the RCS message*” recited in claims 2 and 15, in my opinion, the combination with Bogineni does. Specifically, in the combination, the message comprising the content that is generated in the mobile device’s messaging application (*see above*, Ground 2A, element [1.E.3]) is implemented as “[*an RCS*] message” in order to provide the additional functionality that RCS messages provide. EX1009, 1:7-9; *see above*, Section XVII.A.

265. Claims 2, 7, 13, 15, and 20 depend from claims 1, 8, and 14, and, in my opinion, the Spindler-Long-Wang-Bogineni combination teaches these claims for the reasons discussed above. *See above*, Section XVI.

C. Claims 5, 11, and 18

266. In my opinion, the Spindler-Long-Wang-Bogineni combination teaches claims 5, 11, and 18. The Spindler-Long-Wang-Bogineni combination renders obvious the use of RCS messages. *See above*, Section XVII.A. As I explain

above in Ground 1B (Section XIII.C), Bogineni teaches RCS messages including “*send and receive indicators provided in a user interface of the mobile computing device,*” and, in my opinion, a POSA would have understood that Bogineni’s indicators “*indicate real time typing between an RCS message provider and the mobile computing device or between another computing device and the mobile computing device,*” because this is part of the RCS standard. *See above*, Section XIII.C. Based on my experience, a characteristic feature of RCS messages is the use of “send and receive indicators” that “indicate real time typing” between parties exchanging RCS messages. *See EX1032*. Because the Spindler-Long-Wang-Bogineni combination implements Spindler’s text messages as RCS messages, it is my opinion that the combination teaches the use of these features.

XVIII. GROUND 2C: THE SPINDLER-LONG-WANG(-BOGINENI)-BURR COMBINATIONS RENDER OBVIOUS CLAIMS 3-4, 9-10, AND 16-17

A. Motivation to Combine

267. I understand that dependent claims 3, 9, and 16 recite that “*the content comprises a carousel of selectable options in a user interface of the mobile computing device, the selectable options including performing at least one secure transaction, scheduling an appointment, or resuming at least one abandoned user journey.*” The respective independent claims 1, 8, and 14 would have been obvious in view of the Spindler-Long-Wang combination (Ground 2A) and/or the Spindler-

Long-Wang-Bogineni combination (Ground 2B), as discussed above. *See above*, Sections XVI, XVII. It is my opinion that a POSA would have been motivated to modify these combinations further in view of Burr to include such a carousel of selectable options.

268. To start, in my opinion, Spindler, Long, Wang, Bogineni, and Burr are in the same field of mobile device communication and e-commerce as the '165 patent and are thus analogous art to each other and to the '165 patent. *Compare* EX1016, Title, ¶¶2, 29, 49, 79-80, *with* EX1001, Abstract, 5:46-48; EX1006, ¶30; EX1014, ¶¶14-15; EX1009, 1:6-7, 1:47-2:22; EX1013, 2:48-51.

269. In the Spindler-Long-Wang(-Bogineni) combinations, the customized content presented to Spindler's subscriber customer may include multiple selectable transaction opportunities. For example, "if the event organizer or client has many events, the customized document or webpage may show or include multiple events," and the user may be provided with "options to navigate through and choose to commence an e-commerce transaction" "inside a Web browser on a cellular telephone of the subscriber customer." EX1006, ¶¶72, 83. However, in my opinion, Spindler does not discuss any details about how these multiple selectable options would be arranged and displayed within the user interface of the mobile computing device. Thus, in my opinion, a POSA would have looked to the prior art

for guidance as to specific user-interface formats that could be used to display the multiple selectable purchase options in Spindler's system.

270. Based on my experience, one well-known technique for displaying multiple product options to a consumer on a computing device is via a carousel, such as the one taught by Burr. Burr teaches an e-commerce system that identifies and promotes “additional products items for purchase that have been specifically selected for the consumer,” based on the consumer's personal information, and ranks the identified items “in order of likelihood of purchase by the user.” EX1016, ¶¶21, 59. Burr explains that the selected items “may be displayed in any of a number of ways including ... as a carousel of product information” such as “a carousel or other mechanism that display[s] a limited, but scrollable subset of the most likely items to be purchased by the user.” EX1016, ¶¶47, 60. According to Burr, “[e]ach of the items displayed may have an associated button or other user interface element, to enable the user to add the associated product item to an electronic ‘shopping cart.’” EX1016, ¶¶47, 60. Burr describes that such a “carousel” permits the user to view additional recommended items in the collection. EX1016, ¶¶67-69.

271. It is my opinion that a POSA would have been motivated to implement the multiple selectable transaction options of Spindler as a carousel of selectable options in a user interface, as taught by Burr. In my opinion, such a

modification would predictably result in a user interface that presents “a limited, but scrollable subset” of the options most relevant to the user. EX1016, ¶¶21, 60. In my opinion, such a “scrollable” carousel would be particularly advantageous in the context of Spindler’s mobile computing devices (e.g., a smartphone), which were well-known to have restricted display areas. In my opinion, modifying Spindler in this way would further Spindler’s stated aims of avoiding “a cumbersome user experience” in which “visitors are forced to navigate through the content on a webpage or website in an attempt to find relevant or interesting information,” of providing content that is “relevant to the individual or subscriber customer and immediately actionable,” and of thereby “encourag[ing] the individual or subscriber customer to perform one or more transactions.” EX1006, ¶¶6, 40.

272. Furthermore, it is my opinion that a POSA would have had a reasonable expectation of success in modifying the Spindler-Long-Wang(-Bogineni) combinations further in view of Burr. Burr’s carousel is displayed in ordinary webpages presented on consumer devices including “a cell phone; a smart phone; a tablet, laptop, or desktop computer.” EX1016, ¶49. Spindler’s mobile computing device is capable of displaying such a webpage. EX1006, ¶¶50-51. In fact, Spindler’s customized content is itself a dynamically generated webpage that is rendered “inside a Web browser on a cellular telephone of the subscriber

customer.” EX1006, ¶¶34, 83. Thus, it is my opinion that implementing Burr’s carousel within such a webpage would have involved only the application of conventional user-interface and webpage-design techniques.

273. In the Spindler-Long-Wang(-Bogineni)-Burr combinations, in my opinion, a POSA would have been motivated to display the multiple transaction opportunities of Spindler’s customized document on the subscriber customer’s cellular telephone “as a carousel or other mechanism that display[s] a limited, but scrollable subset of the most likely items to be purchased by the user.” EX1006, ¶¶72, 83, 90; EX1016, ¶¶47, 60, 65, 67. In my opinion, such a modification would enable Spindler’s subscriber customer to order the promoted items “with minimum additional effort” and with “a high likelihood of the recommended product items being of interest to, and therefore being purchased by the consumer.” EX1016, ¶21. And, in my opinion, such a combination would merely amount to combining prior art elements according to known methods to yield the predictable (yet improved) result of presenting Spindler’s customized, selectable transaction options as “a carousel ... that display[s] a limited, but scrollable subset of” items. EX1016, ¶60.

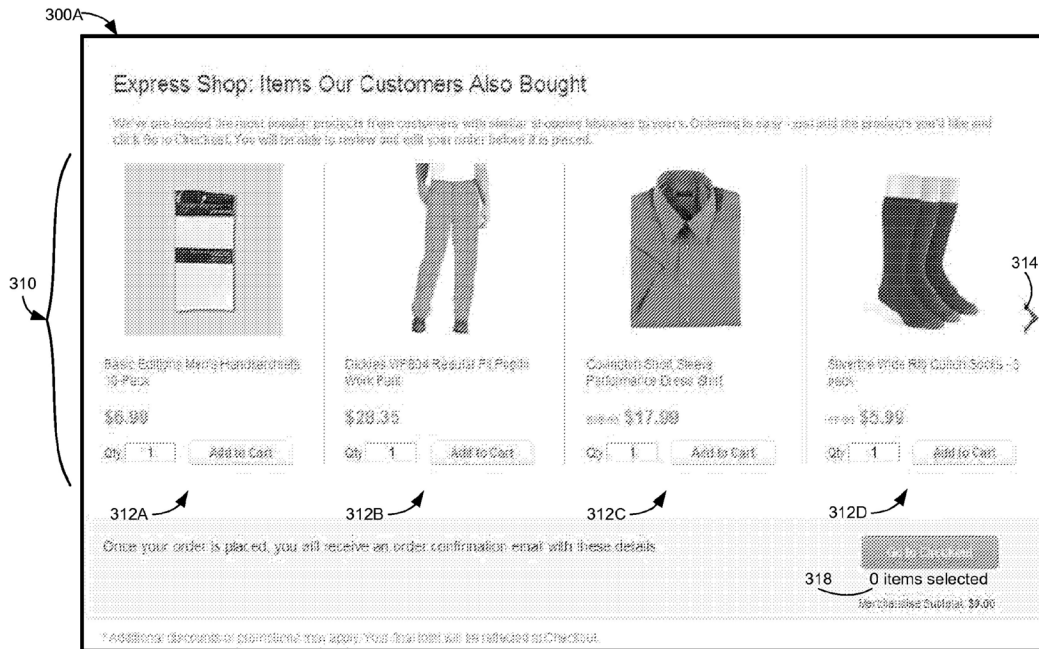
B. Claims 3, 9, and 16

274. In my opinion, claims 3, 9, and 16 are rendered obvious by the Spindler-Long-Wang(-Bogineni)-Burr combinations. Claims 1, 8, and 14, from

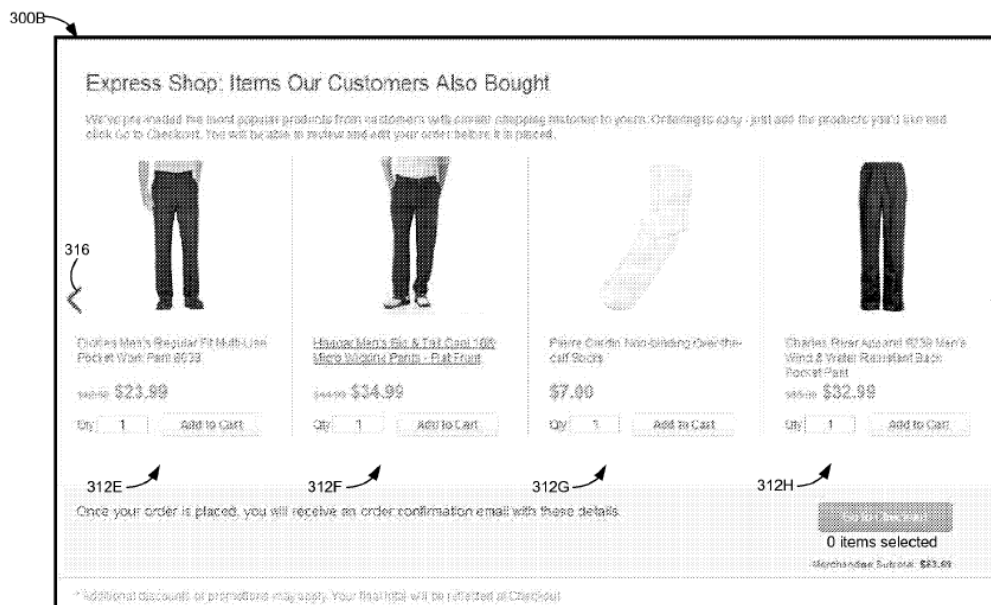
which claims 3, 9, and 16 respectively depend, are rendered obvious by the Spindler-Long-Wang combination or the Spindler-Long-Wang-Bogineni combination, as discussed above. *See above*, Sections XVI.B, XVII.B. In my opinion, the further combination with Burr renders obvious claims 3, 9, and 16.

275. First, in my opinion, the further combination with Burr renders obvious that “*the content comprises a carousel of selectable options in a user interface of the mobile computing device.*” Spindler’s customized document containing one or more transactions of interest to the subscriber customer, including “multiple events,” is displayed “inside a Web browser on a cellular telephone of the subscriber customer” with “options to navigate through and choose to commence an e-commerce transaction” (“*in a user interface of the mobile computing device*”). EX1006, ¶¶72, 83; *see above*, Section XVIII.A.

276. As discussed above, Burr teaches using “a carousel or other mechanism that display[s] a limited, but scrollable subset” of items (“*a carousel of selectable options*”). EX1015, ¶60. Burr’s “carousel” is shown in FIGS. 3A-3B:



EX1016, FIG. 3A.



EX1016, FIG. 3B.

277. In the combination with Burr, in my opinion, Spindler's customized document with multiple transactions or events would be displayed as a “scrollable” “carousel” of the items. EX1016, ¶60; *see above*, Section XVIII.A. As taught by

Burr, each selectable option would be displayed with, for example, a product image, description, price, quantity box, and “Add to cart” button, and arrows would enable the user to scroll among the options. EX1016, ¶¶47, 60, 67-69, FIGS. 3A-3B; *see above*, Section XVIII.A. Because the carousel is rendered within the browser executing on the subscriber customer’s cellular telephone, in my opinion, the content would comprise “*a carousel of selectable options in a user interface of the mobile computing device.*”

278. Second, in my opinion, the combination with Burr renders obvious that the selectable options include at least “*performing at least one secure transaction.*” Initially, claims 3, 9, and 16 recite, in the alternative, that the “*selectable options*” include “*performing at least one secure transaction, scheduling an appointment, or resuming at least one abandoned user journey.*” EX1001, 47:9-15 (claim 3). Thus, in my opinion, the “*performing at least one secure transaction,*” alone, satisfies these claims. In my opinion, the combination with Burr renders obvious at least “*performing at least one secure transaction.*”

279. In the combination with Burr, in my opinion, selecting an option from the carousel would commence Spindler’s e-commerce transaction, e.g., a ticket purchase, which would be completed after security checks. EX1006, ¶¶83, 90-93; EX1016, ¶¶65-66; *see above*, Sections XVI.B.4-XVI.B.5. In my opinion, such a combination amounts to nothing more than modifying Spindler’s transaction

process to commence in response to the selection of an item from the carousel.

This is because the selection of one of Burr's carousel options likewise effects a secure transaction. EX1016, ¶¶65-66; *see also* EX1016, ¶62. Thus, it is my opinion that the selectable options in the carousel of the combination with Burr include one or more options for "*performing at least one secure transaction.*"

C. Claims 4, 10, and 17

280. I understand that claims 4, 10, and 17 depend from claims 3, 9, and 16, respectively, and further recite that "*the content is provided in the user interface and the user interface is within a browser executing on the mobile computing device.*" In my opinion, the Spindler-Long-Wang(-Bogineni)-Burr combinations render obvious these claims.

281. As discussed above, in the combination with Burr, Spindler's customized content, including the carousel of selectable options, is displayed on the subscriber customer's cellular telephone ("*the content is provided in the user interface*"). *See above*, Section XVIII.B; EX1006, ¶¶72, 83. Spindler further teaches that this customized content is rendered "inside a Web browser on a cellular telephone of the subscriber customer" ("*the user interface is within a browser executing on the mobile computing device*"). EX1006, ¶83; *see also* EX1006, ¶¶34-35, 50-51. In the combination, in my opinion, the content is

included in the RCS message (*see above*, element [1.E.3] in Ground 2A), but may also be accessed in a browser as disclosed in Spindler when a browser is available.

XIX. GROUND 2D: THE SPINDLER-LONG-WANG(-BOGINENI)-JAKOBSSON COMBINATIONS RENDER OBVIOUS CLAIMS 6, 12, AND 19

A. Motivation to Combine

282. I understand that claims 6, 12, and 19 recite limitations related to determining a sender and delivering a warning when the sender is not authorized: “*determining a sender of the RCS message*” and, “*responsive to failing to authorize the determined sender of the RCS message, delivering, according to the scheduled delivery, an SMS message indicating a warning about the RCS message.*”

Jakobsson includes explicit discussion of these features. The respective independent claims 1, 8, and 14 would have been obvious in view of the Spindler-Long-Wang combination (Ground 2A) and/or the Spindler-Long-Wang-Bogineni combination (Ground 2B), as discussed above. *See above*, Sections XVI, XVII. It is my opinion that a POSA would have been motivated to modify the Spindler-Long-Wang(-Bogineni) combinations further in view of Jakobsson to include such sender verification and warning messages.

283. To start, in my opinion, Spindler, Long, Wang, Bogineni, and Jakobsson are in the same field of mobile device communication as the ’165 patent and are thus analogous to each other and to the ’165 patent. *Compare* EX1015,

¶¶33, 44, *with* EX1001, Abstract, 5:46-48; EX1006, ¶30; EX1014, ¶¶14-15; EX1009, 1:6-7, 1:47-2:22; EX1013, 2:48-51.

284. In the Spindler-Long-Wang(-Bogineni) combinations, Spindler’s customized messages are delivered to the subscriber customer’s cellular telephone as text messages, and particularly as RCS messages. *See above*, Section XVI.B. Although Spindler recognizes that “the popularity of such online transactions has resulted in increased incidents of fraud and other criminal activity,” and, accordingly, employs security techniques “such as SIM-case swapping or fraudulent use of a link, etc.” EX1006, ¶¶4, 78. Based on my experience, another technique for protecting message recipients is to verify the sender of a message and to take a security action when the sender cannot be verified. In my opinion, however, Spindler does not discuss any details about verifying the sender of a message or warning a recipient about a message whose sender cannot be verified. Thus, in my opinion, a POSA would have looked to the prior art for guidance for verifying message senders and protecting message recipients from unauthorized messages in Spindler’s system. Jakobsson is such a reference.

285. As discussed above (Section XV.A), Jakobsson teaches that when a message sender cannot be verified, a warning module sends a warning to the recipient. In particular, Jakobsson explains that “unscrupulous individuals” can use electronic messaging “for nefarious purposes, such as to send unwanted advertising

email (e.g., SPAM) and perpetrate fraud against victims.” EX1015, ¶2. To address this problem, Jakobsson discloses “techniques for detecting a large class of phishing-attempt communications (e.g., emails, SMSes, and other messages)” that impersonate “an authoritative entity (such as a bank or other financial services provider, shipping/postal carrier, cellular or other utility provider, etc.) to appear to be legitimate/trustworthy to a recipient.” EX1015, ¶33.

286. Jakobsson’s platform evaluates “the sender/originator of the communication (including email address and friendly/display name)” and assesses “whether the apparent sender matches the actual sender.” EX1015, ¶¶34, 48, 54, 100. When the sender cannot be verified, “a warning module” determines an action for the message, such as “erasing the message, marking up the message by adding a warning or explanation, flagging the message, [or] forwarding the message to a third party.” EX1015, ¶96. Jakobsson’s warning module “sends at least one warning to a user associated with message recipient 1508.” EX1015, ¶99.

287. It is my opinion that a POSA would have been motivated to modify the Spindler-Long-Wang(-Bogineni) combinations further in view of Jakobsson for the predictable result of protecting Spindler’s customers from phishing messages that impersonate the system or its clients. EX1015, ¶¶33-34. A POSA, in my opinion, would have realized that Jakobsson’s sender verification and warning techniques would merely amount to additional security measures aimed at

protecting the subscriber customers. In my opinion, the further combination with Jakobsson would further Spindler's stated aim of addressing the "fraud and other criminal activity" that "undermines people's trust and, thus, constrains people's willingness to conduct transactions via networks." EX1006, ¶4. And, based on my experience, a POSA would have known that Spindler's text messages, which are messages sent on behalf of authoritative entities, such as Spindler's clients (e.g., "a third-party ticket provider or any third-party service or event provider"), are exactly the kind of communications that Jakobsson teaches that fraudsters may seek to impersonate. EX1015, ¶33; EX1006, ¶¶38, 67.

288. Furthermore, it is my opinion that a POSA would have had a reasonable expectation of success in modifying the Spindler-Long-Wang(-Bogineni) combinations further in view of Jakobsson. Jakobsson's techniques expressly extend to the text messages taught by Spindler. *Compare* EX1015, ¶¶33, 44, *with* EX1006, ¶34. Jakobsson likewise explains that its techniques "can be implemented in numerous ways, including as a process; an apparatus; a system; ... a computer program product embodied on a computer readable storage medium; and/or a processor." EX1015, ¶31. Thus, in my opinion, a POSA would have known that modifying the Spindler-Long-Wang(-Bogineni) combinations further in view of Jakobsson would merely amount to combining prior art elements according to known methods to yield the predictable (yet improved) result of

delivering the Spindler's text messages with sender verification and delivering an SMS warning about any message whose sender cannot be verified. EX1015, ¶¶34, 99.

B. Claims 6, 12, and 19

289. In my opinion, the Spindler-Long-Wang(-Bogineni)-Jakobsson combinations render obvious claims 6, 12, and 19.

290. First, in my opinion, the further combination with Jakobsson renders obvious “*determining a sender of the RCS message.*” Jakobsson's platform processes the RCS message of the Spindler-Long-Wang(-Bogineni) combinations and evaluates “the sender/originator of the communication (including email address and friendly/display name).” EX1015, ¶48; *see above*, Section XIX.A. Jakobsson's platform determines “whether the apparent sender of [the message], as indicated by the ‘from’ field” is “likely to correspond to the actual sender.” EX1015, ¶¶54, 100. Thus, it is my opinion that the further combination with Jakobsson “*determin[es] a sender of the RCS message.*”

291. Second, in my opinion, the further combination with Jakobsson renders obvious that, “*responsive to failing to authorize the determined sender of the RCS message, delivering ... an SMS message indicating a warning about the RCS message.*” Jakobsson teaches that, when a message is “not authenticated” with the expected digital signature, “this is an indication that the message is not from”

the authoritative entity (“*failing to authorize the determined sender*”). EX1015, ¶66; *see also* EX1015, ¶¶54, 100. In that event, “processing transfers to a warning module” that “sends at least one warning to a user associated with message recipient 1508.” *Id.*, ¶¶96, 99. “The warning may be sent by email, by SMS or conveyed in another appropriate electronic manner” (“*delivering ... an SMS message*”) and “can describe an individual [message] that was filtered out” and/or “may also contain at least portions of the message[], information corresponding to the headers, and statistics related to the message” and “the message sender” (“*indicating a warning about the RCS message*”). EX1015, ¶99.

292. Finally, in my opinion, the further combination with Jakobsson renders obvious that the SMS warning is delivered “*according to the scheduled delivery.*” In the further combination with Jakobsson, delivery of the RCS message to the subscriber customer’s mobile computing device is scheduled for delivery by a machine learning model, as discussed above. *See above*, Section XVI.B.9. When the sender of a scheduled message cannot be authorized, in my opinion, Jakobsson’s warning would be sent in place of the withheld message. EX1016, ¶¶96, 99. Because the warning message would be sent according to scheduled delivery of the message that is withheld, in my opinion, the warning message would be delivered “*according to the scheduled delivery.*”

XX. CONCLUSION

293. In signing this declaration, I recognize that the declaration will be filed as evidence in an *inter partes* review before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

294. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on this 18th day of September 2026, in London, United Kingdom.

/Bernard J. Jansen/
Bernard J. Jansen, Ph.D.