IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner

v.

SITNET, LLC,
Patent Owner

Case IPR2024-00530
U.S. Patent No. 9,877,345

DECLARATION OF DR. JEREMY COOPERSTOCK IN SUPPORT OF PETITIONER'S OPPOSITION TO PATENT OWNER'S CONTINGENT MOTION TO AMEND

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Meta EX1033
Meta v. SitNet
IPR2026-00100

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I, Jeremy Cooperstock, hereby declare as follows.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of Petitioner Meta Platforms, Inc. ("Petitioner") for the above-captioned *inter partes* review (IPR) IPR2024-00530 regarding U.S. Patent No. 9,877,345 ("the '345 patent") (EX1001). I am being compensated for my time in connection with this IPR at my standard consulting rate as of the time I was retained to work on this litigation in 2023.

2. I previously submitted two Declarations in support of the Petitioner for this IPR. This present Declaration is in support of Petitioner's Opposition to Patent Owner's Contingent Motion to Amend. I am also submitting another declaration in support of Petitioner's Reply to Patent Owner's Response.

3. I understand that Patent Owner submitted a Contingent Motion to Amend ("MTA") on December 3, 2024. In the MTA, Patent Owner proposed to substitute claims 17-32 in place of issued claims 1-16 of the '345 patent. MTA, Appendix A. I have been asked to provide my technical review, analysis, insights, and opinions about the proposed substitute claims.

4. My background and qualifications were provided in paragraphs 4-11 of my original declaration, EX1003, and my CV was provided as EX1004. My statements in my original declaration regarding my review of the '345 patent and

related materials remain unchanged. In reaching my opinions, I reviewed the MTA, Dr. Aviel Rubin's declaration (EX2009), as well as the materials reviewed as part of my original declaration. The table below summarizes the exhibits that I have reviewed:

Exhibit No.	Description
1001	U.S. Patent No. 9,877,345 to Cona et al. ("'345 patent")
1002	Prosecution History of U.S. Patent No. 9,877,345 ("'345 File History")
1004	*Curriculum Vitae* of Dr. Jeremy Cooperstock
1005	U.S. Publication No. 2008/0139165 to Gage et al. ("Gage")
1006	U.S. Publication No. 2003/0162557 to Shida ("Shida")
1007	U.S. Publication No. 2008/0208605 to Sinha et al. ("Sinha")
1008	U.S. Provisional Application No. 60/862,365 to Sinha et al. ("Sinha Provisional")
1009	U.S. Publication No. 2003/0197615 to Roche et al. ("Roche")
1010	U.S. Patent No. 9,143,535 to Cona et al. ("Cona")
1011	U.S. Patent No. 8,045,455 to Agronow et al. ("Agronow")
1012	U.S. Publication No. 2007/0276908 to Asthana et al. ("Asthana")
1013	U.S. Publication No. 2007/0194938 to Mitchell ("Mitchell")
1014	Japanese Patent Application Publication 2005-80211 to Ikeda (with certified English translation) ("Ikeda")
1015	U.S. Patent No. 7,817,982 to Chu et al. ("Chu")
1016	U.S. Patent No. 8,024,330 to Franco et al. ("Franco")
1017	U.S. Publication No. 2005/0197775 to Smith ("Smith")
1018	U.S. Publication No. 2007/0233635 to Burfeind et al. ("Burfeind")
1019	U.S. Publication No. 2006/0270419 to Crowley et al. ("Crowley")
1020	U.S. Publication No. 2006/0047825 to Steenstra et al. (Steenstra")

Exhibit No.	Description
1021	U.S. Publication No. 2006/0155809 to Arav ("Arav")
1022	U.S. Publication No. 2006/0117051 to Chin ("Chin")
1027	Transcript of the Deposition of Aviel D. Rubin, Ph.D., February 7, 2025
1029	U.S. Patent No. 7,730,216 to Issa et al. ("Issa")
1030	U.S. Patent No. 7,747,648 to Kraft et al. ("Kraft")
2007	Claim Construction Order in *SitNet LLC v. Meta Platforms, Inc.,* No. 1:23- cv- 06389-AS (Dkt. 79).
2009	Supplemental Expert Report of Dr. Aviel D. Rubin

5. I also reviewed my previously submitted declarations (EX1003, EX1026) and incorporate those opinions into this declaration. In particular, from EX1003, I incorporate the following sections and paragraphs:

- Legal Understanding (¶¶17-31);
- Overview of the '345 Patent (¶¶32-36);
- Overview of the Technology (¶¶37-56);
- Prosecution History (¶¶57-58);
- Level of Ordinary Skill in the Art (¶¶59-60);
- Claim Construction (¶61);
- Overview of the Prior Art – Including Gage, Mitchell, Shida, and Sinha (¶¶62-69);
- Ground 1 - Gage renders obvious claims 1, 3-8, 10-13, and 15-16 (¶¶70-138);

- Ground 2 - The combination of Gage and Mitchell renders obvious claims 2, 9, and 14 (¶¶139-153);
- Ground 3 - Shida renders obvious claims 1, 3-4, 6-8, 10-13, and 15 (¶¶154-212); and
- Ground 4 - The combination of Shida and Sinha renders obvious claims 2, 5, 9, 14, and 16 (¶¶213-237).

II. SUMMARY OF OPINIONS

6. In forming my opinions about Patent Owner's substitute claims 17-32, I have considered whether the substitute claims recite an inventive concept. It is my opinion that they do not, and that each of the concepts in the independent claims recite well-known, routine, and conventional techniques.

7. Additionally, I also have considered the following grounds of unpatentability based on prior art. Based on my review of the prior art references that form the basis of these grounds, it is my opinion that claims 17-32 of the '345 patent would have been obvious to a POSA prior to February 2, 2007.

Ground	Basis	Claims	References
1	§103	17, 19-24, 26-29, and 31-32	Gage-Issa
2	§103	18, 25, and 30	Gage-Issa-Mitchell
3	§103	17, 19-20, 22-24, 26-29, and 31	Shida-Kraft
4	§103	18, 21, 25, 30, and 32	Shida-Kraft-Sinha

8. I have been asked to consider how a POSA would have understood the challenged claims in light of the disclosures of the ’345 patent. I have also been asked to consider how a POSA would have understood the prior art references of Gage, Issa, Mitchell, Shida, Kraft, and Sinha.

9. 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 17-32 of the ’345 patent.

III. CLAIM CONSTRUCTION

10. As indicated in my previous declaration (EX1003), I have been informed that the challenged claims of the ’345 patent are to be given their ordinary and customary meaning as understood by one of ordinary skill in the art at the time the application was filed and in the context of the specification. Based on my review of the substitute claims, it is my opinion that none of the claim terms require explicit constructions. Accordingly, all claim terms should receive their plain and ordinary meaning, in the context of the ’345 patent specification.

11. With this understanding, I note that the substitute claims have been amended to recite the term “event node.” I understand that in the parallel District Court proceeding, it was determined that the term “event node” required no construction. EX2007, 5-6. I agree with this assessment based on how the term is

used in the claims and specification. For example, the specification states that:

> The situation or event itself may also be associated with a node on the SitNet, known as the event node for the SitNet. For example, an entity, such as a trusted provider of information (e.g., a news source such as CNN or weather.com), establishes an event node in an NDSN that propagates up-to-date information on the situation to PIAs of the NDSN connected to that event node. In one embodiment, the SitNet may have more than one event node.

EX1001, 7:59-67.

12. In view of this description and the description in the specification, a POSA would not have understood there to be extra requirements or limitations to the term "event node."

13. I understand that the Patent Owner Response appears to characterize an event node as additionally requiring a correspondence with a situation and must be a "node within an NDSN [(N-dimensional social network)] providing up-to-date information regarding an event or situation via peer-to-peer communication with other nodes." MTA, 18.

14. In view of the specification, a POSA would not have viewed the term so narrowly, as the District Court has also acknowledged. EX2007, 5-6. I additionally note that such limitations are not presented in the language of the claims themselves.

15. I understand that Patent Owner's expert, Dr. Rubin, also discussed his

understanding of "event node" during his deposition and indicated that "an event node would be an object with attributes that defines the event" and that an "event node server would be a thing that could define objects with attributes that define the node." EX1027, Rubin Tr., 33:2-7, 41:17-20. I agree with this assessment, which indicates that Patent Owner's construction includes unnecessary additional limitations.

16. Regardless, I note that the grounds of unpatentability that I have analyzed below demonstrate that the substitute claims are unpatentable regardless of whether Patent Owner's additional limitations are adopted.

IV. PATENT OWNER'S SUBSTITUTE CLAIMS 17-32 RECITE WELL-KNOWN AND ROUTINE TECHNIQUES IMPLEMENTED USING CONVENTIONAL COMPONENTS

17. I have been asked to provide an opinion on whether the substitute claims recite any inventive concepts or any improvements to computer technology. Based on my analysis of the claims, the specification of the '345 patent, and my knowledge of the state of the art before February 2, 2007, it is my opinion that they do not. I have provided my analysis with respect to substitute claim 17, which is representative of the other claims, but note that my analysis is also applicable to the other substitute claims as well.

18. First, I note that claim 17 recites conventionally receiving and manipulating data. I agree with Dr. Rubin's analysis of claim 1 of the '345 patent

as explained in his deposition. Dr. Rubin's analysis directly applies to substitute claim 17, which maintains many of the same claim elements and effectively still recites receiving, manipulating, and presenting data.

19. In analyzing claim 1, Dr. Rubin acknowledged that receiving an indication of an occurrence of a situation amounts to "receiving data about something." EX1027, 57:11-17. Dr. Rubin then indicated that forming a situational network occurs by "creating logical connections," and that creating the logical connections amounts to manipulating data. EX1027, 57:22-58:5. Dr. Rubin then agreed that presenting a roll call amounts to presenting information and that receiving a status response amounts to receiving data. EX1027, 58:6-21. Finally, Dr. Rubin agreed that aggregating status response data into a roll call list again amounts to manipulating data into a list. EX1027, 58:22-59:8. As it relates to the amended claim elements, Dr. Rubin also indicated that establishing an event node would also amount to manipulating data. EX1027, 59:9-15.

20. Based on Dr. Rubin's aforementioned acknowledgments regarding the elements of claim 1, the claim elements recite conventional networking techniques that do not reflect an inventive concept. The specification of the '345 patent also confirms this understanding. Specifically, the '345 patent confirms that its situational network architecture and hardware were well known to those skilled in the art:

> Furthermore, those skilled in the art will recognize that any of the available architectures (e.g., centralized, peer-to-peer, or combination thereof) may be used to form and sustain the various embodiments of the situational network described above, including the event relative (dynamic) SitNet or the proximity based SitNet.

EX1001, 7:38-43.

> Referring to FIG. 44, the situational network may also be formed using a decentralized architecture, such as a peer-to-peer network understood by one skilled in the art.

EX1001, 6:60-62.

> Users 250 are connected via the situational network 3000 using devices 402 such as cell phones, PDA's, personal computers, network servers, PVR's, in-vehicle and portable navigation systems, or other devices generally known to those skilled in the art that enable connection to, from and through the computer network 900.

EX1001, 4:35-40.

> User devices, such as Personal Information Aggregators (PIAs), discussed in greater detail below, containing a GPS or other geographic positioning devices generally understood by those skilled in the art, can share location coordinates to determine if they are within a proximity limit that has either been preset within the device or predetermined by the user.

EX1001, 6:1-7.

21. The ’345 patent also explains that an “N-dimensional social network” was also well known and relied on conventional technology:

> Those skilled in the art will recognize that there are numerous well-known software and hardware technologies that may be utilized to implement the attributes of the users of the NDSN 100 and the attributes of the associations between the users.

EX1001, 16:32-36.

> Those skilled in the art will recognize that a node of the NDSN 100 may be implemented using a wide variety of available hardware and technologies generally known in the art, such as software on a personal computer or a handheld PDA. In addition, those skilled in the art will recognize that the nodes of the NDSN 100 may be interconnected and may communicate with each other using a wide variety of available hardware and technologies generally known in the art, such as TCP/IP over an Ethernet or a wireless network.

EX1001, 15:42-50.

22. I also understand that Dr. Rubin confirmed this understanding during his deposition and could not recall any difference between a “social network” and an “N-dimensional social network”:

> Q. Are you aware of any social networks that are not multidimensional?
>
> A. I haven’t considered that before. Sitting here, I can't think of any.

> Q. You can't think of any social network that existed that was not multidimensional?
>
> A. Like I said, it's not something I've thought about before, but I can't think of any right now.

EX1027, 43:18-44:3.

23. In view of the '345 patent's clear statements relying on hardware and networking techniques generally known to those in the art, the claims clearly rely on well-understood, routine, and conventional components and techniques. Dr. Rubin also agreed throughout his deposition.

24. Additionally, the claims do not recite anything inventive, unusual, or unconventional. For example, the claimed "receiving an indication of an occurrence of a situation," "presenting a roll call query," and "receiving a status response" amount to simply sending and receiving data over a network. As I previously explained, the '345 patent relies on conventional hardware and networking techniques well-known in the art when communicating roll call queries and status responses. EX1001, 4:35-40, 7:38-43, 15:42-50. In this manner, the communications recited in claim 17 do not recite anything inventive.

25. The forming of a situational network is similarly not inventive. As I previously explained, the specification notes that the "situational network" and the newly added "N-dimensional social network" utilize "available hardware and

technologies generally known in the art." EX1001, 4:35-40, 6:1-7, 6:60-62, 7:38-43, 10:7-10, 15:42-50; EX1027, 43:18-44:3, 60:21-61:4. As Dr. Rubin acknowledged, "forming a situational network" merely amounts to manipulating data to create logical connections. EX1027, 57:22-58:5. Dr. Rubin also acknowledged that the '345 patent "did not invent the concept of a social network" or "any new type of technology for saving the information that would be needed for two users to communicate over a social network." EX1027, 25:14-18, 27:14-17. This also extends to the recitation of an "event node" or "event node server," which is established in the social network and was also known in the art. *See* Sections V.A, V.B. In this manner, a POSA would not have viewed the forming of the situational network as reciting an inventive concept.

26. I have also been asked to consider whether the claim limitations when considered as an ordered combination recite any inventive concept. For the reasons that I have previously presented, a POSA would not have found anything inventive in the ordering of the claim elements of substitute claim 17. Claim 17 describes receiving an indication of a situation, identifying the participant devices geographically proximate to the situation, presenting those participant devices with a roll call query, receiving a status response, and then aggregating those status responses into a list. A POSA would have found this sequence of steps to be intuitive—especially in view of the prior art grounds that I have analyzed below.

See Sections VI, VIII. Therefore, there is also no inventive concept found in the particular ordering of the claim steps either.

V. OVERVIEW OF THE PRIOR ART

27. In my previous declaration, I provided overviews of Gage, Mitchell, Shida, and Sinha. EX1003, ¶¶62-69. Those overviews are still applicable here and I incorporate those paragraphs by reference. I additionally provide overviews for Issa and Kraft, which directly address the content added in the substitute claims.

A. Issa

28. Issa describes an "aggregation node" that operates in the context of a social network. Issa therefore teaches the "event node" operating in an "N-dimensional social network" as recited in the substitute claims.

29. Issa describes the connection of "multiple social network nodes using an aggregation node." EX1029, Title. "Members of a pre-existing social network may selectively activate embedded latent peers and link to an aggregation node." EX1029, Abstract. Using this aggregation node, Issa explains that its social network configuration provides "live communication links among networked users" and facilitates the aggregation and sharing of content including "instant messaging, web-based communications, file and content sharing, [and] audio communications." EX1029, 2:57-66; *see also id.*, 13:60-14:15. "When the peers associated with each content sharing node are activated and connected to the

aggregation node, the aggregation node is configured for collecting digital content and/or metadata about such content from such nodes." EX1029, 4:1-8.

30. An example of the aggregation node and its connection to social network nodes is depicted in Figure 5. *See* EX1029, 12:33-13:58, FIG. 5.

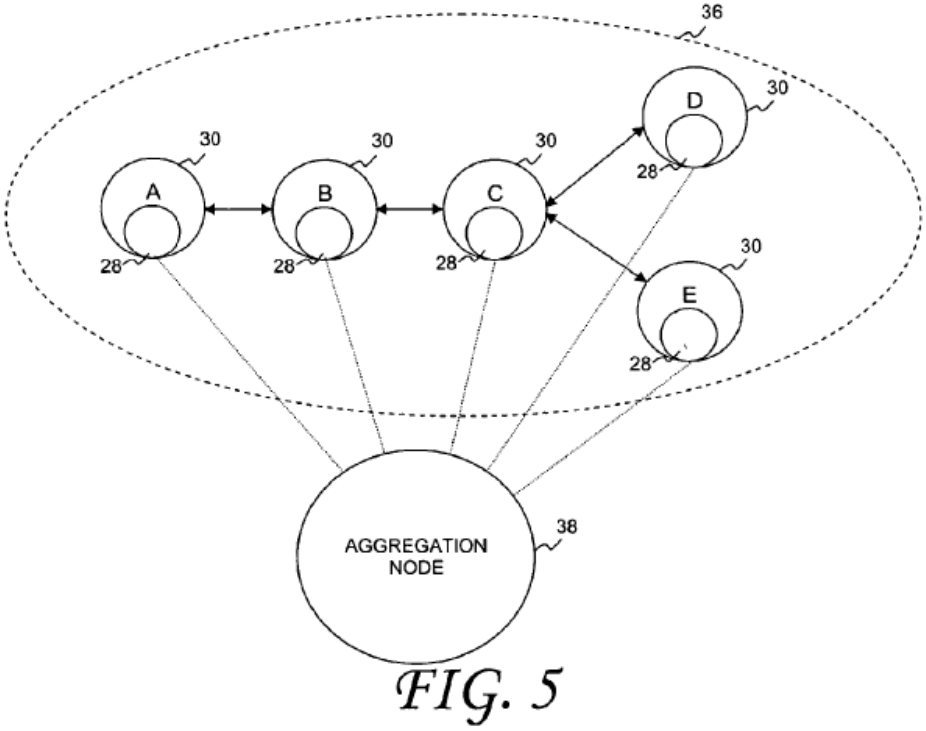


FIG. 5

EX1029, FIG. 5.

31. As depicted in Figure 5, "aggregation node 38 may comprise a centralized server and/or a proxy server." EX1029, 13:7-20. To "provide efficient content sharing," aggregation node 38 obtains "digital content and/or metadata" from the nodes participating in the social network. EX1029, 13:40-59. One way of receiving content and then distributing aggregated content is to establish a "virtual peer" in the social network. EX1029, 2:66-3:39, 12:50-13:6, 14:37-15:12, 15:55-

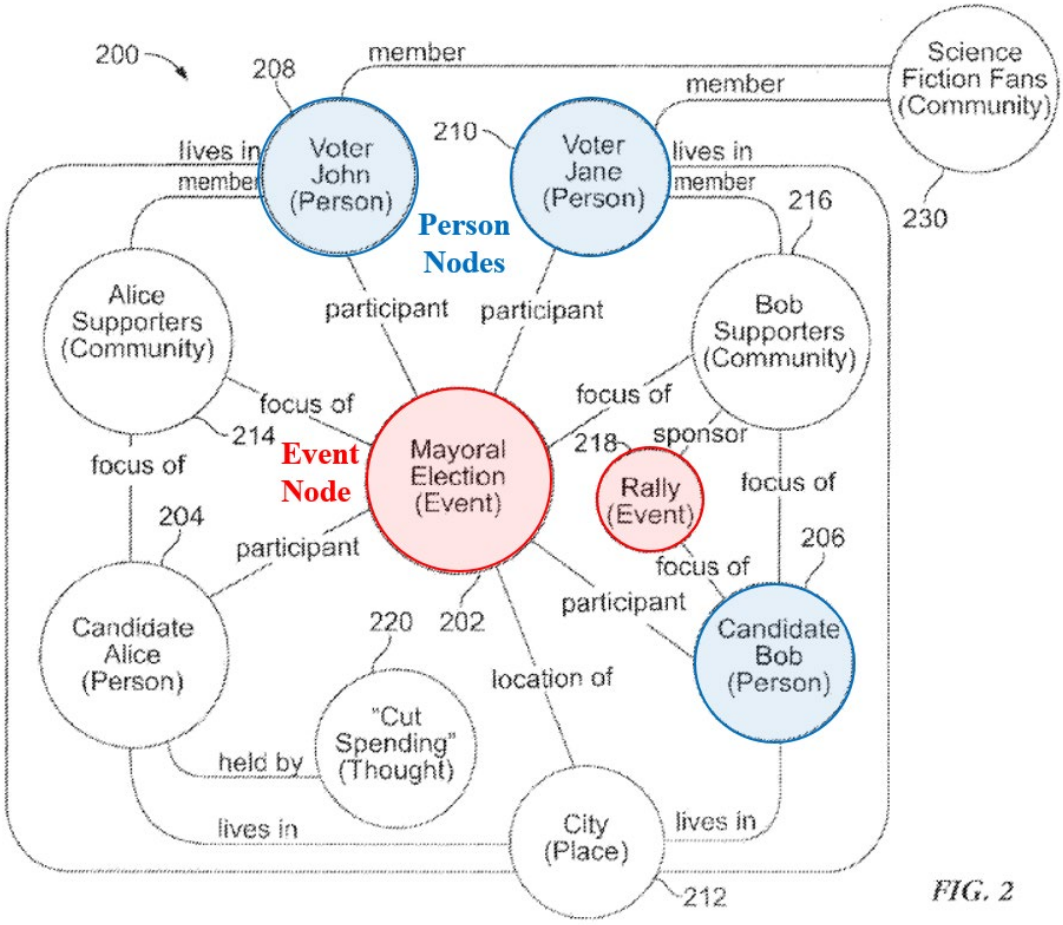
16:23. The aggregation node forms a "virtual peer" within the pre-existing social network and uses the "virtual peer" to receive content from the social media participants and to "efficiently serve content requests." EX1029, 13:40-59; *see also id.*, 3:20-25 (the virtual peer allows "multiple social network nodes communicatively connected to the aggregation node to be addressed with a single request."), 12:63-67, 14:27-36. The aggregation node's virtual peer is a single node that can be used to efficiently aggregate content from social media participants and provide aggregated content to "[m]ember and non-member peers." EX1029, 15:13-23; *see also id.*, 2:66-3:4.

B. Kraft

32. Kraft is directed to "systems and methods for information retrieval and communication using a world model." EX1030, Kraft, 2:35-37. "The world model is made up of interrelated entity models, where each entity model corresponds to an entity (or abstraction) in the real world, such as a person, place, business, other tangible thing, community, ***event,*** or thought." EX1030, 2:37-41[1], 8:28-31. Kraft's "world model can include features of a conventional social network" but "allows other types of entities, not just users, to be included as full participants in the network." EX1030, 10:25-30. Kraft depicts an example of a

[1] Emphasis added unless otherwise indicated.

"world model" in Figure 2. EX1030, 8:35-38.



EX1030, FIG. 2 (annotated).

As illustrated in Figure 2, "***[n]ode 202 represents the event***, in this example a mayoral election," and "[o]ther participants in the election include voter Joe (node 208) and voter Jane (node 210)." EX1030, 8:39-44. Kraft further explains that event nodes or event models can represent "occurrences such as elections**,** ***natural disasters***, sports events." EX1030, 9:65-66. Kraft explains that "[e]ach entity model is advantageously implemented as a data structure that provides access to information about a real-world entity that the node represents." EX1030,

8:26-28. And the "types of information that may be contained in an entity model include … text or media content related to the corresponding entity." EX1030, 3:18-24.

33. Kraft further explains that a "user request may include a search query specifying a property for the information contained in the entity models." EX1030, 2:66-3:2, 9:33-36 (a "user can also send a message to a non-person entity; for example, the user might send a message to the election (node 202)"). "A world server receives a request from a querying user for an entity model," and "[t]he world server returns the information contained in the requested entity model." EX1030, 3:52-57. Because Kraft's framework "enables authorized users to update the world model," for example by "modifying entity models," the information contained in an event node can remain up-to-date. EX1030, 6:54-57.

VI. GROUND 1: GAGE AND ISSA RENDER OBVIOUS CLAIMS 17, 19-24, 26-29, AND 31-32.

A. A POSA would have been motivated to combine Gage and Issa

34. A POSA would have been motivated to combine Gage and Issa to provide a more efficient process for obtaining and aggregating status indicator responses and providing those aggregated responses to relief workers to better inform them of disaster situations. For example, Gage explicitly describes providing "aggregated data" to help "relief workers and/or agencies determine a response order and/or to proportion relief resources based upon need." EX1005,

¶¶7, 11, 21. Gage, however, does not provide details on how to "aggregate[ ]" such data. A POSA looking to implement Gage's system, however, would have sought such details, which would have led to a reference like Issa. As I previously explained, Issa provides a framework of using an "aggregation node" and "virtual peer" to efficiently gather messages from nodes of a network, "provide efficient content sharing," and efficiently respond to content requests (such as providing aggregated status responses to relief workers as described in Gage), which would have furthered Gage's goal of identifying the "greatest need of relief based upon subscriber status indicators and subscriber locations." EX1029, 13:40-59; EX1005, ¶¶7, 11. A POSA would have recognized that Issa's well-known aggregation-node architecture would have provided an efficient way of gathering responses and messages from participant nodes, aggregating them, and then providing those responses to others. A POSA would have therefore been motivated to combine Issa with Gage.

35. In addition to providing an efficient way of sharing information with relief workers, Gage also describes a second goal of providing status responses to "concerned parties." EX1005, Abstract, ¶¶2, 6-8, 19-20, 23, 37-38. "Concerned parties, such as family members, can be granted access to the Web site, through which they can look-up the last known location and situational status of the subscriber." EX1005, ¶37. A POSA would have recognized that a simple way of

connecting to friends and family via a Web site would have been through a social network as described in Issa. EX1029, 1:28-53, 8:60-9:20; EX1005, ¶¶4, 46. As Issa explains and as a POSA would have recognized, a social network would have been an efficient way of providing Gage's gathered status responses to friends and family. EX1029, 1:28-53, 8:60-9:20. This is consistent with Gage, which already discloses a "Web site [that] contain[s] subscriber status information," and "can be updated with the subscriber's status indicator and location." EX1005, ¶37, *see also* ¶¶9, 28, Claim 8. In this manner, a POSA would have also been motivated to implement Issa's aggregation node and social-network interactions with Gage's disaster response system to quickly and efficiently notify friends and family. EX1029, 13:40-59; EX1005, Abstract, ¶¶2, 6-8, 19-20, 23, 37-38.

36. Additionally, Gage also describes providing media and text content available to concerned parties. For example, claim 8 recites "the disaster response system making the textual message available to the plurality of concerned parties." EX1005, Claim 8. Claim 9 recites a "media document comprising at least one of audio, video, and an Image" and "the disaster response system making the media document available to the plurality of concerned parties." EX1005, Claim 9. Issa explains that its techniques provide the benefits of "efficient content sharing" and "distributing digital content within a social network." EX1029, 13:40-59. This digital content includes "video, audio, text, image, graphic, html, [and] metadata."

EX1029, 16:17-23; *see also id.*, 13:60-63 ("The digital content available at each participating peer may include, for example, images, videos, hypertext transfer markup language (HTML) code, documents, presentations, spreadsheets, graphics, audio, or the like."). A POSA would have therefore recognized and would have been motivated to implement the benefits described in Issa with Gage to also efficiently provide content.

37. In addition to being motivated to form such a combination, a POSA would have also known how to combine Gage and Issa and would have recognized that implementing Issa would have amounted to a predictable variation of Gage. For example, both references describe using a common server/client infrastructure to aggregate messages received from participant nodes and to host web pages that display user statuses and messages. EX1029, 1:44-53, 3:60-4:8, 5:12-21, 13:7-20; EX1005, ¶¶37-38; *see also* EX1029, 2:57-66, 13:60-14:15, 16:5-23; EX1005, ¶11 (describing the posting of other content such as video and audio). In view of these shared implementation details, a POSA would have readily been able to implement Issa's aggregation node framework with Gage. A POSA would have recognized that implementing Issa with Gage would have been nothing more than combining prior-art elements in a predictable way using known methods. The results would have been predictable as well. Specifically, this combination would have used an aggregation node to obtain and aggregate disaster response statuses from

participants of a social network.

B. Independent Claim 17

38. In analyzing claim 17, I note that the amendments add the concepts of (1) establishing an event node and (2) connecting the event node to "N-dimensional social network" nodes. MTA, Appendix A. Both concepts, however, were well known in the art and are described in Issa as I explained above. Section V.A. As I will further explain below (in addition to the analysis that I previously provided in EX1003), the combination of Gage and Issa therefore demonstrates that claim 17 would have been obvious. The additional elements of claim 17 are obvious based on the corresponding analysis that I performed in my previous declaration. EX1003, ¶¶70-103.

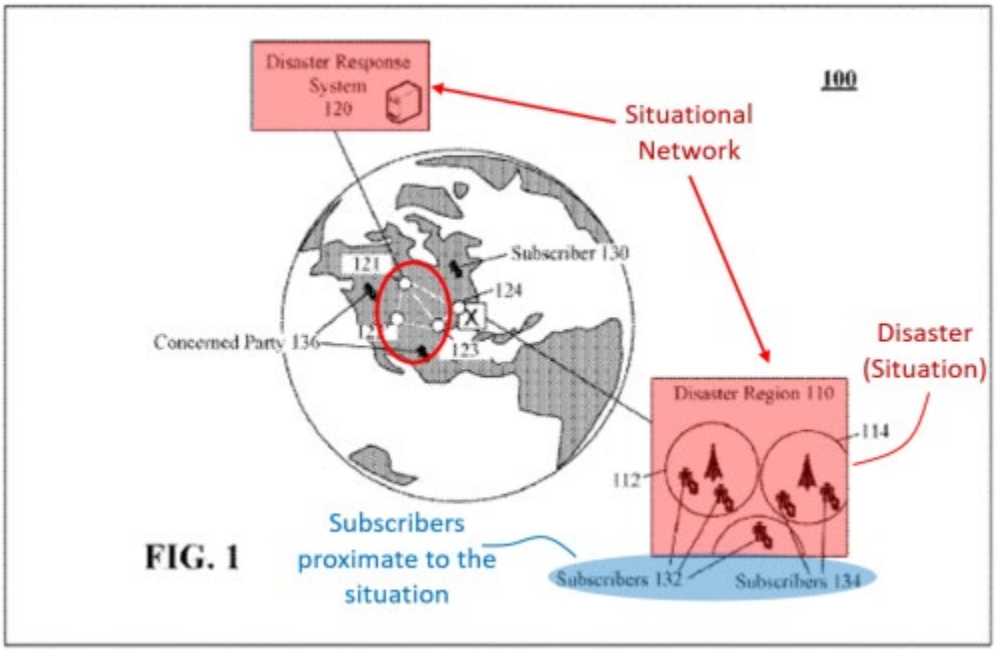
39. With respect to the new material added based on the formation of a situational network, I previously explained that Gage describes forming a situational network in response to receiving an indication of an occurrence of a situation for the reasons I previously presented with reference to claim element [1.2]. EX1003, ¶¶79-90.

40. As I previously explained, Gage discloses forming a situational network related to the occurrence of the situation. Gage discloses that "when a disaster is detected" (occurrence of the situation), "a centrally located disaster response system" queries mobile devices of subscribers located near the disaster

for status indicators. EX1005, ¶9. To do this, Gage forms a situational network related to the occurrence of the disaster. Specifically, upon determining that a "disaster has occurred," and that one or more users are located proximate to the disaster, the disaster response system establishes connections with the users' mobile devices to contact the users by requesting status indicators. EX1005, ¶¶9-10, 36, 38, FIG. 3. The disaster response system also establishes connections for communication with "one or more disaster relief systems" or "agencies" that can provide assistance to needful subscribers. EX1005, ¶¶21, 31.

41. The disaster response system establishes communications with the subscribers in the disaster area using "multiple communication/information transmission options . . . to enable subscribers 130-134 to communicate with system 120." EX1005, ¶25. Gage also explains that "ad hoc networks can be dynamically established (i.e., through BLUETOOTH functionality of mobile telephones) to enable subscribers 130-134 to convey status and location." EX1005, ¶25.

42. Based on this description, Gage's disaster response system forms a situational network by connecting with subscribers 132-134 in the disaster region 110 using one or more communication channels for querying subscribers' situation status. The situational network includes subscriber devices located "proximate to a disaster area." EX1005, ¶9.

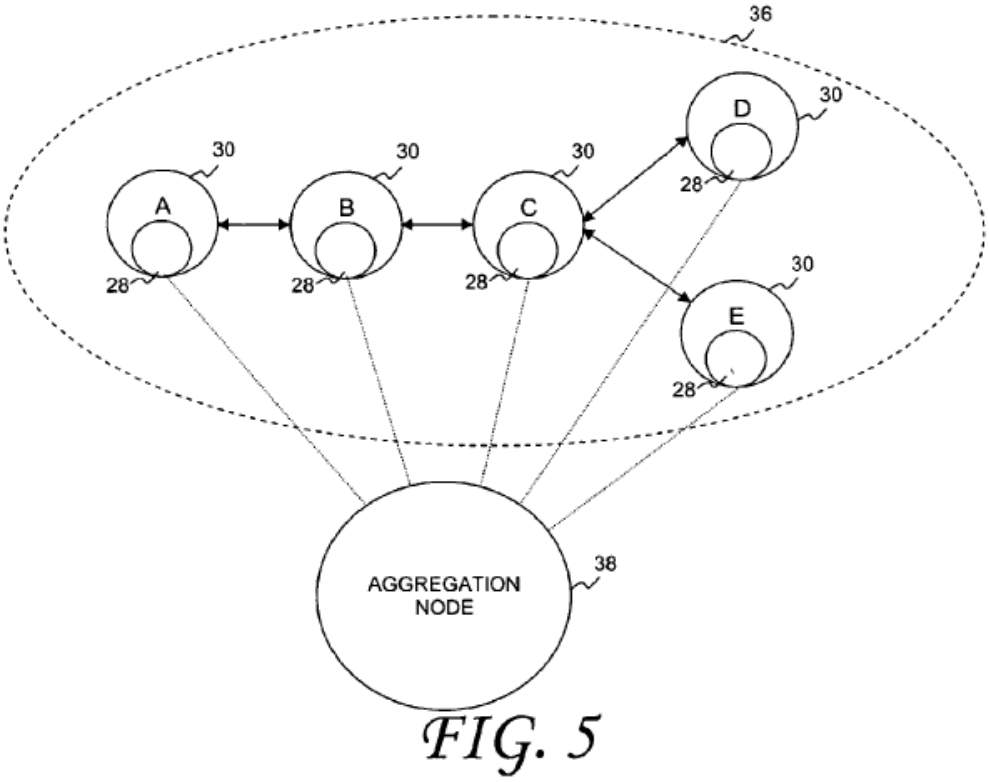


EX1005, FIG. 1 (annotated).

43. While Gage describes forming the situational network within a network of existing nodes, Gage does not explicitly disclose an event node connecting an "N-dimensional social network." EX1005, ¶¶9-10, 19, 25-26, 30-32, 35-39. A POSA, however, would have recognized that such a configuration was well known in the art, as demonstrated by Issa. *See* Section V.A.

44. As I previously explained in Section VI.A, the combination of Gage's disaster response system with Issa's aggregation node framework would have rendered obvious the formation of a situational network by establishing an event node hosted by an event node server within an N-dimensional social network and connecting the event to a plurality of existing nodes corresponding to participant devices.

45. Issa describes connecting "multiple social network nodes using an aggregation node." EX1029, Title, Abstract, 12:33-49. The aggregation node facilitates the aggregation and sharing of content including "instant messaging, web-based communications, file and content sharing, [and] audio communications." EX1029, 2:57-66; *see also id.*, 4:1-8, 13:60-14:15. An example of the aggregation node and its connection to social network nodes is depicted in Figure 5. *See* EX1029, 12:33-13:58, FIG. 5.



EX1029, FIG. 5.

46. "[A]ggregation node 38 may comprise a centralized server and/or a proxy server." EX1029, 13:7-20. To "provide efficient content sharing,"

aggregation node 38 obtains "digital content and/or metadata" from the nodes participating in the social network. EX1029, 13:40-59.

47. Issa explains that "pre-existing or dynamically created social network technologies include Friend-Of-A-Friend (FOAF) social networks." EX1029, 2:55-66; *see also id.*, 1:28-53, 8:60-9:20. These may be "a hybrid peer-to-peer (P2P) network." EX1029, Abstract, 8:4-6, 14:27-36, FIGs. 5, 6. For such social networks, Issa describes connecting "multiple social network nodes using an aggregation node." EX1029, Title. "Members of a pre-existing social network may selectively activate embedded latent peers and link to an aggregation node." EX1029, Abstract; *see also id.*, 12:33-49. To efficiently receive and distribute content, the aggregation node further establishes a "virtual peer" in the social network that allows "multiple social network nodes communicatively connected to the aggregation node to be addressed with a single request." EX1029, 3:20-24; *see also id.*, 2:66-3:4, 12:50-13:6, 13:40-59, 14:27-15:23, 15:55-16:23.

48. Based on this description, Issa therefore teaches connecting a node to a plurality of nodes in an N-dimensional social network as recited in claim element [17.2]. EX1029, FIG. 5, 12:16-13:59; *see also id.*, 1:28-53, 2:55-66, 8:60-9:20; EX1027, 43:18-44:3.

49. The combination of Issa's aggregation node and virtual peer functionality with Gage's disaster response system also renders obvious the

establishment of an *"event node hosted by an event node server*." After receiving an indication that a disaster has occurred, the combined Gage-Issa system would have formed a situational network using the functionality described in Gage by establishing an aggregation node and virtual peer as described in Issa. As implemented with Gage, the aggregation node and virtual peer teaches an *event node* associated with the disaster in the manner described in Gage. EX1005, ¶¶9, 19, 40-45, Abstract. Upon establishing the aggregation node and virtual peer, the combined Gage-Issa disaster response system would have connected to other nodes of an N-dimensional social network akin to how Issa's aggregation node connects to multiple social network nodes. *See* EX1029, FIG. 5, 12:16-13:59; *see also id.*, 1:28-53, 2:55-66, 8:60-9:20. These social network nodes would have corresponded to the geographically proximate subscriber devices described in Gage. EX1003, ¶88.

50. As seen from this combination, implementing Issa's aggregation node and social network framework with Gage would have enabled Gage's disaster response functionality and communications to occur in the context of an N-dimensional social network, which is explicitly disclosed in Issa. The combination of Gage and Issa therefore renders obvious the new material added in substitute claim 17.

51. A POSA would have been motivated to combine Gage and Issa and

would have known how to combine Gage and Issa for the reasons that I explained in Section VI.A. Specifically, combining Issa with Gage would have furthered Gage's goals of efficiently gathering and sharing responses with "relief workers" and with "concerned parties" via a social network. Section VI.A; EX1005, ¶¶2, 6-8, 11, 19-21, 23, 37-38. A POSA would have realized that such implementations would have merely amounted to combining prior-art elements according to known methods to yield predictable results (using an aggregation node to obtain and aggregate disaster response statuses from participants of a social network). Section VI.A.

52. Thus, Gage and Issa teach the new material introduced in claim 17 relative to the original claim 1.

C. Independent Claims 24 and 29

53. Because independent claims 24 and 29 recite substantially the same amendments as 17, a POSA would have found claims 24 and 29 obvious in view of Gage and Issa for similar reasons. *See* Section VI.B. A POSA would have also been motivated to combine Gage and Issa for similar reasons as well. *See* Section VI.A. Gage also teaches the other claim elements of claims 24 and 29 for the reasons provided in my previous declaration with respect to claims 8 and 13. EX1003, ¶¶104-117.

D. Dependent Claims 19-23, 26-28, and 31-32

54. Because dependent claims 19-23, 26-28, and 31-32 have not been substantively amended, Gage teaches these claims for the reasons provided in my previous declaration with respect to the original claims. EX1003, ¶¶118-138.

VII. GROUND 2: THE COMBINATION OF GAGE, ISSA, AND MITCHELL RENDERS OBVIOUS CLAIMS 18, 25, AND 30.

55. Patent Owner has not provided any substantive amendments to claims 18, 25, and 30. A POSA would have therefore determined that claims 18, 25, and 30 were obvious in view of the combination of Gage, Issa, and Mitchell for the same reasons I provided in my previous declaration with respect to claims 2, 9, and 14. EX1003, ¶¶151-153.

56. A POSA would have been motivated to combine Mitchell with Gage and Issa for similar reasons as well. EX1003, ¶¶139-150. Combining Mitchell with Gage and Issa would enable accounted for (responsive) subscribers to provide information relating to the status of unaccounted for (nonresponsive) subscribers, as taught by Mitchell. This would improve the Gage-Issa system by enabling accurate status information to be determined for nonresponsive subscribers. *See* EX1005, ¶¶38-39. That is, this feature would help to mitigate the number of affected subscribers who have an "unknown" status. EX1005, ¶¶38-39. This would be beneficial in coordinating relief efforts so that relief agencies or rescue personnel do not waste resources on nonresponsive subscribers who are actually

safe. EX1005, ¶¶11, 21. This would further Gage's goal of "determin[ing] areas and/or subscribers in greatest need of relief based upon subscriber status indicators and subscriber locations." EX1005, ¶11, *see also* ¶7 (a "problem that occurs in the aftermath of a disaster relates to deployment of rescue personnel and properly targeting relief resources to areas having the greatest need").

VIII. GROUND 3: SHIDA-KRAFT RENDERS OBVIOUS CLAIMS 17, 19-20, 22-24, 26-29, AND 31.

A. A POSA would have been motivated to combine Shida and Kraft

57. A POSA would have been motivated to combine Shida and Kraft to provide an efficient way to continuously gather and update information related to the disaster to further aid in confirming the safety of affected individuals. Shida explains that a subscriber who is reporting a disaster may provide "voice" data or an "image file taken by the digital camera or the video camera" as part of reporting the disaster. EX1006, ¶¶33, 38. Shida, however, does not provide explicit details on how to efficiently obtain this information or manage updated information or media content corresponding to a disaster. In this manner, when implementing Shida, a POSA would have sought references describing such implementation details, which would have led to a reference like Kraft.

58. As I explained in Section V.B, Kraft describes an efficient way to manage and update social network media content or statuses related to an event like a "natural disaster." EX1030, FIG. 2, 8:39-44, 9:65-66, 10:25-30. Specifically,

Kraft describes a node framework that uses "information models that enable the user to efficiently collect and review information related to an object of interest." EX1030, 2:29-31. "Entity models also advantageously provide feedback information, enabling users to easily share their experiences and opinions of the corresponding real-world entity." EX1030, 2:43-46. Participants are provided with the ability to "add or modify entity models." EX1030, 6:61-65. "Any type of content related to the entity may be linked . . . such as photographs or other images of the real-world entity, audio or video clips featuring the real-world entity, or clips reporting on or discussing the real-world entity." EX1030, 11:58-63.

59. Based on this description, a POSA would have recognized that Kraft's node framework and entity models would have provided an efficient way of gathering, organizing, and updating received responses along with media content from individuals impacted by a disaster. This includes Kraft's specific entity model corresponding to an event node. EX1030, 2:29-31, 2:43-46, 11:58-63. For example, implementing Kraft's event node—which Kraft explicitly uses for "natural disasters"—would have provided a way for "users to easily share their experiences," especially when in need of assistance as described in Shida. EX1030, 2:43-46, 9:65-66. This would have been especially relevant in the context of receiving media content when analyzing a disaster situation as Shida describes. EX1006, ¶¶32-33, 38. Based on the efficiencies gained from using Kraft's

framework, a POSA would have been motivated to combine Kraft with Shida.

60. In addition to being motivated to form such a combination, a POSA would have also known how to combine Shida and Kraft and would have recognized that implementing Kraft with Shida would have been predictable. For example, both Shida and Kraft use a conventional server/client infrastructure to aggregate messages and media content received from participant subscribers. EX1006, ¶¶27, 38, 47; EX1030, 4:64-5:12, 7:39-58. In view of these shared implementation details, a POSA would have readily been able to implement Kraft's entity model and node framework with Shida. Combining Shida and Kraft would have been simply combining elements well known in the prior art using well-known techniques and methods of operation. This would have yielded predictable results and would have amounted to using an event node to obtain and manage disaster response statuses and media content from participants of a social network.

B. Independent Claim 17

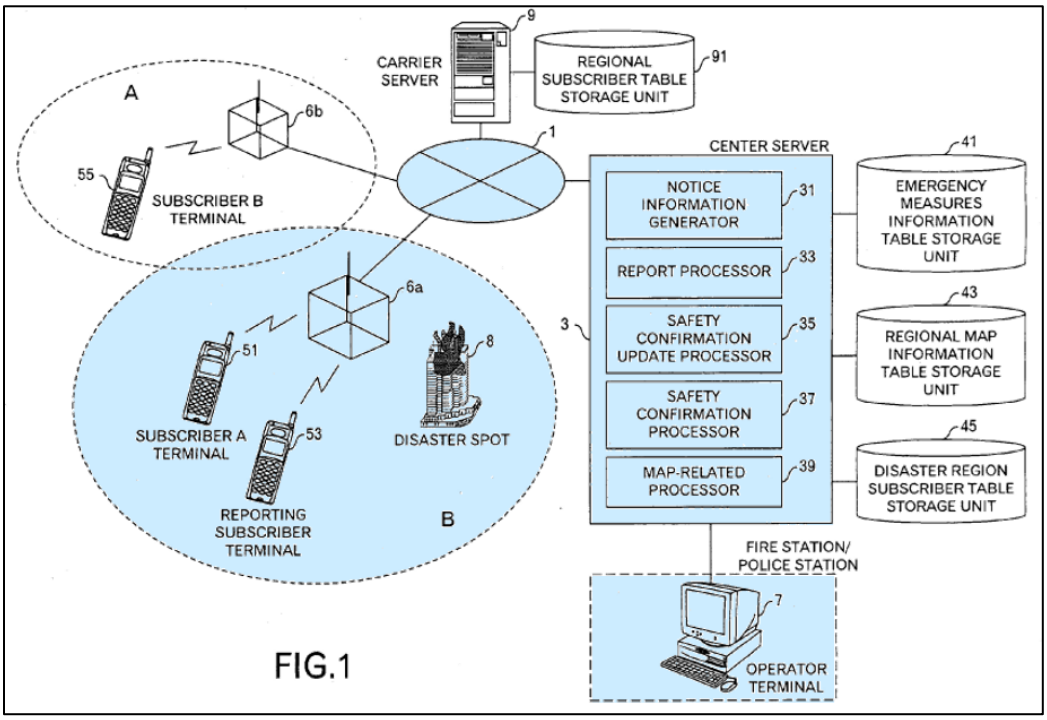
61. In analyzing claim 17, I note that the amendments to the claims add the concepts of (1) establishing an event node and (2) connecting the event node to "N-dimensional social network" nodes. MTA, Appendix A. Both concepts, however, were well known in the art and are described in Kraft as I explained above. Section V.B. As I will further explain below (in addition to the analysis that

I previously provided in EX1003), the combination of Shida and Kraft therefore demonstrates that claim 17 would have been obvious. The additional elements of claim 17 are obvious based on the corresponding analysis that I performed in my previous declaration. EX1003, ¶¶154-177.

62. With respect to the new material added based on the formation of a situational network, I previously explained that Shida describes forming a situational network in response to receiving an indication of an occurrence of a situation for the reasons I previously presented with reference to claim element [1.2]. EX1003, ¶¶158-168.

As I previously explained, Shida's center server forms a situational network related to the occurrence of the situation by establishing connections for communicating with "the subscribers . . . who should be informed of the occurred disaster." EX1006, ¶46. The center server then "generates notice information" related to the disaster "and transmits it to the subscribers to be notified." EX1006, ¶46. "The subscriber terminal of the designated subscriber receives the broadcast notice information from the mobile communication network system, and displays it on the display device." EX1006, ¶46. In this manner, Shida forms a situational network when establishing connections with subscribers who are geographically proximate to a disaster and "should be informed of the occurred disaster. EX1006, ¶¶8, 39, 46, 56, FIG. 1, *see also* ¶¶27, 30, 38. The users of the subscriber terminals

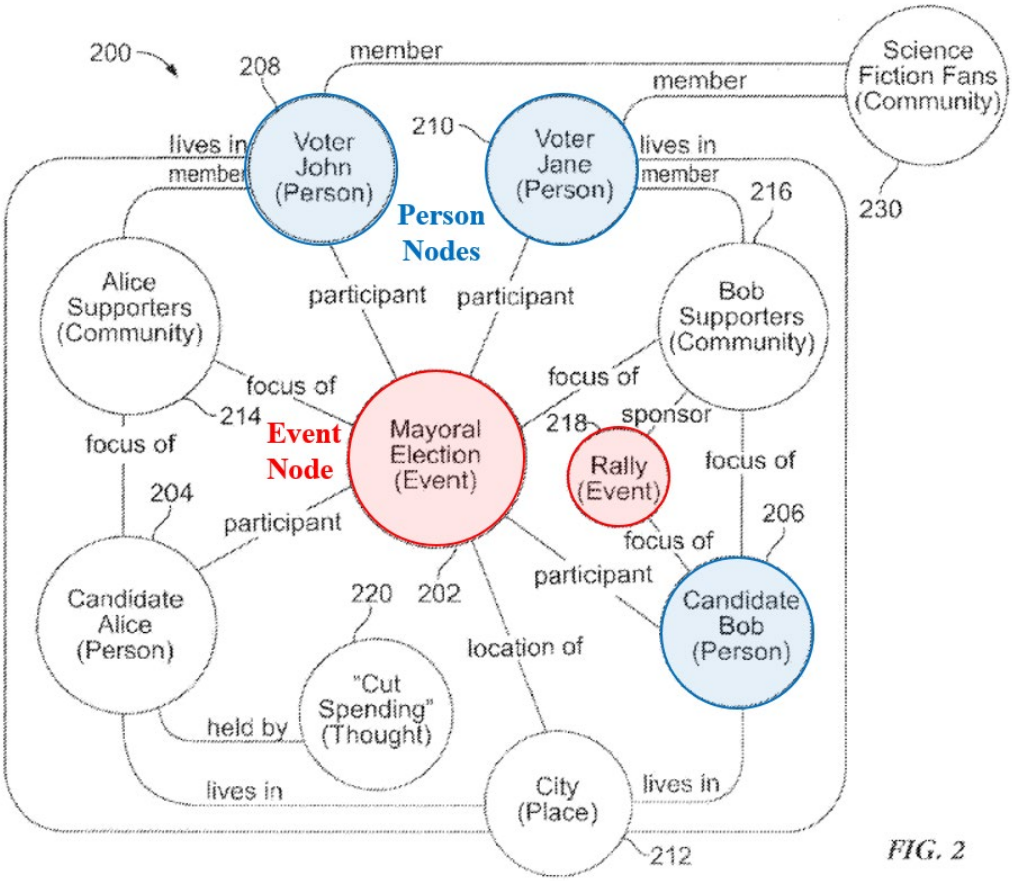
then input a "safety confirmation response," which is transmitted to the center server via a "mobile communication network system." EX1006, ¶50. Shida's center server therefore forms a situational network with subscriber terminals that are associated with respective subscribers who are located in the "disaster occurring region." EX1006, ¶46, FIG. 1.



EX1006, FIG. 1 (annotated).

63. As I explained in Section VIII.A, the combination of Shida's center server with Kraft's world model framework would have rendered obvious the formation of a situational network by establishing an event node hosted by an event node server within an N-dimensional social network and connecting the event to a plurality of existing nodes corresponding to participant devices.

64. As I explained in Section V.B, Kraft describes "systems and methods for information retrieval and communication using a world model." EX1030, 2:35-37. The world model includes "entity models" that can correspond to a "person, place, business, other tangible thing, community, ***event***, or thought." EX1030, 2:37-41, 8:28-31. Kraft's "world model can include features of a ***conventional social network***." EX1030, 10:25-30. Kraft depicts an example "world model" in Figure 2. EX1030, 8:35-38.



EX1030, FIG. 2 (annotated).

65. As depicted in Figure 2, "***[n]ode 202 represents the event***, in this

example a mayoral election," and "[o]ther participants in the election include voter Joe (node 208) and voter Jane (node 210)." EX1030, 8:39-44; *see also id.*, 8:26-28. Another example of an event node is the rally node 218. EX1030, 8:57-62. In addition to organized events, event nodes can also represent "***natural disasters***" and can contain "*text or media content*." EX1030, 3:18-24, 9:65-66. Kraft explains that its event node or event model is "advantageously implemented as a data structure that provides access to information about a real-world entity that the node represents." EX1030, 8:26-28. In this manner, each node or entity model represents a "real-world entity" and can be modified to maintain up-to-date information related to the entity (e.g., the event). EX1030, 2:37-41, 6:54-57, 8:28-31.

66. In view of this disclosure, the combination of Shida and Kraft renders obvious forming a social network by establishing an event node as recited in the claims. As I previously explained, Kraft explains that nodes or entity models can be "advantageously implemented as a data structure that provides access to information about a real-world entity that the node represents." EX1030, 8:26-28, 9:42-49. Forming such a data structure or "event node" corresponding to a "natural disaster," as recited in Kraft's disclosure, teaches "establishing an event node" as recited in the claims. EX1030, 8:39-44, 8:57-62, 9:65-66. A POSA would have recognized that the combination of Shida and Kraft would host such an event node on a server, such as Shida's center server as implemented with functionality from

Kraft's world server and/or search server. EX1006, ¶¶27, 38, 47; EX1030, 4:64-5:12, 7:39-58. As I previously explained, Shida already provides the context for forming a situational network in response to a disaster. EX1003, ¶¶158-168.

67. The combined system would be implemented in a "conventional social network," as taught by Kraft. EX1030, 10:22-30. As Kraft explains, the node framework can also be implemented in a conventional social network. EX1030, 10:22-30. The event node described in Kraft also connects to other "person" nodes or "person entity models" that would operate in a conventional social network. EX1030, 10:22-41. For example, Kraft describes connecting participant nodes to an event node, where the participant nodes correspond to individuals experiencing the event that corresponds to the event node. EX1030, FIG. 2, 8:39-48. As I previously explained, one example would be an event node corresponding to an election or rally, but another type of event node can be a natural disaster. EX1030, 3:18-24, 8:39-44, 9:65-66. Based on the connections of different person nodes to entity nodes described in Kraft, the combination of Shida and Kraft also teaches connecting an event node to a plurality of existing nodes in an N-dimensional social network. EX1030, 10:22-30; EX1027, 43:18-44:3.

68. The combination of Shida and Kraft also teaches connecting the event node to existing nodes corresponding to a plurality of participant devices determined to be geographically proximate to a situation with the participant

devices corresponding to participants in the situational network. Kraft describes connecting an event node to person nodes, which may additionally correspond to "client systems." EX1030, 5:13-33, 6:61-65. The client systems allow users to retrieve information from nodes in a world model and "enables authorized users to update the world model," for example by "modifying entity models," so that the information contained in an event node can remain up-to-date. EX1030, 6:54-57. The combined Shida-Kraft system therefore teaches the claimed configuration of nodes and participant devices and the claimed communications between such nodes based on how Shida establishes a situational network with subscriber terminals that are geographically proximate to disaster regions to provide notice information and to obtain safety confirmation responses. EX1006, ¶¶33, 37, 46, 50, 57-58. Thus, the Shida-Kraft combination renders obvious the amended portions of claim 17. And Shida discloses the non-amended elements of claim 1 for the reasons provided in my previous declaration. EX1003, ¶¶154-177.

69. A POSA would have been motivated to combine Shida and Kraft and would have known how to combine Shida and Kraft for the reasons I explained in Section VIII.A. Specifically, combining Shida and Kraft would have provided an efficient mechanism for managing the receipt of disaster-related content and "enabling users to easily share their experiences." EX1030, 2:43-46. The combination would have also furthered Shida's goal of efficiently informing users

affected in a disaster region and gathering corresponding safety statuses and additional content. EX1030, 2:29-31, 2:43-46, 11:58-63; EX1006, ¶¶33, 38. A POSA would also have realized that such implementations would have merely amounted to combining prior-art elements according to known methods to yield predictable results (using an event node to obtain and manage disaster response statuses and media content from participants of a social network). Section VIII.A.

70. Thus, Shida and Kraft teach the new material introduced in claim 17 relative to the original claim 1.

C. Independent Claims 24 and 29

71. Because independent claims 24 and 29 recite substantially the same amendments as claim 17, a POSA would have found claims 24 and 29 obvious in view of Shida and Kraft for similar reasons. *See* Section VIII.B. A POSA would have also been motivated to combine Shida and Kraft for similar reasons as well. *See* Section VIII.A. Shida also teaches the other claim elements of claims 24 and 29 for the reasons provided in my previous declaration with respect to claims 8 and 13. EX1003, ¶¶178-190.

D. Dependent Claims 19-20, 22-23, 26-28, and 31

72. Because dependent claims 19-20, 22-23, 26-28, and 31 have not been substantively amended, Shida teaches these claims for the reasons provided in my previous declaration with respect to the original claims. EX1003, ¶¶191-212.

IX. GROUND 4: THE COMBINATION OF SHIDA, KRAFT, AND SINHA RENDERS OBVIOUS CLAIMS 18, 21, 25, 30, AND 32.

73. Patent Owner has not provided any substantive amendments to claims 18, 21, 25, 30, and 32. A POSA would have therefore determined that claims 18, 21, 25, 30, and 32 were obvious in view of the combination of Shida, Kraft, and Sinha for the same reasons I provided in my previous declaration with respect to claims 2, 5, 9, 14, and 16. EX1003, ¶¶227-237.

74. A POSA would have been motivated to combine Sinha with Shida and Kraft for similar reasons as well. EX1003, ¶¶213-226. Combining Sinha with Shida and Kraft would have provided additional mechanisms for communicating with, and viewing statuses of, subscribers in a disaster region. For example, a POSA would have been motivated to implement Sinha's "message board" where users impacted by the event can "participate (post and reply)." EX1007, ¶134, FIG. 4K; EX1008, 24:28-25:2, FIG. 5K. The combined system would enable concerned parties, such as friends, to access the message board and roll call information, in addition to the subscribers themselves. *See* EX1005, ¶¶2, 4, 6, 37, 46; EX1009, ¶¶2-5; EX1013, ¶¶2-11; EX1014, ¶33. Additionally, the combined system would have allowed a manager to "get the latest roll call information and escalate a status of an employee," and to "create, modify or update a status of information in the roll call" for users. EX1007, ¶133, FIG. 4J; EX1008, 24:23-27, FIG. 5J. That is, the manager can update the status of a nonresponsive participant within the system

to indicate that the participant is safe. A POSA would have been motivated to combine such features with the Shida-Kraft system for reasons similar to those presented in my previous declaration. EX1003, ¶¶213-226.

X. CONCLUSION

75. 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.

76. 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 24th day of February 2025, in Bonaire, Kingdom of the Netherlands.

Jeremy Cooperstock, Ph.D.