IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

AMERANTH, INC. Plaintiff, v. DOORDASH, INC., EAT'N PARK RESTAURANTS, LLC, and EAT'N PARK HOSPITALITY GROUP, INC., Defendants.	)	Civil Action No. 2:23-cv-2165-WSH **AMENDED COMPLAINT FOR PATENT INFRINGEMENT** **JURY TRIAL DEMANDED**

For its Complaint, Ameranth, Inc. ("Ameranth"), by and through the undersigned counsel, alleges as follows:

THE PARTIES

1. Ameranth is a Delaware corporation having a principal place of business at 5820 Oberlin Drive, Suite 202, San Diego, California 92121.

2. Defendant DoorDash, Inc. ("DDI") is a Delaware company, with, upon information and belief, a brick-and-mortar store, called DashMart, located at 3232 Penn Avenue, Pittsburgh, Pennsylvania 15201 (the "Pittsburgh DashMart"), which has been open since 2021.

3. As shown in the image below, the sign on the Pittsburgh DashMart states "DashMart by DOORDASH", i.e., DashMart is owned/operated by DoorDash, and includes DDI's trademark:

https://www.wpxi.com/news/business/doordash-make-regional-debut-with-dashmart-convenience-concept-penn-avenue-lawrenceville/RGRKTXADZVAKZB6GYOV44WO6NA/ (last accessed Aug. 16, 2024).

4. DDI owns U.S. Trademark Registration 6,623,304 for DashMart and U.S. Trademark Registration No. 6,918,457 for DASHMART.

5. In DDI's Statement of Use filed in the application that became U.S. Trademark Registration No. 6,623,304, DDI identified the specimens as "Screenshots of Applicant's mobile application showing use of the applied-for mark" and when responding to an Office Action in the same application, DDI filed a new specimen identified as "screenshots from Applicant's website showing the mark in use in connection with the applied for services." In both instances, DDI was the "Applicant."

6. When filing the specimen showing use of the mark in the application that became U.S. Trademark Registration No. 6,918,457, DDI identified the specimen as "Screenshots from

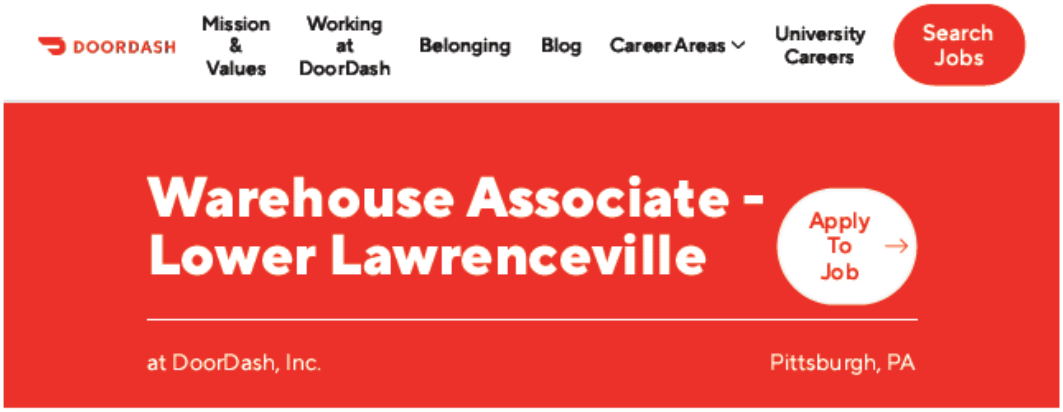
Applicant's website showing the mark in use with the applied-for services." DDI was the "Applicant."

7. DDI's Form 10-K at p. 28 for Fiscal Year 2022, which was signed February 24, 2023, states that "[w]e face certain risks in connection with the operation of DashMart and Wolt Market, our first-party owned and self-operated convenience and grocery delivery businesses." (available at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001792789/6c80c6fa-ff0b-44e3-963b-a6c60669ff56.pdf (last accessed Dec. 20, 2023).

8. The DoorDash website on which DashMart job openings are posted (https://careers.doordash.com) is also the website that provides investor information for the publicly traded DDI (https://ir.doordash.com/).

9. The web page for DashMart is www.doordash.com/dashmart, which falls under the DDI domain name; the "About Us" link (https://www.doordash.com/about/) on the DashMart web page goes to a page about DDI; the "Investors" link (https://ir.doordash.com/overview/default.aspx?_gl=1*58azf1*_gcl_au*MTM2MDMzNDUwMC4xNzIzODMwNjE2&_ga=2.170342504.933805858.1723830617-247626528.1723830616) at the bottom of the DashMart web page goes to a page about DoorDash; the "Company Blog" link (https://blog.doordash.com/en-us?_gl=1*187fxv3*_gcl_au*MTM2MDMzNDUwMC4xNzIzODMwNjE2&_ga=2.200170854.933805858.1723830617-247626528.1723830616) at the bottom of the DashMart web page goes to the "DoorDash [i.e., DDI] Newsroom."

10. DashMart job postings have stated the positions are "at DoorDash, Inc.":



About the Team

DashMart is a store made possible by DoorDash. Customers order their convenience items in the DoorDash app, and our Warehouse Associates pick and pack those orders in a real, brick-and-mortar convenience store.

DashMart stocks everything from convenience store and grocery store essentials to specialty, artisanal food items. We partner with everyone from big brands everyones' familiar with to local craftspeople and chefs that maybe only the locals know.

Shifts: Morning, Day, Evening, Weekend, Part-Time and Full-Time

https://careers.doordash.com/jobs/5102203 (last accessed June 14, 2023).

https://careers.doordash.com/jobs/5029843 (last accessed June 14, 2023).

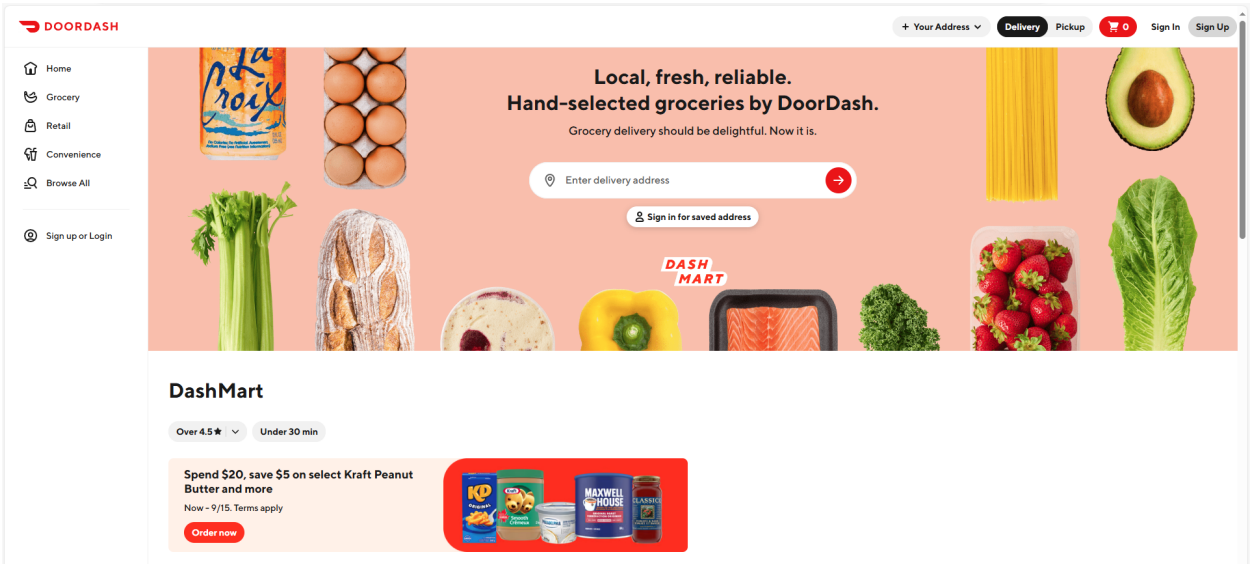
11. The DoorDash website on which Dashers job openings are posted (https://dasher.doordash.com/en-us) is also the website that provides investor information for the publicly traded DDI (https://ir.doordash.com/).

12. On August 5, 2020, DDI announced: "DashMart stores are owned, operated, and curated by DoorDash." Introducing DashMart, Aug. 5, 2020 (available at https://about.doordash.com/en-us/news/introducing-dashmart (last accessed Dec. 20, 2023).

13. On September 4, 2024, DDI's website states "DashMart is an online grocery & convenience store fully owned, operated, and curated by DoorDash." Dashmart from DoorDash |

Hand-selected groceries by DoorDash (available at https://www.doordash.com/p/dashmart-near-me (last accessed Sept. 4, 2024).

14. DDI "hand-select[s]" the groceries for DashMart and consequently they are "curated" by DDI which is consistent with the repeated public admissions that they "own, operate and curate" their DashMart stores.



Id.

15. Defendant Eat'N Park Restaurants, LLC is a Pennsylvania company, with upon information and belief, a place of business located at 285 East Waterfront Drive, Homestead, Pennsylvania 15120.

16. Defendant Eat'N Park Hospitality Group, Inc. is a Pennsylvania company, with upon information and belief, a place of business located at 285 East Waterfront Drive, Homestead, Pennsylvania 15120.

17. Defendants Eat'N Park Restaurants, LLC and Eat'N Park Hospitality Group, Inc. are collectively referred to herein as "Eat'N Park."

18. Defendant DDI and Eat'N Park are collectively referred to herein as "Defendants."

JURISDICTION AND VENUE

19. This action arises under the Patent Act, 35 U.S.C. § 1 *et seq.*

20. Subject matter jurisdiction is proper in this Court under 28 U.S.C. §§ 1331 and 1338.

21. Upon information and belief, Defendants conduct substantial business in this forum, directly and/or through intermediaries, including: (i) at least a portion of the infringements alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct and/or deriving substantial revenue from goods and services provided to individuals in this district and otherwise directs infringing activities to this district in connection with its products and services. DDI's staff operating at and from its DashMart store in Pittsburgh use products and services that are accused of infringement herein. The same is true of the hundreds of DDI's Delivery Driver Dashers operating within this district. Eat'N Park's staff operating at and from its restaurant in Pittsburgh use and integrate with DDI products and services that are accused of infringement herein. That Eat'N Park restaurant and/or other physical locations within this district clearly establish venue in this district for both Eat'N Park and DDI.

22. Further, DDI purposely directs and knowingly deploys its Bbot Mobile Ordering technology that interact with the Accused Instrumentalities and Accused Platform, *see infra*, at physical locations and restaurants within this district, which include the deployment of physical QR codes unique to local restaurants to enable customers within this district to wirelessly receive, display, and interact with menus and content uniquely and generated only for the particular restaurant within this district, as, for example, at Hofbrauhaus in Pittsburgh, PA. The additional $65,000 of revenue generated by Hofbrauhaus in Pittsburgh in one month is due to DDI's specifically and intentionally marketing and availing itself to and deploying its technology in

Hofbrauhaus in Pittsburgh. *See* Ex. U (Hofbrauhaus' general manager stating "You just flip Bbot on and allow people to scan the codes. The beer starts flowing and the food gets run. The first month we used Bbot full-time, we had $65,000 in additional revenue that we wouldn't have had. Yeah. It's really insane. I know."). Further, when Hofbrauhaus in Pittsburgh decided to implement Bbot, upon information and belief, DDI "help[ed] [Hofbrauhaus] set up the POS integration, train staff, and provide signage for your restaurant." Ex. U. This is further confirmation of DDI activity that is knowingly and specifically directed within this district and that DDI is intentionally instructing and training its customers in their infringement of the Network Patents. *See, e.g.,* Ex. W ("The addition of Bbot's products and technology to the DoorDash platform offers merchants more solutions for their in-store and online channels, including in-store digital ordering and payments.").

23. Venue is appropriate in this district because infringing activity occurs in it. For example, DDI engineers most closely aligned with developing this infringing activity, i.e. the "Platform Engineering Team," were hired by DDI to work in and reside within this district. Further almost all Eat'N Park infringing activity occurs within the district and their witnesses reside in this district. The Pittsburgh DashMart is indisputably located within the district and relies entirely on the same DDI website, master database, and mobile app provided to and used by the same DDI customers residing within the district and utilizing the same wireless/cell networks within the district and while also relying on the same Dasher delivery drivers of DDI and which use the same DDI mobile app. Thus, venue is not only appropriate within this district, but it is ideal here where infringement occurs, and many witnesses reside.

24. The same accused products and services are also integrated with, upon information and belief, more than seven hundred other restaurants/stores operating within this district, *see* Food

Delivery in Pittsburgh (available at https://www.doordash.com/food-delivery/pittsburgh-pa-restaurants/ (last accessed May 1, 2023), and with tens of thousands of Pittsburgh area consumers within this district, using DDI's mobile application and supported by a Pittsburgh, Pennsylvania-based engineering team, that is focused on activities directly related and contributing to the infringement allegations herein: DDI is "focused on core platform technologies that drive our delivery logistics platform and solve some of our team's largest distributed systems challenges." Brian Bailey, "Pioneering DoorDash's Platform Evolution in Pittsburgh," Oct. 21, 2021 (available at https://doordash.engineering/2021/10/21/pioneering-doordashs-platform-evolution-in-pittsburgh/ (last accessed Apr. 2, 2023)); *see also* "DoorDash to make regional debut with DashMart convenience concept on Penn Avenue in Lawrenceville," Sept. 22, 2021 (available at https://www.wpxi.com/news/business/doordash-make-regional-debut-with-dashmart-convenience-concept-penn-avenue-lawrenceville/RGRKTXADZVAKZB6GYOV44WO6NA/ (last accessed Apr. 3, 2023)).

25. While DDI announced on January 20, 2023 (just weeks after the first complaint was filed) the cancellation of its planned physical engineering office within this district, the announcement itself admits to infringing activity within this district, including its engineering talent hub located within the Pittsburgh area, and admits to its continuing to hire engineers within this district, i.e.. its "staff" within this district and which it has continued to do and still is doing today:

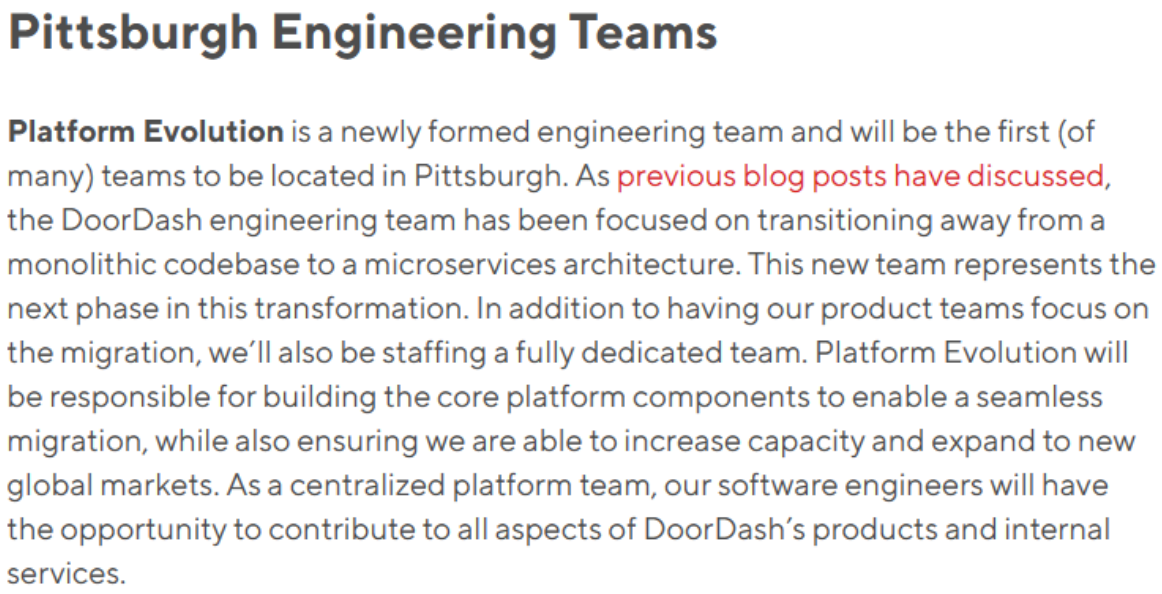
> "We have chosen not to open an office in Pittsburgh at this time," she said. "That said, we do have engineers in Pittsburgh, and are enthusiastic about talent there."
>
> She further emphasized how "DoorDash's flexible work model allows employees to work from wherever is most convenient to them and has enabled us to grow our engineering talent across the U.S., including in Pittsburgh."
>
> The company expects to continue to grow its staff in western Pennsylvania, she added: "DoorDash remains enthusiastic about our plans to grow our talent hub in the Pittsburgh area."
>
> DoorDash's "hub" will likely be figurative now, of course, as the company continues to seek to recruit Pittsburgh engineering talent.

Tim Schooley, "DoorDash opts against establishing Pittsburgh office, instead staying remote with local engineering team," Jan. 20, 2023 (available at https://www.bizjournals.com/10ittsburgh/news/2023/01/20/doordash-engineering-office-pittsburgh.html?utm_campaign=manual&utm_medium=trueAnthem&utm_source=linkedin (last accessed Dec. 20, 2023)). Thus, despite DDI admitting that "we do have engineers in Pittsburgh," for DDI to argue that its engineering staff were not hired to work within its Pittsburgh "hub" and as part of its "staff in Western Pennsylvania" is pure fiction and misleading.

26. DDI also has an "Engineering Leader" in Pittsburgh, Pennsylvania. https://www.linkedin.com/in/mranney (last accessed Apr. 3, 2023), and the Pittsburgh engineering team includes numerous data scientists, software programmers, operations research scientists, partner integrators, computer scientists and more working on all or almost all aspects of the products and services accused herein of infringement. He and, upon information and belief, other DDI employees located in this district are working on the products and services accused of infringement herein. Further, their technical work within this district clearly provides them access to all of the relevant DDI engineering evidence/information.

27. Further, the Pittsburgh engineering team is a centralized platform team that is

contributing to "all aspects of DoorDash's products and internal services":



Pittsburgh Engineering Teams

Platform Evolution is a newly formed engineering team and will be the first (of many) teams to be located in Pittsburgh. As previous blog posts have discussed, the DoorDash engineering team has been focused on transitioning away from a monolithic codebase to a microservices architecture. This new team represents the next phase in this transformation. In addition to having our product teams focus on the migration, we'll also be staffing a fully dedicated team. Platform Evolution will be responsible for building the core platform components to enable a seamless migration, while also ensuring we are able to increase capacity and expand to new global markets. As a centralized platform team, our software engineers will have the opportunity to contribute to all aspects of DoorDash's products and internal services.

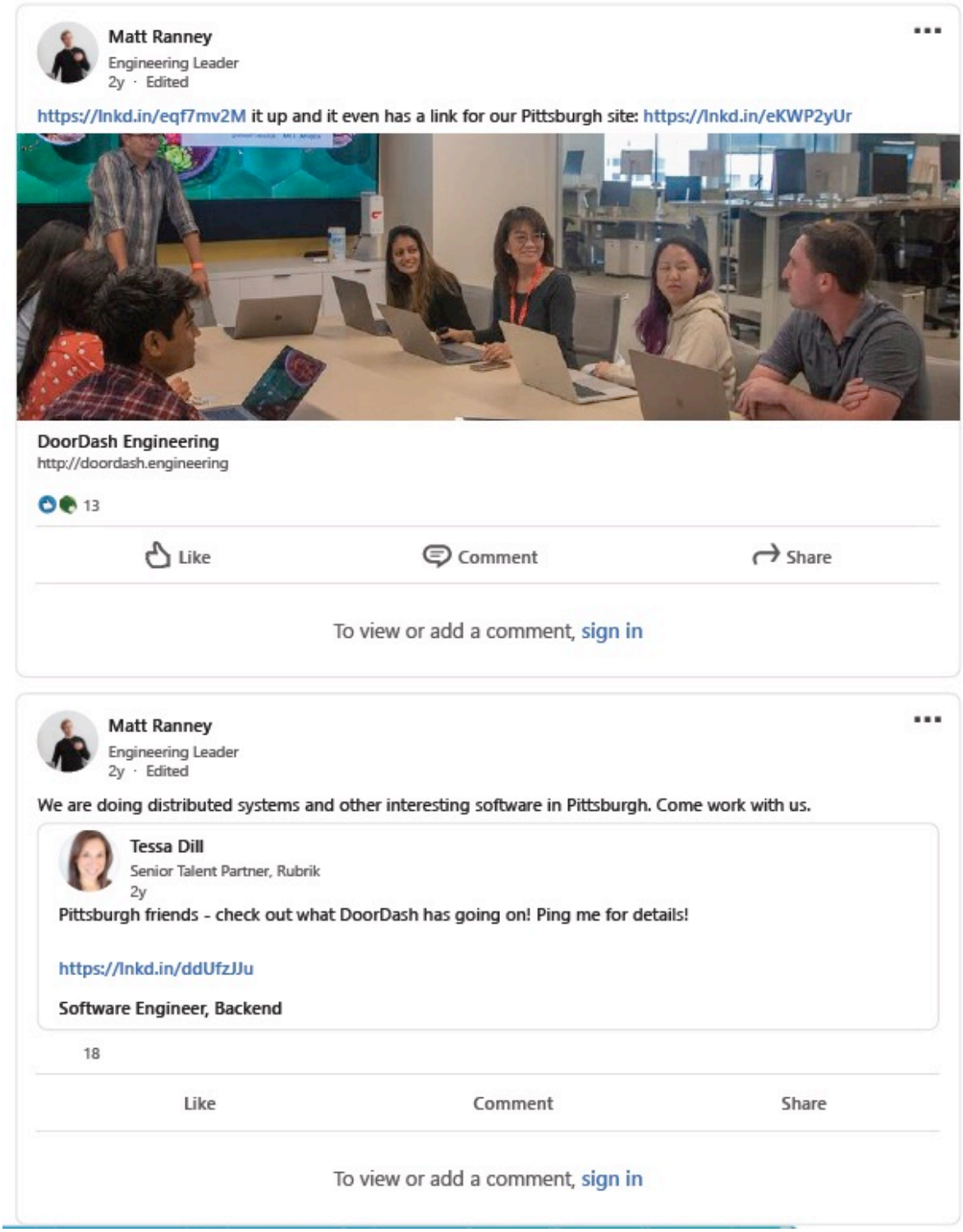
Brian Bailey, "Pioneering DoorDash's Platform Evolution in Pittsburgh," Oct. 21, 2021 (available at https://doordash.engineering/2021/10/21/pioneering-doordashs-platform-evolution-in-pittsburgh/ (last accessed Dec. 20, 2023)).

28. DDI has stated that "Employees are encouraged to gather in person for . . . 'moments that matter': product launches, hackathons, team meetings, planning sessions, decision-making and all-hands gatherings." DDI spokesperson interview, "Remote work or not? How 4 Bay Area companies are tackling the post-pandemic workplace, Nov. 7, 2022 (available at https://www.sfchronicle.com/tech/article/remote-work-bay-area-17559854.php (last accessed Dec. 20, 2023). DDI thus directs, ratifies or establishes in person/team meetings involving members of teams who are employees of DDI, including the Pittsburgh-located DoorDash Platform Engineering Team. The location(s) of these meetings within this district are regular and established places of DDI's business because they are used to conduct business of DDI including, *inter alia*, conducting engineering activities at DDI's direction and for DDI's benefit.

29. By seeking employees specifically for and in its Pittsburgh location, DDI requires

its engineering team members to be located in the Pittsburgh area, otherwise, the job postings would not specify the Pittsburgh area as the location of employment; thus to maintain employment the employee is not free to move out of the Pittsburgh area. DDI requires the pertinent engineering team members to perform their job functions in the Pittsburgh area, otherwise it would not be specifying "Pittsburgh, PA" in its job postings. Since the employees work at their own homes in the Pittsburgh area and not in an office provided by DDI, DDI has established or ratified the employees' homes as DDI's places of business. The employees' homes are regular and established places of DDI's business because they are used to conduct business of DDI including, *inter alia*, conducting engineering activities at DDI's direction and for DDI's benefit. For example, at least one Pittsburgh team member, Matt Ranney, the team leader, has used his home office to not only conduct company business, but also to publicly represent DDI nationwide on technical subject matter directly related to the infringements alleged herein, thus clearly establishing his home office location as a DDI physical place of business in this district. *See* Building Reliable Systems With DoorDash's Matt Ranney (Mar. 27, 2023) (available at https://www.youtube.com/watch?v=6nIuDNJeE4g (last accessed Dec. 21, 2023)).

30. Mr. Ranney has made the following posts on LinkedIn:



https://www.linkedin.com/posts/mranney_episode-5-matt-ranney-at-doordash-activity-7044758935437803520-n6Nz?trk=public_profile_share_view (last accessed Aug. 16, 2024).

31. Members of the DoorDash Platform Evolution Engineering Team, as well as other

engineering teams, as discussed above, are (both individually and collectively) located in Pittsburgh pursuant to DDI's requirement and perform functions directed to DDI's business (in the employees' homes or elsewhere in the Western District of Pennsylvania). The employees' individual and collective activities at DDI's direction separately establish venue over DDI.

32. As is stated above, in addition to the engineering team in Pittsburgh, which is focused on the platform/framework technology of Ameranth's patent claims as explained and admitted below, DDI also employs hundreds of delivery Dashers, each equipped with DDI's mobile application, throughout the district, all of which use technology that is accused of infringement herein and which is implemented within DashMart in Pittsburgh, as well as, upon information and belief, more than seven hundred stores and restaurants operating within this district and all of which are integrated with tens of thousands of consumers, each also equipped with DDI's mobile application, and the respective restaurants and stores of those customers are integrated and operating together and within this district.

33. Venue is thus proper in this district pursuant to the second clause of 28 U.S.C. § 1400(b) which states venue is appropriate "where the defendant has committed acts of infringement and has a regular place of business."

AMERANTH BACKGROUND

34. Inventor and current President Keith McNally founded Ameranth in 1996 to develop and provide innovative wireless, real-time communications technology and associated computer software and hardware systems that would enhance the efficiency of hospitality-focused enterprises such as hotels, restaurants, entertainment and event ticketing venues and similar establishments. Ameranth successfully developed and deployed its products/systems to many thousands of locations, including several of the world's largest restaurant and hotel chains, won

more than ten important technology awards for its technology and has licensed its patents to more than 70 different companies.

35. Ameranth's inventions and development of these systems has already resulted in the issuance by the USPTO of ten patents: 6,384,850 (the "'850 patent) (issued 2002), 6,871,325 (the "'325 patent") (issued 2005), 6,982,733 (the "'733 patent") (issued 2006), 8,146,077 (the "'077 patent") (issued 2012), 9,009,060 (the "'060 patent) (issued 2015), 9,747,651 (the "'651 patent") (issued 2017), 10,970,797 (the "'797 patent) (issued 2021), U.S. Patent No. 11,276,130 (the "'130 patent") (issued 2022), the '415 patent (issued 2023), and the '587 patent (issued 2023). Further, one additional patent application is pending in this patent family, with this additional patent expected to issue later in 2024.

36. The 2023-issued Network Patents are directed to Ameranth's new parallel-operational-capable, web server network and distributed computing-based patent family, based upon the new and expanded teachings disclosed in the July 26, 2005 patent application, which is a continuation-in-part of the '077 patent. The claims of the Network Patents are not directed to formatting and synchronizing a graphical user interface (GUI) with wireless handheld computers, as is further explained below.

37. After the issuance of *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), regarding patent-eligibility (35 U.S.C. § 101), many claims of the '850, '325, '733, '077 and '651 patents were found ineligible by the Patent Trial and Appeal Board or district courts, and then affirmed to be so by the Federal Circuit in three different rulings, *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (2016), *Ameranth, Inc. v. Domino's Pizza, LLC*, 792 Fed. Appx. 780, 788 (2019); and *Ameranth, Inc. v. Olo Inc.*, No. 2021-1211, 2021 WL 4699180 (Fed. Cir. Oct. 8, 2021).

38. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), has been widely

acknowledged to be confusing and difficult to apply, including by all twelve judges of the Federal Circuit and the U.S. Solicitor General multiple times.

39. On April 5, 2023, in response to U.S. Supreme Court orders inviting the Solicitor General to express the views of the United States in two cases involving 35 U.S.C. § 101, the U.S. Solicitor General in conjunction with the Solicitor at the U.S. Patent and Trademark Office again confirmed the confusion surrounding patent-eligibility and the need for the law to be clarified. Brief for the United States as Amicus Curiae, *Interactive Wearables, LLC v. Polar Electro Oy*, No. 21-1281 (filed Apr. 5, 2023); Brief for the United States as Amicus Curiae, *Tropp v. Travel Sentry, Inc.*, No. 22-22 (filed Apr. 5, 2023).

40. All claims of the Network Patents are materially different from those prior invalidated claims. While the invalidated claims were directed to graphical user interfaces and/or synchronizing displays, the claims of the Network Patents are clearly directed to the improved, networked and intelligent web server computer as well as to intelligent and distributed computing networks. The Network Patents' claims are explicitly directed to improving the claimed, backend web server computer, with multiple new and non-conventional inventive concepts, and with the technical improvements and the "how" specifically included and in several instances stated as so within the claims themselves – and supported by and resulting from the extensive new inventive teachings and new material disclosed in the July 26, 2005 continuation-in-part application and Figure 10. These claims specifically address and solve via technological solutions the long recognized technological problem associated with distributed computing systems and defined by the CAP Theorem Challenge of seeking to concurrently optimize consistency, availability and partition tolerance (e.g. avoiding/recovering from errors). DDI too, recognizes that the CAP Theorem Challenge is an established technical problem and has applied/considered/addressed it,

in designing its own copycat systems and technological solutions. *See, e.g.,* Sudhir Tonse, "How Doordash is Scaling its Data Platform to Delight Customers and Meet Our Growing Demand" (Sept. 15, 2020) (available at https://careers.doordash.com/blog/how-doordash-is-scaling-its-data-platform/ (last accessed Sept. 12, 2024) ("For example, in most offline analytical cases we should strive for consistency of data rather than availability, as discussed in the CAP theorem."); Seed Zeng, "**Cassandra Unleased: How We Enhanced Cassandra Fleet' Efficiency And Performance" (**Jan. 30, 2024) (available at https://careers.doordash.com/blog/cassandra-unleashed-how-we-enhanced-cassandra-fleets-efficiency-and-performance/ (last accessed Sept. 12, 2024) ("*"Consistency trade-off*: In accordance with the CAP theorem, Cassandra often trades off consistency for availability and partition tolerance, which might not suit all use cases."

41. The issuance of the Network Patents' claims are the second and third of Ameranth's new parallel-operational-capable, web server computer-based network and master distributed database/computing-based patent family but include further inventive concepts and specific technological features.

42. Further as is discussed and confirmed in detail below, DDI is competing and operating unfairly against Ameranth because its inventors copied many of the 2005 inventive concepts of the Network Patents into newly issued patents (claimed for and issued to DDI in 2023 and 2024) while concurrently claiming those copied innovations and advancements for DDI and swearing under oath that they were new, novel, nonconventional, and improvements to computers despite their having inventive priority dates more than 15 years *after* Ameranth had already invented and deployed them in 2005. Thus, these are all admissions that Ameranth's 2005-based innovations were and are (i) not abstract, (ii) nonconventional, and (iii) improvements to computers and networks. In each of the patents DDI has obtained for concepts invented by

Ameranth, DDI has not disclosed Ameranth's patents to the U.S. Patent and Trademark Office in accordance with its duty of disclosure. In other words, by not disclosing Ameranth's patents to the U.S. Patent and Trademark Office, DDI is essentially improperly claiming Ameranth's earlier inventions as its own. Additionally, DDI also has sought to invalidate Ameranth's patents making arguments in this Court that contradict arguments DDI made before the U.S. Patent and Trademark Office.

THE PATENTS-IN-SUIT

43. On December 12, 2023, U.S. Patent No. 11,842,415 (the "415 patent"), entitled "Intelligent Web Server With Multi-Modes of Contact, Multi-Communications Protocols, Multi-User and Parallel Operational Capabilities for Use in a Hospitality Market Comprising," was duly and lawfully issued by the U.S. Patent and Trademark Office. A true and correct copy of the '415 patent is attached hereto as Exhibit A.

44. On December 19, 2023, U.S. Patent No. 11,847,587 (the "587 patent"), entitled "Intelligent Backoffice and Handheld/Mobile Computing Network With Varying, Multi-Modes of Contact, and Parallel Capabilities for Use in Completing Remotely Initiated Hospitality Tasks in the Hospitality Market Comprising:," was duly and lawfully issued by the U.S. Patent and Trademark Office. A true and correct copy of the '587 patent is attached hereto as Exhibit B.

45. The '415 and '587 patents both claim priority as of July 26, 2005 to U.S. Patent Application No. 11/190,633, a true and correct copy of which is attached hereto as Exhibit N. That application included 76 original claims that not only further confirm and support the Network Patents' inventive concepts, but also provide programming guidance and teach new and non-conventional programming steps to the person of skill in the art, along with the new continuation-in-part specification material and more than 45 examples within what is now columns 13-18 and

Figure 10 in the Network Patents. These original claims have never before been considered by any prior court nor as to any prior patent in any proceeding and consequently they represent entirely new factual material which cannot be ignored.

46. Ameranth is the assignee and owner of the rights, titles and interests in and to the '415 and '587 patents (the "Network Patents"), including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them.

47. Claims 1 and 9 of the '415 patent are as follows:

> 1. An improved and intelligent web server computer with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities for use in a hospitality market comprising:
>
> at least one said web server computer which can be accessed, controlled and provide results, statistics and/or reports to a system administrator via a web based interface;
>
> at least one hospitality software application integrated with the at least one said web server computer;
>
> a master database comprising data and parameters of the at least one hospitality software application integrated with the at least one said web server computer and with a usable file structure dictated prior to execution, thus improving efficiency and reliability, the master database being accessible via a database application program interface (API) and with predefined formats stored within it, wherein the API intelligently learns, updates and stores multiple communication modes of contact and related operational parameters including set periods of time or reflecting other factors associated with hospitality entities and/or hospitality users along with their prior preferences, if any;
>
> Middleware/Framework Communications Control Software, (MFCCS) which enables via its centralized system layer architecture the at least one web server computer to communicate with two or more different wireless handheld computers, each with different mobile operating systems and with mobile compatible versions of the said hospitality application accessible from and with a different set of handheld GUI screens uniquely enabled for both user initiating actions and later selection of choices directly on and from the touchscreens of said different wireless handheld computers and for multiple modes of contact, multiple communications protocol functionality, integrated with the master database and with the at least one hospitality software application;
>
> at least one external software API, which enables the integration of the at

least one hospitality software application via the MFCCS and its layer architecture with one or more non- hospitality applications and to enable real time searches for communication modes of contact and/or related operational parameters, not already stored and available in the master database, if any;

wherein the at least one said web server computer is integrated with the MFCCS and is programmed with instructions executable to choose and apply a primary communications mode of contact, for and with the hospitality entities and/or users, for a period of time, to execute hospitality application task requests from said two or more wireless handheld computers associated with their respective users, and further enabled to automatically choose and execute alternate communication modes of contact and/or alternate communications protocols if needed and appropriate at the time of execution upon failure of the primary communications mode of contact, and/or apply rule based intelligence to not attempt again for an operational period of time the primary communication mode, the instructions being further executable to enable the at least one said web server computer to further improve its efficiency by using less computer resources and less computing time through the avoidance of attempting communications modes of contact to hospitality entities and/or users and/or for subsequent user hospitality application task requests, likely to fail during the operational period of time if attempted again during that time.

9. A network of interconnected, intelligent and improved web server computers with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities for use in a hospitality market comprising; [*sic*]

at least one network of said interconnected web server computers which can be accessed and controlled by system administrators via a web based interface;

at least one hospitality software application integrated with the at least one said web server network;

a master database comprising data and parameters of the at least one said hospitality software application integrated with the at least one said network of web server computers and with a usable file structure dictated prior to execution, the master database being accessible via a database application program interface (API) and with predefined formats stored within it, thus improving network efficiency and reliability, wherein the API intelligently learns, updates and stores inventory data and/or multiple communication modes of contact and related operational parameters associated with hospitality entities and/or hospitality users along with their prior preferences, if any;

Middleware/Framework Communications Control Software (MFCCS) which enables via its centralized system layer architecture the at least one said web server network to communicate with two or more different wireless handheld computers each with different mobile operating systems and with a different set of handheld GUI screens uniquely enabled for both user initiating actions and later

> selection of choices directly on and from the touchscreens of said different wireless handheld computers and for multiple modes of contact, multiple communications protocol functionality, integrated with the master database and with the at least one hospitality software application;
>
> at least one external software API, which enables the integration of the at least one hospitality software application via the MFCCS with one or more non-hospitality application and to enable access to information not already stored and available in the master database;
>
> wherein the at least one web server network is integrated with the MFCCS and is programmed with instructions enabled to choose and apply a communications mode of contact for and with the hospitality entities and two or more different communications modes of contact during the same hospitality task with handheld users to execute hospitality application task requests with a first hospitality entity from said wireless handheld computers associated with their respective users, and further enabled to automatically choose and execute with alternate hospitality entities when inventory is learned to be unavailable at a first hospitality entity and then improve efficiency by applying rule based intelligence to not attempt again such a request with the first hospitality entity for a subsequent user request, now known by the interconnected web server network as to be unavailable to enable the web server network to use less computer resources and less computing time through the avoidance of attempting communications modes of contact to hospitality entities known in advance to fail to meet the subsequent user requests.

Exhibit A at 21:41-22:42, 43:4-67.

48. In accordance with and by applying Ameranth's claim constructions (as in the table below), claim 1 of the '415 patent is directed to "an improved and intelligent web server computer that optimizes its performance and efficiency via parallel operations, a centralized layer architecture and by learning to intelligently choose and apply multiple communications modes/protocols likely to succeed in completing its tasks while avoiding those likely to fail." This claim provides a technological solution to a technological problem. The claim incorporates new teachings from the expanded continuation-in-part specification material in columns 13-18 which were non-conventional and improved the web server computer because they are directed to enhancing (improving) web-based systems, e.g., web servers, as in this claim. *See* '415 patent at 18:43-47 ("It is further noted that, in various embodiments, various of the operations discussed

above may be ***implemented in a manner*** that ***enhances*** [improves] ***existing*** [conventional] systems (e.g., ***web-based systems***) such as, for instance, ***existing*** systems for reservation, appointment, ***orders***, and/or waitlisting." (emphasis added)).

49. In accordance with and by applying Ameranth's claim constructions (as in the table below), claim 9 of the '415 patent is directed to "a network of interconnected, intelligent and improved web server computers that are able to concurrently achieve consistency, availability, and partition-tolerance via applying rule-based intelligence to avoid communications modes known to fail." This claim provides a technological solution to a technological problem. The claim incorporates new teachings from the expanded continuation-in-part specification material in columns 13-18 which were non-conventional, since they were/are directed to enhancing (improving) web-based systems, e.g. web servers, as in this claim. *See* '415 patent at 18:43-47 ("It is further noted that, in various embodiments, various of the operations discussed above may be ***implemented in a manner*** that ***enhances*** [improves] ***existing*** [conventional] systems (e.g., ***web-based systems***) such as, for instance, existing systems for reservation, appointment, ***orders***, and/or waitlisting." (emphasis added)).

50. In accordance with and by applying Ameranth's claim constructions (as in the table below), claim 15 of the '415 patent is directed to "a network of interconnected, intelligent and improved web server computers that are able to concurrently achieve consistency, availability, and partition-tolerance by applying dual modes of contact with the handheld users and rule-based intelligence to avoid communications modes known to fail." This claim provides a technological solution to a technological problem. The claim incorporates new teachings from the expanded continuation-in-part specification material in columns 13-18 which were non-conventional, since they were/are directed to enhancing (improving) web-based systems, e.g. web servers, as in this

claim. *See* '415 patent at 18:43-47 ("It is further noted that, in various embodiments, various of the operations discussed above may be ***implemented in a manner*** that ***enhances*** [improves] ***existing*** [conventional] systems (e.g., ***web-based systems***) such as, for instance, existing systems for reservation, appointment, ***orders***, and/or waitlisting." (emphasis added)).

51. Claims 1 and 7 of the '587 patent are as follows:

> 1. An intelligent backoffice and handheld/mobile distributed computing network with varying, multi-modes of contact, and parallel operational capabilities for use in completing remotely initiated hospitality tasks in the hospitality market comprising:
>
> a network of distributed and linked backoffice servers that are continuously synchronized in real time and which are enabled to be remotely accessed and managed by a system administrator via a web based interface;
>
> one or more hospitality software applications linked with the backoffice servers and with handheld/mobile compatible versions available to be remotely accessed and used by handheld/mobile equipped users and including two or more different handheld/mobile computers with their respective and different mobile operating systems;
>
> a master database comprising multiple linked and continuously synchronized in real-time databases throughout the network and with data and parameters of the one or more hospitality software applications integrated with the said network and with predefined formats, the master database comprising a usable file structure dictated prior to execution, thus improving efficiency and reliability, wherein the one or more hospitality software applications learn, update, store and intelligently apply varying modes of contact with the handheld/mobile equipped hospitality users and in accordance with their preferences, if any;
>
> Middleware/Framework Communications Control Software (MFCCS) which enables via its centralized system layer architecture the parallel operations capable network to communicate with said two or more different wireless handheld computers, each with different mobile operating systems and with mobile compatible versions of the said hospitality application accessible from the back office servers;
>
> at least one external software application program interface (API), which enables the full integration of the one or more hospitality software applications via the MFCCS and its layer architecture with one or more non-hospitality applications;
>
> additionally the network is further enabled to automatically contact one or more other entities when the remotely initiated hospitality task cannot be completed

with a first entity and to intelligently continue this, until the task is completed;

additionally the network is further enabled to intelligently apply time constraints and/or hold times, associated with the hospitality task, when applicable;

wherein the parallel operations capable network is integrated with the MFCCS and the backend servers are programmed with instructions executable to choose and apply varying modes of contact during the same remotely initiated hospitality task, for and with the handheld/mobile customers and/or handheld/mobile equipped entity staff, to intelligently execute and support completion of the hospitality application task requests.

7. An intelligent backoffice and handheld/mobile distributed computing network with varying, multi-modes of contact, and parallel operational capabilities for use in completing remotely initiated hospitality tasks in the hospitality market comprising:

a network of distributed and linked backoffice servers that are continuously synchronized in real time and which are enabled to be remotely accessed and managed by a system administrator via a web based interface;

one or more hospitality software applications linked with the backoffice servers and with handheld/mobile compatible versions available to be remotely accessed and used by handheld/mobile equipped users and including two or more different handheld/mobile computers with their respective and different mobile operating systems;

a master database comprising multiple linked and continuously synchronized in realtime databases throughout the network and with data and parameters of the one or more hospitality software applications integrated with the said network and with predefined formats. the master database comprising a usable file structure dictated prior to execution, thus improving efficiency and reliability, wherein the one or more hospitality software applications learn, update, store and intelligently apply varying modes of contact with the handheld/mobile equipped hospitality users and in accordance with their preferences, if any;

Middleware/Framework Communications Control Software (MFCCS) which enables via its centralized system layer architecture the network to communicate with said two or more different wireless handheld computers, each with different mobile operating systems and with mobile compatible versions of the said hospitality application accessible from the backoffice servers;

at least one external software application program interface (API), which enables the full integration of the one or more hospitality software applications via the MFCCS and its layer architecture with one or more non-hospitality applications;

additionally, the network is further enabled to automatically communicate alerts to the handheld/mobile equipped management staff when corresponding

criteria are met;

wherein the network is integrated with the MFCCS and the backend servers are programmed with instructions executable to choose and apply varying modes of contact during the same remotely initiated hospitality task, for and with the handheld/mobile customers and/or handheld/mobile equipped entity staff, to intelligently execute and support completion of the hospitality application task requests.

Exhibit B at 21:44-22:33, 22:53-54:8.

52. In accordance with and by applying Ameranth's claim constructions (as in the table below), claim 1 of the '587 patent is directed to "an intelligent backoffice and handheld/mobile distributed computing network that is improved by being able to concurrently achieve consistency, availability, and partition-tolerance via parallel operations, continuously synchronized in real time web servers and multiple linked databases, and intelligent execution via choosing and applying varying modes of contact." This claim provides a technological solution to technological problems including the challenge identified in the CAP Theorem. The claim incorporates new teachings from the expanded continuation-in-part specification material in columns 13-18 which were non-conventional, since they are directed to enhancing (improving) web-based systems, e.g. web servers, as in this claim. '587 patent at 18:43-47 ("It is further noted that, in various embodiments, various of the operations discussed above may be ***implemented in a manner*** that ***enhances*** [improves] ***existing*** [conventional] systems (e.g., ***web-based systems***) such as, for instance, existing systems for reservation, appointment, ***orders***, and/or waitlisting." (emphasis added)).

53. In accordance with and by applying Ameranth's claim constructions (as in the table below), claim 7 of the '587 patent is directed to "an intelligent backoffice and handheld/mobile distributed computing network that is improved by being able to achieve consistency, availability, and partition-tolerance via parallel operations and intelligent execution and by choosing and applying varying modes of contact." This claim provides a technological solution to a

technological problem. The claim incorporates new teachings from the expanded continuation-in-part specification material in columns 13-18 which were non-conventional, since they were/are directed to enhancing (improving) web-based systems, e.g., web servers, as in this claim. '587 patent at 18:43-47 ("It is further noted that, in various embodiments, various of the operations discussed above may be ***implemented in a manner*** that ***enhances*** [improves] ***existing*** [conventional] systems (e.g., ***web-based systems***) such as, for instance, ***existing*** systems for reservation, appointment, ***orders***, and/or waitlisting." (emphasis added)).

54. As can be seen by the differences between what different claims of the Network Patents are directed to, as set forth above, there is no claim representative of all of the claims of the Network Patents.

55. No text in the Network Patents states the combination of steps as claimed in the '415 and '587 patents were commonly known or that the design of the Ameranth framework and multi-layered system architecture of the overall software systems were commonly known.

56. Further, the new material, in the continuation-in-part application of July 2005 not only included 45 examples to instruct and teach a person of ordinary skill in the art the code/steps for the new inventive concepts as claimed in these new patents, but there are indisputably specific programming instructions/steps and flow diagrams that are disclosed and taught in the specification and further supported through the teachings of the original claims from 2005, that a qualified person of ordinary skill in the art would understand and apply, just as Dr. Goodrich declares in his declaration.

57. The specification teaches, includes, and provides the programming guidance/steps, and the specification indisputably states, as below, that the new continuation-in-part material, added in July 2005, improves prior systems: "It is noted that such computers servers [web servers]

and/or web sites, may for example employ **software programmed to employ** one or more **of the operations discussed above**." '415 patent at 18:33-36; '587 patent at 18:33-36.

58. A person of ordinary skill in the art would understand that since the Network Patents' claims are claims from a continuation-in-part patent, the "operations discussed above" are from the new continuation-in-part teachings, inclusive of their 45+ examples teaching pseudo code (as confirmed in Mr. McNally's inventor declaration and Dr. Goodrich's expert declaration) and including/teaching actual programming steps as in e.g. columns 13-18, while applying the teachings of Figure 10, and supported by certain teachings in and from the July 2005 original claims.

59. A person of ordinary skill in the art ("POSITA") at the time of the inventions of the Network Patents would be:

> someone with a bachelor's degree in computer science, industrial engineering, operations research, or related field, and either (1) two or more years of relevant industry experience for hospitality applications and/or (2) an advanced degree in computer science, industrial engineering, operations research, or related field. This description is approximate, and more work experience could compensate for less education or more education could compensate for less work experience.

Exhibit C at ¶ 16.

60. "The purpose of claim construction is to give claim terms the meaning understood by a person of ordinary skill in the art at the time of the invention." *Mass. Inst. of Tech. v. Shire Pharms., Inc.*, 839 F.3d 1111, 1118 (Fed. Cir. 2016).

61. Ameranth hereby proposes and officially adopts the below claim constructions, all of which must be viewed through the eyes of a POSITA, as defined above. These constructions, and all of them as a whole, must be fully considered and applied to properly determine what the claims are directed to and which doing so confirms the correctness of what the claims are "directed to" as stated in ¶¶ 48-50 and 52-53, *supra*. The claim constructions applicable to some or all of

the claims of both the '415 and '587 patents are presented first and two additional claim constructions unique to the '587 patent are presented second; the same terms appearing in both patents are to have the same meanings and same constructions:

Claim Terms/Phrase	***'415 Patent Claim Nos.***	***Proposed Construction with Supporting Evidence***
"web server computer"	all	any machine capable of running or executing server software that uses HTTP to serve up HTML documents and any associated files and scripts when requested by a client, such as a Web browser Evidence: Microsoft Computer Dictionary (5th ed. 2002) at p. 260); Exhibit C at ¶ 38; https://www.pcmag.com/encyclopedia/term/web-server (last accessed Dec. 20, 2023); '415 patent at 17:40-42
"said web server computer"	all	an improved and intelligent web server computer with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities Evidence: Preamble of claim 1; Exhibit D at pp. 9-12 This is an ordered combination defined and limited by the anteceding and limiting, first element of the claim preamble and with all terms non- conventionally arranged and integrated to improve the web server computer
"multi"	all	two or more
"modes of contact"	all	communication options including e.g. telephone calls, web pages, emails, pages, facsimiles, instant messages, and text messages Evidence: '415 patent at Figure 10, 14:44-56, 15:25-16-9, 15:52-55, 16:27-36, 17:38-51, 17:59-62; Exhibit D at pp. 9-12

Claim Terms/Phrase	*'415 Patent Claim Nos.*	*Proposed Construction with Supporting Evidence*
"parallel operational capabilities"	all	parallel processing of related operational parameters to improve the performance of the web server Evidence: Microsoft Computer Dictionary (5th ed. 2002) at p. 391; '415 patent at 16:8-21, 17:38-51, 17:59-18:6, 18:32-35; Exhibit D at p. 9
"related operational parameters"		a set of operational criteria or rules related to the modes of contact and associated with the hospitality entities and for remote hospitality users, such as e.g. periods of time,, alternate modes, multi-thread communications, restaurant inventory/menu options that are set aside for one or more particular purposes, location, type and/or price range Evidence: '415 patent at 13:61-66, 13:65-14:5, 15:52-55, 17:38-51, 15:66-16:2, 16:55-17:15, 18:14-21, 32-35; Exhibit D at pp. 2, 10
"along with their prior preferences"	all	a set of corresponding operational criteria such as e.g. their order history, one or more orders of restaurants as to user ranking, and/or most desirable, in accordance with previously established (e.g. stored) user unique lists, via database lookups, with matches to search criteria, with only one, multiple or all of selected entities/preferences Evidence: '415 patent 14:10-28, 15:66-16:2, 16:55-17-15, 18:14-21; Exhibit D at p. 10
"intelligence"	all	the ability of a program to monitor its environment and initiate appropriate actions to achieve a desired state. For example, a program waiting for data to be read from disk might switch to another task in the meantime Evidence: '415 patent at 10:51-55, 15:62-16:7, 16:13-21, 16:41-43, 16:64-17:7; Microsoft Computer Dictionary (5th ed. 2002) at p. 278, Def. 2

Claim Terms/Phrase	***'415 Patent Claim Nos.***	***Proposed Construction with Supporting Evidence***
"learning and rule based intelligence"	all	applying intelligence to include concurrently with pre-established and/or developed rules, e.g. applying or not applying a mode of contact, dependent on related operational parameters and/or prior preferences Evidence: '415 patent at 10:51-55, 15:62-16:7, 16:13-21, 16:41-43, 16:64-17:7, 17:9-19, 17:42-51; Microsoft Computer Dictionary (5th ed. 2002) at p. 278, Def. 2
"network of said interconnected web server computers"	9-20	a network of interconnected, intelligent and improved web server computers with multi modes of contact, multi communications protocols, multi-user and parallel operational capabilities '415 patent at 14:58-63, 18:22-30, 18:48-60, Figure 10; *see also* definitions for "interconnected," "storage area network," and "system area network" in Microsoft Computer Dictionary (5th ed. 2002) at pp. 278, 498, 499 This is an intelligent ordered combination defined and limited by the anteceding and limiting, first element of the claim preamble and with all terms non-conventionally arranged and integrated to improve the web server computer and the overall network.
Middleware, Framework, Communications Control Software (MFCCS)	All	Ameranth's Middleware Framework Communications Control Software as shown in Figure 10 which enables via its centralized layer architecture the at least one web server. Evidence: '415 patent at Figure 10, claims; Ex. O at p. 2 (prosecution history of the preceding '130 patent in which the MFCCS was specifically relied upon, i.e., renamed to distinguish prior art and directly associated with Figure 10, and the center of which clearly identifies the MFCCS as Ameranth's MFCCS and thus it is not a generic nor conventional/known structure).

Claim Terms/Phrase	*'587 Patent Claim Nos.*	*Proposed Construction with Supporting Evidence*
"a network of distributed and linked backoffice servers"	all	an intelligent back office and handheld/mobile distributed computing network with varying, multi modes of contact, and parallel operational capabilities, and which is continuously synchronized along with its master database in real time Evidence: Preamble of claims 1 and 7, first element of claims 1 and 7; '587 patent at 14:57-63, 18:23-31, 18:49-61, Figure 10 and as is further defined in/by the sub/related definitions above as to the '415 patent and including these below too This is an intelligent ordered combination defined and limited by the anteceding and limiting, first element of the claim preamble and with all terms non- conventionally arranged and integrated to improve the overall network.
"distributed computing network"	all	a network in which processing, storage, and other functions are handled by separate units (nodes) rather than by a single main computer Evidence: '587 patent at 14:57-63, 18:23-31, 18:49-61, Figure 10; Microsoft Computer Dictionary (5th ed. 2002) a p. 168

TECHNOLOGY BACKGROUND

a. Technological Problems in 2005

62. A distributed database is a database that is distributed across multiple computers and devices in a network. Such an architecture can provide tremendous benefits for users. As would be well-known to a POSITA prior to 2005 and prior to the new and non-conventional Network Patents' claimed inventions, however, there were significant challenges for system designers to be able to successfully implement such a distributed database. For example, a major

challenge is that of concurrently achieving the design goals of consistency, availability, and partition-tolerance:

- **Consistency**. Consistency means that all devices on the network see the same data at the same time. For this to happen, whenever data is written to one node, it must be immediately forwarded and replicated to all the other nodes in the system before the write is deemed successful.
- **Availability**. Availability means that that any device making a request for data gets a response, even if one or more other nodes are down. Another way to state this is that all working nodes in the distributed system return a valid response for any request.
- **Partition-tolerance**. A partition is a communications break within a distributed system, such as a delayed or disconnected link between nodes, that disconnects one or more nodes from other nodes in the network. Partition-tolerance means that a cluster of nodes must continue to work despite any communication breakdowns between nodes in the system.

63. The CAP Theorem Challenge states that it is not possible to design a distributed system on a network that achieves all three of these goals 100% of the time. This means that distributed database systems on a network were inefficient and could not be optimized for all three goals because all three goals (consistency, availability, and partition-tolerance) could not be simultaneously achieved. Thus, the technical challenge is to seek/achieve the most optimal combination.

64. Prior to the Network Patents' claimed inventions in 2005, a technological problem existed in distributed database systems because changes to a distributed database created too much of a load on the system which resulted in the system and the system's processer not being able to

efficiently process the changes, which in turn resulted in the database not being available to each node or not being available at all. In other words, due to the design of the distributed system at the time, the distributed system could crash and be unavailable due to not being able to efficiently and optimally process a change to the database.

65. DDI itself recognized this same technological problem in 2020:

> The problems we faced using Celery and RabbitMQ
>
> RabbitMQ and Celery were mission critical pieces of our infrastructure that powered over 900 different asynchronous tasks at DoorDash, including order checkout, merchant order transmission, and Dasher location processing. The problem DoorDash faced was that RabbitMQ was frequently going down due to excessive load. If task processing went down, DoorDash effectively went down and orders could not be completed, resulting in revenue loss for our merchants and Dashers, and a poor experience for our consumers. We faced issues on the following fronts:
>
> - **Availability:** Outages caused by demand reduced availability.
> - **Scalability:** RabbitMQ could not scale with the growth of our business.
> - **Observability:** RabbitMQ offered limited metrics and Celery workers were opaque.
> - **Operational efficiency:** Restarting these components was a time-consuming, manual process.
>
> Why our asynchronous task processing system wasn't highly available
>
> This biggest problem we faced were outages, and they often came when demand was at its peak. RabbitMQ would go down due to load, excessive connection churn, and other reasons. Orders would be halted, and we'd have to restart our system or sometimes even bring up an entirely new broker and manually failover in order to recover from the outage.
>
> * * * * *
>
> Why our legacy solution did not scale
>
> The next biggest problem was scale. DoorDash is growing fast and we were quickly reaching the limits of our existing solution. We needed to find something that would

> keep up with our continued growth since our legacy solution had the following problems:
>
> **Hitting the vertical scaling limit**
>
> We were using the largest available single-node RabbitMQ solution that was available to us. There was no path to scale vertically any further and we were already starting to push that node to its limits.
>
> **The High Availability mode limited our capacity**
>
> Due to replication, the primary-secondary High Availability (HA) mode reduced throughput compared to the single node option, leaving us with even less headroom than just the single node solution. We could not afford to trade throughput for availability.
>
> Secondly, the primary-secondary HA mode did not, in practice, reduce the severity of our outages. Failovers took more than 20 minutes to complete and would often get stuck requiring manual intervention. Messages were often lost in the process as well.
>
> We were quickly running out of headroom as DoorDash continued to grow and push our task processing to its limits. We needed a solution that could scale horizontally as our processing needs grew.

Saba Khalilnaji, Eliminating Task Processing Outages by Replacing RabbitMQ with Apache Kafka Without Downtime (Sept. 3, 2020) (available at https://careers.doordash.com/blog/eliminating-task-processing-outages-with-kafka/ (last accessed Sept. 11, 2024); *see also* Sudhir Tonse, "How Doordash Is Scaling its Data Platform to Delight Customers and Meet Our Growing Demand" (Sept. 15, 2020) (available at https://careers.doordash.com/blog/how-doordash-is-scaling-its-data-platform/ (last accessed Sept. 12, 2024) ("For example, in most offline analytical cases we should strive for consistency of data rather than availability, as discussed in the CAP theorem."); Seed Zeng, "Cassandra Unleased: How We Enhanced Cassandra Fleet' Efficiency And Performance" (Jan. 30, 2024) (available at https://careers.doordash.com/blog/cassandra-unleashed-how-we-enhanced-cassandra-fleets-efficiency-and-performance/ (last accessed Sept. 12, 2024) (""Consistency trade-off: In

accordance with the CAP theorem, Cassandra often trades off consistency for availability and partition tolerance, which might not suit all use cases."

66. Ameranth incorporates in its entirety the Declaration of Keith R. McNally Regarding: U.S. Patents: 11,842,415 and 11,847,547 ("McNally Decl."), attached hereto as Exhibit E, into the pleadings here.

67. As explained by Mr. McNally, the inventor and a person of ordinary skill in the art, in early 2005, Ameranth was presented with two new, strategic opportunities, one from Holiday Inn Hotels of Intercontinental Hotels Group (IHG) (the world's largest hotel company) and the other from Zagat Survey LLC (the world's largest restaurant rating/ranking company). These enterprise level opportunities presented new and unprecedented technological challenges to Ameranth in 2005. Ameranth recognized they needed that which was non-conventional and which did not exist at the time—a full, intelligent, enterprise level, web server computer-based back end solution/service with parallel operational capabilities and multi modes of contact. That these technology improvements were new, nonconventional, and did not exist prior to 2005 is evidenced and confirmed by the sworn statement of Mr. McNally and the fact that IHG and Zagat management sought Ameranth to develop what clearly did not then exist in 2005; had the technology existed, these industry giants would have simply used it, yet they retained Ameranth to develop it. This is compelling, and factual evidence of non-conventionality as of 2005.

68. Indeed, a decade later in 2015, DDI's Chief Executive Officer acknowledges "parallel processing" is not something humans can do. Erika Ekiel, " DoorDash CEO: Solving Problems of Time-Starved People" (Nov. 30, 2015) (available at https://www.gsb.stanford.edu/insights/doordash-ceo-solving-problems-time-starved-people (last accessed Sept. 11, 2024). ("Humans are not good at parallel processing, which is what you need

to do to solve peak demand. Software can solve these problems.").

69. Ameranth's eHost platform deployed for Holiday Inn incorporated key aspects of the inventions claimed in the '415 and '587 patents. McNally Decl. at ¶¶ 14-17.

70. Several of the features claimed in the Network Patents were also incorporated into Ameranth's Magellan Restaurant Reservations System in November 2005. McNally Decl. at ¶¶ 18-19.

71. Mr. McNally invented a new, unique and ordered combination of technologies that improved web server computers, including an internet-based web server/cloud-based datacenter/hosted system with distributed computing, and the new and non-conventional multi-modes of contact and parallel operational capabilities' functionality, and its layered architecture and with distributed but linked databases, yet operating together as a master database and which learns, was intelligent and chooses/acts/decides intelligently. This ordered-combination-based invention improving web server computers is what is claimed in the Network Patents. As is confirmed in his declaration, the Network Patent's new multi-modes of contact to/with either or both wireless handheld equipped consumers/customers and with the restaurants/hotels, solves technological problems by providing resiliency, flexibility and reliability, and its internal and external API's accommodate and integrate with current and future hospitality and non-hospitality external systems.

72. With national scale, hosted, web server computer-based deployments and the requirements for extreme reliability, the 24x7x365 availability of the system across thousands of locations, and enabled for multiple and linked web server data centers to prevent the system from going down due to a power outage or other such failure mode, consequently, the distributed computing and claimed master database while acting intelligently approaches with Ameranth's

layered Middleware/Framework Communications Control Software (MFCCS) architecture and framework as is shown in Figure 10 of the Network Patents and with seamless interconnectivity was essential.

73. Because speed/time to market was also a high priority, Ameranth was also challenged to develop interim solutions if required—while deferring, when/if appropriate to later versions—any integrations or special features not essential for the initial, primary operational features/objectives. This required planning and integrating the layered architecture shown in Figure 10 of the Network Patents and external API into the MFCCS system framework/design to provide for continual growth and considerations into the overall system framework/architecture. At the time of the inventions claimed in the Network Patents, no such integrated system or system of systems existed.

74. The claimed inventions of the Network Patents and their new technical and intelligent solutions preceded what later and more currently have become known as e.g. machine learning and/or a microservices-based architectural approach. McNally Decl. at ¶¶ 13, 25-26.

75. After conceiving the advances, innovations and new, web server based architecture that powered and enabled these new systemic solutions in late 2004 into early 2005, Mr. McNally filed a continuation-in-part patent application on July 26, 2005, providing extensive new teachings/guidance to persons of skill in the art to expand upon the earlier teachings/disclosures of his original patent specification, filed on September 21, 1999. The teachings were and are targeted to teach new advancements on the back end and architectural side of the systems. This continuation-in-part application is the parent to the Network Patents and is attached hereto at Exhibit N.

76. Mr. McNally added text about some additional functionality at the end of the prior

Abstract, emphasizing the importance of new enhancements supporting the multiple modes of contact enhancements, he modified the primary prior systemic architecture Figure 9 into Figure 10, and he added a short addition to the prior specification (*see* '415 patent at 5-9; '587 patent at 13: 5-9), but then focused on the extensive new 2005 systemic and architectural innovations disclosed in the '415 patent at 13:34 to 18:60; '587 patent at 13:34 to 18:61.

77. The advantages of and extensive new teaching/explaining in columns 13-18 of the '415 and 587 specifications via non-software language specific examples evidence the multiple modes of contact advancement/concept, because a person of ordinary skill in the art can follow the example based specification teachings and then at the appropriate time and in the appropriate programming language as of that date or any date program/code this functionality in the software language then preferred and used. This enhancement of the multi-modes of contact improved the web server functionality as part of the overall framework design and was/is essential to achieving the system reliability and autonomous enterprise level functionality, as was required for both the eHost and Magellan systems. Without such functionality combined with the learning/intelligence of the system, the first instance of a communication failing and/or being unanswered would immediately end that communication flow and prevent that hospitality task from being timely completed, thus degrading the system and its reliability and reducing merchant/customer satisfaction. Further, once the system learns that e.g. a particular contact mode is ineffective, it can then avoid even trying that and thus eliminate that wasted computer resource and increase the system's efficiency. This new learning and intelligence functionality and its application as in the Network Patents' claims was new, non-conventional and improved the efficiency of prior web servers and the overall connected network by eliminating computer resources previously wasted on actions (that were not required toward the claimed requirement of completing the hospitality

tasks as in the Network Patent's claims) and by eliminating these wasted actions, less computing resources were required; thus improving CPU processing and efficiency. Of special importance to the multiple modes of contact were included in the Network Patents' claimed invention, in late 2004, that integrating text and chat into actual deployed/operational systems would offer technical and operational benefits. This was a new and important innovation since at this time, texting (while loved by teenagers) was scorned by most adults, but its limited use was a stand-alone function, not actually integrated directly into an operational system and the execution and completion of hospitality tasks. Mr. McNally was the first to recognize this and actually teach the ability to integrate texting/chatting functionality into deployed and operational hospitality task based systems and make them, optionally a part of the completion of those tasks when/where appropriate, as evidenced by the disclosure and claims of the Network Patents patent. McNally Decl. at ¶¶ 24-25, 27.

78. As Mr. McNally further and first recognized, and which is specifically taught in the continuation-in-part additions of and claimed in the Network Patents to achieve and teach the overall systemic enhancements to prior web server computer-based systems while providing a totally integrated, hosted, ordered combination systemic solution and one capable of interfacing with wireless handheld computers and via multiple modes of contact, along with the framework and layered approach of Figure 10 of the Network Patents, the claims and teachings of the Network Patents guide/teach a person of skill in the art to pursue/architect a distributed computing, distributed-but linked database system, which mirrors and teaches the new systemic framework approach, as a new and ordered combination which now, many years later is often now deemed as a microservices-based approach. '415 patent at 14:57-63, 16:64-17:2, 18:24-30, 18:32-55, Fig. 10; '587 patent at 14:57-63, 16:65-17:3, 18:25-31, 18:33-36, Fig. 10.

79. As explained in Mr. McNally's declaration:

> 23. In order to best teach/explain these new innovations and enhancements to prior web server based systems to persons of skill in the art, such as myself, I decided to adopt and apply a 'pseudo code', and 'by way of example' teaching approach - relying on a 'three way' example baseline/approach, of the interactivity between the 'computer', i.e. the improved back office/web servers and with the 'the users', 'the entities' and their bi-directionally 'back and forth' actions/communications, describing and teaching the new enhancements via 45 examples and which was/is clearly explained to a POSA below.
>
> I chose a reservations embodiment, to illustrate the new innovations, however the new inventive concepts apply to all hospitality embodiments.
>
> 'Such functionality may be implemented in a number of ways. So as to illustrate **by way of example**, employing such functionality in the making of appointments and/or reservations will be discussed.' '415 patent, Col 13, lns 41-434-47; '587 patent, Col. 13, lns 44-47.)
>
> This 'examples' teaching approach, (including the pseudo code instructions where appropriate) was the best teaching approach of the how, since with ever changing software languages, and the likelihood that multiple/different languages would be used, on/with different elements of the overall integrated framework/system and even with varying databases types and interfaces, this was the optimal approach. Providing source code in a single/particular programming language that would likely soon be obsoleted, would not have stood the test of time, nor offered a viable technical teaching, whereas providing pseudo code guidance and 'examples' which are independent of a special/unique software language optimized the teachings for a person of skill in the art, and ensured broad teaching applicability.

McNally Decl. at ¶ 23.

80. The advantages of the pseudo code approach are further and independently confirmed in Exhibit 7 to the McNally Decl.:

> Developing computer programs, especially ones as large and complex as operating systems or corporate data systems, is a difficult job. There are many opportunities for developers to make mistakes, create unintentional complexity, or simply lose their way. Pseudocode is an incredibly useful tool in the developer's toolbox, helping her avoid many of the pitfalls that plague such a complex undertaking.
>
> Pseudocode is plain text and therefore easy to understand. Because it does not require the rigid structures and syntax of a programming language, it does not require a special editing environment. Pseudocode can also be understood by nonprogrammers, allowing developers to bring experts with no computer

knowledge into the creative loop, benefiting from their input and allowing the developer to create software that is even more useful for their clients.

Because pseudocode is not itself an actual programming language, it can be used with almost any available programming language. This is a great boon to developers, who often have the ability to use a variety of languages.

b. The Network Patents' Claimed Inventions Solved These Technological Problems with Technical Solutions and Improvements

81. These 2005 operational challenges required an entirely new systemic technical approach/solution including parallel operational capabilities and one which operated as an ordered combination of technical advancements to create an intelligent and integrated internet enabled system that met all of these requirements and more, while designed for growth/expansion as well. As claimed and disclosed in the Network Patents, Ameranth's MFCCS-based layered framework/architecture upon which the pieces of the system would be integrated together was needed.

82. The inventions claimed in the Network Patents are vastly different from the claimed inventions in Ameranth's earliest patents. Unlike the claims in Ameranth's earliest patents, the claims of the Network Patents provided improved technical solutions for web server computers and distributed database systems and networks with parallel operational capabilities by improving their efficiency and reliability and decreasing bottlenecks.

83. On their face, a POSITA would understand that the claims of the Network Patents are vastly different and directed to an entirely different concept and technological problem from the earlier patent claims invalidated in *Apple*, *Domino's*, and *Olo*. Exhibit F shows a representative claim from each of those cases, claim 9 of the '415 patent, and claim 7 of the '587 patent. Unlike the invalidated claims, the claims in the Network Patents are for and improve intelligent web server computers and computer networks and include specific details for implementing and improving the web server computers and networks, which result in a technological improvement to a network

of distributed computing systems, including parallel operational capability, because the claimed web server and network is able to achieve improvements in consistency, availability, and partition tolerance.

84. The preambles of the asserted claims are limiting. For example, claim 1 of the '415 patent includes a preamble that is limiting and that defines the "said web server computer" to which it is directed as "an improved and intelligent web server computer with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities for use in a hospitality market."

85. The asserted claims of the '415 and '587 patents recite an inventive ordered combination and includes each of the following elements:

- a web server with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities;
- at least one hospitality food/drink ordering software application
- an advanced master database, with its own database API;
- Middleware/Framework Communications Control Software (MFCCS), which enables at least one web server to communicate with at least two remote handheld computers and for multiple modes of contact and multiple communications protocols; and
- at least one external software API, which integrates the hospitality software application and the MFCCS with the Internet and leverages the advanced master database to support learning, updating, and storing multiple communication modes of contact and related operational parameters.

This inventive combination of the above-listed elements in the Network Patents overcomes the challenge of simultaneously achieving consistency, availability, and partition-tolerance for a distributed database by changing the preconditions inherent in the environment for which these goals were typically articulated. For instance, rather than accepting the underlying assumption that there is only a single type of network and network protocol for connecting the devices in a distributed database design, the Network Patents introduce an approach utilizing multi-modes of contact, multi-communication protocols, and parallel operational capabilities for its system, and

combines this with the above-listed elements. Accordingly, the Network Patents claim an invention that, through their claimed inventive concepts, can effectively achieve consistency and availability, as well as partition-tolerance, for example, such that when a communication link is down in one communication modality or protocol, the system can then utilize another communication modality or protocol that is not down. This unique, non-conventional and ordered combination of elements of claim 1 in each patent is supported in the specification, e.g., in embodiments disclosed at Fig. 10 and at 16:28-43, 18:61-19:3 of the '415 patent and 16:28-43, 18:62-19:4 of the '587 patent, for instance, which teach multi-modes of communication (e.g., instant messaging, text messaging, email, web pages, pages, facsimiles, text to voice, voice to text, and/or touch tone recognition) message, mobile app message, ethernet, paging (e.g., 27MHz/318MHz), Wi-Fi (802.11), and web links), multiple communications protocols (e.g., HTTP, 802.11, Paging, Ethernet, and WAN Wireless protocols), and parallel operational capabilities, together with a MFCCS, linked databases, servers, and handheld devices. *See, e.g.,* Ex. N (Original claim nos. 42, 43, 54, and 65 providing programming steps and guidance to a person of ordinary skill in the art).

86. It cannot be reasonably argued that the asserted claims do not claim improvements to the claimed web server computers and networks, such as "improving efficiency and reliability" and/or enabling the web server computer "to further improve its efficiency by using less computer resources and less computing time through the avoidance of attempting communication modes of contact to hospitality entities and/or users and/or for subsequent user hospitality application task requests likely to fail during the operational period of time if attempted again during that time." This eliminating the necessity of continually querying or checking a mode of communication to be improving the functionality of computers in that its system effectively achieves consistency and

availability for real-time searching in a distributed database. That is, it effectively achieves consistency, since one node in the system does not need to check or continually check another node in the system to know that its data is consistent with the data of the other node. Similarly, this limitation effectively achieves availability, since it implies that there is no need to continually be checking if another node is available or not. Moreover, the claimed inventions effectively provide partition-tolerance through their multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities, whereby a partition in one mode of communication (such as the Internet) can be overcome by communicating over another modality (such as text messaging)..

87. The Network Patents disclose how the claimed inventions achieve web server improvements in both consistency and availability:

> According to various embodiments of the present invention, messaging (e.g., wireless text messaging and/or wireless instant messaging) and/or text-to-voice functionality may be employed, for instance, in appointment, waitlist, and/or reservation operations. Such functionality might, in various embodiments, involve messaging (e.g., wireless messaging), text-to-voice, and/or two-way interactivity, and/or may involve communication via landline telephones, cellular telephones, and/or wireless devices.

'415 patent at 13:34-43; '587 patent at 13:44-52.

88. The claimed multi-modal communication is also taught as being performed in parallel with other operations:

> A computer operating to communicate with the entity as discussed herein might, for example, be dedicated to performing such operations. As another example, such a computer might be one performing other tasks (e.g., acting as a web server). It is noted that, in various embodiments, one or more rules may be followed in communicating with the entity and/or the user.

'415 patent at 17:38-44; '587 patent at 17:39-45. Thus, the above passage, and when viewed through the lens of a POSITA also applying the teachings of Figure 10, expressly ties the consistency and availability achieved in the claimed inventions of the Network Patents to their

multi-modes of communication and provide partition-tolerance. *See also* Ex. N (Original claim nos. 42, 43, 54, and 65 providing programming steps and guidance to a person of ordinary skill in the art).

89. The Network Patents and their learning/intelligence further disclose the benefits and functionality of its claimed multi-modal communication approach as follows:

> A communications control program monitors and routes all communications to the appropriate devices. **It continuously monitors the wireless network access point and all other devices connected to the network** such as pagers, remote devices, internet Web links and POS software. Any message received is decoded by the software, and then routed to the appropriate device. No user action is needed during operation of the software once the application has been launched.

'415 patent at 10:51-59 (emphasis added); '587 patent at 10:51-59 (emphasis added).

90. The Network Patents' claimed ordered combinations provided computer improvements and were not routine or conventional in 2005. This was further confirmed by the patent examiner's relying on the combinations of claim elements in the Notice of Allowances issued at the USPTO:

> The limitations lacking in the prior art, in combination with the other limitations clearly claimed in the application are novel and unobvious. Therefore, the Examiner is allowing the case.

Exhibits G – H.

91. Claim 1 of the '415 patent also has the following limitation and ordered combination which provides an additional, nonconventional inventive concept:

> **Middleware/Framework Communications Control Software (MFCCS) which enables via its centralized system layer architecture** the at least one said web server computer to communicate with two or more remote wireless handheld computers and for multiple modes of contact, multiple communications protocol functionality, integrated with the master database and with the **at least one hospitality food/drink ordering software application;**

This limitation (the "middleware/framework" limitation), including the centralized system layer architecture, provides a specific structure via an ordered combination of technical functionality, is

and was non-conventional, non-generic and specific to Ameranth's teaching and architecture as disclosed in Figure 10 and as constructed above in Ameranth's claim construction table, which must be applied at this point of the case), recites further technological improvements to computers, improves the web server computer, and is not reciting a routine or conventional element. The claimed middleware/framework architecture for a food/drink ordering distributed system for the hospitality industry would speed up and simplify the development, testing, deployment, and performance of the hospitality applications that are built on top of it. By providing a centralized system layer architecture, multi-modes of contact and multiple communications protocol functionality, which are integrated with the master database and with the at least one hospitality food/drink ordering software application, the "middleware/framework" limitation recites technological improvements to web server computers for food/drink ordering applications in the hospitality industry.

92. The MFCCS, i.e. Ameranth's MFCCS (as disclosed/shown in Figure 10), inclusive of the added "framework" term and the centralized layered architecture of Figure 10, is a specific technical solution and inventive concept that improved the prior web server computers/networks and is specifically claimed and incorporated into the Network Patents' claims as evidenced in the prosecution history and Figure 10 was repeatedly referenced as such in the new continuation-in-part material teachings in columns 13-18 of the Network Patents.

93. Further still, the importance of the centralized layered architecture from the MFCCS framework/platform and which resulted in the eHost system developed by Ameranth to overcome the limitations of conventional web server computers in 2005 was contemporaneously confirmed on February 10, 2006 by the world's largest hotel company, Intercontinental Hotels Group to be unique and non-conventional: "It's this platform [framework] that allows eHost to function as a single seamless system, despite actually being

made up of thousands of individual, customized web portals (one per hotel location)." McNally Decl. at Ex. 3. That Intercontinental Hotels deployed the eHost system for millions of its guests and into three thousand Holiday Inns and Holiday Inn Express Hotel properties is further confirmation that Ameranth's MFCCS platform/framework was non-conventional. *Id.* at ¶ 14.

94. Middleware will impact many parts of an application system built atop it and can be a make-or-break factor for the success of such systems, so great care should be undertaken in their design. Developing a middleware/framework therefore requires the development of a comprehensive design/framework, which provides the layer architecture for the middleware/framework and describes its functionality, and the Network Patents provide such a design for a non-routine and unconventional middleware/framework for the hospitality industry.

95. As stated above, the teachings of Figure 10 were non-conventional, non-generic, and an inventive concept specifically incorporated into the Network Patents' claims, and with the "how" shown to a POSITA in the claims themselves and via the figure/architecture itself.

96. Figure 10 and accompanying disclosures in the specification of the '415 and '587 patents disclose a system diagram, framework and design description for the claimed middleware/framework for distributed food/drink ordering applications in the hospitality industry which results in improved efficiency, reliability, and optimization of the system. *See, e.g.*, '415 patent at Fig. 10, 3:55-64, 14:43-63, 15:27-43, 15:45-49; '587 patent at Fig. 10, 3:52-61, 14:43-63, 15:27-43, 15:45-49; '415 patent at 16:44-64, 16:64-17:7; '587 patent at 16:45-61; 16:65-17:8. These disclosures describe multiple communication modes, multiple communications protocols and distributed computing components (including a server and multiple clients). These disclosures are new inventive concepts and are non-routine, non generic and include an unconventional middleware/framework architecture for distributed food/drink ordering applications in the

hospitality industry.

97. The claims of the '415 patent include several non-conventional limitations that individually and in ordered combinations improve computer functionality and enhance computer system operation and resources.

98. Claim 1 of the '415 patent recites "a master database . . . with a usable file structure dictated prior to execution, thus improving efficiency and reliability," which increases computational speed and reduces storage and processor usage by minimizing redundancy in data and parameters. '415 patent at 21:25-30; Fig. 10.

99. Claim 1 of the '415 patent recites "Middleware Framework Communications Control Software (MFCCS) which enables via its centralized layer architecture," which is Ameranth's own, unique and non-conventional Middleware Framework Communication Control Software (MFCCS) with its centralized system that defines the overall programming architecture and parallel operational capabilities for a POSITA as shown in Figure 10. The MFCCS is a unique platform that provides centralized communications and controls, thereby avoiding redundancy and saving computer resources from processing unwanted or extra data and communication signals. That the layered architecture of the MFCCS is a technical improvement is confirmed by DDI itself in the 2020s, *see* ¶¶ 118-119 *infra*, and this indisputable fact alone is an admission that Ameranth's MFCCS was a technical improvement and non-conventional 15 years earlier in 2005.

100. Claim 1 of the '415 patent also recites an inventive ordered combination of "at least one external software API, which enables the integration of the at least one hospitality software application via the MFCCS and its layer architecture with one or more non-hospitality applications and to enable real time searches for communication modes of contact and/or related operational parameters, not already stored and available in the master database, if any" and "a master database

comprising data and parameters of the at least one hospitality software application integrated with the at least one said web server computer and with a usable file structure dictated prior to execution, thus improving efficiency and reliability, the master database being accessible via a database application program interface (API) and with predefined formats stored within it." This unique and multi-faceted, three-way API ordered combination of both an external and an internal API operating together and in parallel along with the specific structuring of the master database solves an internet centric technical problem by enabling more efficient web searches within the web server and the master database and thus eliminates the bottleneck for other processes that the web server may be executing by reducing the need for resource intensive pointers. '415 patent at 2:27-31, 16:13-21, 20: 19-30.

101. Claim 1 of the '415 patent also recites "apply rule based intelligence to not attempt again for an operational period of time the primary communication mode, the instructions being further executable to enable the at least one said web server computer to further improve its efficiency by using less computer resources and less computing time through the avoidance of attempting communications modes of contact to hospitality entities and/or users and/or for subsequent user hospitality application task requests, likely to fail during the operational period of time if attempted again during that time," which innately defines how to code the intelligence and which improves the efficiency and reliability of the web server, thus improving web servers and solving an internet centric technical problem. '415 patent at columns 13-18, Fig, 10.

102. Claim 7 of the '587 patent recites "additionally the network is further enabled to automatically issue alerts to handheld/mobile equipped management staff when corresponding criteria is met," which improved computers. *See* '587 patents at 17:9-19. At the time of the invention in 2005, very few management staff were equipped with and enabled with a

mobile/wireless handheld nor one that was/is integrated with their operational hospitality software application for their real time applications and for staff required to continuously move within their restaurant/hotel venues; consequently, hospitality systems were not capable of providing them timely wireless alerts, when, e.g., important events occurred and key actions were urgently needed. Yet with the technical solution of claim 7 solving this technical problem, such management staff could wirelessly control and operate their business from anywhere within their establishment, not tied to their fixed computers, and thus improve the efficiency of the entire network and the corresponding operations of the restaurant/business. This technical need and the technical improvement is specifically disclosed in the new material of the continuation-in-part application, *see, e.g.,* col. 18, ll. 36-42. Further, innate with the '587 patent's enabled network and its varying modes of contact (with the "varying" innately being a "how") the optimal mode of contact can be selected to communicate with the management staff, while applying the appropriate operational criteria and/or rules. '587 patent at 14:10-21, 17:10-20. Further, that such an "alert" is significantly more than any purported abstract idea and supports this claim as being patentable subject matter was admitted by DDI in its April 11, 2024 amendment when prosecuting U.S. Patent Application Serial No. 17/505,604, entitled "Food Delivery Optimization," when DDI successfully argued to obtain allowance of the application:

> The Office Action rejected Claims 1-20 under 35 U.S.C. § 101 because *the claims are allegedly directed to an abstract idea without significantly more. Applicant respectfully traverses this assertion*.
>
> *Applicant submits that the claims, as amended, are directed to patentable subject matter.* For example, the claims now recite "causing display, on a user interface associated with the restaurant [i.e., **management staff**], a message [i.e., **alert**] indicating the updated one or more pick-up times." Therefore, Applicant respectfully requests that the examiner withdraw the rejection of the claims under 35 U.S.C. § 101.

Ex. V. Thus, DDI argued that a nearly identical inventive concept in its own application was significantly more than any alleged abstract idea on April 22 2024, even though it argued to this

Court on August 6, 2024 that, in reference to '587 patent claim 7 and its "alert" inventive concept, there are no inventive concepts as to any Ameranth claim. (Dkt. 42 at 17.) Clearly a patent for "Food Delivery Optimization" is a closely related patent to the Network Patents and represents the core of DDI's business, yet DDI did not disclose the Network Patents to the U.S. Patent and Trademark Office or its contradictory position on patent-eligibility to this Court.

103. Claim 1 of the '415 patent also recites the inventive ordered combination of: "a master database comprising data and parameters of the at least one said hospitality software application integrated with the at least one said network of web server computers and with a usable file structure dictated prior to execution" (with the corresponding technical improvements and benefits disclosed at col 21, ll. 25-30) and "Middleware/Framework Communications Control Software (MFCCS) which enables via its centralized system layer architecture the at least one said web server network to communicate with two or more different wireless handheld computers each with different mobile operating systems and with a different set of handheld GUI screens uniquely enabled for both user initiating actions and later selection of choices directly on and from the touchscreens of said different wireless handheld computers." This ordered combination improves the network's efficiency and performance by monitoring, storing, and exploiting the user interactions, e.g., the "initiating actions" of the user, as claimed. '415 patent at 16:60-17:7.

c. A Person of Ordinary Skill in the Art, Dr. Goodrich, Recognized Technological Improvements of the Network Patents' Claimed Inventions and Confirmed Their Non-Conventionality in 2005

104. Ameranth incorporates in its entirety the Declaration of Michael T. Goodrich, Ph.D. Regarding U.S. Patent Nos 11,842,415 and 11,847,587 ("Goodrich Decl."), attached hereto as Exhibit C, into the pleadings here.

105. The "web server" of claim 1 of the Network Patents, and as it is defined in the preamble of the claims, was non-conventional in 2005, and is improved and specialized to employ

technical improvements, including multi-modes of contact, multi-communications protocols, multi-user, and parallel operational capabilities. Goodrich Decl. at ¶¶ 36-52.

106. As confirmed by Dr. Goodrich,

> a POSITA would also find ample support for the claimed web server being "[a]n intelligent web server computer" integrated with "an advanced master database" with an "application program interface (API)" that "intelligently learns, updates, and stores multiple communication modes of contact and related operational parameters for hospitality entities and for remote hospitality users along with their prior attributes or preferences, if any and then intelligently applies them," as well as at least one said web server being "programmed with instructions enabled to intelligently choose and apply multiple and different modes of contact and/or different communication protocols."

Goodrich Decl. at ¶ 37.

107. "[A] POSITA would understand that these [i.e., the following non-routine and unconventional combination of' claimed] components work together as disclosed in the specification" of the Network Patents:

> A POSITA would understand that the claims of the '415 and '587 Patents recite non-routine and unconventional combinations of the following elements:
>
> - a web server with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities;
> - at least one hospitality food/drink ordering software application
> - an advanced master database, with its own database API;
> - Middleware/Framework Communications Control Software (MFCCS), which enables at least one web server to communicate with at least two remote handheld computers and for multiple modes of contact and multiple communications protocols; and
> - at least one external software API, which integrates the hospitality software application and the MFCCS with the Internet and leverages the advanced master database to support learning, updating, and storing multiple communication modes of contact and related operational parameters.

Id. at ¶¶ 82-83.

108. A person of ordinary skill in the art would understand the Network Patents' claimed combination of elements provides for the improvement in the functionality of computers and/or networks, such as "improving efficiency and reliability" and/or enabling the web server computer "to further improve its efficiency by using less computer resources and less computing time through the avoidance of attempting communication modes of contact to hospitality entities and/or users and/or for subsequent user hospitality application task requests likely to fail during the operational period of time if attempted again during that time." Therefore, a POSITA would recognize that the claimed web server and network improve the functionality of computers and/or computer networks for applications in the hospitality industry, which used a single mode of communication, with a system that utilizes multi-modes of communication and thereby overcomes the limitations of the CAP Theorem challenge. *See* Goodrich Decl. at ¶¶ 56-65.

109. A person of ordinary skill in the art also would understand the claim elements include explaining "how" to achieve these improvements (e.g., automatically choose and execute alternate communication modes of contact and/or alternate communications protocols if needed and appropriate at the time of execution). A person of ordinary skill in the art would understand this eliminating the necessity of continually querying or checking a mode of communication to be improving the functionality of computers in that its system effectively achieves consistency and availability for real-time searching in a distributed database. That is, it effectively achieves consistency, since one node in the system does not need to check or continually check another node in the system to know that its data is consistent with the data of the other node. Similarly, this limitation effectively achieves availability, since it implies that there is no need to continually be checking if another node is available or not. Moreover, a person of ordinary skill in the art would understand that the invention effectively provides partition-tolerance through its multi-

modes of contact, multi-communications protocols, multi-user and parallel operational capabilities, whereby a partition in one mode of communication (such as the Internet) can be overcome by communicating over another modality (such as text messaging). *Id.* at ¶ 85.

110. Claim 1 of the '587 patent recites "wherein the parallel operations capable network is integrated with the MFCCS and the backend servers are programmed with instructions executable to choose and apply varying modes of contact during the same remotely initiated hospitality task, for and with the handheld/mobile customers and/or handheld/mobile equipped entity staff, to intelligently execute and support completion of the hospitality application task requests." (emphasis added). This technological limitation is a new inventive concept and was not a routine or conventional element in 2005. Further, the claim provides structure regarding how to apply varying modes of contact during the same hospitality task and it also integrates with and leverages the claimed "parallel operational capabilities" of the claimed network. A POSITA would therefore understand that this provides, along with the supportive teachings in the specification, as is explained further herein, the "how" and specific programming guidance, e.g., through "instructions executable to choose and apply varying mode**s** of contact during the same remotely initiated hospitality task." This switching or varying of modes of contact, which occurs during the same hospitality tasks, such as, e.g. switching/varying from email to text and/or back, was new (hence, not routine or conventional). Additionally, dependent claim 12 adds the additional inventive concept that the switching/varying of the modes occurs automatically and based upon learning and rule based intelligence. Thus, these are technological improvements which provide structure to improve the prior computers and also improve the way that prior, conventional networks operated while concurrently addressing and overcoming the CAP Theorem challenges via significant technical improvements to overcome the occurrences of network partitions. The

varying between modes of contact, is specifically taught/disclosed in the specification, *e.g.* '587 patent at 14:47-51 ("As another example, the computer might, alternately or additionally, determine a messaging address and/or telephone number of the entity (e.g., via database lookup) and send a message (e.g., of the sort discussed above) in an automated manner to the entity."); *see also, e.g., id*. at 14:58-63 ("It is noted that, in various embodiments, in the case where the computer was not able to successfully reach the entity and/or receive a valid response from the entity, the computer might keep trying and/or try alternate contact modes."); *id.* at 18:23-31 ("Such synchronization might for instance, be of the sort discussed herein, (e.g. as shown in Figure 10). For example, synchronization might occur between one or more computers that operate to communicate with the user, one or more web servers, one or more web sites, one or more cell phones (e.g. smart phones) and or PDAs and/or one or more back office servers (central databases)."). Further, these specific network architectural teachings to a POSITA comprise new continuation-in-part material teachings, which provide the programming guidance as is clearly stated in the specification. *See, e.g., id.* at 18:33-36. ("It is noted that such computers, servers and/or web sites may for example, employ software programmed to employ one or more of the operations discussed above."). Further, these are the specific operations discussed above, because the inventor defined them as such via the limitations and scope of these claims, and which are defined within the claims themselves. Thus, it is clear to a POSITA that the inventor identified prior conventional systems and their problems and taught and claimed technological improvements to them.

111. The inventions of the Network Patents are not tied to a specific computer programming language. Goodrich Decl. at ¶ 94 ("The specification advantageously teaches and

discloses that its invention is not tied to a specific computer programming language, such as Visual Basic, SQL, or C++.").

112. More specifically,

> 98. Given this disclosure, a POSITA would understand that embodiments can be written in any commonly used computer language, such as Visual Basic, C++, or SQL. Thus, a POSITA would understand that it is sufficient for the specification to describe its algorithms in prose or ***pseudocode***, which is a plain language description of the steps in an algorithm, which is written primarily for humans not machines. *See, e.g.,* the '415 Patent at 8:35-42, 9:22-50, 10:29-50, 14:22-63, 15:13-51, 16:44-17:2, and 17:20-37; '587 Patent at 8:35-42, 9:2-50, 10:29-50, 14:22-63, 15:13-52, 16:45-17:3, and 17:21-38, for example algorithm descriptions. In fact, there are multi-faceted advantages to not limiting an invention to a particular software language via the inclusion of language specific, source code in a patent application, and as a repeated inventor myself, with multiple issued patents, I would not do so. For example, when it is considered that over the 20-year life of patents, computer languages are continually evolving and advancing..

Id. at ¶ 99.

113. The Network Patents provide pseudocode for an exemplary algorithm for building a menu file structure:

> The steps taken in building a menu are as follows:
> 1. Add Modifiers;
> 2. Add Sub-Modifiers and link them to the Modifiers;
> 3. Create Menu categories;
> 4. Add menu items to the categories;
> 5. Assign Modifiers to the menu items;
> 6. Preview the menu on the POS emulator on the desktop PC;
> 7. Download the menu database to the handheld device.

Id. at ¶ 102; *see also* '415 patent at 8:34-41; '587 patents at 8:34-41.

114. The '415 and '587 patents specification includes

> numerous examples from the newly added material and repeated references to Figure 10 and its framework, which provide the "how" and programming guidance to a POSITA, while also identifying specific exemplary technologies and embodiments for realizing updating and querying, including a client-server system ('415 Patent at 19:13-58 and '587 Patent 19:12-59) utilizing client and server devices employing an advanced master database ('415 and '587 Patents at 11:64-65), Hypertext Transfer Protocol, HTTP ('415 Patent at 18:61-19:2; '587 Patent at

> 18:62-19:3), Hypertext Mark-up Language, HTML (*id.* at '415 Patent at 19:3-7 and '587 Patent at 19:4-8), Extensible Mark-up Language, XML (*id.* at '415 Patent at19:7-13 and '587 Patent at 19:8-14), Structured Query Language, SQL (*Id.* at 12:3-6), ActiveX Data Objects, ADO (*Id.* at 11:7-12:3), graphical user interfaces, GUIs (*Id.* at Figs. 1-8, 6:18-59, 7:16-50-, 11:3-25, 13:61-14:9). In my opinion, a POSITA in 2005 would not have considered this suite of technologies to be a set of generic components and certainly not in their ordered combination as in the claims, (inclusive of the multiple, new 'inventive concepts' as defined above), but rather to be specific technologies for realizing an improved and specialized distributed client-server system for food/drink ordering applications which is further enhanced via the claimed combination of above-cited elements of claim 1.

Goodrich Decl. at ¶ 103.

115. Confirming the claims of the Network Patents in view of the specification sufficiently disclose "how" the result is achieved, a POSITA would know how to develop source code "given the clear structure disclosed, e.g., with respect to the above-cited technology and algorithmic teachings from the specification/figures, as well as the claims themselves." *Id.* at ¶¶ 104-111; *see also id.* at ¶¶ 92-100.

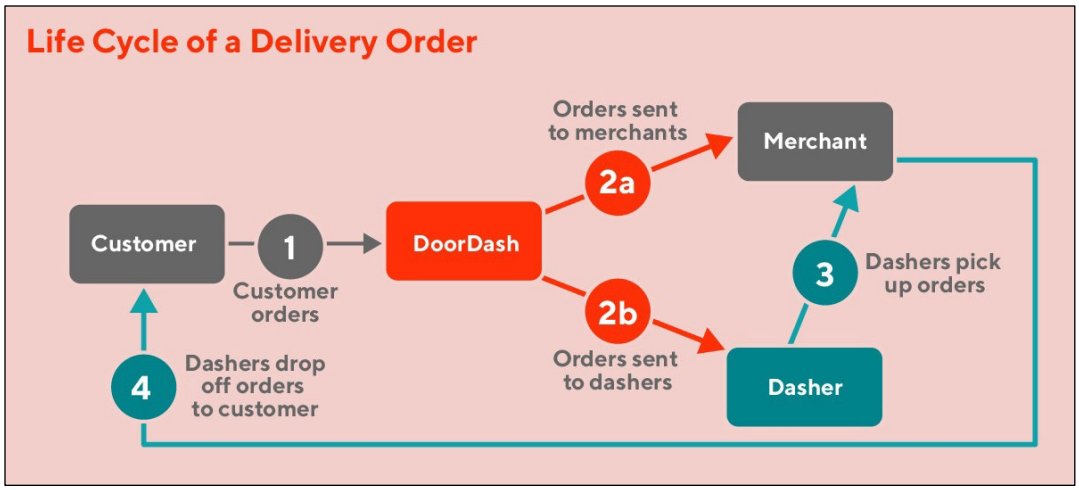
116. "[A] POSITA in 2005 would not have considered this suite of technologies to be a set of generic components and certainly not in their ordered combination as in the claims, (inclusive of the multiple, new 'inventive concepts' as defined above), but rather to be specific technologies for realizing an improved and specialized distributed client-server system for food/drink ordering applications . . . . *Id.* at ¶ 103; *see also id.* at ¶ 40 ("[A] POSITA would understand that, rather than being only a generic, conventional computer, the improved 'web server' of claim 1, and as it is defined in the preamble is specialized to employ technical improvements, including multi-modes of contact, multi-communications protocols, multi-user, and parallel operational capabilities, which is supported by the specification.").

DOORDASH BACKGROUND

117. DDI was formed in 2012 by four Stanford students, Evan Charles Moore, Andy Fang, Stanley Tang and Tony Xu, who is the CEO today. Initially, understandably and admittedly,

like most startups, they had little technology, nor experience nor the vision for the technology needed for a true, enterprise scale, system as DoorDash has become today. But they did have drive and vision and through that, they have become the number one food delivery company in the U.S. and in the world. As explained below, over time, DDI and its engineering team realized that they needed an integrated web server-based solution, inclusive of the teachings of the Network Patents and their claims.

118. Below is a snippet of a screenshot from a video posted by DDI and entitled "DoorDash Technical Showcase Event- Logistics Team" (available at https://www.youtube.com/watch?v=Um_s0AUjZd4 (last accessed Dec. 20, 2023):



119. The article "Future-proofing: How DoorDash Transitioned from a Code Monolith to a Microservice Architecture" (available at https://doordash.engineering/2020/12/02/how-doordash-transitioned-from-a-monolith-to-microservices/ (last accessed Dec. 20, 2023), contains the following text (bullet points added), reordered for purposes of this complaint:

- "DoorDash began its venture into food delivery in 2013. At that time, the mission from an engineering standpoint was to build a fast prototype to gather delivery orders and distribute them to a few businesses through basic communication channels like phone calls and emails. The application would need to accept orders from customers and transmit those orders to restaurants while at the same time engaging Dashers to pick up orders and

deliver them to customers."

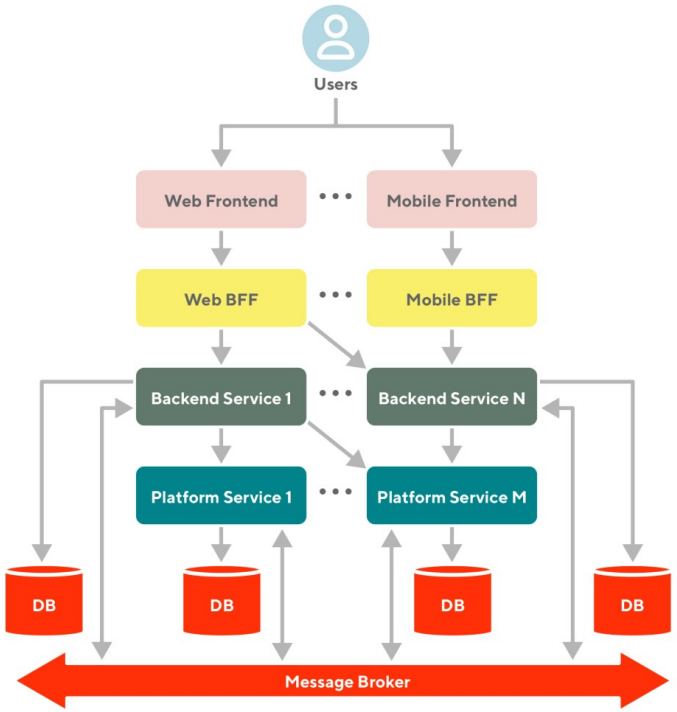
- "Although the monolithic architecture was a valid solution to enable agile development in the early phases, issues started emerging over time. This is a typical scenario in the lifecycle of a monolith that occurs when the application and the team building it cross a certain threshold in the scaling process. DoorDash reached this point in 2017, which was evident by the increasing challenge of building new functionalities and extending the framework.

  Eventually, the DoorDash application became somewhat brittle. New code sometimes caused unexpected side effects. Making a seemingly innocuous change could trigger cascading test failures on code paths that were supposed to be unrelated."

- "*In 2019, DoorDash's engineering organization initiated a process to completely reengineer the platform on which our delivery logistics business is based.*"

- "Originally developed as a monolithic codebase, the company's business growth in 2019 unveiled the weaknesses of our development model, including issues such as growing developer ramp up time, longer waits for test completion, and overall higher developer frustration as well as increased brittleness of the application. After some debate, the company began planning to transition the monolith to a microservice architecture."

- "After these phases, a multi-layered microservice architecture emerged:



"

120. Per the prior paragraph, DDI's technical problems that needed to be solved in the mid- to late 2010s were solved by DDI's "multi-layered microservice architecture," which is DDI's version of the MFCCS and layer approach claimed in the Network Patents. Thus, DDI made a 2019 factual admission that the layered framework/architecture of the Network Patents' claims improved computers and thus was surely not conventional much earlier in 2005. This admission is further confirmed by DDI's parallel activities to seek to patent such technology for itself, as is further detailed below.

121. The article "2020 Hindsight: Building Reliability and Innovating at DoorDash" (available at https://doordash.engineering/2020/12/23/2020-engineering-highlights/ (last accessed Dec. 20, 2023)), includes the following text (bullet points added):

- "Highlights from this year include work on our microservices architecture and migrating business logic, a process begun in 2019, improving our reliability metrics on a platform facilitating millions of deliveries per day. To support the many data-driven aspects of our business, we built new pipelines and found other ways to improve our data infrastructure's speed, reliability, and usability."

- "The continued growth of DoorDash's business brought us to the realization in 2019 that we needed to fundamentally re-architect our platform. Our original monolithic codebase was stressed from the need to facilitate millions of deliveries per day, while a growing engineering organization meant hundreds of engineers working to improve it. To support our scale, we began migrating from the original codebase to a microservices architecture, work that continues through 2020, improving reliability and developer velocity."

122. After recognizing its own technological problems as discussed above and then envisioning what was needed to address them, DDI not only initiated technical developments, but it also sought patent protections for the concepts they believed to be new and non-conventional as of 2019-2022. DDI has publicly acknowledged its valuing and support of the U.S. patent system, including in its own SEC Form 10-K Annual Statement, available at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001792789/628c3275-56ed-4bc8-a246-20e7c40742ce.pdf, and it now owns over 40 patents, many of which, (including the two patents further identified below) that include copied and/or complementary technology as to that disclosed and claimed in the Network Patents' claims. DDI has vigorously argued the patent eligibility of its own patents, including its copying of many technical aspects of the Network Patents as is exemplified in Exhibits I and J attached hereto and as further cited below.

123. DDI continues to apply for and obtain patents in the same technological field as Ameranth's Network Patents, and uses language in its patents and applications that mirror or are substantially similar to the terminology and phrasing used in the Network Patents. Yet, DDI has not informed the U.S. Patent and Trademark Office of any of Ameranth's patents or of the ongoing litigation between Ameranth and DDI, or of its contradictory positions, all of which it was required to do in accordance with the U.S.P.T.O. Manual of Patent Examining Procedure. While attacking the § 101 eligibility of Ameranth's patents, DDI also has failed to acknowledge to this Court in its repeated filings against Ameranth that its own patents and own positions on patentability contain

nearly identical positions and disclosures which it inappositely argued requires Ameranth's much earlier patents to be invalidated under § 101 eligibility law. Multiple examples of their copying of Ameranth's earlier inventions and their inconsistencies (which innately create factual disputes) follow in the next paragraphs and as is shown in their associated patents and exhibits which contain and constitute factual evidence and admissions by DDI that Ameranth's much earlier inventions, claimed in the Network Patents were neither well-known nor conventional at the time of their actual invention by Ameranth, their true inventor, in 2005:

124. DDI's U.S. Patent No. 11,188,970, entitled "Food Delivery Optimization," attached hereto at Exhibit P, states the following:

> Techniques for optimizing a food service configured to receive food orders from multiple customers , and consolidate orders based on respective days , times , and locations associated therewith . The food orders may include deliveries , customer pick - ups , and dine - in options for eating at a restaurant. The optimized food service may be configured to assign a restaurant to the consolidated orders and send a preparation instruction to the restaurant to prepare the consolidated orders for a designated pick - up or dining time . The optimized food service may additionally instruct an order supervisor to travel to the restaurant to assist in preparation of the consolidated orders. The order supervisor may additionally serve a food order, such as for a dine - in option or full service, catered delivery. For delivery orders, the optimized food service may assign a courier and, in some examples , a delivery assistant , to deliver the orders to respective customers.

Abstract.

> "Techniques described herein are directed to an optimized order service that is configured to receive orders from multiple customers, and consolidate orders based on respective days, times, and locations associated therewith. One type of order served by the service is a food order."

Col. 2, ll. 3-7.

> "Techniques described herein are directed to leveraging information associated with customers, restaurant merchants, food service assistants, and delivery personnel to intelligently optimize a food service."

Col. 2, ll. 13-16.

> The food service may receive a food delivery order submission (e.g., an order), and may identify and assign a restaurant to prepare the food for one or more orders received from one or more customers. In some examples, the restaurant may be assigned to the order(s) based on a relative proximity of the restaurant to respective delivery locations. In various examples, the restaurant may be assigned to each order based on the customer data, the food data, the type of service requested by respective customers, and/or other factors associated with the order(s).

Col. 2, ll. 39-44.

> "Additionally, the food service may send a notification to the order supervisor, instructing the order supervisor to travel to the restaurant and assist in food preparation and/or quality control of the order(s)."

Col. 3, ll. 46-50.

> The technical problem addressed by this application is that typical food service systems are generally not configured to communicate and share data with sufficient entities in order to prepare, deliver, and serve large orders for customers, and are not designed with quality control mechanisms in place. The technical solution, therefore, is collecting data from multiple sources and coordinating multiple individuals in order to optimize a food delivery system capable of preparing, delivering, and serving orders for customers with high quality control.
>
> Furthermore, unlike traditional food service systems, which require customers to get online and place an order each time they want food delivered, the optimized food service is configured to process recurring orders for a particular customer to a high degree of customer satisfaction. Because the customer need not place an order for each and every delivery instance, the optimized food delivery techniques described herein require fewer network transmissions to complete orders, thereby leading to increased bandwidth being available for other network traffic.

Col. 5, l. 56 – col 6, l. 8.

> "The optimized food delivery system may include a service computing device 102. In various examples, the service computing device 102 may be configured to communicate with other devices in a distributed computing resource 104."

Col. 6, ll. 44-48.

> Service computing device 102 may include a variety of device types configured to communicate via one or more networks 106 and are not limited to a particular type of device. In some examples, device 102 may include stationary devices, including but not limited to servers, desktop computers, personal computers, work stations, and thin clients, such as those capable of operating in a distributed computing resource. In some examples, service computing device(s) 102 may include mobile devices, including but not limited to mobile phones, tablet computers, laptop

computers, and any other mobile computers or mobile telecommunication devices. In various examples, service computing device(s) 102 may include any other sort of computing device configured to communicate via the one or more networks 106.

In various examples, network(s) 106 may include public networks such as the internet, private networks such as an institutional and/or personal network or some combination of public and private networks. Network(s) 106 may also include any type of wired and/or wireless network, including but not limited to local area networks (LAN), wide area networks (WAN), satellite networks, cable networks, Wi-Fi networks, WiMax networks, mobile communications networks (e.g., 3G, 4G, etc.), or any combination thereof. Network(s) 106 may utilize communications protocols, including packet-based and/or datagram-based protocols, such as internet protocol (IP), transmission control protocol (TCP), user datagram protocol (UDP), or other types of protocols. Moreover, network(s) 106 may also include a number of devices that facilitate network communications and/or form a hardware basis for the networks, such as switches, routers, gateway access points, firewalls, base stations, repeaters, backbone devices, and the like.

In some examples, network(s) 106 may further include devices that may enable connection to a wireless network, such as a wireless access point (WAP). The examples which support connectivity through WAPs send and receive data over various electromagnetic frequencies (e.g., radio frequencies), including WAPs that support Institute of Electrical and Electronics Engineers (IEEE) 802.11 standards (e.g., 802.11g, 802.11n, and so forth) and other standards.

Col. 6, l. 48 – col. 7, l. 21.

In various examples, the service application 134 may provide information associated with each assigned batched order. In various examples, the schedule and/or information associated with each assigned batched order may be provided to the order supervisor 116(1) via a website or other platform for interaction between the service computing device 102 and an order supervisor 116(1), such as via the captain computing device.

Col. 10, ll. 28-34.

"In some examples, the service computing device 102 may send the request for delivery services via a website or other means by which the service computing device 102 may communicate with a courier computing device (e.g., electronic mail, text message, messaging application, telephone call, etc.)."

Col. 10, ll. 61-66.

In various examples, the service computing device 102 may send a request for services to the delivery assistant computing device. Similar to the request for courier services described above, the service computing device 102 may send the request via an application, text message, phone call, or other means by which the service computing device 102 may request services.

Col. 11, ll. 56-62.

> "In some examples, the service computing device 102 may be configured to cause the preparation message to surface on the captain computing device, such as via a pop-up message text message, messaging application notification, or the like."

Col. 21, l. 64 – col. 22, l. 1.

> FIGS. 6-8 are flow diagrams illustrating example processes according to some implementations. The processes of FIGS. 5-8 are illustrated as collections of blocks in logical flow diagrams, which represent a sequence of operations, some or all of which can be implemented in hardware, software or a combination thereof. In the context of software, the blocks may represent computer-executable instructions stored on one or more computer-readable media that, when executed by one or more processors, program the processors to perform the recited operations. Generally, computer-executable instructions include routines, programs, objects, components, data structures and the like that perform particular functions or implement particular data types. The order in which the blocks are described should not be construed as a limitation. Any number of the described blocks can be combined in any order and/or in parallel to implement the process, or alternative processes, and not all of the blocks need be executed. Further, in some examples, some or all of the operations illustrated in one or more of FIGS. 6-8 can be combined with some or all of the operations illustrated in others of FIGS. 6-8. For discussion purposes, the processes are described with reference to the environments, architectures and devices described in the examples herein, although the processes may be implemented in a wide variety of other environments, architectures and devices.
>
> Various instructions, methods and techniques described herein may be considered in the general context of computer-executable instructions, such as program modules stored on computer-readable media and executed by the processor(s) herein. Generally, program modules include routines, programs, objects, components, data structures, etc., for performing particular tasks or implementing particular abstract data types. These program modules, and the like, may be executed as native code or may be downloaded and executed, such as in a virtual machine or other just-in-time compilation execution environment. Typically, the functionality of the program modules may be combined or distributed as desired in various implementations. An implementation of these modules and techniques may be stored on computer storage media or transmitted across some form of communication media.

Col. 24, l. 49 – col. 25, l. 23.

> In some examples, the service computing device may cause the reminder message to surface on restaurant computing device, such as via the restaurant application. In some examples, the service computing device may cause the reminder message to surface, such as via a pop-up message, text message, messaging application notification, or the like.

> Col. 26, ll. 40-46."In various examples, the service computing device may be configured to send an assistance instruction (e.g., preparation message, preparation notification) to the order supervisor at a first interval prior to the pick-up time at the restaurant, an estimated time associated with a start of food preparation at the restaurant, or the like."

Col. 27, l. 1-6.

> "In some examples, the service computing device may be configured to cause the assistance instruction to surface on the captain computing device, such as via a pop-up message, text message, messaging application notification, or the like."

Col. 21, l. 64- col. 22, l. 1

> "In some examples, the delivery instruction may be sent via text message, social media or other application message, phone call, or other means of transmitting a message and/or notification."

Col. 27, l. 66 – col. 28, l. 3.

> In some examples, such as if the food order is sent in advance of the delivery day, the service computing device may be configured to send a reminder message to the restaurant computing device associated with the restaurant on the day of pick-up/delivery. In some examples, the service computing device may cause the reminder message to surface on restaurant computing device, such as via the restaurant application. In some examples, the service computing device may cause the reminder message to surface, such as via a pop-up message, text message, messaging application notification, or the like.

Col. 26, ll. 36-46.

> FIG. 9 illustrates an example service computing device 900, such as service computing device 102, for use in an optimized food service system. The service computing device 900 may be any suitable type of computing device, e.g., mobile, semi-mobile, semi-stationary, or stationary. The service computing device 900 may belong to a variety of categories or classes of devices such as traditional server-type devices, desktop computer-type devices, mobile devices, special purpose-type devices, embedded-type devices, and/or wearable-type devices. Thus, service computing device 900 may include a diverse variety of device types and are not limited to a particular type of device. For example, the service-computing device 900 may represent, but is not limited to, desktop computers, server computers or blade servers such as web-servers, map-reduce servers, or other computation engines or network-attached storage units, personal computers, mobile computers, laptop computers, tablet computers, telecommunication devices, network enabled televisions, thin clients, terminals, personal data assistants (PDAs), game consoles, gaming devices, work stations, media players, personal video recorders (PVRs), set-top boxes, cameras, integrated components for inclusion in a computing device,

appliances, or any other sort of computing device capable of sending communications and performing the functions according to the techniques described herein.

Col. 32, l. 64 – col. 33, l. 22.

Depending on the configuration of the service computing device 900, the memory 904 may be an example of tangible non-transitory computer storage media and may include volatile and nonvolatile memory and/or removable and non-removable media implemented in any type of technology for storage of information such as computer-readable processor-executable instructions, data structures, program modules or other data. The memory 904 may include, but is not limited to, RAM, ROM, EEPROM, flash memory, solid-state storage, magnetic disk storage, optical storage, and/or other computer-readable media technology. Further, in some cases, the service computing device 900 may access external storage, such as RAID storage systems, storage arrays, network attached storage, storage area networks, cloud storage, or any other medium that may be used to store information and that may be accessed by the processor 902 directly or through another computing device or network. Accordingly, the memory 904 may be computer storage media able to store instructions, modules or components that may be executed by the processor 902. Further, when mentioned, non-transitory computer-readable media exclude media such as energy, carrier signals, electromagnetic waves, and signals per se. The memory 904 may be used to store and maintain any number of functional components that are executable by the processor 902. In some implementations, these functional components comprise instructions or programs that are executable by the processor 902 and that, when executed, implement operational logic for performing the actions and services attributed above to the service computing device 900. Functional components of the service computing device 900 stored in the memory 904 may include an order-processing module 910, such as order-processing module 108. Functional components of the service computing device 900 stored on the memory 904 may include one or more customer profiles 912, one or more restaurant profiles 914, one or more assistant profile(s) 916, one or more courier profiles 918, and/or one or more delivery assistant profiles 920.

Col, 33, l. 39 – col 34, l. 10-61.

Additional functional components may include an operating system 922 for controlling and managing various functions of the service computing device 900. The memory 904 may also store other modules and data 924, which may include programs, drivers, etc., and the data used or generated by the functional components, to enable efficient and effective food order processing. Further, the service computing device 900 may include many other logical, programmatic and physical components, of which those described are merely examples that are related to the discussion herein. In addition, the memory 904 may also store data, data structures and the like, that are used by the functional components.

Col. 35, ll. 16-28.

> The I/O interface(s) 906, may include speakers, a microphone, a camera, and various user controls (e.g., buttons, a joystick, a keyboard, a keypad, etc.), a haptic output device, and so forth. The network interface(s) 908 may include one or more interfaces and hardware components for enabling communication with various other devices over the network or directly. For example, network interface(s) 908 may enable communication through one or more of the Internet, cable networks, cellular networks, wireless networks (e.g., Wi-Fi) and wired networks, as well as close-range communications such as Bluetooth®, Bluetooth® low energy, and the like, as additionally enumerated elsewhere herein.

Col. 35, l. 61 – col. 36, l. 5.

> In the illustrated example, the assistant computing device 1000 includes at least one processor 1002, at least one memory 1004, a display 1006, a location component 1008, one or more network interfaces 1010, and one or more input/output (I/O) interfaces 1012. Each processor 1002 can itself comprise one or more processors or processing cores. For example, the processor 1002 may be implemented as one or more microprocessors, microcomputers, microcontrollers, digital signal processors, central processing units, state machines, logic circuitries, and/or any devices that manipulate signals based on operational instructions. In some cases, the processor 1002 may be one or more hardware processors and/or logic circuits of any suitable type specifically programmed or configured to execute the algorithms and processes described herein. The processor 1002 may be configured to fetch and execute computer-readable processor-executable instructions stored in the memory 1004.

Col. 36, ll. 21-38.

> Additionally, the assistant computing device 1000 may include various other components that are not shown, examples of which include removable storage, a power control unit, and so forth.
>
> The one or more network interface(s) 1010 may include one or more interfaces and hardware components for enabling communication with various other devices over the network or directly. For example, network interface(s) 1010 may enable communication through one or more of the Internet, cable networks, cellular networks, wireless networks (e.g., Wi-Fi) and wired networks, as well as close-range communications such as Bluetooth®, Bluetooth® low energy, and the like, as additionally enumerated elsewhere herein.

Col. 37, ll. 54-67.

125. DDI's claims in the patent application that matured into U.S. Patent No. 11,790,387, entitled "User Interface Adjustments Based on Internet-of-Things Engagement," attached hereto

as Exhibit Q, initially were rejected as being unpatentable under 35 U.S.C. § 101. On June 21, 2023, DDI amended the claims and argued that the claims contain an inventive concept because the claimed features "when taken singularly or in any combination, are **not** well-understood, routine, and conventional activity in the field," *see* Ex. R at p. 13 (emphasis in original), even though the specification contains no source code and states at col. 21, l. 50 – col. 22, l. 24:

> Computer readable program instructions for carrying out operations of the present invention may be assembler instructions, instruction-set-architecture (ISA) instructions, machine instructions, machine dependent instructions, microcode, firmware instructions, state-setting data, configuration data for integrated circuitry, or either source code or object code written in any combination of one or more programming languages, including an object oriented programming language such as Smalltalk, C++, or the like, and procedural programming languages, such as the "C" programming language or similar programming languages. The computer readable program instructions may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer or server. In the latter scenario, the remote computer may be connected to the user's computer through any type of network, including a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider). In some embodiments, electronic circuitry including, for example, programmable logic circuitry, field-programmable gate arrays (FPGA), or programmable logic arrays (PLA) may execute the computer readable program instructions by utilizing state information of the computer readable program instructions to personalize the electronic circuitry, in order to perform aspects of the present invention.

126. DDI's claims in the patent application that matured into U.S. Patent No. 11,869,036, entitled "System and Method for Logistical Assistance with Data Exchange," initially were rejected as being unpatentable under 35 U.S.C. § 101. To overcome the § 101 rejection, on June 23, 2023, DDI amended the claims and argued "the claims involve more than performance of 'well understood, routine, [and] conventional activities previously known to the industry' even though the specification at col. 18, ll. 20-33 states:

> Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a

> series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus and may be present on or within different computational apparatuses within a system or network.

127. Paragraph [0152] in DDI's specification in U.S. Patent Application No. 18/296,916, entitled "Machine Learning Platform for Optimized Provider Determination and Processing," attached hereto as Exhibit S, states:

> Any of the software components or functions described in this application may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C, C++, C#, Objective-C, Swift, or scripting language such as Perl or Python using, for example, conventional or object-oriented techniques."

128. Paragraph [0165] in DDI's specification in U.S. Patent Application No. 18/147,801, entitled "Automated Cart Generation," attached hereto as Exhibit T, states:

> Any of the software components or functions described in this application may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C, C++, C#, Objective-C, Swift, or scripting language such as Perl or Python using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions or commands on a computer readable medium for storage and/or transmission, suitable media include random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a compact disk (CD) or DVD (digital versatile disk), flash memory, and the like. The computer readable medium may be any combination of such storage or transmission devices.

129. DDI has argued to this Court that "rather than describing any patent-eligible new device or technology, the specification [of the Network Patents] concedes that the system disclosed and claimed simply uses 'typical' hardware components and would be programmed with 'commonly known' software programming steps that are omitted from the patent's disclosure." (Dkt. No. 42 at 18-19.) Yet, DDI argued otherwise to the U.S. Patent and Trademark Office to overcome patent-eligibility rejections under 35 U.S.C. § 101 when DDI's own patent applications contained the same or substantially the same description.

130. DDI filed for and was awarded multiple patents for inventive concepts it believed it was the first to invent and the inventors of the claimed inventions in those patents signed sworn statements attesting to those beliefs.

131. However, DDI and the inventors of DDI's patents were wrong, because Ameranth had invented many of those concepts long before they did, and DDI's filing for and receiving these patents are direct admissions that Ameranth's Network Patents' inventive concepts were improvements to computers and were thus not conventional 16+ years earlier in 2005.

132. That the inventive concepts claimed in the Network Patents provide non-abstract, technical solutions to technical problems that improve computers is further confirmed by DDI itself by its repeated statements when prosecuting the patents identified below and through the disclosures, inventors' admissions and statements within those patents themselves, all of which rely on, in part or in whole, key aspects of the Network Patents' related technology improvements.

133. As evidenced in bold text below, each of DDI's following two patents include various aspects of the inventive concepts of the Network Patents' claims, and include multiple admissions that these same features improved computers and provided the same platform as claimed in the Network Patents. These specification statements along with the inventors' sworn declarations, attached hereto as Exhibits K-L, wherein they each swore under oath that they believed they were the original inventors of many of the same elements and other inventive concepts of the Network Patents' claims, are factual evidence that these elements and inventive concepts were not conventional in 2005. In fact, these inventors and DDI itself via filing and prosecuting these applications and seeking patents for these concepts indisputably admitted and confirmed that the subject matter they are directed to and for which they much later duplicated into these applications, and now in 2023 had issued as patents, were and are computer

improvements, network improvements, improved user interfaces and since their priority date is almost 15 years behind Ameranth, they clearly were not conventional back in 2005. Further, the admissions/statements herein are yet further evidence of their infringement of the Network Patents.

a. U.S. Patent No. 11,657,442, entitled "Method, Medium, and System for Integration of Functionality of a Fulfillment Service Provider into Third-Party Application," filed on November 11, 2021, issued on 23, attached hereto as Exhibit I (emphasis added):

> Abstract: Integrating a fulfillment service provider into a third-party application via an Application Programming Interface (API) is described. In an example, a computing device associated with a fulfillment service provider can determine, based at least in part on an indication of an interaction between a user and a third-party application, that the fulfillment service provider has been initialized. In one example, functionality associated with the fulfillment service provider can be accessible to the third-party application via an API. In at least one example, the computing device can generate, based at least in part on the interaction with the third-party application and while the fulfillment service provider is initialized, a recommendation of at least one of a service, a merchant, or an item associated with the fulfillment service provider. The computing device can cause the recommendation to be presented via at least one of the third-party application or the fulfillment service provider.
>
> Col. 3, l. 53 – col. 4, l. 26: As will be described below, **techniques described herein can be implemented via a communication network that enables third-party applications to communicate with server(s) that are associated with a fulfillment service provider**. **Techniques described herein thus utilize the technical capability of such a communication network** to enable the integration of services and/or functionalities that are available via different service providers into a single access point. That is, as described herein, **techniques utilize API(s) to enable third-party applications to integrate services and/or functionalities of a fulfillment service provider**. For instance, individual third-party service providers can utilize API(s) and/or a software developer kit (SDK) provided by the fulfillment service provider to allow third-party developers to include fulfillment service provider functionality and/or avail fulfillment service provider services in association with their own third-party applications. **That is, the API(s) and/or SDK can enable third-party developers to customize how their respective third-party applications interact with the fulfillment service provider. The third-party applications can exchange data with the server(s) that host the**

fulfillment service provider, using the technical capabilities of communication networks, to provide such functionality and/or services. In many examples, as described below, the use of fulfillment service provider functionality and/or services can be dynamic and individualized for each of the third-party applications, **thereby providing more efficient use of functionalities and/or services available via the fulfillment service provider. As such, techniques described herein are directed to improved performance of computing systems**.

Col 4, ll. 52-66: For instance, if a user is watching a video via a content providing application and wants to order a pizza, the user is required to exit the content providing application, determine a service that would deliver the pizza, and then open another application for ordering the pizza. **Such a transition causes friction for users and, additionally, consumes computational resources, as described below. That is, existing capabilities of computing devices are inefficient. Techniques described herein provide a specific improvement in the capabilities of computing devices**. For instance, instead of requiring a user to open two separate applications to access two different services, such is the case with existing capabilities of computing devices, techniques described herein are directed to the integration of services and/or functionalities via API(s).

Col 5, ll. 4-8: That is techniques described herein **improve the efficiency of using computing devices** by bringing together functionalities of multiple service providers **via a common access point, using for example, API's.**

Col 5, ll. 12-17: Thus, techniques described herein **reduce friction caused by existing capabilities of computing devices and reduce computational resources required for availing services and/or functionalities from multiple service providers to users. As such, techniques described herein can offer an improvement in the functioning of computing devices**.

Col. 6, ll. 22-25: The fulfillment module **108** can present recommendations to patrons via the **fulfillment user interface 114** (**e.g., via push notifications, interstitials, deep links, text messages, or the like**). The recommendation can be interactive to allow the user to engage with the recommendation while in the third-party application.

Col 8, ll. 59-65: In at least one example, a recommendation module **126**, which can be included in the fulfillment module **108**, **can generate the recommendations and/or cause the recommendations to be presented to the user(s), e.g., via push notifications, interstitials, deep-links, text messages, or the like**. Additional details are described below.

Col. 11, ll. 50-60: In an additional or alternative example, the recommendation can be presented **via the fulfillment service provider**.

That is, in such an example, **the recommendation** can be presented **via another channel** associated **with the fulfillment service provider instead of, or in addition to, the third-party application 104**. The recommendation can be sent to the user **via a push notification, interstitial, a deep-link, a text message, or the like**. The recommendation can be interactive to allow the user to engage with the recommendation while in the third-party application.

Col. 12, ll. 15-21: If the user does not desire to take an action based on the recommendation, the fulfillment module **108 can refrain from performing additional operations (e.g., take no action)**, as illustrated in block **216**. In some examples, the interactions or lack thereof **can be used to feed into the machine learning models that make the recommendations**.

Col. 16, ll. 49-56: If the event details are not updated, the recommendation can continue to be presented **until the recommendation module 126 determines to terminate the recommendation (e.g., after a lapse of a predetermined period of time, etc.)** or the user otherwise interacts with the third-party application **104** (e.g., takes an action based on the recommendation, closes the third-party application **104**, exits the third-party application, etc.).

Col, 40, ll. 38-48: **Further, while the figures illustrate the components and data of the server(s) 1504 as being present in a single location, these components and data can alternatively be distributed across different computing devices and different locations in any manner. Consequently, the functions can be implemented by one or more server computing devices, with the various functionality described above distributed in various ways across the different computing devices. Multiple server(s) 1504 can be located together or separately, and organized, for example, as virtual servers, server banks and/or server farms**.

Col. 42, l. 63 – col. 43, l. 5: **In at least one example, the system 1500 can include a datastore 1544 that can be configured to store data that is accessible, manageable, and updatable**. In some examples, the datastore **1544** can be **integrated with the user device 1502 and/or the server(s) 1504. In other examples, as shown in FIG. 15, the datastore 1544 can be located remotely from the server(s) 1504 and can be accessible to the server(s) 1504. The datastore 1544 can comprise multiple databases and/or servers connected locally and/or remotely via the network(s) 1506.**

Col. 44, ll. 35-45: **Furthermore, the methods described above are illustrated as collections of blocks in logical flow graphs, which**

represent sequences of operations that can be implemented in hardware, software, or a combination thereof. In the context of software, the blocks represent computer-executable instructions stored on one or more computer-readable storage media that, when executed by processor(s), perform the recited operations. **Generally, computer-executable instructions include routines, programs, objects, components, data structures, and the like that perform particular functions or implement particular abstract data types.**

b. U.S. Patent No. 11,710,172, entitled "Dynamically Providing Context-Based Notification and Fulfillment," filed on April 15, 2021, issued on July 25, 2023, attached hereto as Exhibit J (emphasis added):

Abstract: In some examples, a location of a merchant is updated as the merchant moves. A server receives the location of the merchant and compares that location to the location of a user, so as to determine whether the merchant is located within a first threshold distance or a second, smaller threshold distance from the location of the user. If the user is within the first threshold distance, the server presents a first point of sale (POS) interface to initiate an order from the merchant and present the user with an option to fulfill that order through delivery. If the merchant is located within the second, smaller threshold distance from the user, the server presents the user with a second POS interface that gives the user an option to fulfill the order through pickup instead of delivery.

Col. 2, ll. 31-38: The present disclosure relates to systems and methods for dynamically determining whether and how to provide notification to a customer of a changeable remote location of a merchant, and fulfillment options for vending products from that merchant to a customer. In one embodiment, **a network of one or more merchants** offers products for sale via a common application or interface that communicates with a third party server.

Col. 2, ll. 52-56: **The notification may be displayed on the customer device** in a manner that allows the customer to see the identity of the merchant and/or their products, and to make a purchase for later pick up or delivery. In a similar manner, the merchant device **may receive appropriate notifications** of relevant customers in a merchant's proximity.

Col. 2, ll. 60-66: In some embodiments, the virtual boundary may a geo-fence that bounds a geographic area around a particular device. In some embodiments, the virtual boundary may be drawn (or set) **with consideration of other contextual factors, such as past purchases, a**

customer's indicated interest, a merchant's route, a merchant's intended marketing plan, or any other appropriate factor that may provide contextual information regarding the users within the geographic area in which the merchant intends to travel.

Col. 3, ll. 15-23: This determination may be **based on a user's previous purchases or actions, current conditions (like time, weather, or traffic), merchant saturation indicators in the target area(s), customer interest indicators (e.g., a preference in cuisine or price range) provided by the customer or obtained from a third-party system**, and the like. In some embodiments, **a determination** of customer interest **may be predictive, deterministic**, and/or based on a classification of users in accordance with one or more user characteristics.

Col. 3, ll. 35-38: Alternate embodiments are also contemplated where an opposite flow is implemented, that is, **notifications of customers are provided to a merchant, such notifications happening additionally or alternately to notifications to customers**. In such embodiments, **notifications to one or more merchants may happen contemporaneously with, serially to, or otherwise at a separate time from notifications made to customers.**

Col. 4, ll. 4-12: In some embodiments, the disclosed methods and systems send, to a merchant device, **a notification of relevance (e.g., based on proximity, time, customer or merchant preferences, etc.)** of one or more customers, **such notification being customizable to a particular subset of the merchant's customer base**. In one such embodiment, a merchant-facing user interface may allow the merchant to **identify one or more "loyal" customers, for example those who make repeated purchases from the merchant**. **A fulfillment server** may then notify the merchant when the merchant moves to a location that is in proximity to one or more of those loyal customers.

Col. 4, ll. 20-29: In another embodiment, the disclosed methods and systems compile and/or aggregate and present, to a merchant device, information regarding one or more customers. In one such embodiment, after a notification of proximity has been sent to customers, the customers who express interest in making a purchase may be determined. This information may be summarized and transmitted to the merchant. **In some embodiments, prior to the transmission of a notification of proximity, information regarding the customers and/or their predicted interest in the merchant and its products (a customer profile), a selected location (a location profile), and/or current conditions (a condition profile), and the merchant themselves (a merchant profile) may be analyzed** in order to generate location, route, and/or product recommendations to the merchant.

Col. 4, ll. 34-49: In some embodiments, this recommendation or aggregated data **may be presented to the merchant in a variety of forms**, such as **a dashboard or graphical format, or as a suggestion for one or more actions to be taken by the merchan**t, for instance a suggested location or route for sale of their products, or a suggested product that is predicted to be successful in a particular market or geographic area.

Col. 5, ll. 5-9: **The technology herein** employs **a plurality of computing devices, such as mobile devices, to provide targeted and automatic recommendations** of merchants and/or products to customers based on proximity **or other relevant context**, without customers having to perform search or filtering of merchant's and/or their products.

Col. 5, ll. 17-22: **As a further result of the technology described herein**, there may be **an interaction of multiple computing devices to expedite a fulfillment process** by dynamically determining which of several fulfillment options (e.g., pickup, delivery, both) may apply given a changeable proximity between the merchant and the customer (e.g., a moving food truck), or overall network efficiency.

Col. 5, ll. 28-45: **This technology** may also provide **a highly-customizable interface for specifying fulfillment options based on practical and/or conditional considerations**, including merchant **and customer preferences**, current environmental and geographic conditions, **the availability of transient or time-sensitive fulfillment options**, such as third-party assistance, among other considerations. That is, the systems and methods described herein may also provide a way of determining real-time locations of one of more entities involved in the fulfillment or an order, and displaying a graphical user interface to any of a customer, a merchant, or a courier, that automatically provides an indicator of such real-time locations, and/or automatically provides, in dependency of such real-time locations, dynamic options for fulfillment of an order. By these means, the user customer, merchant, or courier is presented **with an improved user interface for electronic devices.**

Col. 5, ll. 50-57: Additionally, the systems and methods described herein further provide **the ability to receive, via a user interface, a customer selection of an order**, to determine, based on real-time location determining systems, locations of one or more mobile entities with changeable locations (such as merchant systems, customer systems, and in some embodiments third party systems such as couriers), **and/or to automatically coordinate and monitor location-based fulfillment between the mobile entities**.

Col. 6, ll. 23-38: Merchant system **24** may include **a device 20 such as a mobile phone such an iPhone or Android device, an iPad or tablet device**, a laptop, or touchscreen device, **though any practical device that**

can communicate with the network 30 may be appropriate. In the embodiment of FIG. **1** , merchant system **24** includes a payment reader **25** illustrated as a standalone mobile hardware device, though the configuration is not so limited. In other embodiments, the payment reader **25** may be integrally incorporated into the merchant device **20**, for instance **where the merchant device 20 is a smart phone (iOS or Android) or another computing device** that is configured to act as an embedded card reader (ECR). In still other embodiments, reader **25 may be presented as software (such as an application installed on a mobile device),** hardware, or any combination thereof in another component of environment **10**.

Col. 7, ll. 8-21: **A customer device 40 may be any device operated (or operable) by a customer** that is able to communicate with the merchant device **20** and **a central server 50 (described further herein) via the network 30**. The term "customer" (also referred to herein as a "user" (of a POS system), a "purchaser" or the like) may be any individual or entity that may purchase or intend to purchase a product or service of a merchant, or may be potentially interested in purchasing a product or service of a merchant. **A customer device 40 may be, for instance, a mobile phone such as an iPhone or Android device, an iPad or tablet device**, a laptop or touchscreen device, a PC or stationary computing device, **or any other practical device that can communicate via the network 30.**

Col. 7, l. 66 – col. 8, l. 8: **Environment 10 may also include one or more servers 50**. **A server 50 is, in some embodiments, remote to the merchant device 20 and customer devices 40 but is capable of transmitting and receiving information therewith via the network 30**. In the embodiment of FIG. **1** , **remote server 50 is a mobile fulfillment server (also referred to herein as "fulfillment server") capable of processing and transmitting data to, from, and between merchant device 20 and customer device 40 to facilitate sales transactions in a manner described in greater detail below.**

Col. 8, ll. 48-65: **In some embodiments, fulfillment server 50** may, upon a determination of proximity with the merchant device **20**, **present to a customer device 40 a customer-facing user interface (e.g., a graphical user interface) that displays a notification of proximity to the merchant**. In some embodiments, **this notification may prompt the customer device 40 to transmit an indication of interest in making a purchase from (or otherwise interacting with) the merchant. In some embodiments, the fulfillment server 50 may then present to the customer device 40 a user interface** through which the customer can purchase or order a product from the merchant; viz., **fulfillment server 50 may provide one or more components of a POS system between the merchant and the customer**. In some examples, **fulfillment server 50 may transmit order information to the merchant**

device 20 via a merchant-facing user interface, email, instant messaging, or other type of electronic communication, or via voice, SMS, voicemail, or any other appropriate type of communication.

Col. 9, ll. 16-34: **The fulfillment server may then deliver different sets of data to each of the respective customers** detailing fulfillment options specific (though not necessarily unique) to that customer. **For instance, fulfillment server 50 may present to customer device 40-1, via a user interface, two fulfillment options: pickup and delivery, and may present to customer device 40-1, via a user interface, only one fulfillment option, e.g., one of pickup or delivery**. By these means, **different sets of fulfillment data are sent to different customer devices, based on the devices' location and/or other relevant factors (that is, other context data)** described in greater detail below. In some embodiments, merchant device **20** and one or more of customer devices **40-1** and **40**-2 may also transmit data directly to and between each other, for example, transaction data regarding an order made by the customer from the merchant, or message data regarding the status of an order or of fulfillment.

Col. 9, ll. 35-49: **Fulfillment server 50 transmits and/or receives location data, notification data, fulfillment data, profile/preference data, etc. to/from one or more of the merchant device 20 and the customer devices 40-1** (belonging to customer **44**) and **40-2** (belonging to customer **46**). **These types of data transmission, performed over the network 30, are illustrated in FIG. 1 as solid lines passing through network 30. Network 30 may include one or more of any appropriate network, including a wide area network (such as the Internet), a local area network (such an intranet), a cellular network or another type of wireless network, such as Wi-Fi, Bluetooth, Bluetooth Low Energy, and/or other close-range wireless communications, a wired network, such as fiber optics and Ethernet, or any other such network, or any combination thereof.**

COUNT I – INFRINGEMENT OF U.S. PATENT NO. 11,842,415

134. Ameranth repeats and realleges the allegations of the preceding paragraphs as if fully set forth herein.

135. Without license or authorization and in violation of 35 U.S.C. § 271(a), Defendants are liable for infringement of at least claims 1 and 9 of the '415 patent by making, using, importing, offering for sale, and/or selling, (a) an improved and intelligent web server computer with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities

for use in a hospitality market and (b) a network of interconnected, intelligent and improved web server computers with multi-modes of contact, multi-communications protocols, multi-user and parallel operational capabilities for use in a hospitality market, respectively, (collectively, the "Accused Instrumentalities"), because each and every element is met either literally or equivalently.

136. Upon information and belief, Defendants have used and tested the Accused Instrumentalities in the United States, directly infringing one or more claims of the '415 patent.

137. The Accused Instrumentalities satisfy each and every element of each asserted claim of the '415 patent, either literally or under the doctrine of equivalents. Exemplary preliminary claim charts illustrating infringement of claims 1 and 9 are attached hereto as Exhibits M1-M2, and incorporated herein by reference.

138. In addition to the extensive and detailed infringement chart, backed by 100+ evidentiary citations attached thereto, including extensive and detailed technical video presentations and case studies directly from the Defendants, DDI has admitted to infringement in various public statements, not only as detailed in the extensive claims chart, but as shown below via an August 2022 interview of DDI's Vice President of Analytics and Data Science, Jessica Lachs, and when combined with the DDI's post about its recently created Iguazo "Big Picture" framework/architecture pictorially reflecting its infringement of the '415 patent claims. The Iguazo "Big Picture"(further illuminated by the statements by Ms. Lachs and many other DDI engineering team leaders and developers as is shown in the evidence attached to the preliminary claim chart) clearly demonstrates, explains, and admits to Defendants' infringement of the '415 patent claims and is further explained as to the Iguazo system diagram below.

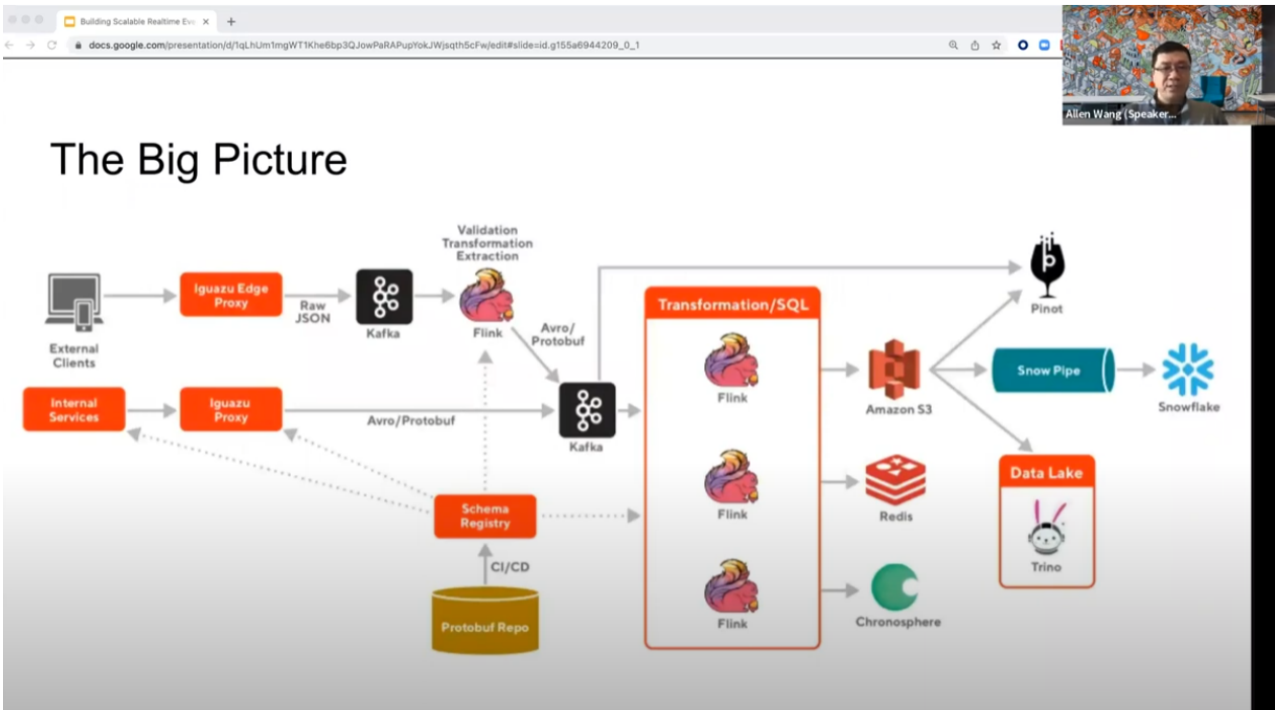
139. In the interview, a video of which is attached as Exhibit 98 to the preliminary claim chart and also available at https://www.youtube.com/watch?v=g-1MaOCFgUc (last accessed Dec. 20, 2023), DDI's Vice President of Data Science admits:

- "And so for us, it's really about collecting as much information as we can about all sides of the marketplace, bringing all of that data together into a central data platform, where all of that data is accessible no matter the source. Whether it is coming from our production systems, transactional data, whether it is event data in our apps, whether that's the consumer app, the dasher app, the merchant app . . . whether it is coming from our CRM systems. All of that data needs to come in to one central place so that we can tie it together and use the insights together to create a 360 degree picture of what's happening on our platform and off our platform so that we can use that information not just to provide accurate menus and inventory for consumers but also so we can send the right email communications to consumers, to dashers, so that we really have a full picture of what's happening and can use that for personalization and to help all three sides of our marketplace really optimize that they are at their peak efficiency."

- "So, for us, we want data to be easily accessible to all the different teams that need access to it. Analytics, being one of the largest customers of data at DoorDash, of course, but the way we think about our data models is really about increasing accessibility and consistency to that data. So, having all of our data in one central place and making sure that it is high in performance and so like query speeds are fast and that data models are thoughtful, so that it makes it a lot easier for data scientists, analysts, operators, product managers to be able to query the data that is needed and use the data in our production, in our production systems as well. So, we try to be thoughtful about how we structure our data models and how we ensure that all of the different production systems tie together into that central, as you mentioned, that central data lake."

140. In the post "Building Scalable Real Time Event Processing" (available at https://www.youtube.com/watch?v=BqbN-DD24SE (last accessed Dec. 20, 2023)), a lead engineer at DDI working on its real-time data infrastructure showed the "architectural overview of Iguazu." As a POSITA would understand, the Iguazo system diagram shows the DoorDash platform and "360 degree picture," and as illuminated by many other DDI technical statements, papers, admissions and presentations in the attached exhibits, it depicts the framework and layered architecture of the '415 patent claims, clearly operating with/on clusters of the claimed web servers

and including its master database as is shown on the far right, the hospitality tasks from, e.g., consumers and Dashers and food importation inputs from the restaurants on the far left (i.e. their external clients) and the integration, API's communication protocols, and intelligence of the claimed '415 patent inventions in the center and including the interactivity and integration of the system elements in their ordered combination.



141. Ameranth is entitled to recover from Defendants the damages sustained by Ameranth as a result of Defendants' infringement of the '415 patent in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT II – INFRINGEMENT OF U.S. PATENT NO. 11,847,587

142. Ameranth repeats and realleges the allegations of the preceding paragraphs as if fully set forth herein.

143. Without license or authorization and in violation of 35 U.S.C. § 271(a), Defendants are liable for infringement of at least claims 1 and 7 of the 587 patent by making, using, importing, offering for sale, and/or selling, an intelligent back office and handheld/mobile distributed computing network with varying, multi-modes of contact, and parallel operational capabilities for use in completing remotely initiated hospitality tasks in the hospitality market (collectively, the "Accused Platform"), because each and every element is met either literally or equivalently.

144. Upon information and belief, Defendants have used and tested the Accused Platform in the United States, directly infringing one or more claims of the '587 patent.

145. The Accused Platform satisfies each and every element of each asserted claim of the '415 patent, either literally or under the doctrine of equivalents. Exemplary preliminary claim charts illustrating infringement of claims 1 and 7 are attached hereto as Exhibits M3-M4, and incorporated herein by reference.

146. In addition to the extensive and detailed infringement chart, backed by 100+ evidentiary citations attached thereto, including extensive and detailed technical video presentations and case studies directly from the Defendants, DDI has admitted to infringement in various public statements, not only as detailed in the extensive claims chart, but as shown below via an August 2022 interview of DDI's Vice President of Analytics and Data Science, Jessica Lachs, and when combined with the DDI's post about its recently created Iguazo "Big Picture" framework/architecture pictorially reflecting its infringement of the 587 patent claims. The Iguazo "Big Picture"(further illuminated by the statements by Ms. Lachs and many other DDI engineering team leaders and developers as is shown in the evidence attached to the preliminary claim chart) clearly demonstrates, explains, and admits to Defendants' infringement of the '587 patent claims and is further explained as to the Iguazo system diagram below.

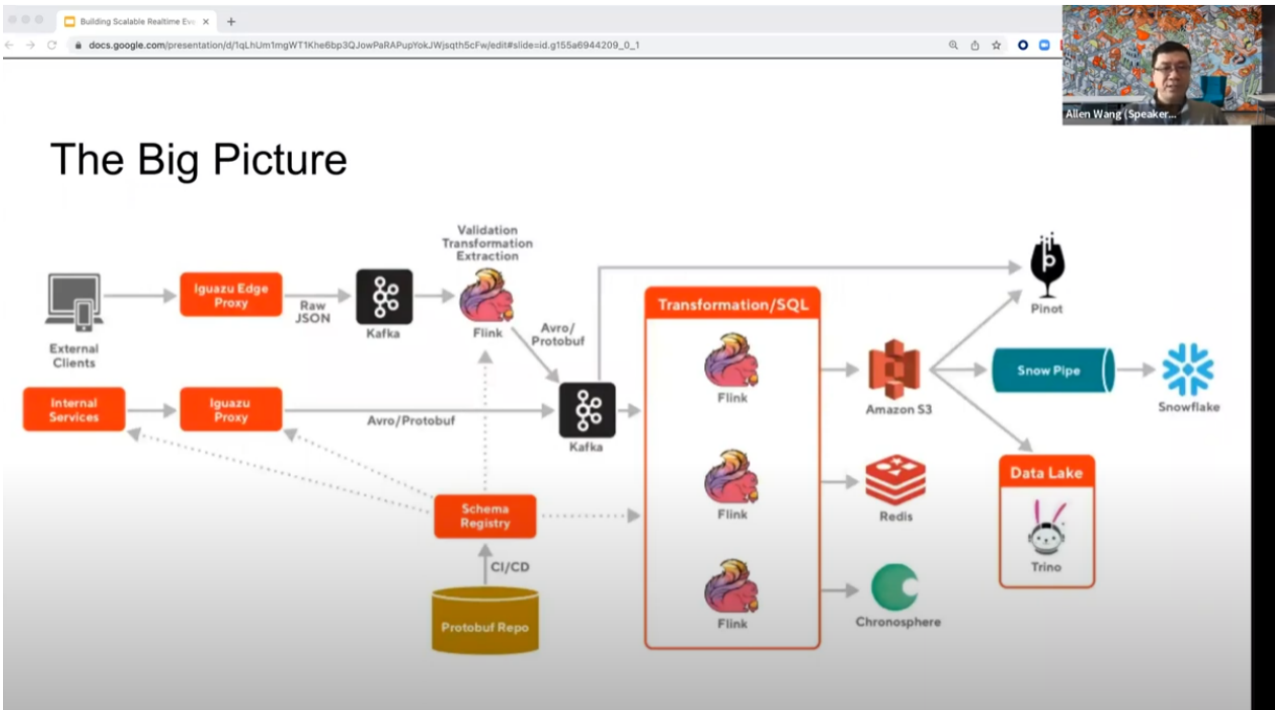
147. In the interview, a video of which is attached as Exhibit 98 to the preliminary claim chart and also available at https://www.youtube.com/watch?v=g-1MaOCFgUc (last accessed Dec. 20, 2023), DDI's Vice President of Data Science admits:

- "And so for us, it's really about collecting as much information as we can about all sides of the marketplace, bringing all of that data together into a central data platform, where all of that data is accessible no matter the source. Whether it is coming from our production systems, transactional data, whether it is event data in our apps, whether that's the consumer app, the dasher app, the merchant app . . . whether it is coming from our CRM systems. All of that data needs to come in to one central place so that we can tie it together and use the insights together to create a 360 degree picture of what's happening on our platform and off our platform so that we can use that information not just to provide accurate menus and inventory for consumers but also so we can send the right email communications to consumers, to dashers, so that we really have a full picture of what's happening and can use that for personalization and to help all three sides of our marketplace really optimize that they are at their peak efficiency."

- "So, for us, we want data to be easily accessible to all the different teams that need access to it. Analytics, being one of the largest customers of data at DoorDash, of course, but the way we think about our data models is really about increasing accessibility and consistency to that data. So, having all of our data in one central place and making sure that it is high in performance and so like query speeds are fast and that data models are thoughtful, so that it makes it a lot easier for data scientists, analysts, operators, product managers to be able to query the data that is needed and use the data in our production, in our production systems as well. So, we try to be thoughtful about how we structure our data models and how we ensure that all of the different production systems tie together into that central, as you mentioned, that central data lake."

148. In the post "Building Scalable Real Time Event Processing" (available at https://www.youtube.com/watch?v=BqbN-DD24SE (last accessed Dec. 20, 2023)), a lead engineer at DDI working on its real-time data infrastructure showed the "architectural overview of Iguazu." As a POSITA would understand, the Iguazo system diagram shows the DoorDash platform and "360 degree picture," and as illuminated by many other DDI technical statements, papers, admissions and presentations in the attached exhibits, it depicts the framework and layered architecture of the '587 patent claims, clearly operating with/on clusters of the claimed web servers

and including its master database as is shown on the far right, the hospitality tasks from, e.g., consumers and Dashers and food importation inputs from the restaurants on the far left (i.e. their external clients) and the integration, API's communication protocols, and intelligence of the claimed '587 patent inventions in the center and including the interactivity and integration of the system elements in their ordered combination.



149. Ameranth is entitled to recover from Defendants the damages sustained by Ameranth as a result of Defendants' infringement of the '587 patent in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

WILLFULNESS AND INDIRECT INFRINGEMENT

150. Ameranth repeats and realleges the allegations of the preceding paragraphs as if fully set forth herein.

151. Ameranth's initial complaint was filed on December 22, 2023.

152. Defendants received a copy of the complaint on January 16, 2024 and agreed to waive service.

153. Defendants have been on notice of the Network Patents since, at the latest, their receipt of the complaint.

154. Thus, Defendants have been on notice of the Network Patents since, at the latest, the date they received the complaint.

155. Upon information and belief, Defendants have not altered their infringing conduct after receiving the initial complaint.

156. Upon information and belief, Defendants' continued infringement despite their knowledge of the Network Patents and the accusations of infringement has been objectively reckless and willful.

157. In particular, Defendants' customers' and end-users' use of the Accused Instrumentalities and the Accused Platform that is facilitated by the use of the technology patented under Network Patents. Thus, DDI's customers and end-users are able to use and benefit from infringing the Network Patents.

158. On information and belief, in order to generate profits and revenues, DDI markets and promotes, e.g., through its websites, advertising and sales personnel, the use of its products that infringe the Network Patents when used as intended by DDI's customers and end-users. Defendants' customers and end-users use such products. DDI further instructs its customers and end-users how to use such products in a manner that infringe the Network Patents (e.g., through on-line technical documentation, instructions, and technical support). DDI further instructs its and end-users to infringe the Network Patents through the products themselves, e.g., through instructions.

159. In particular, DDI instructs its customers and end-users through at least on-line support instructions over the Internet how to use the Accused Instrumentalities and the Accused Platform.

160. On information and belief, in order to generate profits and revenues, Eat'N Park markets and promotes, e.g., through its websites and advertising, the use of online and mobile ordering through DoorDash that infringe the Network Patents when used as intended by Eat'N Park's customers and end-users. Eat'N Park's customers and end-users use such products. Eat'N Park further implicitly instructs its customers and end-users how to use such products in a manner that infringe the Network Patents (e.g., through its website or in-store QR codes). Eat'N Park further instructs its and end-users to infringe the Network Patents through the products themselves, e.g., through instructions.

161. Defendants still further make such products accessible to their customers and end-users via the Internet or mobile apps, thus enabling and encouraging their customers and end-users to use such products to infringe the Network Patents.

162. On information and belief, even though Defendants have been aware of the Network Patents that their customers and end-users infringe the Network Patents since no later than the date they received the complaint and Defendants have neither made any changes to the functionality, operations, marketing, sales, technical support, etc. of such products to avoid infringing the Network Patents nor informed their customers or end-users how to avoid infringing the Network Patents. To date, Defendants have not identified a single action that they have taken to avoid infringement (e.g., by designing around or notifying its customers or end-users how to avoid infringement) by itself or its customers or end-users since it became aware of the Network Patents.

163. On information and belief, Defendants themselves are unaware of any legal or factual basis that their actions solely, or in combination with the actions of their customers and end-users, do not constitute direct or indirect infringement of the Network Patents. To date, Defendants have not produced any opinion of counsel, request for opinion of counsel relating to the scope, interpretation, construction, enforceability, unenforceability, or the infringement or potential infringement of any claim of the Network Patents. In addition, Defendants have not produced any complete evaluation, analysis, or investigation relating to the validity of the Network Patents.

164. As such, on information and belief, despite the information Defendants obtained from the original complaint in this action, Defendants continue to specifically intend for and encourage their customers and end-users to use its products in a manner that infringes the claims of the Network Patents. In addition, since at least the filing of the original complaint in this action, Defendants have deliberately avoided taking any actions (e.g., designing around, or providing notice to their customers) to avoid confirming that their actions continue to specifically encourage their customers and end-users to use their products in a manner that infringes the claims of the Network Patents.

165. Defendants' actions of, *inter alia*, making, importing, using, offering for sale, and/or selling such products constitute an objectively high likelihood of infringement of the Network Patents, which were duly issued by the United States Patent and Trademark Office and are presumed valid. Since at least the filing of the original complaint, Defendants are aware that there is an objectively high likelihood that their actions constituted, and continue to constitute, infringement of the Network Patents and that the Network Patents are valid. Despite Defendants' knowledge of that risk, on information and belief, Defendants have not made any changes to the relevant operation of their accused products and have not provided their users

and/or customers with instructions on how to avoid infringement of the Network Patents. Instead, Defendants have continued to, and still are continuing to, among other things, make, use, offer for sale, and/or sell products and/or services patented under the Network Patents. As such, Defendants willfully, wantonly and deliberately infringed and are infringing the Network Patents in disregard of Ameranth's rights under the Network Patents.

JURY DEMAND

Ameranth hereby demands a trial by jury on all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Ameranth requests that this Court enter judgment against Defendants as follows:

A. An adjudication that Defendants have infringed the '415 and '587 patents;

B. An award of damages to be paid by Defendants adequate to compensate Ameranth for Defendants' past infringement of the '415 and '587 patents and any continuing or future infringement through the date such judgment is entered, including interest, costs, expenses and an accounting of all infringing acts including, but not limited to, those acts not presented at trial;

C. An award of enhanced damages pursuant to 35 U.S.C. § 284 for Defendants' willful infringement of the '415 and '587 patents subsequent to the date of their notice of the '415 and '587 patents;

D. A declaration that this case is exceptional under 35 U.S.C. § 285, and an award of Ameranth's reasonable attorneys' fees; and

E. An award to Ameranth of such further relief at law or in equity as the Court deems just and proper.

Dated: September 17, 2024

/s/ Vincent A. Coppola
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Attorneys for Plaintiff
Ameranth, Inc.

CERTIFICATE OF SERVICE

I hereby certify that on September 17, 2024, I electronically filed the above document(s) with the Clerk of Court using CM/ECF which will send electronic notification of such filing(s) to all registered counsel.

/s/ Vincent . Coppola
Vincent A. Coppola