Nos. 2022-1600, 2022-1709

United States Court of Appeals for the Federal Circuit

MIRROR WORLDS TECHNOLOGIES, LLC,
Plaintiff-Appellant,

v.

META PLATFORMS, INC.,
Defendant-Cross-Appellant

Appeals from the United States District Court for the Southern District of New York in No. 1:17-cv-03473-JGK, Judge John G. Koeltl

RESPONSE AND CROSS-APPEAL BRIEF OF APPELLEE AND CROSS-APPELLANT META PLATFORMS, INC.

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U.S. Patent No. 6,006,227

13. A method which organizes each data unit received by or generated by a computer system, comprising the steps of:

generating a main stream of data units and at least one substream, the main stream for receiving each data unit received by or generated by the computer system, and each substream for containing data units only from the main stream;

receiving data units from other computer systems;

generating data units in the computer system;

selecting a timestamp to identify each data unit;

associating each data unit with at least one chronological indicator having the respective timestamp;

including each data unit according to the timestamp in the respective chronological indicator in at least the main stream; and

maintaining at least the main stream and the substreams as persistent streams.

14. The method of claim 13, wherein each timestamp is selected from the group consisting of: past, present, and future times.

17. The method of claim 13, wherein each data unit includes textual data, video data, audio data and/or multimedia data.

U.S. Patent No. 7,865,538

1. A method of operating a computer system comprising:

providing the computer system with documents from diverse applications in respective formats unique to the respective applications;

causing the computer system to automatically, without user interaction and without requiring a user to designate directory structures or other pre-imposed document categorizations structures, store the provided documents as a time-ordered main stream of documents associated with respective automatically generated time indicators;

said time-ordered main stream being unbounded to thereby accommodate documents associated with time indicators related to past, present and future times;

said time-ordered main stream requiring no fixed beginning or end and being maintained and being selectively retrievable and searchable by the computer system;

said computer system maintaining the main stream live and responsive to subsequent events by automatically incorporating therein new documents as provided to the computer system while maintaining the thus expanded main stream time-ordered;

providing selected search criteria;

causing said computer system to search said time-ordered main stream according to said search criteria and use search results to create a time-ordered substream of documents from the main time-ordered stream;

further causing said computer system to maintain said substream live and responsive to subsequent events by automatically incorporating therein new document provided to the computer system that meet the search criteria while maintaining the thus expanded substream time-ordered;

displaying at least selected portion of the live main stream or substream on computer display means as a display reflecting the time-ordered nature thereof;

automatically showing on the display means a display of a glance view of a displayed document in response to touching with a cursor a screen area associated with the document;

said glance view being an abbreviated version of the document and indicative of content thereof; and

said showing of the glance view occurring essentially instantaneously in response to said touching with the cursor of the screen area associated with the document.

U.S. Patent No. 8,255,439

1. A method of operating a computer system comprising:

providing the computer system with documents in respective formats according to respective different applications through which the provided documents are generated or modified, which formats differ from one of the document to another for at least some of said provided documents, said provided documents being delivered to the computer system or generated by the computer system;

storing at least some of the documents provided to the computer system in computer storage;

said computer system being configured to automatically generate and store in computer storage respective representations related to the documents provided thereto, thereby forming a main collection of document representations;

said computer automatically generating and storing said main collection of document representations without requiring a user to designate a directory structure, a physical location for storage of document representations or corresponding documents, or another pre-imposed document categorization structure for each of said document representations or documents;

said automatically generated and stored document representations being in a consistent format despite differences in format from one to another of the documents corresponding thereto;

said automatically generated and stored representations of said documents including respective automatically generated time indicators associated with the documents corresponding to said representations;

said automatically generated and stored representations of said documents further including respective automatically generated information relating the document representation to the respective documents provided to and stored in said computer system;

said automatically generated and stored main collection of document representations being unbounded in time and size and being configured to include documents associated with time indicators related to future times as well as to past and present times;

said automatically generated and stored main collection of document representations requiring no fixed beginning or end and being non-transitory and selectively searchable by the computer system;

providing selected search criteria;

causing said computer system to perform a first search of at least said main collection of document representations according to selected first search criteria, to provide first search results, and to utilize said first search results to generate a first sub-collection of document representations related to a respective sub-collection of the documents provided to the computer system;

selectively causing the computer system to display on a computer screen graphical depictions of only a first portion of said first sub-collection of document representations generated by utilizing said first search results, said first portion corresponding to only a portion of the documents provided to and stored in the computer system;

said first portion of said first document sub-collection of document representations corresponding to a multi-document portion of the documents provided to and stored in said computer system;

said computer system being configured to maintain at least one of said the main collection of document representations and said first sub-collection of document automatically responsive to events subsequent to the providing of said first search results such that additional document representations corresponding to additional documents provided to the computer system subsequent to an initial display of said first portion of the first sub-collection of document representations and meeting said selected search criteria are automatically included in a subsequent display of graphical depictions of one or more portions of said first sub-collection of document representations;

said additional document representations also including automatically generated respective time indicators associated with the documents subsequently provided to the computer system;

automatically showing on the computer screen a display of a glance view of a displayed document depiction while continuing to show on the screen plural displayed graphical depictions of respective plural document representations;

said glance view being an abbreviated version of the document corresponding to the graphical depiction and being indicative of content thereof; and

said showing of the glance view occurring in response to a user designating a displayed document representation by interacting with a screen area currently associated with the graphical depiction, without requiring the user to click on the designated screen area in order to enable such showing of the glance view.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

CERTIFICATE OF INTEREST

Case Number 2022-1600, 2022-1709

Short Case Caption Mirror Worlds Technologies, LLC v. Meta Platforms, Inc.

Filing Party/Entity Defendant-Cross-Appellant Meta Platforms, Inc.

Instructions: Complete each section of the form. In answering items 2 and 3, be specific as to which represented entities the answers apply; lack of specificity may result in non-compliance. **Please enter only one item per box; attach additional pages as needed and check the relevant box**. Counsel must immediately file an amended Certificate of Interest if information changes. Fed. Cir. R. 47.4(b).

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 02/13/2023

Signature: /s/ Heidi L. Keefe

Name: Heidi L. Keefe

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	**2. Real Party in Interest.** Fed. Cir. R. 47.4(a)(2).	**3. Parent Corporations and Stockholders.** Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. ☐ None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. ☐ None/Not Applicable
Meta Platforms, Inc. (formerly Facebook, Inc.)	N/A	N/A

☐ Additional pages attached

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

☐ None/Not Applicable ☐ Additional pages attached

Alexandra Leeper	Azadeh Morrison	Lowell Mead
Joseph M. Drayton	Benjamin Damstedt	Shane Hannon
Emily Terrell	David Murdter	

5. Related Cases. Provide the case titles and numbers of any case known to be pending in this court or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal. Do not include the originating case number(s) for this case. Fed. Cir. R. 47.4(a)(5). See also Fed. Cir. R. 47.5(b).

☑ None/Not Applicable ☐ Additional pages attached

6. Organizational Victims and Bankruptcy Cases. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

☑ None/Not Applicable ☐ Additional pages attached

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I. RELATED CASES

No case is pending in this or any other court or agency that will directly affect or be affected by this Court's decision here.

This Court previously addressed U.S. Patent No. 6,006,227, one of the patents at issue here, in *Mirror Worlds v. Apple*, 692 F.3d 1351, 1353 (Fed. Cir. 2012) (Lourie, Newman, Prost). The *Apple* action did not involve Meta Platforms, Inc. (f/k/a Facebook, Inc.).

This Court also previously addressed a prior appeal from this case, on an early motion for summary judgment of noninfringement before discovery closed. *Mirror Worlds Techs. v. Facebook*, 800 F. App'x 901, 902 (Fed. Cir. Jan. 23, 2020) (Taranto, Prost, Stoll). That ruling was "without prejudice to otherwise-appropriate consideration of non-infringement contentions on remand, especially once the record is fully developed." *Id*. at 910.

Facebook, Inc. changed its corporate name to Meta Platforms, Inc. in October 2021. (Dkt. 16; Dkt. 17.) To be consistent with the district court proceedings, this brief uses "Facebook."

II. JURISDICTION

Facebook agrees that this Court has jurisdiction under 28 U.S.C. § 1295(a) over Mirror Worlds' appeal, which challenges the district court's grant of summary judgment of noninfringement in favor of Facebook. Jurisdiction over Facebook's

cross-appeal of the denial of summary judgment of invalidity under 35 U.S.C. § 101 (Appx17989-17991; Appx66) is also proper because it seeks a finding of invalidity as to the asserted patents, which would "lessen the rights of [Mirror Worlds]" and "enlarge [Facebook's] own rights." *Lazare Kaplan Int'l v. Photoscribe Techs.*, 714 F.3d 1289, 1293 (Fed. Cir. 2013). The district court's denial of summary judgment was based entirely on the first step of *Alice*, which "presents a legal question that can be answered based on the intrinsic evidence." *CardioNet v. InfoBionic*, 955 F.3d 1358, 1372 (Fed. Cir. 2020); *Ericsson v. TCL Commc'n Tech. Holdings*, 955 F.3d 1317, 1321 (Fed. Cir. 2020).

III. ISSUES PRESENTED

The issues presented by Mirror Worlds' appeal are:

1. Did the district court properly grant summary judgment of noninfringement, where Mirror Worlds raised no genuine issue of material fact that the accused systems satisfied each limitation of the asserted claims?

2. Did the district court correctly construe "data unit" as "an item of information," consistent with the intrinsic evidence including Mirror Worlds' statements to the Patent Office?

3. Did the district court correctly construe "main collection" as "main stream," based on the specification, because "main collection" is a coined term with no established meaning in the field?

4. For the ’439 and ’538 patents, did the district court correctly grant summary judgment of noninfringement where Mirror Worlds failed to adduce evidence of the claimed “glance view” being “an abbreviated version of the document” and “indicative of content thereof”?

The issue presented by Facebook’s cross-appeal is:

5. Did the district court erroneously deny summary judgment of invalidity under 35 U.S.C. § 101, where the asserted claims are directed to the abstract idea of organizing information in a time-ordered manner, and recite no inventive concept?

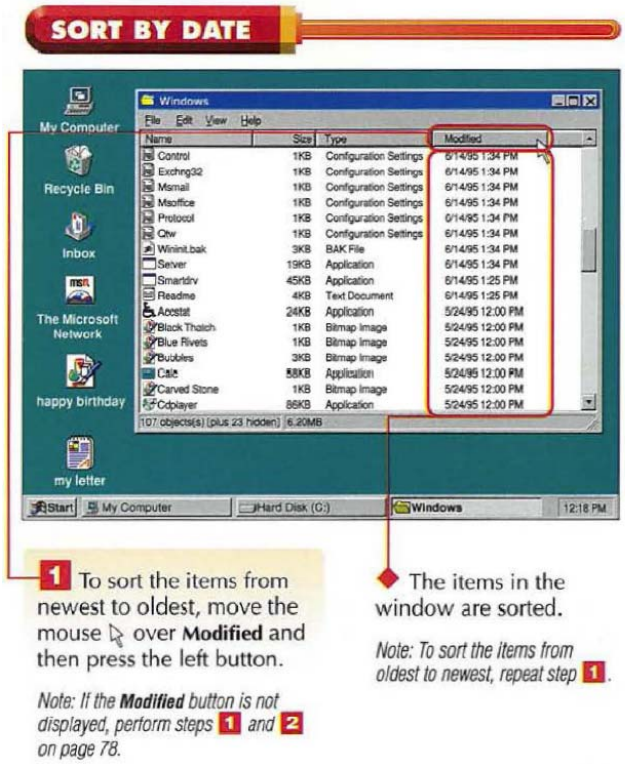
IV. STATEMENT OF THE CASE

A. The Patents-In-Suit Are Directed To Organizing Information in a Time-Ordered Manner

Mirror Worlds asserts three expired patents directed to the idea of organizing information in a time-ordered manner. Time ordering information is hardly a new concept; the patents acknowledge that “traditional systems can time-order documents.” (Appx130 (’439, 2:56-59).) Businesses, for at least a century, have filed papers in chronological order (Appx8556-8557; Appx8492; Appx8490), mail was automatically timestamped (Appx8554-8555), and humans have indexed and displayed information using time. (Appx8548-8560; Appx8565-8566.)

Organizing information based on time was also a feature of popular software and operating systems before the patents-in-suit. For example, Microsoft Windows, Apple’s Finder, Lotus Magellan, and other well-known systems allowed users to

search, sort, and display files based on time. (Appx8574, Appx8575, Appx8579, Appx8566-8596 (Windows); Appx8592 (Apple); Appx8651, Appx8656, Appx8647-8658 (Lotus); Appx8211-8213 (Linux); Appx8208-8211 (Unix timestamp); Appx8174; Appx8172; Appx8213-8220 (databases); Appx2001-2002; Appx1978; Appx1975; Appx8621-8624 (Excel); Appx8644-8647 (Eudora); Appx8618-8621; Appx8630 (calendaring).) Windows 95 could "sort" items by "date":



(Appx8580.)

To distinguish such prior art, the applicants made clear that it is not enough to store *some* of the computer's information in chronological order. Instead, the patents require **every** data unit in the computer system to be stored in a "**main stream**," in

time order. (Appx75 ('227, 4:6-10).) The specification[1] explains:

> A "stream" according to the present invention is a time-ordered sequence of documents that functions as a diary of a person or an entity's electronic life. **Every** document created and every document send [sic; sent] to a person or entity is stored in a **main stream**.

(Appx75 ('227, 4:6-10) (emphasis added); Appx74-75 ('227, 1:5-6, 3:62-65).) As this Court's previous decision noted:

> The parties agree that the "main stream" has two properties: first, it includes **every** data unit received or generated by the "computer system"; second, it is a **time-ordered** sequence of data units.

Mirror Worlds Techs. v. Facebook, 800 F. App'x 901, 903 (Fed. Cir. 2020) (emphasis added).

Figure 1 of the '227 patent shows a "visual representation of the stream metaphor," where the stacked rectangles represent documents in the user's "main stream," arranged in time order. (Appx76 ('227, 6:31-32).)

[1] The '227 patent issued from an application filed in 1996. The '439 and '538 patents claim priority to the '227 and incorporate it by reference. (Appx130 ('439, 1:15-16); Appx105 ('538, 1:14-15).)

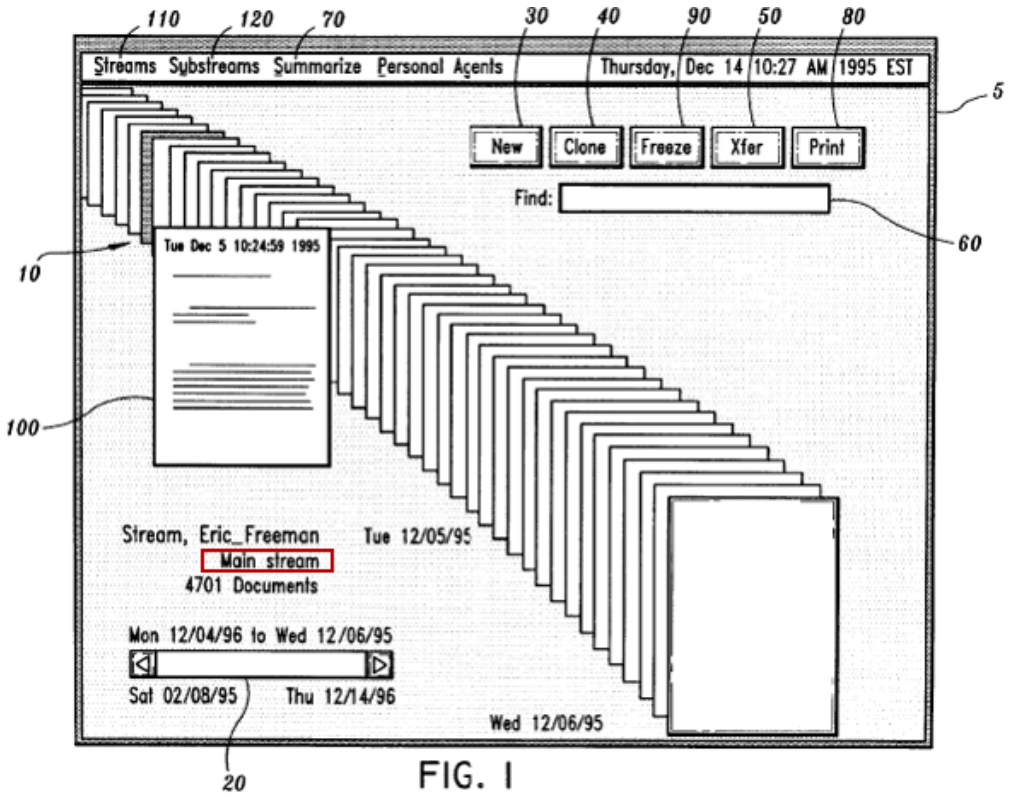


FIG. 1

(Appx68 ('227, Fig. 1) (red box added).)

The patents contemplate an "**all-encompassing** stream that gets updated promptly with new material." (Appx130 ('439, 2:61-65) (emphasis added).) The "stream" comprehensively holds "**any type of data**." (Appx75 ('227, 4:16-18) (emphasis added).) And again, it must be all the information in the system.

The purported invention does not improve the operation of the computer itself, such as by making it process data faster or more efficiently. Instead, it emulates the way humans organize information in the real world: "Time-based ordering is a natural guide to experience." (Appx75 ('227, 4:21-23).)

In addition to a time-ordered "stream," the patents recite a "substream" for further organization. As its name implies, a "substream" is just a "subset" of data

units from the "main stream." (Appx76 ('227, 5:16-17); Appx1804.) The "substream" idea is akin to the paper-based process of identifying and pulling out documents from a larger collection. One way to create a substream is to run a search to find "all faxes I've sent to Schwartz," to generate a substream containing documents from the main stream. (Appx75-76 ('227, 4:48-51, 5:8-11).)

During prosecution, the patentee distinguished time-based prior art by proclaiming that the "main stream" comprehensively includes "**every** data unit" received or generated by the computer system, and "data unit" encompasses "**any type of data**"—any item of information. (Appx1498 (emphasis added).) These meanings foreclose Mirror World's infringement case against Facebook. Merely time-ordering *some* data units is not enough. The "main stream" must include **every** data unit (every item of information) received or generated by the computer system. Separate from the all-encompassing main stream, "substreams allow a user to determine the events of direct user interest from the stream of data units of significance to the user (main stream)." (*Id.*; Appx29 (n.11).)

B. Mirror Worlds' Prior Litigation Campaigns

Mirror Worlds began its litigation campaign against Apple in 2008, asserting the '227 patent and two related patents not asserted here. *Mirror Worlds v. Apple*, No. 08-cv-00088 (E.D. Tex. Mar. 14, 2008). Mirror Worlds obtained a jury verdict of infringement against Apple's Mac operating system, but the district court granted

judgment as a matter of law in favor of Apple. *Mirror Worlds v. Apple*, 692 F.3d 1351, 1358-59 (Fed. Cir. 2012). This Court affirmed. *Id*. at 1362.

In 2013, Mirror Worlds sued Apple and six others on the '227 patent. *Mirror Worlds Technologies v. Apple*, No. 13-cv-00419 (E.D. Tex.); *Mirror Worlds Technologies v. Dell*, No. 13-cv-00941 (E.D. Tex.). On a motion for judgment on the pleadings under § 101, the district court found that claim 13 of the '227 patent was "directed to the abstract idea of organizing data units on a computer." *Mirror Worlds Techs. v. Apple*, No. 13-CV-419, 2015 WL 6750306, at *8 (E.D. Tex. July 7, 2015). But citing the "procedural posture," the court stated that it could not conclude "at the pleading stage that claim 13 uses conventional and generic computer functions to disproportionately preempt the abstract idea." *Id*. at *9-10. The motion was denied without prejudice. *Id*. at *10.

In 2016, the Patent Trial and Appeal Board ("PTAB") denied institution of a CBM petition filed by Apple against the '227 patent. *Apple v. Mirror World Techs*., CBM2016-00019, 2016 WL 6678298, at *1 (PTAB July 6, 2016). The PTAB found that because the steps of the claims called for "operations that must be performed by a computer," the PTAB concluded the "'227 patent claims do not recite an abstract idea." (Appx12402-12403.) Under *Alice* step two, the PTAB also found "Petitioner has not established that its § 101 challenge is more likely than not to succeed." (Appx12404.)

Apple also sought CBM review on the basis that the term "data unit" was indefinite because it was limited to units of "direct user interest." (Appx1344-1350; Appx1280.) Mirror Worlds argued unequivocally that data units are **not** only of "direct user interest": "The definitions of 'data unit' in both the specification and prosecution history **do not include the narrowing limitation** that forms the basis of Petitioner's indefiniteness challenge—*i.e.*, 'an item of information that is of direct user interest in the user's timeline.'" (Appx1349-1350 (emphasis added), Appx1354.) Mirror Worlds' own words used to save its patent negates its infringement case against Facebook.

Accepting Mirror Worlds' construction of "data unit," based on the "'227 patent, specification, and prosecution history" (Appx2038), the PTAB declined to institute the CBM. *Apple*, 2016 WL 6678298, at *4. Apple subsequently settled with Mirror Worlds. (Appx1011-1012 (¶35).)

C. Mirror Worlds' Litigation Against Facebook

1. Complaint

Seventeen years after the '227 patent issued and after the prior lawsuits concluded, Mirror Worlds filed suit against Facebook. (Appx1001.) Mirror Worlds' complaint announced a broad fishing expedition into Facebook features (Appx1036 (¶87)), but Mirror Worlds never found a "main stream" that time-ordered **every** item of information received or generated by an accused computer system because

no such system existed at Facebook.

2. 2018 Summary Judgment Motion

After Facebook produced source code and technical documents (Appx1690), Mirror Worlds answered targeted interrogatories wherein its infringement theory centered on TAO. (Appx2054-2055; Appx1035.) Facebook filed an early motion for summary judgment of noninfringement directed at that theory. (Appx1795-1821; Appx3183-3196; Appx3354-3359.) Facebook provided unrebutted testimony that "TAO," which stands for "The Associations and Objects" is not time-ordered. (*E.g.*, Appx1770-1771.)

Because it had no basis to dispute Facebook's motion on TAO, Mirror Worlds pivoted its infringement allegations for the accused "main stream" / "main collection" to avoid TAO. (Appx3194; Appx3355-3358.) For News Feed, Mirror Worlds accused: "the Multifeed System includes the Leaves, but not TAO." (Appx3356.) And, for Timeline and Activity Log, the accused "Timeline Backend includes the TimelineDB and an aggregator used to query the TimelineDB," but "[i]t does not include TAO." (Appx3357.) Mirror Worlds also withdrew its "claims as to the accused Events, Search and Ticker features." (Appx2098.) But those systems also received information that was not time ordered.

After full briefing and oral argument, the district court found: "it is plain that Mirror Worlds cannot establish that any of the Facebook systems at issue contains a

'main stream' within the meaning of the patents-in-suit." *Mirror Worlds Techs. v. Facebook*, 320 F. Supp. 3d 538, 541 (S.D.N.Y. 2018).

3. 2020 Decision

This Court reversed and remanded for further proceedings. *Mirror Worlds Techs. v. Facebook*, 800 F. App'x 901, 902 (Fed. Cir. 2020) ("*2020 Decision*"). This Court recognized that: "[t]he parties agree that the "**main stream**" has two properties: *first*, it includes **every** data unit received or generated by the 'computer system'; *second*, it is a time-ordered sequence of data units." *Id*. at 903 (emphasis added). Contrary to Mirror Worlds' misquotation (BB5),[2] Mirror Worlds did not "establish[] … that accused systems met the 'every data unit' requirement and hence are 'main streams.'" Rather, because fact discovery was not complete, this Court stated: "[o]ur ruling is without prejudice to otherwise-appropriate consideration of non-infringement contentions on remand, especially once the record is fully developed." *Id*. at 910.

4. Remand and 2021 Summary Judgment Motion After Fact and Expert Discovery Completed

Upon remand, the parties completed fact and expert discovery. (Appx10.) Facebook then moved for summary judgment of noninfringement under *Celotex*, and that the asserted claims are invalid under 35 U.S.C. § 101. (Appx7445; Appx7441-

[2] Mirror Worlds' Principal Brief is abbreviated as "BB."

7468; Appx17992-18005.) Facebook submitted sworn testimony from the deposed engineers (Appx8152-8162; Appx8163-8171), as well as its technical experts Dr. Balakrishnan (Appx8172) and Mr. Gray (Appx8490).

Noninfringement (No "Main Stream" / "Main Collection"): The asserted '227 and '538 claims require a "computer system" with a "**main stream**." (Appx81 ('227, 16:9-15); Appx112 ('538, 16:30, 20:32).) The "main stream" is "a stream that is inclusive of **every** data unit received or generated by the computer system." (Appx7456 (emphasis added); Appx3614.) Likewise, the related '439 claims use the coined term "**main collection**" which is synonymous with "**main stream**." (*E.g.*, Appx137 ('439, 16:56-60); Appx30-34; Appx1448-1453 (¶¶123, 133-134); Appx1377-1380; Appx1399; Appx1366.) Thus, you first determine what the **computer system** is, then you must find that it includes a "main stream" / "main collection" that includes **every** data unit received or generated by that **computer system**. (Appx7457.)

Mirror Worlds maintained the same infringement theory it pursued in the prior (2018) summary judgment proceedings:

Term	News Feed	Timeline & Activity Log
"computer system"	Multifeed System, which includes at least the **Multifeed Aggregator** and the Multifeed Leaves	Timeline backend system, which includes at least the **Timeline Aggregator** and the TimelineDB
"main stream" / "main collection"	Multifeed Leaves	TimelineDB

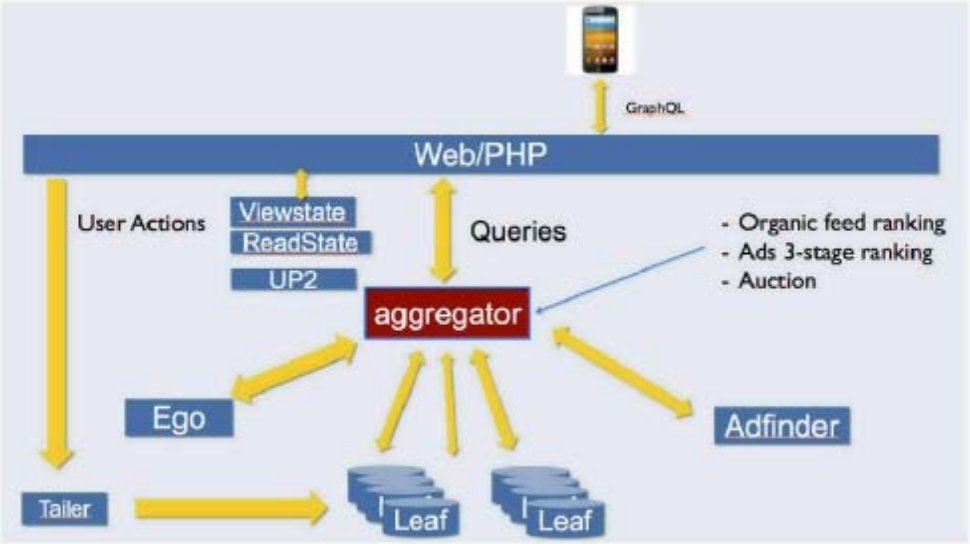
(Appx4-5; Appx8034 (58:5-25); Appx8031.) Thus, to find infringement, Mirror Worlds had to show the "main stream" (*i.e.*, Multifeed Leaves for News Feed; and TimelineDB for Timeline and Activity Log) was "inclusive of every data unit received or generated by the computer system" (*i.e.*, the Multifeed System, which includes the Aggregator, for News Feed; and the Timeline backend system, which includes the Timeline Aggregator, for Timeline and Activity Log). The completed record required summary judgment of noninfringement because the Aggregators receive information not stored in the Multifeed Leaves or TimelineDB.

News Feed Noninfringement Evidence: News Feed engineer, Yun Mao, unequivocally testified that the Multifeed Leaves (the alleged "main stream") do not contain each piece of information generated or received by the accused Multifeed "computer system." (Appx8167-8168 (¶9); Appx7458-7460.)

Even worse, Mirror Worlds did not accuse content displayed to a user on News Feed, but instead "user actions" present in a "backend" system component known as the Multifeed Leaves. (Appx8351; Appx8356-8357; Appx8364 ("don't

see the user actions"); *cf.* Appx8222-8228.)

The image below from an internal Facebook document used by Mirror Worlds depicts portions of the accused News Feed backend, and dooms their argument.



(Appx3013 (FBMW_00002633).)

The undisputed evidence established that the **Multifeed Aggregator** (depicted in red), which is part of the accused "computer system," receives information from "many other sources besides the Multifeed Leaves" that are not stored in the Multifeed Leaves. (Appx7458.) The Multifeed Aggregator receives, among other things, information from "**AdFinder**," which identifies advertisements potentially relevant to the user to the Aggregator; information from "**Ego**," which provides recommendations to the Aggregator, and a "**Coefficient score**" (not shown above) that describes the strength of the relationship between the user and a particular friend. (Appx8169 (¶12); Appx8171 (¶¶16-17);

Appx8354 (excerpt of FBMW_00191030); Appx8365-8379 (¶¶539, 541); Appx8351; Appx8167-8171.) The Multifeed Aggregator also receives information from other components, including queries from the front end ("Web/PHP"). (Appx3013 (FBMW_00002633); Appx2810; Appx2799; Appx2784; Appx2802 (Ads Backend to aggregator); Appx2740; Appx14319; Appx14366; Appx14381; Appx14384; Appx14392; Appx14494; Appx8378 (¶556).)

Timeline / Activity Log Noninfringement Evidence: Timeline engineer, Yifei Tang, also testified unequivocally, the TimelineDB does not contain each piece of information generated or received by the Timeline Backend. (Appx8156-8157 (¶10); Appx7460-7461.) That testimony was also unrefuted.

Just like for News Feed, for Timeline and Activity Log, Mirror Worlds did not accuse content displayed to a user, but instead "actions" in the backend "TimelineDB," which is "split into multiple tables." (Appx8275-8279 (¶283); Appx3622 (¶83); Appx8320-8321; *see also* Appx8249-8266.) The TimelineDB is essentially an "index of pointers," with the pointers to other storage locations, such as UDB or TAO, for the "actual content." (Appx8280; Appx3266 (33:9-15); Appx3036; Appx8290-8291.)

The **Timeline Aggregator**, which is undisputedly part of the accused "computer system" for Timeline and Activity Log also receives information that is "not contained in the TimelineDB" (the alleged "main stream") (Appx7460

(emphasis added).) For example, **user information** (*e.g.*, user's birthday, list of family members, list of places previously lived); **major life events** (*e.g.*, education, work, marital status); and **coefficient** data identifying users with a stronger relationship with the user in question, are all sent to the Timeline Aggregator (alleged "computer system") but not stored in the TimelineDB (alleged "main stream"). (Appx8156-8158 (¶¶10-12); Appx8285-8297; *see also* Appx8256; Appx8255; Appx14273; Appx14281; Appx14301; Appx14542; Appx15246; Appx15247; Appx2327; Appx2330; Appx2338; Appx3030; Appx3035; Appx3038.)

Given the unrefuted evidence, Mirror Worlds could not prove that the "main stream" ("main collection") includes **every** data unit received or generated by the "computer system." (Appx7458; Appx17999-18003.)

No "Glance View" Noninfringement Evidence: Facebook also moved for noninfringement of the '538 and '439 patents on an additional ground, and filed a related *Daubert* motion to exclude expert opinions relying on unauthenticated screenshots of unknown origin. (Appx3569-3571.)

Claim 1 of both patents require display of a "glance view" of a document, which the claim requires to be "**an abbreviated version of the document**" and "**indicative of content thereof**." (Appx112 ('538, 16:59-60); Appx138 ('439, 17:39-41) (emphasis added); *see also, e.g.*, Appx108 ('538, 7:20-26); Appx60.)

The claims further require that the "glance view" be shown in response to a particular user action like "touching with a cursor a screen area associated with the document" (Appx12 ('538, 16:55-58) or "interacting with a screen area currently associated with the graphical depiction …." (Appx138 ('439, 17:42-45).)

For both patents, Mirror Worlds accused the same "hover-over" functionality. (Appx7462; Appx7465-7466.) But the hover-over content accused as the alleged "glance view" merely displayed information about the author (or source) of the alleged document, not its content. (Appx8158-8160; Appx7465-7466.) Facebook thus showed the accused functionality did not, as a matter of law, meet the claimed "glance view." (Appx8158-8162 (¶¶13-20); Appx61; Appx8322-8334; Appx8349-8350; Appx8404-8405; Appx8420-8421.)

In opposition, Mirror Worlds relied on *inadmissible* evidence – a single unauthenticated, grainy image allegedly taken from a video posted by an unidentified third party on YouTube years ago. (Appx18003-18004.) But Facebook had filed a *Daubert* motion because Dr. Koskinen relied on a screenshot that he could neither sponsor nor explain. (Appx3571; Appx3656-3661 (¶179 (Timeline)); Appx3729-3732 (¶366 (News Feed)); Appx3584; *see also* Appx8329-8335 (¶¶438-443); Appx8349-8350; Appx8420-8421 (¶710); Appx8404-8405; Appx8172; Appx8152-8162 (¶¶13-20 (Tang)); Appx3569-3571; Appx4223 (127:11); Appx4224 (129:20-23).)

Even if the unauthenticated screenshot were considered, Mirror Worlds admitted the "whole document" was displayed, not an "abbreviated version" of it. (Appx18004; Appx12265; Appx8334.) Mirror Worlds could not prove infringement of the '538 and '439 patents.

Section 101: Facebook also argued all the asserted claims are directed to the abstract idea of **organizing information in a time-ordered manner**. (Appx7452; Appx7448-7449; Appx7451-7452.) Under step two, the evidence showed that the asserted claims recite no inventive concept. (Appx7455-7456; Appx17998-17999.)

5. District Court's Order

Claim Construction

"Data Unit" Construction: The district court properly construed "**data unit**" as "**an item of information**," accepting Mirror Worlds' position that "data unit" means "an item of information" but rejecting the limitation that it "is of direct user interest." (Appx30; Appx26; Appx40 (n.17) ("there is no subject matter or format limitation built into the term 'data unit'").) The court found a "person of ordinary skill in the art would not understand 'data unit' to refer only to those units of data that happen to interest a particular user at a particular time." (Appx27; *see also* Appx1443; Appx1439-1443.) Instead, based on the record evidence including the prosecution history, the district court found that "all the information contained in the computer system is included in the main stream, regardless of its source." (Appx29

(n.11) (emphasis in original); Appx1488-1518; Appx18008.) The district court also observed that the "contrast between substreams and the main stream" as explained during prosecution "makes clear that the substream is the layer in which the user has the opportunity to filter information that is of direct interest. The main stream, on the other hand, contains all information that is received or generated by the computer system, without any selection criteria from the user." (Appx29 (n.11).)

The district court also stated: "Mirror Worlds' proposed construction is 'confusing,' 'subjective,' and would render the term 'data unit' indefinite because different users have different opinions about what information is of direct interest, and even the same user may be interested in different information at different times." (Appx29 (n.11); Appx1372-1374.)

Undisputed "Main Stream" Construction: The parties agree that the "main stream" (1) includes **every** data unit received or generated by the "computer system" and (2) is a time-ordered sequence of data units. (Appx3-4; Appx7456.)

"Main Collection" Construction: The court construed "**main collection**" in claim 1 of the '439 patent as "**main stream**." (Appx34 (emphasis added).) Citing expert testimony, the district court found "main collection" was a coined term with no established meaning. (Appx30; Appx1452 (¶133); Appx1448-1453.) The specification does not use the term "main collection" either; instead the

"'439 patent uses the terms 'stream' and 'collection' interchangeably." (Appx30-31; Appx1448 (¶123); Appx1377-1380.) The district court stated: "[t]he '439 specification clearly states that the invention incorporates the characteristics of a stream." (Appx33 (quoting Appx130 ('439, 1:67-2:3 ("The system is stream-based in that it creates time-ordered streams of information items or assets, beginning with the oldest and continuing through current and on to future items."))); Appx130-131 ('439, 2:67-3:2 ("One can search on any word or phrase, as every word in every document is indexed, on document types and metadata, and on time-related data")); Appx34 (n.15) (quoting Appx115 ('439, Abstract ("automatically create[s] a main stream in chronological order")))).)

Summary Judgment and *Daubert*

Noninfringement Because No "Main Stream" / "Main Collection": The district court granted summary judgment due to lack of the claimed "main stream" / "main collection" containing **every** data unit received or generated by each accused computer system. For News Feed, the court found: "the record conclusively establishes that the Multifeed Aggregator (part of the Multifeed System, the alleged computer system) receives information from (1) Coefficient service, (2) AdFinder, and (3) Ego that is not stored in the Multifeed Leaves (the alleged main stream)." (Appx47 (citing *e.g.*, Appx8169; Appx8171; Appx8243; Appx8245; Appx8369-8371; Appx8381-8382; Appx8367; Appx8248-8249).)

For Timeline and Activity Log, the court found: "the Timeline Aggregator receives the following data that is not contained in the TimelineDB: (1) background user information; (2) major life event information; and (3) coefficient data." (Appx59 (citing *e.g.*, Appx8156-8157; Appx8290-8292; Appx8258-8260; Appx8293; Appx8300; Appx8254-8255; Appx8286-8287).)

"Glance View" *Daubert* Ruling: The district court granted Facebook's *Daubert* motion to exclude the opinions of Dr. Koskinen that rely on unauthenticated screenshots purporting to demonstrate the accused "glance view" functionality. (Appx62-63.) Mirror Worlds' appeal brief does not challenge this ruling.

Noninfringement Because No Glance View: The district court also granted Facebook's additional motion for summary judgment of noninfringement of the '439 and '538 patents, due to lack of the claimed "glance view." (Appx63.) Citing unrebutted sworn testimony from Facebook engineer, Yifei Tang, the district court found that "Facebook's evidence establishes that its hover functionality does not meet the glance view limitation." (Appx63; Appx61 (citing Tang ¶¶15-19).) Specifically, "Facebook has shown that its hover functionality (or the 'contextual dialog box' …) provides only information about the source or author of the selected link, not information about the content of any underlying document." (Appx61 (emphasis added); Appx8158-8160.) Based on unrebutted evidence, the district court further found that the "content of the underlying story or document is not even

provided to the source code responsible for creating the contextual dialog box." (Appx61; Appx8161 (¶19).)

Section 101: Relying principally on *Enfish*, the district court denied Facebook's summary judgment motion under § 101. (Appx22; Appx16 (citing *Enfish v. Microsoft*, 822 F.3d 1327, 1335-36 (Fed. Cir. 2016)).) At *Alice* step one, the court found the "claims are not directed to an abstract idea," but instead "directed to improving computer functionality." (Appx22.) The district court did not reach *Alice* step two. (Appx22.)

V. SUMMARY OF THE ARGUMENT

Mirror Worlds' Appeal

The district court correctly granted summary judgment of noninfringement. The same requirements that Mirror Worlds argued to distinguish its idea from the prior art—an all-encompassing "main stream" time-ordering every item of information received or generated by the computer system—doomed its infringement case against Facebook.

Claim Construction: The district court correctly construed "data unit" as "an item of information," and properly rejected Mirror Worlds' attempt to further require that those data units narrowly be "of direct user interest." Mirror Worlds' construction lacks intrinsic support, and Mirror Worlds affirmatively disavowed any "of direct user interest" requirement to defeat institution of the CBM petition that

argued that "of direct user interest" rendered the claims indefinite. The district court also properly rejected Mirror Worlds' meritless argument that the term "data unit" somehow excludes information received as part of a query or request – a limitation not even contained in Mirror Worlds' own proposed construction. As Mirror Worlds itself argued, a "data unit" is simply an item of information, and the term imposes no restrictions on its format or how it was generated or received. The whole point of the claimed idea was to time-order **every** data unit, containing **any type of data**, that the computer system generated or received.

The district court also correctly construed "main collection" as "main stream," because "main collection" has no established meaning in the field and the specification discloses only a "main stream." The patents repeatedly refer to "main collection" and "main stream" synonymously and interchangeably.

Noninfringement – Lack of the "Main Stream": All of the asserted claims required Mirror Worlds to identify a "computer system" with a "main stream" inclusive of **every** data unit received by or generated by the computer system. That requirement was a critical basis for Mirror Worlds distinguishing its claimed invention over the prior art. Mirror Worlds not only failed to come forward with evidence raising a genuine issue of material fact, but the evidence relied upon by the district court affirmatively and conclusively negated any possibility of infringement.

With respect to the accused Timeline feature, Mirror Worlds could not prove infringement because the alleged "main stream" (*i.e.*, TimelineDB) does **not** include **every** data unit received or generated by the accused Timeline Backend, which includes the Timeline Aggregator. Facebook introduced uncontroverted evidence that the Timeline Aggregator (alleged "computer system") receives a plethora of information not contained in the TimelineDB (alleged "main stream"), including (1) background user information; (2) major life event information; and (3) coefficient data, among other information. A single piece of information in any one of these categories would have been sufficient to show the lack of a main stream, and collectively, the evidence provided overwhelming evidence of noninfringement of all asserted claims.

With respect to the accused News Feed feature, Mirror Worlds' position rests on its erroneous contention that the term "data unit" excludes information contained in a query, which is meritless under the correct construction of "data unit." The unrebutted evidence demonstrated that the Aggregator in the accused News Feed system receives information from AdFinder, Ego and Coefficients that is not in the accused "main stream" of the Leaves. (Appx8167-8171.)

Noninfringement – Lack of "Glance View": A separate basis for noninfringement of the '439 and '538 claims was that Facebook's systems do not include a "glance view" that is "an abbreviated version of the document" that is

"indicative of content thereof." Summary judgment was proper because Facebook submitted uncontroverted evidence that the accused "hover functionality (or the 'contextual dialog box')" on which Mirror Worlds relied on for these limitations, only provides information about the source or author of the selected link, **not** information about the **content** of any underlying document as the claims require. Mirror Worlds could not (and cannot) establish infringement as a matter of law.

Facebook's Cross-Appeal

Facebook separately cross-appeals the district court's denial of summary judgment based on § 101. The district court erred in concluding, at *Alice* step one, that the asserted claims were not directed to an abstract idea.

The asserted claims are directed to the abstract idea of **organizing information in a time-ordered manner**, and recite no inventive concept. Under this Court's precedent, the district court's denial of summary judgment should be reversed. The asserted patents are invalid under § 101.

VI. ARGUMENT

A. Standards of Review

Claim Construction: This Court reviews a "district court's ultimate claim constructions *de novo* and any underlying factual determinations involving extrinsic evidence for clear error." *Medgraph v. Medtronic*, 843 F.3d 942, 949 (Fed. Cir. 2016) (citing *Teva Pharms. USA v. Sandoz*, 574 U.S. 318, 332 (2015)).

Summary Judgment of Noninfringement: The law of the Second Circuit – applicable here – reviews a grant of summary judgment *de novo*. *Medgraph*, 843 F.3d at 947. But *de novo* review does not apply to challenges to the district court's evidentiary rulings underlying summary judgment. *Picard v. JABA Assocs. LP*, 49 F.4th 170, 180-81 (2d Cir. 2022). These evidentiary rulings are reviewed only for abuse of discretion, and as the Second Circuit has observed, "a 'district court deciding a summary judgment motion has broad discretion in choosing whether to admit evidence.'" *Id.* at 181 (citation omitted).

"To establish literal infringement, every limitation set forth in a claim must be found in an accused product, exactly." *Advanced Steel Recovery v. X-Body Equip.*, 808 F.3d 1313, 1319 (Fed. Cir. 2015) (citation omitted). Under *Celotex* and *Exigent*, to obtain summary judgment of noninfringement, "nothing more is required than the filing of a summary judgment motion stating that the patentee had no evidence of infringement and pointing to the specific ways in which accused systems did not meet the claim limitations." *Exigent Tech. v. Atrana Sols.*, 442 F.3d 1301, 1308-09 (Fed. Cir. 2006); *Celotex v. Catrett*, 477 U.S. 317, 322 (1986). Any "[f]actual disputes that are irrelevant or unnecessary will not be counted." *Anderson v. Liberty Lobby*, 477 U.S. 242, 248 (1986).

Section 101 Summary Judgment: The district court's denial of summary judgment under § 101 was based solely on the first step of *Alice*, which "presents a

legal question that can be answered based on the intrinsic evidence." *CardioNet v. InfoBionic*, 955 F.3d 1358, 1372 (Fed. Cir. 2020). This Court reviews the district court's denial of summary judgment of patent ineligibility *de novo*. *Elec. Power Grp. v. Alstom S.A.*, 830 F.3d 1350, 1352 (Fed. Cir. 2016).

B. Appeal: Summary Judgment of Noninfringement Was Correct

1. The District Court Correctly Granted Summary Judgment on the "Main Stream" / "Main Collection" Limitations

Although Mirror Worlds' brief addressed issues in a different order, this brief addresses claim construction and then the accused systems, consistent with the Court's framework. *Medgraph*, 843 F.3d at 949 ("Evaluation of summary judgment of noninfringement is a two-part inquiry: first, a court construes the scope and meaning of the asserted patent claims, and then compares the construed claims to the accused product.").

a. The District Court's Claim Constructions Are Correct

(1) "Data Unit" Means "An Item of Information" and Is Not Limited to Items "of Direct User Interest."

The district court correctly construed "data unit" as "an item of information." (Appx25-30.) Mirror Worlds' proposed construction of "data unit" contained two separate components: "**[1]** an item of information **[2]** that is of direct user interest."

For purposes of this appeal, there is no material dispute as to part **[1]**. The district court "agree[d] with Mirror Worlds" that "data unit" is best defined as

"an item of information" because the intrinsic record broadly describes that data units can contain "any type of data" including various data, objects, or "software programs." (Appx30 (quoting Appx75 ('227, 4:16-18)).) Mirror Worlds specifically urged this broad meaning:

> First, a "data unit" should be construed as an "item of information." *Id.* ¶¶36-37. The intrinsic record confirms that "data units" can include various kinds of data, objects and/or files.

(Appx1252 (highlighting added).) Mirror Worlds also provided expert testimony opining that "[t]he use of the term in the '227 patent would indicate to a POSITA that the patentees intended the term to refer **broadly to any item of information**," and the claims "refer to 'data unit' **without limiting the kind of information** that may be encompassed by the term." (Appx1218 (¶36); Appx1217 (¶35) (emphasis added to both); Appx1441; Appx1443.)

But the district court properly rejected part **[2]** of Mirror Worlds' proposal that would limit "data unit" to an item of information *that is of direct user interest*. (Appx25-30 (emphasis added).) Mirror Worlds' arguments on this issue are meritless. (BB48-55.)

Starting with the claims, the district court correctly observed that the proposed "direct user interest" limitation "finds no support in the claim language or the specification." (Appx27.) The claim language recites only the simple words "data unit," with no limitation regarding "direct user interest."

With respect to the specification, the phrase "direct user interest" is recited nowhere, let alone as a limitation on the claimed data unit. The specification instead broadly describes that the "main stream" as storing "every" document (or "data unit") containing "any type of data," including "software programs." (Appx75 ('227, 4:6-8 ("**Every** document created and every document send [sic] to a person or entity is stored in a main stream.")); Appx75 ('227, 4:16-18 ("A document can contain any type of data including but not limited to pictures, correspondence, bills, movies, voice mail and software programs.")) (emphasis added), Appx75 ('227, 3:23-24, 3:66-4:2).) Nothing in the specification qualifies or otherwise limits the scope of a data unit.

Mirror Worlds also points to nothing in the specification that would narrow data units to be only "of direct user interest." Mirror Worlds points only to high-level purported "goals of the invention" (BB49-50, BB51-52), but as the district court noted, an "overarching aim of displaying information that is interesting to the user cannot be crammed into the term 'data unit.'" (Appx27.) "A person of ordinary skill in the art would not understand 'data unit' to refer only to those units of data that happen to interest a particular user at a particular time." (Appx27; Appx1443 (¶107).)

Finally, with respect to the prosecution history, the district court correctly determined that the prosecution history specifically negates a "direct user interest"

limitation. (Appx27-29.) Mirror Worlds' brief mischaracterizes the original prosecution and reexamination proceedings, which were superseded by later CBM proceedings where Mirror Worlds specifically disavowed the "direct user interest" limitation. (BB48-49.)

In the '227 CBM, Apple argued that "data unit" was indefinite because the patentee had defined that term as "an item of information that is of direct user interest in the user's timeline." (*See* Appx1350-1351.) Apple argued that the "direct user interest" requirement was subjective.

Mirror Worlds defeated these indefiniteness arguments by expressly disavowing any requirement that a data unit must be "of direct user interest." Mirror Worlds argued that "data unit" should "**not include the narrowing limitation** that forms the basis of Petitioner's indefiniteness challenge—*i.e.*, 'an item of information that is of **direct user interest** in the user's timeline.'" (Appx2009-2010 (emphasis added); Appx2005.) Mirror Worlds summarized the original prosecution as follows:

> Petitioner asserts that "the Applicant expressly defined a 'data unit' as 'an item of information that is of direct user interest in the user's timeline.'" Pet. 75. This assertion is demonstrably false. As demonstrated above, and as admitted by Petitioner and its expert, the Applicant's express definition of "data unit" is not "an item of information that is of direct user interest in the user's timeline." To the contrary, the Applicant expressly defined "data unit" as a "document."

(Appx1354 (highlighting added).) Mirror Worlds also provided several pages explaining away events that occurred during prosecution, as well as statements in its own specification, arguing that none of them supported "data unit" as having a "direct user interest" limitation. (*See* Appx1345-1353.) The Patent Office accepted Mirror Worlds' arguments, construing "data unit" as simply "document." (Appx2038; Appx2037.)

The Patent Office's ruling on the meaning of "data unit" directly resulted in CBM review not being instituted. Mirror Worlds is therefore estopped from arguing now that a "data unit" must be "of direct user interest," having advanced the opposite position to defeat institution of CBM review. The district court correctly observed that Mirror Worlds had disavowed any meaning of "data unit" limited to items "of direct user interest." (Appx27-28 (citing *Aylus Networks v. Apple*, 856 F.3d 1353, 1360 (Fed. Cir. 2017)); Appx17985; Appx2009-2010; Appx2037-2038; Appx2027; *SpeedTrack v. Amazon.com*, 998 F.3d 1373, 1380-81 (Fed. Cir. 2021).)

Mirror Worlds now attempts to distance itself from those dispositive

statements by arguing that the Patent Office applied the broadest reasonable interpretation (BRI) standard. But as the district court noted, this argument fails. (Appx28 (n.10); BB52-53.) As a factual matter, the district court correctly observed that it was "simply not true" that Mirror Worlds always couched its statements during the CBM under the broadest reasonable interpretation standard. To the contrary, Mirror Worlds unequivocally argued that "document" was the "best interpretation of 'data unit'" and argued that the original prosecution had "defined 'data unit' as 'document' without any narrowing limitation." (Appx28 (n.10) (emphasis in original); Appx1348; Appx1349-1350; Appx1354.)

Legally, it makes no difference that the CBM applied the BRI standard. As the district court observed, this Court in *Aylus Networks* confirmed that claim construction disavowal applies equally to PTAB proceedings that applied the BRI standard applicable to pre-2018 PTAB proceedings. (Appx28 (n.10); *Aylus Networks*, 856 F.3d at 1359-62.)

Finally, echoing the arguments that Apple made in seeking CBM review, the district court correctly observed that Mirror Worlds' proposed construction "would render the term 'data unit' indefinite" because it would render the claim scope inherently subjective: "different users have different opinions about what information is of direct interest, and even the same user may be interested in different information at different times." (Appx29 (n.11); Appx1374; Appx1443;

Appx8671.) As Facebook's expert explained, Mirror Worlds' proposal would render the claims irreparably "confusing and subjective." (Appx1443 (¶107); *Teva Pharms.*, 574 U.S. at 322-23.) As a result, even if this Court were to adopt Mirror Worlds' construction, that ruling would boomerang against Mirror Worlds by requiring that the claims be found invalid as indefinite.

Mirror Worlds now points to statements during earlier prosecution and reexamination, but those statements do not support a "direct user interest" limitation. In fact, Mirror Worlds itself relied on these statements to explain away the "direct user interest" limitation in the CBM review. For example, during the original prosecution, the examiner filed an interview summary noting that the applicants would submit a clarifying amendment. (Appx18008.) The applicants then filed a response and amendment. (Appx1488-1518.) They quoted the examiner's summary (Appx1497) and explained that they had "amended the claims to recite the stream of documents (data units) of significance to the user (in the broadest sense) by reciting that 'each data unit <u>received by or generated by</u> the computer system' is received by the 'main stream.'" (Appx1497-1498.) "In other words, all the data units, without regard to whether a data unit was generated internally or externally, are now of significance to the user." (Appx1498.) The remarks continued with express definitions of "data unit" and "main stream": "**A 'data unit' is a 'document' because a 'document can contain any type of data,'** see page 11, lines 20-22 of

the present specification," and "[a] 'main stream' is a type of stream which receives every data unit received by (external) or generated by (internal) the computer system." (*Id*. (bold emphasis added, underlining in original).)

The applicants thus expressly defined "data unit" broadly to "contain any type of data" regardless of any user interest or significance. (*Id*.) The applicants explained that if a particular data unit is received or generated by the user's computer, then it would be considered "of significance to the user (in the broadest sense)." (*Id*.) The applicants explained that the "substream" feature allows the user to identify a **subset** of data units that are of "direct user interest": "**substreams allow a user to determine the events of direct user interest** from the stream of data units of significance to the user (main stream)." (*Id*.) The district court correctly analyzed this record. (Appx29 (n.11).)

The applicants reconfirmed these meanings when they distinguished Tobias (U.S. Patent No. 5,530,859) on the basis that its timeline "does not include every **object (data unit)** generated by or received by the computer system." (Appx1502 (bold emphasis added, underlining in original).) Thus, "**data unit**" broadly encompasses any "**object**." Applicants also reconfirmed that the "substream" feature identifies a subset of "data units of direct interest," reconfirming that not every "data unit" is of interest/significance to the user: "Substreams, in contrast, allow a user to determine the data units of direct interest while also maintaining the

data unit in the main stream of the computer system." (Appx1503-1504.)

For these reasons, the district court's construction of "data unit" as "**an item of information**" should be affirmed. (Appx30 (emphasis added).) Affirming this construction would also moot Section IV(C)(4) of Mirror Worlds' brief (BB55-56).

(2) Mirror Worlds' "Query" Argument Is Meritless

Desperate to avoid the broad construction of "data unit" that encompasses any "item of information" that it proposed, Mirror Worlds now argues that "the meaning of the term 'data unit' does not extend to information received in a query." (BB42-45.) But this Court need not reach this secondary claim construction argument if it affirms the construction of "data unit" as "an item of information" for the reasons described above.

Even if this Court engages with the argument, it is meritless. Nothing in the claim language or intrinsic evidence supports that a "data unit," *i.e.*, an item of information, is no longer a data unit if it is received by a computer system as part of a request or query. As the district court correctly observed, there is "no subject matter or format limitation built into the term 'data unit.'" (Appx40 (n.17); Appx75 ('227, 3:23-24, 4:16-18); Appx1502 (Tobias "object (data unit)").)

Indeed, as noted, Mirror Worlds' proposed construction of "data unit" in the district court was "an item of information of direct interest to the user." (Appx26.) Mirror Worlds' own proposal did not exclude information received by a computer

system as part of a request, query, or any other means of transmission. Mirror Worlds itself correctly argued that "**a 'data unit' should be construed as an 'item of information'**" because "[t]he intrinsic record confirms that **'data units' can include various kinds of data, objects and/or files**." (Appx1252 (emphasis added).) As the district court observed, a "query is plainly 'an item of information,' which is also consistent with Mirror Worlds' argument that 'data unit' includes any type of data." (Appx40.)

On appeal, Mirror Worlds' argument seems to be that items of information contained in queries cannot be "data units" because the specification describes a "search query" when discussing a "substream." (BB43-44.) But nothing in the specification refutes Mirror Worlds' own position that a "data unit" broadly encompasses an "item of information" regardless of how it is received. (Appx1252.) Neither the specification nor the claims limits "data unit" to exclude information transmitted in a query. Moreover, Mirror Worlds emphatically argued the applicable meanings to the Patent Office *after* the specification was originally filed. (*E.g.*, Appx1498 ("main stream" must contain "**every**" data unit containing "**any type of data**"); Appx1502 (distinguishing Tobias because it did not include "**every object (data unit)** generated by or received by the computer system"); Appx1348-1350 (emphasis added).) Mirror Worlds cannot now run away from the very basis on which it obtained its claims in the first place and avoided CBM review.

The district court thus correctly found that the intrinsic evidence shows that "data unit" broadly encompasses "any type of data" as Mirror Worlds itself urged, supporting construing "data unit" as "an item of information." (Appx30.)

Lacking support in the intrinsic record, Mirror Worlds invokes expert testimony from Mr. Gray about invalidity, which is unrelated to the claim construction issue presented here. (BB44-45 (citing Appx14215 (129:14-16; 128:4-25)).) Mirror Worlds cites testimony from Mr. Gray about a prior art patent called Lewak, which described a "computer filing system" called a "File Information Directory." (Appx14215 (*e.g.*, 127:3; 128:4; 129:9); Appx4728; Appx4889; Appx4892.) Counsel asked if "search queries are stored" in Lewak, to which Mr. Gray replied that he did not know. (Appx14215 (127:5-6; 128:25).) Counsel then asked: "Q. Storing search queries is not required to have a main stream; agreed? A. I agree." (Appx14215 (129:14-16).) This is because, for Lewak, Mr. Gray did not need to show search queries were ***stored*** in the "main stream" if they were not "received" or "generated" by the "computer system." The cited testimony in no way supports Mirror Worlds' claim construction argument that "data unit" excludes data units contained in requests or queries.

In addition to Mirror Worlds' "query" claim construction argument missing the mark, Mirror Worlds' efforts to characterize the information from Ego, Coefficient, major life events, TAO, and UDB as "only received as part of a query"

do not demonstrate any basis to disturb the district court's ruling, as discussed further below. (BB45-48.)

(3) '439: The District Court Correctly Construed "Main Collection" As "Main Stream"

The term "main collection" appears only in the claims of the '439 patent. (Appx30; Appx1448 (¶123).) Citing expert testimony, the district court correctly found that "main collection" is a "coined term with no established meaning in the field." (Appx30 (citing Appx1452 (¶133)).) Mirror Worlds does not demonstrate any error in this factual determination. *Teva Pharms.*, 574 U.S. at 322, 332 (clear error review applies to factfinding for claim construction). Facebook presented unrebutted expert testimony that the term "main collection" did not have an established meaning in the art. (Appx1452 (¶133).) Mirror Worlds submitted no evidence that this term had an accepted meaning in the relevant field.[3]

The fact that the term "main collection" had no established meaning in the art is dispositive. When a term has "no accepted meaning in the art," it "ordinarily cannot be construed broader than the disclosure in the specification." *Indacon v. Facebook*, 824 F.3d 1352, 1357 (Fed. Cir. 2016); *MyMail v. Am. Online*, 476 F.3d 1372, 1376 (Fed. Cir. 2007); *Network Com. v. Microsoft*, 422 F.3d 1353, 1359-61

[3] In the district court, Mirror Worlds circularly proposed to construe "main collection" to mean "main collection of document representations." (Appx30; *cf.* Appx30 (n.13).)

(Fed. Cir. 2005).[4]

"Because 'main collection' is a coined term with no 'established meaning to one of ordinary skill in the art,' it must be interpreted in light of the specification and 'cannot be construed broader than the disclosure in the specification.'" (Appx33 (quoting *Indacon*, 824 F.3d at 1357).) "The term 'main collection' never appears in the '439 specification." (Appx1448 (¶123).) Rather, the '439 Abstract refers to a "**main stream**." (Appx1448 (¶124); Appx115 (emphasis added).) The title calls the patent "**Stream-Based**." (Appx1448-1449 (¶125) (emphasis added).) And, Figure 1 shows a "**Stream**." (Appx1449 (emphasis added).) The '439 patent explains that "every word in every document is indexed," and the system is "**stream-based** in that it creates time-ordered streams of information." (Appx130-131 ('439, 2:67-3:2, 1:67-2:3) (emphasis added).) Both the '439 and the earlier-filed '227 patent, whose specification is incorporated into the '439 patent, use "stream" and "collection" interchangeably and synonymously. (Appx31; Appx1448-1453

[4] Mirror Worlds argues that the individual words "main" and "collection" have individual meanings in isolation (BB59), but the disputed term is "main collection." Where, as here, "a definition of the [disputed term] *as a whole* does not exist," it would be improper to "combine individual dictionary definitions" of constituent words. *Network Com.*, 422 F.3d at 1359-61 (emphasis added) (construing "download component" and rejecting patentee's proposal to combine individual meanings of "download" and "component"); *Indacon*, 824 F.3d at 1356-58 (evaluating "custom link" and "custom linking relationship" as a whole); *Honeywell Int'l Inc. v. Universal Avionics Sys.*, 488 F.3d 982, 991 (Fed. Cir. 2007) (narrowly construing "terrain floor boundary" as a whole, based on specification description).

(¶¶134, 124-128); Appx135 ('439, 12:39-42 ("**streams or collections** of information")); Appx76 ('227, 6:8-17 ("**document collections, that is, streams**")); Appx76 ('227, 5:16-17 ("the **main stream document collection**")); Appx1377-1378 (bold emphasis added above).) The '439 patent comprehensively captures all information. (Appx130 ('439, 2:3-8 ("any type" of information)).)

The '439 specification thus uses the same comprehensive "time-ordered" "stream" concepts from the '227 patent. (Appx31; Appx1452 (¶134); Appx1448-1451 (¶¶124-132); *e.g.*, Appx115 ('439, Abstract ("main stream in **chronological order**")); Appx130 ('439, 1:66-2:3 ("**time-ordered** streams … oldest and continuing through current and on to future items")); Appx130 ('439, 2:31-35 ("to the beginning or the end of time in the stream")); Appx133-134 ('439, 8:66-9:4 ("time-ordered stream")); Appx130 ('439, 1:66-67 ("time-associated way of dealing with information")) (bold emphasis added above).)

Thus, as the district court correctly found, any construction of "main collection" that lacked the characteristics of the "main stream" would be "impermissibly untethered from the specification." (Appx33; *Retractable Techs. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011).) Although Mirror Worlds complains that "main collection" and "main stream" use different words, it is well-settled that "claim drafters can [] use different terms to define the exact same subject matter." *Curtiss-Wright Flow Control v. Velan*, 438 F.3d 1374,

1380 (Fed. Cir. 2006).

In view of the foregoing, a skilled artisan reading the '439 patent would conclude that the term "main collection" means "main stream," as the district court found. (Appx1452 (¶134); Appx30-34.) The district court correctly construed "**main collection**" as "**main stream**." (Appx34 (emphasis added).)

The doctrine of claim differentiation does not change the result. (BB58.) Mirror Worlds argues that "main collection" should not be construed as "main stream" because that gives claim 19 the same scope as dependent claim 20. (BB59.) But *Fenner* rejected this argument. Although "claim differentiation" can be an "analytic tool, it cannot enlarge the meaning of a claim beyond that which is supported by the patent documents." *Fenner Invs. v. Cellco P'ship*, 778 F.3d 1320, 1326-27 (Fed. Cir. 2015) (rejecting patentee's argument that dependent claim 19 reciting the PIN being "independent of the device" meant that claims 1 and 18 were "not so limited"). *See also Multilayer Stretch Cling Film Holdings v. Berry Plastics*, 831 F.3d 1350, 1360-61 (Fed. Cir. 2016); *Howmedica Osteonics v. Zimmer*, 822 F.3d 1312, 1323 (Fed. Cir. 2016). The doctrine of claim differentiation cannot broaden claims beyond the specification, and the coined term "main collection" cannot be construed broader than the time-ordered "every data unit" "main stream" described in the '439 patent. (Appx1453 (¶137); *Indacon*, 824 F.3d at 1357.)

b. The District Court Correctly Ruled The Accused Systems Do Not Satisfy the "Main Stream" / "Main Collection" Limitations

(1) Timeline: The Timeline Aggregator Receives Information Not Stored in the TimelineDB

To prove infringement, Mirror Worlds had to show that the TimelineDB (the alleged "main stream" and "main collection") includes **every** data unit received or generated by the Timeline backend system (the alleged "computer system"), which includes the **Timeline Aggregator**. *2020 Decision*, 800 F. App'x at 903 ("properties" of the "main stream"). This requirement that the "main stream" (and "main collection" contain "**every**" data unit was critical to Mirror Worlds obtaining its patents. By distinguishing the prior art on that basis, Mirror Worlds negated any infringement case against Facebook.

After discovery was completed, Facebook moved for summary judgment of noninfringement. (Appx7457; Appx7460-7461; *Exigent Tech. v. Atrana Sols.*, 442 F.3d 1301, 1308-09 (Fed. Cir. 2006); *Celotex*, 477 U.S. at 322.) Because the accused "computer system" – that is, the Timeline backend system which includes the Timeline Aggregator – receives data units that are **not** in the accused "main stream" (and "main collection") – that is, the TimelineDB – Mirror Worlds did not and could not show infringement. (*E.g.*, Appx8156-8158 (¶¶10-12); Appx8258-8259 (¶254); Appx8290-8291 (¶307); Appx8274-8297; Appx8172.)

The district court correctly found based on uncontroverted evidence that

Facebook has "proven that the Timeline Aggregator receives the following data that is not contained in the TimelineDB: (1) background user information; (2) major life event information; and (3) coefficient data. Each of these sets of information constitutes an independent basis entitling Facebook to summary judgment of non-infringement with respect to Timeline and Activity Log." (Appx59.)

On appeal, Mirror Worlds cites the same documents the district court found that Mirror Worlds had misleadingly "changed the subjects of the quoted sentences" and the same irrelevant information that fails to create a genuine issue of material fact. (*E.g.*, Appx50; Appx51; BB31-33.)

None of the cited material shows that the TimelineDB includes **every** data unit received or generated by the Timeline backend system, nor does the material create a genuine issue of material fact. Fed. R. Civ. P. 56(a). "Factual disputes that are irrelevant or unnecessary will not be counted." *Anderson v. Liberty Lobby*, 477 U.S. 242, 248 (1986).

Facebook adduced "clear evidence" that the Timeline Aggregator receives background user information, major life events, coefficient and other data and information, that are not stored in the TimelineDB. (Appx48-59; Appx8156-8158.) The Timeline engineer stated:

> I understand that an issue has arisen as to **whether the TimelineDB contains each piece of information generated or received by the Timeline Backend**. The answer to that question is **an unequivocal "no."**

(Appx8156 (emphasis added).) The record contains "unequivocal evidence" that "background user information," "major life events information," and coefficient information are received by the Timeline Aggregator and **not** stored in the TimelineDB. (Appx49; Appx57; Appx58; Appx8152-8162.) "Each of these sets of information constitute[d] an independent basis entitling Facebook to summary judgment of non-infringement with respect to Timeline and Activity Log." (Appx59; Appx8156-8158.)

Mirror Worlds' cited materials do not create a triable issue:

- BB32 and BB35 cite Appx14273 and Appx14275 from Appx14272-14277, which discuss certain read and write paths for "Timeline" as a whole. The document does not describe "the TimelineDB as having 'all the data' for Timeline." (BB35.) Mirror Worlds omits critical context: "If the first write is against UDB, system will then attempt to write the same data into TimelineDB synchronously as well to make sure TimelineDB eventually has all the data, but if that fails, we log the failure and context to Scribe, and still ack [sic] the write request as successful to the caller." (Appx14275 (emphasis added); Appx50 (discussing ECF 290-16).) This sentence merely discusses that when a "first write" is made against UDB (user database), the system will attempt to ensure that all of that same data is also written into TimelineDB. Mirror Worlds' cited language does not create a genuine issue of material fact because it is irrelevant, and does not controvert the

unequivocal testimony about the specific information received by the Aggregator that is not in the TimelineDB, including "background user information," "major life events information," and coefficient information.

- BB32 and BB35 cite Appx14291 from Appx14279-14299, which again discusses attempts to write data to both TimelineDB and UDB. Mirror Worlds again uses ellipses to remove important context. The first sentence of the final bullet point on the slide states: "We have a whole architecture set up for retrying writes to TimelineDB if the UDB write succeeds, but TimelineDB write fails." (Appx14291 (emphasis added).) The next slide then shows write failures where "UDB write succeeds, Timeline write fails." (Appx14292; *see also* Appx54.) The cited slide is irrelevant and does not controvert unequivocal testimony establishing noninfringement. This document does not suggest, let alone state, that TimelineDB stores all data units received or generated by the Timeline system, including the "background user information," "major life events information," and coefficient information about which unrebutted testimony was submitted.

- BB32 cites Appx15241-15245 and Appx15244-15246 from Appx15241-15256, where Mirror Worlds misleadingly cobbles together quotes about the basic concept of a "timeline" and cherry-picks figures relating to the RocksDB. (Appx53 (noting Mirror Worlds' expert "simply changed the subject of the quoted sentence from "Timeline" to "the TimelineDB").) The cited portions do

not create a genuine issue of material fact, failing to establish the TimelineDB includes every data unit received or generated by the Timeline backend system.

- BB32 and BB35 cite Appx14554-14555, which discusses "Timeline" writ large, not TimelineDB specifically. (Appx50 (discussing ECF 290-29).) Again, the cited portions do not create a genuine issue of material fact, failing to establish the TimelineDB includes every data unit received or generated by the Timeline backend system.

- BB33 and BB35 mistakenly cite Appx14532 from Appx14530-14535, which describes "UX Research" (*e.g.*, user research) about having a timeline. (Appx14532.)

- Finally, BB33 cites Mirror Worlds' expert's report (Appx13254) at Appx13291-13292, Appx13294, Appx13296, Appx13304, Appx13306, Appx13309-13310. But conclusory and irrelevant expert testimony cannot raise a triable issue of fact. "It is well-established that unsupported expert opinions do not create a genuine issue of material fact." *Minkin v. Gibbons*, 680 F.3d 1341, 1352 n.5 (Fed. Cir. 2012); *Sitrick v. Dreamworks*, 516 F.3d 993, 1001 (Fed. Cir. 2008); Appx53 ("Dr. Koskinen's conclusory statements are not supported by the underlying documents and are therefore not entitled to any weight.").

None of the cited Dr. Koskinen testimony saves Mirror Worlds. The cited paragraphs 114 and 118 on Appx13304 and Appx13306 state threadbare conclusions

that address only "user actions," not **every** data unit. *Intell. Sci. & Tech.*, 589 F.3d at 1184-87 (expert's "unsupported conclusion of infringement" is "not sufficient to raise a genuine issue of material fact"); *Novartis v. Ben Venue Lab'ys*, 271 F.3d 1043, 1051, 1055 (Fed. Cir. 2001) (experts need an "explicit factual foundation", not just conclusory opinions). Appx13309-13310 recite certain snippets from the code, but critically, stay silent and ignore the information from the Timeline Aggregator that is not in the TimelineDB. (*But see* Appx8268-8293 (¶¶275-307).) The excerpted language in paragraph 82 on Appx13291-13292 again focuses on "user actions," without addressing all the other information (*i.e.*, data units) received by the Aggregator, not in the TimelineDB. The excerpted portions of Appx13294 and Appx13296 have the same problem.

At bottom, Mirror Worlds needed to show that every data unit received or generated by the Timeline backend system, which includes the Timeline Aggregator, was in the TimelineDB. Sticking its head in the sand and staying silent in the face of uncontroverted adverse evidence is insufficient to avoid summary judgment. (*E.g.*, Appx50 (cited documents "do not stand for the proposition that the TimelineDB contains all background user information contained in the Timeline backend system"); Appx57 ("Mirror Worlds has failed to create a dispute of material fact as to whether the Timeline Aggregator receives major life event information that is not contained in the TimelineDB"); Appx58 ("Mirror Worlds has failed to create

a dispute of material fact as to whether the Timeline Aggregator receives data from the Coefficient service that is not contained in the TimelineDB").)

(2) Timeline: Mirror Worlds' "Part of A Query" Argument is a Baseless Red Herring

As explained above, the proper claim construction of "data unit" does not exclude items of information received as part of a query or request. (Appx40.) Mirror Worlds nevertheless argues that "information from TAO, UDB and Coefficient" are "part of a query." (BB46.) The district court correctly saw past this misdirection. (Appx40.)

Indeed, even what little evidence Mirror Worlds cites actually establishes noninfringement. (BB46.) First, the cited Timeline engineer's declaration states clearly:

> I understand that an issue has arisen as to **whether the TimelineDB contains each piece of information generated or received by the Timeline Backend**. The answer to that question is **an unequivocal "no."**
>
> ***
>
> For example, the "front end" discussed above constructs a request to the Timeline Aggregator that **supplies the Aggregator with a number of pieces of information** relating to the user in question, including the user's birthday, list of family members, list of children, list of places previously lived, education history, along with other information about that user. **This information received by the Aggregator is not stored in the TimelineDB** but was instead obtained from "TAO" and "UDB" (user database), storage systems that are **separate and distinct from the TimelineDB**.

(Appx8156-8157 (¶10) (emphasis added).) Similarly, the deposition testimony from the Timeline engineer at Appx14161 and Appx14162 simply confirms that **information** ("list all of major life events we get from TAO, the coefficient we get from Coefficient 2 system, and a bunch of other necessary data to help the aggregator") will be "**sent to [the] Timeline aggregator** and some of the information there will then be used as input to query Timeline DB in some cases, when necessary." (Appx14161 (77:11-19) (emphasis added).) There is also "extra **ranking information** we got from the Timeline request. And it will also combine things like **major life events that was also passed to aggregator**." (Appx14162 (81:18-23) (emphasis added).) Lastly, paragraph 300 says "**data units** from 'TAO' and the 'Coefficient 2 system,' which are both **separate and apart** from the TimelineDB and the Timeline Backend, **are provided to the Timeline Aggregator** to construct requests." (Appx8286 (¶300) (bold emphasis added and original emphasis omitted).)

The district court correctly concluded that Mirror Worlds failed to raise a genuine issue of material fact. Its noninfringement decision should be affirmed.

(3) News Feed: The Multifeed Aggregator Receives Information Not Stored in the Multifeed Leaves

Mirror Worlds' appeal focuses on Timeline (and Activity Log), staying largely silent with respect to News Feed. (*See* BB31-41 (Section IV(B)); *cf.* Appx35-47 (order regarding News Feed); Appx8163-8171.) Mirror Worlds thus

waived defending News Feed, except for its baseless "query" argument. (BB47.)

Summary judgment of noninfringement for News Feed can be easily affirmed. As the district court correctly noted: "Mirror Worlds does not argue, as it did with respect to coefficient scores, that information from **AdFinder** is merely part of a query, and therefore not a data unit." (Appx43 (n.20) (emphasis added).) On appeal, Mirror Worlds ignores AdFinder again. (BB45-48.) This is a devastating omission for Mirror Worlds, because to prove that News Feed infringes, it had to show that the alleged "main stream" (*i.e.*, the Multifeed Leaves) includes **every** data unit received or generated by the alleged "computer system" (*i.e.* the Multifeed System including the Multifeed Aggregator). Because there was "unequivocal evidence in the record that the Multifeed Aggregator receives information from AdFinder that is not contained in the Multifeed Leaves," Mirror Worlds could not show infringement of News Feed. (Appx42.) The News Feed engineer described in unrebutted testimony that:

> [A] system called **"AdFinder" generates advertisements relevant to the current user, which it provides to the Multifeed Aggregator**. The Aggregator, in turn, is responsible for slotting these advertisements into the candidate stories for News Feed. The interactions between AdFinder and the Multifeed Aggregator involve the exchange of **hundreds of pieces of information** that did not come from (and were not stored in) the Multifeed Leaves, but other separate and distinct storage systems within Facebook.

(Appx8171 (¶16) (emphasis added).) That alone is enough to affirm the district

court's decision on News Feed. (Appx41-43; Appx47.) Indeed, Mirror Worlds does not even make an independent argument for News Feed, focusing only on Timeline in Section IV(B). (BB31-41.)

Ignoring AdFinder, Mirror Worlds argues still that information from Ego and Coefficient are "part of a query." (BB47.) For **Ego**, Mirror Worlds cites only testimony from Facebook engineer, Xingdi Li (Appx14001 (37:10-15)), and portions of the report from Facebook's expert, Dr. Balakrishnan (Appx8248-8249 (¶236); Appx8230 (¶205)). (BB47-48.)

The cited evidence supports Facebook – not Mirror Worlds. Mr. Li testified: "ego use thrift to **send the ego object to multifeed aggregator**." (Appx14001 (37:5-6) (emphasis added).) And Dr. Balakrishnan summarized the testimony, showing that Ego enables recommendations (Appx8247-8248 (¶234)), and the "aggregator use[s] those objects" its receives from Ego (Appx8248-8249 (¶236)). News Feed engineer, Yun Mao, explained:

> Another system called "**Ego**" **provides information to the Multifeed Aggregator that is not stored in the Multifeed Leaves**. Ego provides a service that generates recommendations, for example, identifying other Facebook users whom the current user may wish to become friends ("People You May Know"), or Groups or Pages that might be of interest to the current user. These recommendations are **provided to the Multifeed Aggregator** …."

(Appx8171 (¶17) (emphasis added); Appx43-45.) In other words, the Aggregator

receives information from Ego (*i.e.*, data units) that are not stored in the Leaves. This is also fatal to Mirror Worlds' claim.

The district court thus correctly found that "Mirror Worlds cites no evidence to the contrary." (Appx44.) "Mirror Worlds cites no record evidence to dispute that the Multifeed Aggregator receives information from Ego that is not stored in the Multifeed Leaves." (Appx44.) Faced with unrebutted evidence of noninfringement, summary judgment was appropriate.

For **Coefficient**, Mirror Worlds claims for News Feed, it meant to point to the "same Coefficient-related evidence addressed in the context of the Timeline backend system." (BB47 & (n.6); *cf.* Appx37-41.) But that's beside the point.

It is still undisputed that Coefficient exists – and, Facebook provided unrebutted testimony from engineers from both News Feed and Timeline showing that the Aggregators receive information from Coefficient, which is not stored in the Leaves or the TimelineDB. (Appx8169 (¶12); Appx8158 (¶12).) Those unrefuted facts doom Mirror Worlds' case. (Appx58-59; Appx36-41.)

Indeed, the district court correctly found that "Mirror Worlds has failed to create a dispute of material fact." (Appx58.) Mirror Worlds' entire theory hinged on the idea that select diagrams or evidence did not always mention Coefficient explicitly. (Appx12255-12256 (arguing slide did not "reference" Coefficient; deponent's description of code failed to identify "fields" from Coefficient; and

diagram did not show an "interaction" with Coefficient).) But the district court correctly saw through this sleight of hand. (*E.g.*, Appx54 (discussing Mirror Worlds' argument about a diagram).) It makes no difference whether or not select diagrams always depict every single path in which information is sent or received by the Aggregators. Because of the undisputed requirements of the claimed main stream, Mirror Worlds could not show infringement unless it accounted for every data unit received or generated by the Multifeed system, including the Aggregator. It failed to do so, and therefore, summary judgment was appropriate. (Appx35-47.)

c. Mirror Worlds' Attorney Argument Cannot Overcome Uncontroverted Evidence

Mirror Worlds devotes several pages to criticizing the district court. (BB34-41.) But the district court did not "weigh" or "disregard" evidence; to the contrary, the district court carefully analyzed Mirror Worlds' cited evidence, and the evidence fell short. (Appx48-59.)

Pointedly, Mirror Worlds invokes the *2020 Decision*. (BB37-38.) There, this Court concluded based on the "current record evidence" at the time (*i.e.*, 2018), "the district court erred in concluding that a reasonable jury would have to find that the Timeline Aggregator receives data from TAO that is not in TimelineDB." *2020 Decision*, 800 F. App'x at 909.

But after remand, the record was completed with additional depositions and

expert reports. Based on an augmented record, the district court correctly ascertained: "**[t]hat defect in Facebook's argument [before] has been cured because there is now unequivocal evidence that the Timeline Aggregator receives background user information from TAO**." (Appx55 (citing Appx8156-8157 (¶10) and Appx8290-8292 (¶¶307-309)) (emphasis added).) Notably, the district court cited the declaration from Timeline engineer, Yifei Tang, who Mirror Worlds deposed (Appx14142), and the expert report from Dr. Balakrishnan. (Appx55; Appx8172.)

Mirror Worlds also argues that "information from TAO, UDB and Coefficient are *not* received by the Timeline backend system at all," and thus "need not be stored in the TimelineDB." (BB38 (emphasis in original).) Using attorney argument, Mirror Worlds theorizes that because certain documents do not refer to "information from TAO, UDB, or Coefficient" and Mr. Huang described the source code without referencing the "fields from TAO, UDB, or Coefficient," this somehow translates into a suggestion that no such information is received by the Timeline backend. (BB38-39.)

The argument is meritless. *Ferring v. Barr Labs.*, 437 F.3d 1181, 1193 (Fed. Cir. 2006) ("Conclusory allegations and attorney arguments are insufficient to overcome a motion for summary judgment."); *Intell. Sci. & Tech. v. Sony Elecs.*, 589 F.3d 1179, 1185-86 (Fed. Cir. 2009). Facebook provided uncontroverted

evidence, both from the Timeline engineer and an expert witness studying the source code. (Appx8156-8157 (¶10); Appx8290-8292 (¶¶307-309).) Mirror Worlds provides nothing but attorney speculation. That is not enough.

d. Mirror Worlds Failed to Supply Evidence Even Under Its Erroneous "Of Direct User Interest" Construction

The following argument responding to BB55-56 is moot, if the Court rejects Mirror Worlds' baseless "of direct user interest" claim construction argument.

Mirror Worlds argues that if "data unit" "excludes information that is not of direct user interest," then there is "a genuine dispute of material fact" as to whether the information "not stored in the accused 'main streams' are 'data units.'" (BB55.) Mirror Worlds is wrong.

Despite access to Facebook's code and documents, the earlier summary judgment briefing, noninfringement discovery responses, and fact witness deposition testimony, Mirror Worlds' expert was totally **silent** on the information received by the Aggregators from AdFinder, Ego, Coefficient, and the major life events information that is not stored in the alleged "main stream."

Lacking expert testimony, Mirror Worlds' appeal brief cobbles together irrelevant cites that do not support its argument. For Timeline, Mirror Worlds cites *Facebook's* briefing and one paragraph from the Timeline engineer's declaration. (BB55 (citing Appx7460 (Facebook's brief); Appx7459-7460 (same); Appx8158 (¶12)).) Nowhere on the cited pages is there any evidence that all the information

provided to the Aggregator is not "information of direct user interest." The opposite is true. Facebook identified numerous examples of information – user's birthday, list of family members, list of children, list of places previously lived, education history, major life events – that are all received by the Aggregator (but not included in the alleged "main stream") and are clearly of direct user interest. (Appx18002-18003; Appx8156-8158 (¶¶10-12).) Ranking data are also of direct user interest, helping engagement and bumping up useful stories. (Appx18003 (citing Appx8158 (¶12)).)

For News Feed, Mirror Worlds cites only information about "organic" versus "non-organic" content. (BB56 (citing Appx14561; Appx13977 (107:25-108:6); Appx14740 (41:15-23); Appx14073-14074 (197:24-200:15)).) But nothing in the cited pages establishes that the information sent to the Aggregator is not of direct user interest. To the contrary, non-organic content includes "people you may know" and tailored advertising information which are of direct user interest. (Appx8171.)

Mirror Worlds adduced zero evidence showing that *all of the information* received by the Aggregator is not of direct user interest. Thus, even under Mirror Worlds' erroneous construction, summary judgment of noninfringement was appropriate.

2. "Glance View": The District Court Correctly Entered Summary Judgment of Noninfringement of the '439/'538 Patents

The district court correctly granted summary judgment of the '439 and '538 patents based on lack of the claimed "glance view." (Appx59-63; Appx7461-7467.) Facebook presented uncontroverted evidence "demonstrating that [the accused] hover functionality does not meet the glance view limitation." (Appx61 (citing Appx8158-8161 (¶¶15-19)); Appx8324-8334.)

Mirror Worlds argues the district court allegedly "overlooked" "relevant" evidence. (BB61-62.) Not so. The claim language requires "showing on the display means a display of a **glance view** of a displayed document in response to touching with a cursor a screen area associated with the document," and "said glance view **being an abbreviated version of the document and indicative of content thereof**." (Appx112 ('538, claim 1) (emphasis added); *see also* Appx137-138 ('439, claim 1).) Citing Mr. Tang's sworn testimony about the very code Mirror Worlds relied upon, the district court correctly concluded the accused "hover functionality (or the 'contextual dialog box,' [citing Appx8158 (¶14)]) provides only information about the source or author of the selected link, not information about the content of any underlying document." (Appx61 (citing Appx8159-8161 (¶¶16-18)).)

Dr. Koskinen never independently reproduced or tested the accused functionality. The district court specifically excluded Dr. Koskinen's testimony to

the extent it relied on the unauthenticated third-party screenshots in the Complaint (Appx62).[5] Mirror Worlds has not shown that exclusion of these aspects of Dr. Koskinen's opinions was an abuse of discretion. *Picard*, 49 F.4th at 181.

None of the other testimony offered by Dr. Koskinen raised any issue of fact. The commentary cited by Mirror Worlds in its opening brief involves nothing more than Dr. Koskinen copying certain source code and summarizing what he thought it did. (*See* BB61-62 (quoting Appx13326 (¶178)).) That commentary was untethered to the claim language, and Mirror Worlds cites nothing in his report identifying any "glance view" of a displayed document that qualifies as "**an abbreviated version of the document and indicative of content thereof**." (Appx112 ('538, claim 1) (emphasis added).) As noted, the accused hover-over content identified by Mirror Worlds as the alleged "glance view" merely displays information about the author (or source) of the alleged document, and nothing about its content. Mirror Worlds therefore could not establish infringement as a matter of law. (Appx8160-8161; Appx7466.)

The district court's summary judgment of noninfringement of the '538 and '439 patents based on lack of the claimed "glance view" should be affirmed.

[5] Mirror Worlds does not challenge the district court's exclusion of the unauthenticated screenshots. (Appx63; BB61.)

C. Cross-Appeal: The Asserted Claims Are Invalid Under 35 U.S.C. § 101

Alice's two-step test governs the 35 U.S.C. § 101 analysis. *Alice v. CLS Bank Int'l*, 573 U.S. 208, 217-18 (2014). At step one, the Court considers whether the claims are "directed to" a patent-ineligible concept. *Id*. at 217. This step "presents a legal question that can be answered based on the intrinsic evidence." *CardioNet v. InfoBionic*, 955 F.3d 1358, 1372 (Fed. Cir. 2020).

At step two, the Court considers whether the limitations of the claims considered individually and in an ordered combination "transform the nature of the claim" into a patent-eligible application. *Alice*, 573 U.S. at 217 (citation omitted).

1. The District Court Correctly Found Claim 13 of the '227 Patent Was Representative of All Asserted Claims

Under § 101, it is enough to analyze a "representative claim" where, as here, the claims are substantially similar and linked to the same abstract idea. *E.g.*, *Content Extraction & Transmission v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1349 (Fed. Cir. 2014); *ChargePoint v. SemaConnect*, 920 F.3d 759, 770-71 (Fed. Cir. 2019) (dependent claim did not "alter" the analysis), *cert. denied*, 140 S. Ct. 983 (2020); *Ultramercial v. Hulu*, 772 F.3d 709, 714 (Fed. Cir. 2014); *Elec. Power Grp. v. Alstom S.A.*, 830 F.3d 1350, 1351, 1352-53 (Fed. Cir. 2016) ("lengthy and numerous" claims of three patents, properly represented by one claim).

The district court found all the asserted claims "focus on the stream-based, time-ordered storage and retrieval of data on a computer," and "claim 13 of the '227 patent is representative of all the asserted claims for purposes of the § 101 analysis." (Appx22-23 (n.6).) The district court correctly employed a representative claim analysis. (Appx7448-7449.)[6] But the district court erred in finding that the patents are not directed to an abstract idea under step one.

2. The Asserted Claims Are Directed to an Abstract Idea.

a. The Asserted Claims Are Directed to the Abstract Idea of Organizing Information in a Time-Ordered Manner

Storing, organizing, and locating information based on **time** is a longstanding practice as evidenced by diaries, paper files, court dockets, and calendars. (Appx8548-8592 (*e.g.*, ¶¶153, 157, 159, 165, 188, 206); *Weisner v. Google*, 51 F.4th 1073, 1082-83 (Fed. Cir. 2022) ("travel logs, diaries, journals, and calendars").) Offices for a century have filed papers in chronological order (Appx8556-8557), mail was automatically timestamped (Appx8554-8555), and humans have indexed and displayed information using time. (Appx8548-8560; Appx8565-8566; Appx8492; Appx8490.) "The concept of data collection, recognition, and storage is undisputedly well-known. Indeed, humans have always performed these functions."

[6] In the district court, Mirror Worlds did not dispute that the '227 claims are representative. (*See* Appx7448-7449 (arguing representative claim); Appx12249-12253 (no dispute).)

Content Extraction & Transmission, 776 F.3d at 1347.

The asserted claims are directed to the abstract idea of **organizing information in a time-ordered manner**. Claims like these, which implement an abstract idea through "generalized steps to be performed on a computer using conventional computer activity are not patent eligible." *Two-Way Media v. Comcast Cable Commc'ns*, 874 F.3d 1329, 1337 (Fed. Cir. 2017); *Intell. Ventures I v. Cap. One Fin.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) ("*Cap. One*") (invalidating claims directed to "the abstract idea of collecting, displaying, and manipulating data"); Appx8666 (¶335).

The asserted claims fall squarely within this Court's precedent holding claims directed to collecting, analyzing, and displaying information to be patent-ineligible under § 101. *E.g., Elec. Commc'n Techs. v. ShoppersChoice.com*, 958 F.3d 1178, 1182 (Fed. Cir. 2020) (claimed invention found ineligible "because it amounts to nothing more than gathering, storing, and transmitting information"); *SAP Am. v. InvestPic*, 898 F.3d 1161, 1167 (Fed. Cir. 2018) (invalidating claims directed to "selecting certain information, analyzing it using mathematical techniques, and reporting or displaying the results of the analysis"); *Elec. Power Grp.*, 830 F.3d at 1353 (invalidating claims directed to "collecting information, analyzing it, and displaying certain results of the collection and analysis").

The asserted claims simply take a longstanding technique for organizing

information based on time and "do it on a computer." *Apple v. Ameranth*, 842 F.3d 1229, 1243 (Fed. Cir. 2016) (citing *Alice*, 573 U.S. at 222-23). As the Supreme Court observed in *Alice*, "[n]early every computer" contains the requisite hardware "capable of performing … basic calculation, storage, and transmission functions"—and claims reciting the use of hardware to perform those functions does not prevent a claim from aiming at an abstract idea. *Alice*, 573 U.S. at 226. "[M]erely adding computer functionality to increase the speed or efficiency of the process does not confer patent eligibility on an otherwise abstract idea." *Ericsson v. TCL Commc'n Tech. Holdings*, 955 F.3d 1317, 1330-31 (Fed. Cir. 2020) (citation omitted); *OIP Techs. v. Amazon.com*, 788 F.3d 1359, 1363-64 (Fed. Cir. 2015).

b. The Asserted Claims Are Merely Directed to An End-Result, Not Details Specifying *How* the End-Result is Achieved

"[T]he claim language here provides only a result-oriented solution, with insufficient detail for how a computer accomplishes it." *Cap. One*, 850 F.3d at 1342. The asserted claims of the '227 patent recite "generating a main stream of data units and at least one substream," with no technological or implementation details about how the claimed streams are generated or maintained. (Appx81 ('227, claims 13, 14, 17).) The claims improperly seek to encompass the "principle in the abstract," regardless of the implementation. *Interval Licensing v. AOL*,

896 F.3d 1335, 1343-45 (Fed. Cir. 2018). These are ineligible "claims to results rather than to a means of achieving the claimed result." *In re Killian*, 45 F.4th 1373, 1382 (Fed. Cir. 2022).

The asserted claims of the '538 and '439 patents suffer from the same defect. (Appx112 ('538, claim 1); Appx137-138 ('439, claim 1).) Although the claims use more words, they recite nothing more than the end result of using the abstract idea without specifying "how" those end results are achieved. *Affinity Labs of Tex. v. DIRECTV*, 838 F.3d 1253, 1256–57 (Fed. Cir. 2016). The claims add the desired result of storing a document without requiring a user to designate any "pre-imposed document categorizations structure." (*E.g.*, Appx112 ('538, claim 1); *see also* Appx137-138 ('439, claim 1).) But the patents acknowledge that this is a longstanding practice by explaining that "when a person grabs a piece of paper and starts writing, no one demands that a name be bestowed on the sheet or that a storage location be found." (*E.g.*, Appx74 ('227, 1:52-56).) The claims merely state the absence of such a requirement, providing no more detail than the paper-based description in the specification.

The '538 and '439 claims also recite a "glance view" that provides "an abbreviated version of the document and indicative of content thereof," again merely stating the end result with no details. *Customedia Techs. v. Dish Network*, 951 F.3d 1359, 1365 (Fed. Cir. 2020) ("improving a user's experience while using a

computer application" is not sufficient to render the claims patent-eligible); *Elec. Commc'n Techs.*, 958 F.3d at 1180-81 (finding that a lengthy "automated notification system" claim that recited hardware was patent ineligible). But adding a display feature does not render the claims non-abstract. *Interval Licensing*, 896 F.3d at 1345 ("collection, organization, and display of two sets of information on a generic display device is abstract").

c. The Asserted Claims Are Not Directed to Improving Computer Functionality.

"To be a patent-eligible improvement to computer functionality, we have required the claims to be directed to an improvement in the functionality of the computer or network platform itself," as opposed to merely "improving a user's experience while using a computer application." *Customedia*, 951 F.3d at 1359, 1364-65 (citing cases). The district court erred when it determined that "the asserted claims are directed to improving computer functionality." (Appx22.)

The "§ 101 inquiry must focus on the language of the Asserted Claims themselves." *Synopsys v. Mentor Graphics*, 839 F.3d 1138, 1149 (Fed. Cir. 2016). Nothing in the claim language "demonstrates an improvement to computer functionality." *Free Stream Media v. Alphonso*, 996 F.3d 1355, 1358-64 (Fed. Cir. 2021); Appx8667-8669 (¶337).

To the contrary, the claims use computers only as generic tools to solve a *human* problem of storing and organizing information. As lead inventor

Eric Freeman explained, his approach was "let's use time as an organizing metaphor for the user." (Appx8096 (72:6-9, 72:19-24); Appx8094.) The specification explains that "[t]ime-based ordering is a natural guide to experience." (Appx75 ('227, 4:21-23).) The patents recite nothing more than "a process of gathering and analyzing information of a specified content, then displaying the results, and not any particular assertedly inventive technology for performing those functions." *Elec. Power Grp.*, 830 F.3d at 1354. The claims "are therefore directed to an abstract idea." *Id*.

For these reasons, the district court incorrectly relied on *Enfish*, which is starkly distinguishable. Although the district court recognized that the focus of the asserted claims here is "broader than the claims at issue in *Enfish*," it nevertheless found the "claims asserted here are also aimed at improving the storage and retrieval of data on a computer." (Appx18; *see also* Appx22.)

But *Enfish* does not apply here. There, the claims comprised a specific algorithm for creating "a self-referential table for a computer database," including assigning each row and column an object identification number and, for each column, storing information about that column in one or more rows, among other steps. *Enfish v. Microsoft*, 822 F.3d 1327, 1336-37 (Fed. Cir. 2016) (where the specification was invoked because the claims were recited in means-plus-function format). So drafted, the claims were directed to "a specific improvement

to the way computers operate"—an "improvement to computer functionality itself," providing "faster searching of data," "more effective storage of data," and "more flexibility in configuring the database." *Id*. at 1333, 1336. The claims were eligible due to these specific claimed features "designed to improve the way a computer stores and retrieves data in memory," enabling "increased flexibility, faster search times, and smaller memory requirements." *Id*. at 1337, 1339.

By contrast, here, the asserted claims do not recite any specific improvement to the way computers operate. All of the purported "improvements" resulting from time-ordering data units identified by Mirror Worlds and the district court merely seek to improve the *human experience*, not the *computer* itself: "**the user is not required** to store documents in a pre-imposed directory structure, documents are **automatically** [*i.e.*, not manually] archived, and **the user can see** how a document has evolved," which purportedly "**allows the user to avoid** the 'unneeded overhead' of naming a file and choosing a storage location." (Appx19 (citing Appx74 ('227, 1:42-44, 2:20-24)) (emphasis added).) These are all *human* conveniences, much like the conveniences that result from time-ordering paper files in a cabinet. This Court has repeatedly "held that improving a user's experience while using a computer application is not, without more, sufficient to render the claims directed to an improvement in computer functionality." *Customedia*, 951 F.3d at 1365. The asserted claims "do not enable computers to operate more quickly

or efficiently, nor do they solve any technological problem." *Id*.; *Simio v. FlexSim Software Prods.*, 983 F.3d 1353, 1361 (Fed. Cir. 2020) (claim did not "explain how the computer's functionality is improved" as opposed to merely providing an "improvement of the experience of a user") (emphasis omitted). Nothing in the claim language improves the computer itself.

d. The Prior Decisions by the Texas District Court and the PTAB Are Immaterial.

Neither of the two prior decisions is binding precedent, and neither changes the result here. (Appx19; Appx3525; Appx17997-17998.)

First, in 2015, a Texas district court correctly found that claim 13 of the '227 patent was "directed to the **abstract idea of organizing data units on a computer**," but denied without prejudice the Rule 12(c) motion based on its "procedure posture." *Mirror Worlds Techs. v. Apple*, No. 13-CV-419, 2015 WL 6750306, at *8-10 (E.D. Tex. July 7, 2015) (emphasis added). The instant challenge was brought on summary judgment based on completed discovery. (Appx7445-7456.)

In 2016, the PTAB denied CBM review of the '227 patent. *Apple v. Mirror World Techs.*, CBM2016-00019, 2016 WL 6678298, at *1 (PTAB July 6, 2016). The PTAB found that the claims did not "recite an abstract idea" because they called for "operations that must be performed by a computer" regarding "the way in which computers name, organize, and retrieve electronic documents and purported to distinguish the way in which conventional computers had done so." (Appx12402-

12403; Appx12388-12409.)

Neither of the prior decisions apply. Since 2016, this Court has produced legions of § 101 decisions invalidating claims that use a computer to organize, store, and present information. *Electric Power*, *Capital One*, *SAP*, *Interval*, *Customedia*, and other decisions cited above were all decided after the 2015 district court and 2016 PTAB decisions, and they further reinforce that using a computer to organize information is not patent-eligible when, as here, the claims do not improve the functioning of the computer itself.

3. The Asserted Claims Recite No Inventive Concept.

The asserted claims fail step two because the claims – whether considered alone or as an ordered combination – recite no inventive concept and instead merely invoke conventional technology to carry out an abstract idea. *Alice*, 573 U.S. at 225-26. Tellingly, the specification proclaims that its idea can be carried out on "any available platform." (Appx74 ('227, 2:56-61), Appx80 ('227, 14:43-51).)

In the district court, Mirror Worlds devoted the vast majority of its arguments to step one of *Alice*, on which the district court based its order. With respect to step two, Mirror Worlds did little more than point back to the abstract idea in arguing that "the claimed main streams and substreams are a significant 'inventive concept.'" (Appx12252.) But the "main stream" and "substream" provide nothing significantly more than reflections of the abstract idea for organizing information. "[A] claimed

invention's use of the ineligible concept to which it is directed cannot supply the inventive concept that renders the invention 'significantly more' than that ineligible concept." *BSG Tech. v. Buyseasons*, 899 F.3d 1281, 1290-91 (Fed. Cir. 2018) ("If a claim's only 'inventive concept' is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea.").

Mirror Worlds also broadly gestured at the claims "as a whole" but did not argue that any other specific claim element allegedly provides an inventive concept, because none exists. (Appx12252.) *Elec. Power Grp.*, 830 F.3d at 1355 (at step 2, "merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes"). Indeed, the lack of any inventive concept can be observed from the claims themselves, which merely follow the order dictated by the abstract idea to which the claims are directed and recite only end results without any concrete technological implementation. (Appx17998-17999; Appx8666-8671 (¶¶338-340).) For example, claim 13 of the '227 patent first recites "generating a main stream" and a "substream," and then recites steps relating to the storage of data units in the claimed streams (such as selecting a timestamp and associating a chronological indicator with each data unit). (Appx81 ('227, claim 13).) There is nothing unusual or non-conventional about this sequence. (Appx8667-8670 (¶¶337-340).)

The generation of the claimed "main stream" and "substream" must obviously occur before information can be stored in those streams, just the same way a paper-based diary must be created before entries can be added to it. The same is true for the asserted claims of the '439 and '538 patents; they further recite the ability to create the claimed substream (or subcollection) through a search of documents, and the ability to display a "glance view" of a document, which obviously cannot occur until after the main stream/main collection is generated and documents are stored in it.

The inventors also freely admitted that they did not invent the ability to store and order documents based on timestamps. (*E.g.*, Appx8096 (72:6-9, 72:19-24); Appx8104 (47:20-23); Appx8133 (190:4-11); Appx8141 (198:6-23); Appx8131 (186:18-22); Appx8102; Appx8127; Appx8136; Appx8621-8623 (¶¶245-247); Appx8573-8580.) The inventors also freely acknowledged that having a computer assign a timestamp to information was well-known. (Appx8103 (39:24-40:16); Appx8104 (47:20-23); Appx8096 (71:19-72:9); Appx8094; Appx8101; *see also* Appx8216-8217 (UNIX time).) Popular operating systems and applications allowing users to search, sort, and display files based on time predated the patents-in-suit. (Appx8574 (Windows); Appx8575; Appx8579; Appx8580; Appx8592 (Apple); Appx8651 (Lotus); *see supra* Section IV(A).) Electronic spreadsheets containing data, email, and calendaring programs also existed before the patents. (*See id.*; Appx8621-8624; Appx8630-8631; Appx1921 (Outlook).) The asserted

claims recite no inventive concept.

VII. CONCLUSION

The district court's noninfringement judgment should be affirmed. Additionally, the Court should reverse the district court's denial of summary judgment of invalidity because the asserted claims are invalid under § 101.

Dated: February 13, 2023 COOLEY LLP

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I hereby certify that on February 13, 2023, I filed or caused to be filed the foregoing with the Clerk of the United States Court of Appeals for the Federal Circuit via the CM/ECF system and served or caused to be served a copy on all counsel of record by the CM/ECF system.

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