NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

MENTONE SOLUTIONS LLC,
Plaintiff-Appellant

v.

DIGI INTERNATIONAL INC.,
Defendant-Appellee

2021-1202

Appeal from the United States District Court for the District of Delaware in No. 1:20-cv-00280-LPS, Judge Leonard P. Stark.

MENTONE SOLUTIONS LLC,
Plaintiff-Appellant

v.

ELO TOUCH SOLUTIONS, INC.,
Defendant-Appellee

2021-1203

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Appeal from the United States District Court for the District of Delaware in No. 1:20-cv-00281-LPS, Judge Leonard P. Stark.

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Decided: November 15, 2021

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GEORGE PAZUNIAK, O'Kelly, Ernst, & Bielli, LLC, Wilmington, DE, for plaintiff-appellant.

AMR O. ALY, Jenner & Block LLP, New York, NY, for defendant-appellee Digi International Inc. Also represented by YUSUF ESAT, Chicago, IL; ADAM G. UNIKOWSKY, Washington, DC.

RICARDO BONILLA, Fish & Richardson P.C., Dallas, TX, for defendant-appellee Elo Touch Solutions, Inc. Also represented by NEIL J. MCNABNAY, MICHAEL VINCENT.

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Before MOORE, *Chief Judge*, LOURIE and DYK, *Circuit Judges*.

MOORE, *Chief Judge*.

Mentone Solutions LLC appeals an order from the District of Delaware holding the claims of U.S. Patent No. 6,952,413 invalid under 35 U.S.C. § 101 and dismissing Mentone's claim of patent infringement. For the following reasons, we reverse.

BACKGROUND

I

The '413 patent relates to dynamic resource allocation in general packet radio systems. '413 patent at 1:8–10. In those systems, a number of mobile stations communicate with a single network through physical links called Packet

Data Channels (PDCHs). *Id.* at 1:13, 19–24. When the mobile stations receive information from the network, they are engaging in downlink (DL) communication, and when the mobile stations are transmitting information to the network, they are engaging in uplink (UL) communication. *Id.* at 1:28–32. These mobile stations communicate within time frames, each divided into eight timeslots. *Id.* at 1:24–26. Figure 1 of the patent depicts the numbering convention used for uplink and downlink slots in two successive frames:
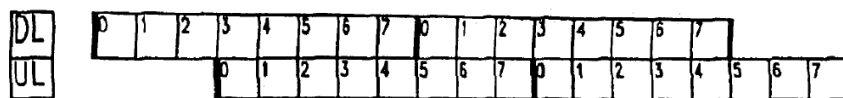

Fig.1

Each corresponding pair of slots (e.g., uplink slot 0 and downlink slot 0) represents a PDCH. *Id.* at 1:55–58.

To control access to the PDCHs, which are shared among mobile stations, the network uses an uplink status flag (USF). *Id.* at 1:50–54. That flag can take eight values, 0 through 7, allowing allocation of resources for up to eight mobile stations. *Id.* at 1:60–62. When a mobile station receives a USF, it may recognize the value as valid, which communicates exclusive use of resources to that station. *Id.* at 1:63–64. In systems using an extended dynamic allocation method, a mobile station's reception of a valid USF in a certain downlink timeslot indicates the availability for that station to begin transmission in the corresponding uplink slot. *Id.* at 1:65–2:5.

To "utilize most effectively the available bandwidth," access to PDCHs may be dynamically allocated. *Id.* at 1:33–38. "The amounts of time that the mobile station receives downlink or transmits uplink may be varied and slots allocated accordingly." *Id.* at 1:39–41. However, as explained below, at the time of the alleged invention,

certain multislot patterns or configurations were not available due to restrictions in mobile stations.

II

The '413 patent identifies two restrictions. First, "the mobile station is not able instantly to switch from a receive condition to a transmit condition or vice versa." *Id.* at 2:11–12. This turn-around time, along with the time needed to perform certain measurements, prevents certain multislot patterns from functioning. *Id.* at 4:1–8. Figure 3 depicts an example of an impermissible multislot pattern, specifically a steady state single-downlink and 5 uplink slot allocation for a class 34 mobile station:
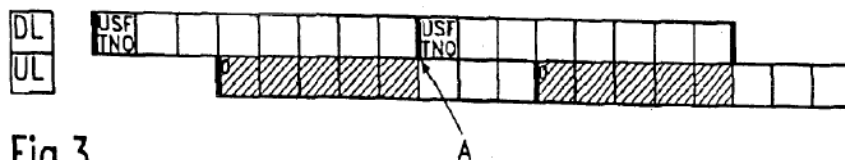

Fig.3

Id. at 2:11–14; 4:5–7. Between uplink timeslot 4 of the first frame and downlink timeslot 0 of the second frame (shown as letter A), there is insufficient time for the mobile station to change from a transmit state to a receive state. *Id.* at 4:5–7.

Second, in systems using an extended dynamic allocation method, there is a fixed relationship between the downlink slot in which a valid USF is received and the uplink slot in which transmission begins; a mobile station's receipt of a valid USF in a certain downlink timeslot indicates the availability for that station to begin transmission in the corresponding uplink slot. *Id.* at 1:65–2:5. For example, if a valid USF indicating the availability of four uplink slots is received at downlink timeslot 0, the mobile station begins transmission in the corresponding uplink timeslot 0. *Id.* at 2:1–10, 27–35. Figure 2 illustrates this fixed relationship:
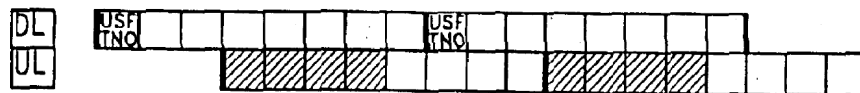
Fig.2

Id. at 3:61–67. Due to these two restrictions, certain multislot configurations were not possible.

III

The '413 patent's purported invention focuses on easing the latter restriction. It allows a mobile station access to previously restricted multislot configurations through "altering the fixed relationship in the timing of the downlink allocation signalling [sic] and subsequent uplink transmission for certain classes of mobile station." *Id.* at 2:46–49. For example, it purports to allow configurations that would otherwise be impossible due to insufficient turnaround time. *Compare id.* at Fig. 3 *with id.* at Fig 4. The '413 patent specification purports to alter this fixed relationship through shifting, to the second downlink slot, the USF indicating the mobile station may begin uplink transmission at the first uplink slot, as shown in Figure 4:
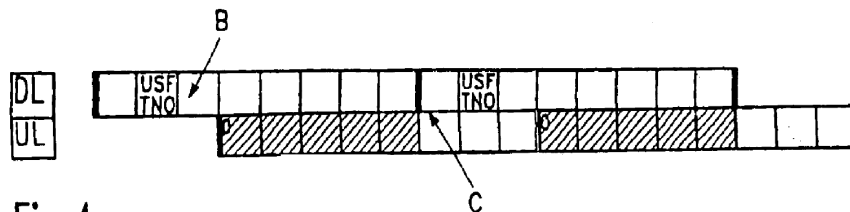

Fig.4

Id. at 4:8–19. Any USF corresponding to the second uplink slot is also placed in the second downlink slot. *Id.* at 4:12–14. Through this shifted USF, the invention purports to "reduce restrictions affecting extended dynamic allocation with minimal effect on the existing prescript." *Id.* at 2:44–46. It allows the mobile station to "transmit up to its physical slot limit." *Id.* at 5:17–18. The present invention increases the capacity of networks to communicate data by

allowing the network to use timeslots for transmission which, according to the patent, were not available in the prior art. The result is a system capable of a higher rate of data transmission. Claim 5 is representative and recites:

> 5. A multiple access communication method in a mobile station, comprising the steps of:
>
>> receiving an assignment of at least a first PDCH (packet data channel) and a second PDCH;
>>
>> monitoring an assigned PDCH to detect a USF; and
>>
>> transmitting on an assigned PDCH corresponding to the USF,
>>
>> wherein (i) if shifted USF operation is not used then a first assigned PDCH is monitored to detect a USF corresponding to the first assigned PDCH and (ii) if the shifted USF operation is used then a second assigned PDCH is monitored to detect the USF corresponding to the first assigned PDCH and a USF corresponding to the second assigned PDCH.

IV

Mentone sued Digi International Inc. and Elo Touch Solutions, Inc. (collectively Appellees) for infringement of at least claim 5 of the '413 patent. Appellees moved to dismiss under Federal Rule of Civil Procedure 12(b)(6), arguing the '413 patent claims are patent ineligible under 35 U.S.C. § 101. The district court held that claim 5, which the parties agreed is representative, is patent ineligible. The district court held claim 5 is "directed to the abstract idea of receiving a USF and transmitting data during the appropriate timeslots." J.A. 7. It further held that the shifted uplink status flag combined with the "abstract idea,

functional limitations, and anything else" is not significantly more than a claim to the abstract idea. J.A. 8. Accordingly, the district court dismissed Mentone's infringement claims. Mentone timely appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

We review a district court's Rule 12(b)(6) dismissal under regional circuit law, here the Third Circuit. *In re TLI Commc'ns LLC Pat. Litig.*, 823 F.3d 607, 610 (Fed. Cir. 2016). The Third Circuit reviews such orders de novo, accepting as true the facts alleged and drawing all reasonable inferences in favor of the nonmoving party. *Vallies v. Sky Bank*, 432 F.3d 493, 494 (3d Cir. 2006). Applying our law, we review a district court's patent eligibility determination under § 101 de novo. *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362 (Fed. Cir. 2015). Patent eligibility under § 101 is a question of law, based on underlying factual findings. *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1166 (Fed. Cir. 2018). It may be resolved on a Rule 12(b)(6) motion "when there are no factual allegations that, taken as true, prevent resolving the eligibility as a matter of law." *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1125 (Fed. Cir. 2018).

Section 101 provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof," may obtain a patent. 35 U.S.C. § 101. However, "[l]aws of nature, natural phenomena, and abstract ideas are not patent eligible." *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). We apply the Supreme Court's two-step framework to determine patent eligibility. *See id.* at 217. First, we determine whether the claims are directed to a "patent-ineligible concept," such as an abstract idea. *Id.* If they are, we examine "the elements of [each] claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a

patent-eligible application." *Id.* at 221 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 72, 79–80 (2012)).

<div align="center">I</div>

At *Alice* step one, we determine whether the claims are directed to an abstract idea. *Alice*, 573 U.S. at 217. In cases involving software, step one often "turns on whether the claims focus on specific asserted improvements in computer capabilities or instead on a process or system that qualifies [as] an abstract idea for which computers are invoked merely as a tool." *Uniloc USA, Inc. v. LG Elecs. USA, Inc.*, 957 F.3d 1303, 1306–07 (Fed. Cir. 2020) (citing *Customedia Techs., LLC v. Dish Network Corp.*, 951 F.3d 1359, 1364 (Fed. Cir. 2020)). "We have routinely held software claims patent eligible under *Alice* step one when they are directed to improvements to the functionality of a computer or network platform itself." *Id.* at 1307 (collecting cases).

Here, claim 5 is directed to a patent-eligible improvement to computer functionality, namely permitting additional multislot configurations for certain classes of mobile stations using extended bandwidth allocation. *See* '413 patent at 2:36–53; 4:5–19. It adds this capability through using a shifted USF that breaks the fixed relationship in the timing of downlink allocation signaling (i.e., receipt of a USF on a timeslot) and subsequent uplink transmission. First, a mobile station receives two assignments for PDCHs and then monitors them to detect a shifted USF. If a shifted USF operation is used, then the mobile station monitors the second assigned PDCH to "detect the USF corresponding to the first assigned PDCH and a USF corresponding to the second assigned PDCH," and transmits on both PDCHs accordingly. The specification shows how using the shifted USF, as in Figure 4, allows a mobile station to utilize the otherwise impermissible configuration of Figure 3 because the mobile station has sufficient

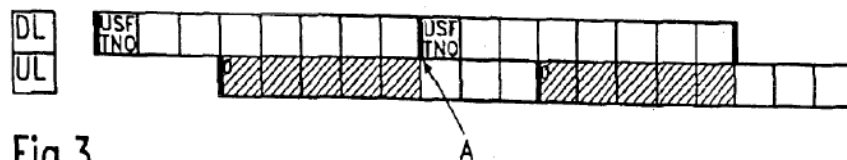turnaround time to switch from a receive condition to a transmit condition.
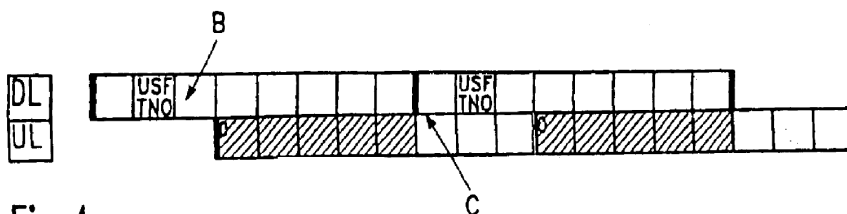

Fig.3

Fig.4

See '413 patent at 4:1–19. And this newly allowed multislot configuration provides an additional uplink slot compared to the configuration of Figure 2. *Id.* at 3:61–67. The claimed invention, therefore, improves communication capabilities in certain mobile stations using extended bandwidth allocation. Like the claims we held patent eligible in *DDR Holdings, LLC v. Hotels.com, L.P.*, claim 5 improves the normal operation of the communication system itself to "overcome a problem specifically arising in the realm of computer networks." 773 F.3d 1245, 1257 (Fed. Cir. 2014).

We reject the district court's holding and Appellees' position that claim 5 does not recite "when, how, or why one would . . . shift the USF or how a shifted USF would specifically improve the functioning of a prior art system." *See* J.A. 7; Appellees' Br. 12. The claim does not merely recite generalized steps to be performed on a computer. Nor does it recite data manipulation on a generic computer as Appellees argue. Appellees' Br. 12. Claim 5 recites a particular method of breaking the fixed relationship between the timing of a downlink USF and subsequent uplink transmission: the mobile station receives an assignment of two distinct PDCHs, and, if the shifted USF operation is used, it monitors the second PDCH for USFs corresponding to

the first and second PDCH and transmits on those PDCHs accordingly.

The specification also provides important details on the technological problem and how the claimed invention solves that problem. The specification is of particular importance here, as "shifted USF" appears to be a coined term by the inventor.[1] *See Intervet Inc. v. Merial Ltd.*, 617 F.3d 1282, 1287 (Fed. Cir. 2010) ("[T]erms coined by the inventor are best understood by reference to the specification." (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc)). Figure 2 provides a prior art "steady state single downlink and 4 uplink slot allocation" in which there is a fixed relationship between a downlink in which the USF is received and transmission availability on the corresponding uplink slot. *Id.* at Fig. 2; 1:50–2:5; 3:61–67. Figure 3 shows how the prior art's use of a USF does not permit a 5 uplink slot allocation due to constraints in switching a mobile station from a transmitting configuration to a receiving configuration. *Id.* at 3:1–4. Accordingly, as the patent explains, there was a need to reduce restrictions with minimal effect on the existing system to enable desirable multislot configurations. *Id.* at 2:32–46.

Figure 4 permits the 5 uplink slot allocation through altering the fixed timing relationship of the prior art Figure 3 system. It has the network send USFs for both the first and second uplink slots in the second downlink slot. Through using a shifted USF, a mobile station is able to utilize a desirable and previously restricted multislot configurations. Figure 7 depicts a detailed flow chart of how a mobile station may implement the shifted USF in a mobile station:

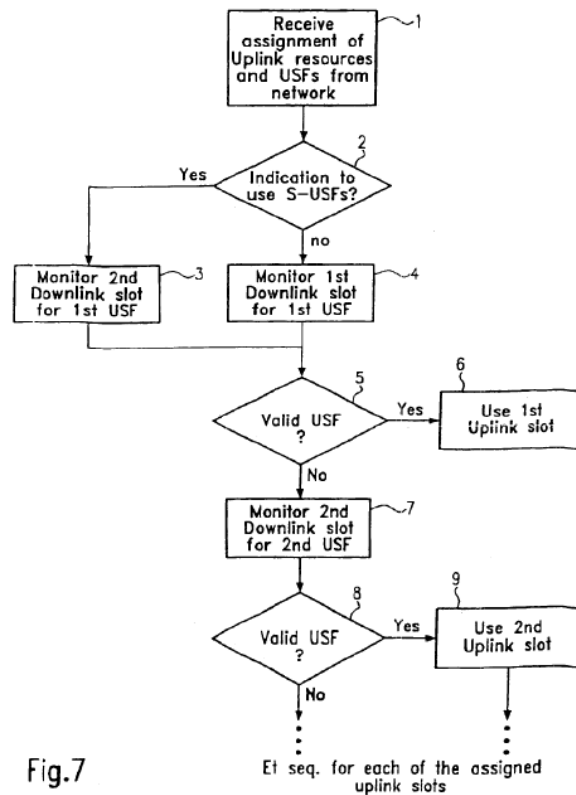[1]   Appellees do not contest that shifted USF is a coined term.

Fig.7

As shown, the mobile station receives assignment information relating to the first and second downlink and uplink slots (i.e., assignments for the first two PDCHs), and, if a shifted USF is to be used, monitors the second downlink slot for the first and second USF, and utilizes the uplink slots accordingly. Thus, the specification shows how the elements of claim 5 work together to solve a technological problem in network communication.

To the extent either the Appellees or the district court believe claim 5 must expressly mention the additional timeslots available or enabled by this achievement, they are mistaken. "Claims need not articulate the advantages of the claimed combinations to be eligible." *Uniloc*, 957 F.3d at 1309.

This case is nothing like the claims we held ineligible in *Two-Way Media Ltd. v. Comcast Cable Communications,*

LLC, 874 F.3d 1329 (Fed. Cir. 2017). There, the claims recited a method of transmitting packets of information over a communications network comprising: converting information into streams of digital packets; routing the streams to users; controlling the routing; and monitoring the reception of packets by the users. *Id.* at 1334. We held the claims ineligible because they merely recited a series of abstract steps ("converting," "routing," "controlling," "monitoring," and "accumulating records") using "result-based functional language" without the means for achieving any purported technological improvement. *Id.* at 1337. Here, there is no functional claiming, nor are there abstract steps.

Instead, the claims here are like those in *Packet Intelligence LLC v. NetScout Sys., Inc.*, 965 F.3d 1299 (Fed. Cir. 2020). In that case, the claim presented a solution to a "challenge unique to computer networks, identifying disjointed connection flows in a network environment," and provided detail on how the solution was "achieved in several steps." *Id.* at 1309. To inform our understanding of the claimed invention and the technological solution, we relied on the specification which made it clear that "known network monitors were unable to identify disjointed connection flows to each other," and that the focus of the claims was "a more granular, nuanced, and useful classification of network traffic." *Id.* at 1309–10. We also relied on the specification to inform our understanding of how the elements in the claim functioned together to provide that "granular, nuanced, and useful classification of network traffic, rather than an abstract result." *Id.* at 1310.

Like the claim in *Packet Intelligence*, claim 5 purports to solve a challenge unique to computer networks, or, more specifically, certain mobile stations using extended bandwidth allocation in a network: reducing restrictions to enable additional multislot configurations. It increases the rate of data transmission by enabling the use of timeslots for transmission that were not previously available.

Likewise, the specification informs our understanding of the claimed invention, the technological solution, and how the elements of the claim work together to provide that solution. The specification explains the restrictions on mobile stations and how use of a shifted USF permits these configurations. Further, the specification through at least Figure 7 shows how the elements of claim 5, including receiving and monitoring information in two separate PDCHs, function together to provide that inventive solution. Accordingly, we hold that claim 5 is directed to patent-eligible subject matter.

The district court held that claim 5 was directed to the abstract idea of "receiving a USF and transmitting data during the appropriate timeslots." J.A. 7 We do not agree. The district court's formulation of the abstract idea appears to be a high-level description of how USFs operate in mobile stations using extended bandwidth allocation generally. *See* '413 patent at 1:67–2:8. However, the claimed invention departs from this conventional use through a shifted USF, which breaks the fixed relationship between USFs in a downlink slot and the availability for transmission in the corresponding uplink slot. The district court's abstract idea fails to mention a shifted USF, nor does it capture the receipt of two PDCH assignments that permit monitoring and detecting the PDCHs for a shifted USF and transmission based thereon. Accordingly, it is untethered to the invention as claimed. Because we hold the claims patent eligible under *Alice* step one, we need not proceed to the second step of *Alice*. *Uniloc*, 957 F.3d at 1309.

CONCLUSION

Because we hold claim 5 is directed to patent-eligible subject matter, we reverse the district court's judgment and its dismissal of Mentone's infringement claims.

REVERSED

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COSTS

Costs to Mentone.