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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte AJITA JOHN and
DOREE DUNCAN SELIGMANN

Appeal 2018-002138
Application 12/978,973¹
Technology Center 3600

Before ALLEN R. MacDONALD, JASON V. MORGAN, and
JAMES B. ARPIN, *Administrative Patent Judges*.

MORGAN, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Introduction

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–20, all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Appellants identify Avaya, Inc., as the real party in interest. Appeal Br. 2.

Summary of Disclosure

Appellants disclose a system for managing resources that:

(1) identifies a group of users by categorizing users according to common characteristics and behaviors with respect to a first domain; (2) identifies a user behavior, associated with an event in a second, different domain, for a user in the group of users; and (3) provides a response, based on the user behavior and the event, at the second domain. Spec., Abstract.

Representative claim

1. A method comprising:

receiving, at a processor and via a communication interface, first user data from a first electronic media channel and second user data from a second electronic media channel, the first electronic media channel different from the second electronic media channel;

storing the first and second user data in a memory coupled to the processor;

identifying, with the processor and based on the first user data, a group of user terminals corresponding to users having a common usage characteristic with respect to a first website, the first website associated with the first electronic media channel;

analyzing with the processor, during a first time interval and based on the second user data, a usage of a first user terminal from the group of user terminals with respect to a second website associated with the second electronic media channel, the second website different from the first website;

making a determination, with the processor, about a likely behavior of the group of user terminals based on the analyzing the usage; and

during a second time interval after the first time interval, modifying, with the processor and based on the determination, one of a resource or a user interface corresponding to the

second website for a second user terminal of the group of user terminals.

Appeal Br. 13 (Claims Appendix).

Rejection

The Examiner rejects claims 1–20 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter.

PRINCIPLES OF LAW

To be statutorily patentable, the subject matter of an invention must be a “new and useful process, machine, manufacture, or composition of matter, or [a] new and useful improvement thereof.” 35 U.S.C. § 101. There are implicit exceptions to the categories of patentable subject matter identified in § 101, including: (1) laws of nature; (2) natural phenomena; and (3) abstract ideas. *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 217 (2014). The U.S. Supreme Court has set forth a framework for distinguishing patents with claims directed to these implicit exceptions “from those that claim patent-eligible applications of those concepts.” *Id.* (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012)). The evaluation follows a two-part analysis: (1) determine whether the claim is *directed to* a patent-ineligible concept, e.g., an abstract idea; and (2) if so, then determine whether any element, or combination of elements, in the claim is sufficient to ensure that the claim amounts to *significantly more* than the patent-ineligible concept itself. *See Alice*, 573 U.S. at 217–18.

Although the second step in the *Alice/Mayo* framework is termed a search for an “inventive concept,” the analysis is not an evaluation of novelty or non-obviousness, but rather a search for “an element or combination of elements that is ‘sufficient to ensure that the patent in

practice amounts to significantly more than a patent upon the [ineligible concept] itself.” *Alice*, 573 U.S. at 217–18 (citation omitted). A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible. *See Mayo*, 566 U.S. at 90; *see also Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 591 (2013) (“Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry”).

If a claim proves to be unpatentable as a result of the two-part analysis, no additional determination regarding preemption is necessary. “While preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility,” as “questions on preemption are inherent in and resolved by the § 101 analysis.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (internal quotation marks and citation omitted).

The U.S. Patent and Trademark Office (USPTO) recently published revised guidance on the application of the two-part analysis. USPTO’s January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (“Memorandum”). Under that guidance, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) (*see* Memorandum, 84 Fed. Reg. at 54 (Step 2A – Prong One)); and

(2) additional elements that integrate the judicial exception into a practical application (*see* Memorandum, 84 Fed. Reg. at 54–55 (Step 2A – Prong Two); MPEP § 2106.05(a)–(c), (e)–(h)).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that are not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Memorandum, 84 Fed. Reg. at 56 (Step 2B).

ANALYSIS

Memorandum Step 2A – Prong One

Appellants acknowledge “that the general principle underlying the pending Claims—that users grouped by a common user behavior or usage characteristic tend to perform similar actions—is an abstract idea that is not, by itself, patentable.” Appeal Br. 8. The Examiner similarly determines the claimed steps “are directed to actions that facilitate sharing data [where] information is gathered about . . . user[s] to determine . . . usage characteristics.” Final Act. 5. More specifically, claim 1 is directed to: (1) identifying a group of users with similar behavior at a first website; (2) analyzing the behavior of a first user from the group at a second website; and (3) modifying the second website for a second user from the group based on the assumption that the first user’s behavior at the second website

predicts the likely behavior of the second user at the second website. *See, e.g.,* Spec. ¶¶ 42, 44, 45, 47, Fig. 3.

The claimed process is analogous to identifying a group of individuals exhibiting common behaviors in a first context and predicting that the behavior of an individual from the group, in a second context, is representative of the likely behavior of others in the group. That is, the claimed process represents the mental process of predicting future behavior of members of a group of individuals, who behaved similarly in the past, by observing the behavior of a representative member of the group—an abstract idea.

Even when the behavior being observed involves use of computer technologies, the acts of observing and making predictions may be performed without a computer (e.g., through the use of one-way mirrors). *See, e.g.,* Ahmed Seffah and Halima Habieb-Mammar, *Usability engineering laboratories: limitations and challenges toward a unifying tools/practices environment*, *J. of Behavior and Info. Tech.*, Vol. 28, No. 3, 281–91, 282–83 (May–June 2009) (although software is typically used as part of analysis and observation, the basis of a traditional usability lab starts with “two rooms separated by a one-way mirror and a sound-proof wall”); *see also* *Mortg. Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1324 (Fed. Cir. 2016) (claims reciting “nothing more than the collection of information to generate a ‘credit grading’ and to facilitate anonymous loan shopping” were directed to an abstract idea); Memorandum, 84 Fed. Reg. 52 (mental processes “including an observation, evaluation, judgment, opinion” are abstract).

Importantly, claim 1 does not limit the analysis, determination, and modification steps in a manner that, other than their execution “with the processor,” distinguishes these parts of the claimed process from how a human would likely engage in modifying a website by predicting the behavior of a group of users based on a representative user’s behavior. *Cf. McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1316 (Fed. Cir. 2016) (citing *Myriad*, 569 U.S. at 595–96) (recitation of limited rules reflecting “a specific implementation not demonstrated as that which ‘any [animator] engaged in the search for [an automated process] would likely have utilized’” (alterations in original) limited claim to patent-eligible subject matter). Therefore, the claimed process is analogous to a mental process of predicting, based on a representative member’s behavior, future behavior of members of a group of individuals, who behaved similarly in the past.

Accordingly, claim 1 is directed to an abstract idea.

Memorandum Step 2A – Prong Two

Appellants argue that claim 1—which includes recitations such as user data from and websites associated with electronic media channels, and a resource or user interface corresponding to a website—includes features “unique to the specific application claimed” such that the claimed invention “constitute[s] a real-world embodiment of the general principle described in the specification.” Appeal Br. 8. That is, Appellants proffer that claim 1 integrates the underlying abstract idea into a practical application “such that the claim is more than a drafting effort designed to monopolize the judicial exception.” Memorandum, 84 Fed. Reg. at 54.

Appellants' argument is unpersuasive because the cited recitations merely link the abstract mental process to the particular technological environment of website interactions. *See id.* at 55 (citing, e.g., *Bilski v. Kappos*, 561 U.S. 593, 612 (2010)).

Appellants further argue the “modifying” step of claim 1

in particular constitutes “applying the data in a step of the overall method,” and is therefore the type of limitation that the *Classen*^[2] Court found to distinguish between claims directed to patent-ineligible subject matter (if such a limitation were not included in the claim) and claims directed to patent-eligible subject matter (if such a limitation were included in the claim).

Appeal Br. 9; *see also* Reply Br. 3, 5–6.

Appellants' reliance on *Classen* is unavailing because Appellants' arguments do not show that modifying a resource or user interface “based on [a] determination” represents something more than “insignificant extra-resolution activity.” *Classen*, 659 F.3d at 1067. The Specification broadly discloses modifications, such as customizing a user interface “with the addition or subtraction of some the elements therein, or a rearrangement and/or a reconfiguration (e.g., color, size, shape) of the original elements of the default user interface” (Spec. ¶ 48) or including a direct link to an online resource to “reduce[] the number of links that need to be followed to access the resource” (*id.* ¶ 49; *see also* Reply Br. 5). These conventional modifications are more comparable to the alarm limit adjustments in the patent-ineligible process of *Parker v. Flook*, 437 U.S. 584 (1978), than to the *Classen* act of immunization according to a lower-risk schedule, which

² *Classen Immunotherapies, Inc. v. Elan Pharm., Inc.*, 786 F.3d 892 (Fed. Cir. 2015).

represented a practical use that went beyond insignificant post-solution activity (*see Classen*, 659 F.3d at 1067–68).

Appellants argue “a modified web page or other user interface is not simply ‘a result of analysis.’” Reply Br. 5. Both the claimed modification step and the supporting disclosure, however, are broad enough to encompass a modification that merely makes the results of the analysis or determination steps available for display. *See, e.g.*, Spec. ¶¶ 48–49. Therefore, we do not determine that inclusion of the modification step integrates the underlying abstract idea of claim 1 into a patent-eligible practical application.

Memorandum, 84 Fed. Reg. 54–55.

Memorandum Step 2B

Appellants argue

[t]he step of modifying a resource or a user interface corresponding to the second website based on the determination of a likely behavior of the group of users, in particular, is alone sufficient to add significantly more to the pending claims, as there is nothing abstract about modifying a resource or a user interface corresponding to the second website as claimed.

Appeal Br. 10. As discussed above, however, the claimed modification step includes well-understood, routine, conventional activities, such as changing the appearance of a user interface or including a direct link to a resource. *See* Spec. ¶¶ 48, 49. Therefore, contrary to Appellants’ argument, we determine that this step alone does not provide an inventive concept that makes claim 1 significantly more than the underlying abstract idea.

Furthermore, the additional recitations of claim 1—such the processor, communication interface, memory, and electronic media channel recitations—represent generic computer implementation elements that do

not supply the necessary inventive concept. *See Alice*, 573 U.S. at 222; *see also, e.g.*, Spec. ¶¶ 21, 29, 30, Fig. 1. In particular, despite Appellants' arguments, we do not determine that these elements are arranged in a non-conventional and non-generic manner so that claim 1 recites more than performing the underlying abstract process on generic computer components. *See Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016).

For these reasons, claim 1 does not include additional recitations that make claim 1 significantly more than the underlying abstract idea discussed above. Accordingly, we sustain the Examiner's 35 U.S.C. § 101 rejection of claim 1, and claims 2–20, which Appellants do not argue separately. Appeal Br. 11.

DECISION

We affirm the Examiner's decision rejecting claims 1–20.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

APPENDIX

Ahmed Seffah and Halima Habieb-Mammar, *Usability engineering laboratories: limitations and challenges toward a unifying tools/practices environment*, J. of Behavior and Info. Tech., Vol. 28, No. 3, 281–91, 281–83 (May–June 2009)

<i>Notice of References Cited</i>	Application/Control No. 12/978,973	Applicant(s)/Patent Under Patent Appeal No. 2018-002138	
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NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
U	Ahmed Seffah and Halima Habieb-Mammar, <i>Usability engineering laboratories: limitations and challenges toward a unifying tools/practices environment</i> , J. of Behavior and Info. Tech., Vol. 28, No. 3, 281–91, 281–83 (May–June 2009)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Usability engineering laboratories: limitations and challenges toward a unifying tools/practices environment

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(Received November 2006; final version received November 2007)

This article discusses the limitations and challenges surrounding the present usability engineering (UE) labs. Usability laboratories include hardware and software tools to observe users, collect and analyse diverse data about the users' interactions, behaviours, actions, and reactions including their raw feedback regarding their experiences. Using statistical analysis and data mining software, these qualitative and quantitative data are transformed into design insights and recommendations for future usability improvements. First, we survey the existing stationary, portable, and remote laboratories. We then review the current usability tools while highlighting the gap between the existing tools/labs and the UE practices. We will show how this gap can be closed via a roadmap using a computer-assisted usability engineering environment (CAUTE). A CAUTE provides a unifying user interface that exploits a process-sensitive architecture for integrating the large variety of the existing tools into the best UE practices. Beyond the technical problems, there is also a need to address research issues including determining the interest of the CAUTE approach in comparison with the current usability labs.

Keywords: usability testing; testing lab; tools; computer-assisted usability engineering; integration; user acceptance tests

1. Introduction

In the last two decades, usability and its engineering have been recognised as a major milestone in the software engineering lifecycle (Seffah and Metzker 2004). The costs and benefits of usability engineering (UE) techniques have been largely demonstrated by the human interaction and human factors community (see, e.g. Bias and Mayhew 1994, Landauer 1995, Bevan 2000).

UE is concerned with the question of how to specify, design, develop, and evaluate interactive software that is easy to use and easy to learn. As a disciplined engineering process, UE includes different activities:

- Analysis of existing or similar products to learn from previous designs and user experiences success and failures;
- Analysis of customer field studies and contextual inquiries to understand the users' workflows, tasks, profiles, environments, and how much they vary;
- Collect customer feedback to understand past issues and problems with the product;

- Participatory design sessions to understand customers' tasks and generate design directions through collaboration among developers, users, and usability engineers;
- Interface prototyping, where a key to producing usable products is to have a professional interface designer work on the project.
- Performing interactive usability tests on prototypes and the product as it is being developed;
- Worldwide usability tests that can either be done in different locations or from a specific lab via remote usability testing.

Usability labs offer the computers, software and audio/video infrastructure needed to support these UE activities. The emphasis is on observation of people using the software to learn what people want and need from software systems. Laboratories include software tools to observe users directly, record and analyse data about their experiences, behaviours, actions, reactions, as well as their raw feedback. Using data analysis software, these qualitative and quantitative data are analysed and transformed into design

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insights and recommendations for future usability improvements.

As it will be highlighted in this article, the existing 'black box' labs as well as the lack of integration between the diverse tools needed by testers and the informal testing practices is a major obstacle for the maturity of UE and its integration in the mainstream software development lifecycle. Closing such a gap will lead not only to making studies more accurate and objective but it will also pave the road for the development of the next-generation of usable UE tools. A usability lab requires a well-defined process. In addition, many usability labs are custom made and therefore are unusable for projects or in environments other than those for which they were designed.

This article starts by describing a set of limitations intrinsic to current usability labs, and then by surveying the software tools in use today. We examine the impacts of these limitations and the lack of integration between tools and labs on the specification, design and validation of usability studies. In the last section, we discuss the research and development opportunities in important topics relevant to future labs including the concept of computer-assisted usability engineering environment (CAUTE). We will highlight how this concept, borrowed from the field of software engineering, can contribute to the emergence of an advanced, integrative and powerful framework capable of effectively and efficiently supporting a large set of UE studies; not just testing as it is today in current labs.

2. Usability labs today: stationary, mobile, and remote

Three types of labs are available today. Most often they are designed to support usability tests. In this section, we briefly introduce their structure and point to their limitations.

2.1. The traditional stationary, heavy, and home-made lab

Traditional stationary usability labs include two rooms separated by a one-way mirror and a sound-proof wall (Figure 1). A room, intended to the participants' test, simulates the user work environment. The term 'participant' designates the user who has been selected, recruited, and interviewed. In the other room are observers who can watch the participants in action. Generally, there is also a reception hall for the participants' convenience and sometimes one user may sit near the participant. These traditional laboratories allow the observers to watch and study the participant's behaviours including facial expressions. Observers can talk, exchange and record ideas between themselves during the tests without disturbing the participants. Recently, some usability labs started offering the possibility to observe and record the observers. Such practice is useful for the improvement of testing practices as well as for the lab equipment.

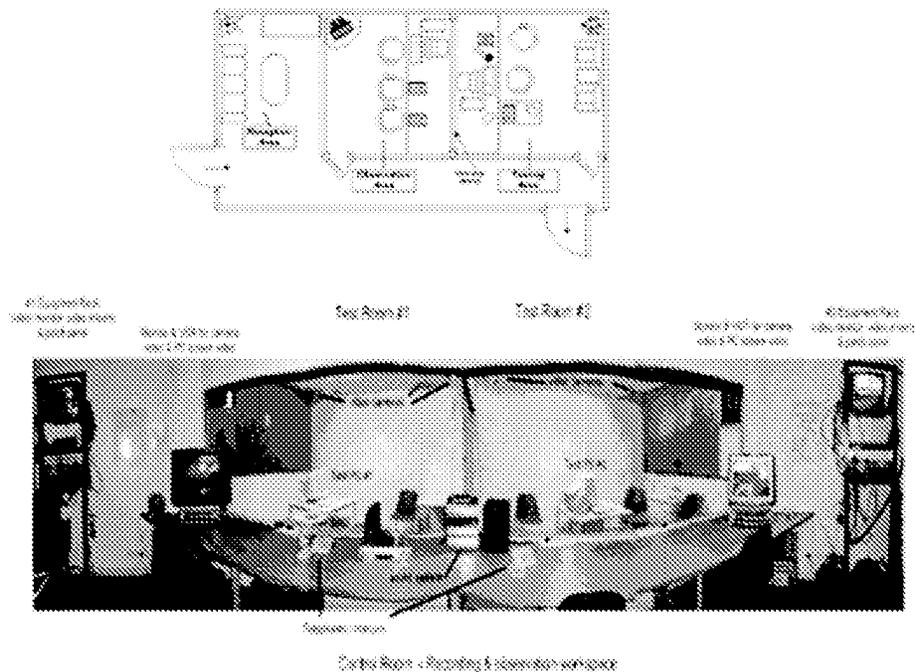


Figure 1. Floor plan and layout of a stationary lab [Swiburne University, Australia].

In spite of their considerable contribution to user interface engineering and to the empirical-based comprehension of human-computer interaction nature, the stationary laboratories have some major weaknesses.

Firstly, these labs are costly in equipment and software used for analysis and observation. As a matter of fact, the cost of a typical infrastructure for fixed labs is estimated between 100 000 and 150 000 US dollars excluding the cost of deployment, management, training, frequent upgrades, and advanced test analysis software. Furthermore, it requires dedicated rooms with soundproof walls, one-way mirrors, wires and fixtures for video and audio equipment. The customisation of such labs to meet the requirements of some tests is often impossible to do within reasonable costs.

Secondly, fixed labs force the participants as well as the testers and all observers to all gather in the same place and at the same time. This makes it difficult to hire a representative sample of the target population because participants' trips to usability lab locations are costly and sometimes just impossible. Moreover, the number of participants is restricted mainly due to financial reasons and by the time required to analyse the large amount of data generated by the tests. Because of these reasons, in general, a test session does not include more than 10 participants. Thus, the recommendations are extracted from a small sample size and consequently their reliability is limited.

Thirdly, tests are realised outside the participants' natural work environment. Feeling surrounded and watched by the observers and by the testers, the participants are generally anxious about not being able to achieve the assigned tasks. We observed this behaviour during tests that we conducted within our lab. The environment and the formal character of tests have a negative influence on the participant's behaviour and actions and, consequently, on the pertinence and the reliability of test results.

2.2. Mobile or portable usability labs

Mobile usability labs, also called portable labs, emerged essentially to overcome some limitations of fixed platforms. A mobile lab comes generally in the form of a suitcase, which includes a laptop equipped with a camera, a camcorder and a video recorder for collecting the data (Figure 2). It also includes a software tool for recording video observations and analyses the tests results.

Rubin (1994) estimates the approximate cost of the basic equipment between \$10 000 US and \$15 000 US, which makes such labs more cost-effective compared with the heavy stationary labs. Including the test software, the total cost amounts to \$15 000–\$20 000 US,



Figure 2. Examples of mobile and portable usability lab.

which constitutes an undeniable advantage in comparison with fixed labs.

Moreover, it is easy to install mobile labs in the participant's workplace and conduct the tests. Nevertheless, the observers and the testers are forced to move and for the same reasons mentioned in the case of fixed usability labs, the number of participants is often limited. In addition, even though they are in their own work environment, the user is still influenced by the presence of the observers, the testers and to somehow the equipment as shown in Figure 2.

These laboratories are used to supplement fixed labs, especially for field observations studies in the user's work environment. However, they do not solve the major disadvantage of fixed labs: the recruitment and movement of test subjects.

2.3. Remote usability tests

The convergence of the Internet, videoconferencing as well as mobile telephony technologies has led to the emergence of promising new labs: remote testing. Remote usability tests can be defined as being usability tests, in which the testers, in charge of carrying out the observation and the analysis of participants, are separated in space and/or time from the participants they have to observe (Figure 3).

A remote usability lab can be developed by connecting, via the network, a stationary and/or