Commissioner's Decision No. 1462
Décision du commissaire n^{o} 1462

TOPICS: J–00 Meaning of Art
J–50 Mere Plan

SUJETS: J–00 Signification de la technique
J–50 Simple plan

Application No. 2 409 631
Demande n^{o} 2 409 631

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 2409631, having been rejected under subsection 30(3) of the *Patent Rules*, has subsequently been reviewed in accordance with paragraph 30(6)(*c*) of the *Patent Rules*. The recommendation of the Patent Appeal Board and the decision of the Commissioner are to refuse the application.

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INTRODUCTION

[1] This recommendation concerns the review of rejected patent application number 2409631, which is entitled "User profile classification by web usage analysis" and owned by Xerox Corp. The outstanding defect indicated by the Final Action (FA) is that the claims do not define statutory subject matter, contrary to section 2 of the *Patent Act*. The Patent Appeal Board (the Board) has reviewed the rejected application pursuant to paragraph 30(6)(*c*) of the *Patent Rules*. As explained below, our recommendation is to refuse the application.

BACKGROUND

The application

[2] Canadian patent application 2409631 was filed October 25, 2002 and became open to public inspection on May 2, 2003.

[3] The application relates to the prediction of user demographic information based on an analysis of a pattern of web pages accessed by a user.

Prosecution history

[4] On February 9, 2016, an FA was issued pursuant to subsection 30(4) of the *Patent Rules*. The FA indicated the application to be defective on the ground that claims 1 to 24 (i.e. all claims on file) encompass subject matter outside the definition of invention and thus do not comply with section 2 of the *Patent Act*.

[5] In its August 9, 2016 response to the FA (RFA), the Applicant submitted arguments for allowance and proposed an amended set of 32 claims (the proposed claim set) to make explicit certain points and more fully claim the invention. Corresponding amendments to the description were included in the proposal.

[6] The Examiner did not consider the amendments to remedy the subject matter defect and was not persuaded by the Applicant's arguments to withdraw the rejection. The Examiner also considered the proposed claims to introduce a wording defect.

[7] Therefore, pursuant to subsection 30(6) of the *Patent Rules*, the application was forwarded to the Board for review, along with the Examiner's Summary of Reasons. On November 9, 2016, the Board forwarded a copy of the Summary of Reasons, with a letter acknowledging the rejection, to the Applicant. The Applicant

responded on February 2, 2017, requesting the review to proceed on the basis of the written record.

[8] A Panel was formed to review the rejected application under paragraph 30(6)(*c*) of the *Patent Rules* and to make a recommendation to the Commissioner as to its disposition. Following our preliminary review, we sent a letter on May 11, 2018 (the PR letter) presenting our analysis and rationale as to why, based on the record before us, the subject matter of the claims on file (as well as of the proposed claim set) does not comply with section 2 of the *Patent Act*.

[9] The PR letter requested the Applicant to respond by June 8, 2018, failing which, the review would proceed based on the written record. When no response was received, a telephone message was left with the Agent on June 19, 2018, requesting confirmation that the Applicant did not intend to respond to the PR letter. No response was received to this message.

[10] We therefore undertook our final review based on the written record. Since that record has not changed since the PR letter was sent, we have maintained the rationale and conclusions presented in that letter.

ISSUE

[11] The issue to be addressed by this review is whether the claims on file define subject matter falling within the definition of invention in section 2 of the *Patent Act*.

LEGAL PRINCIPLES AND PATENT OFFICE PRACTICE

Purposive construction

[12] In accordance with *Free World Trust v Électro Santé Inc*, 2000 SCC 66 [*Free World Trust*], essential elements are identified through a purposive construction of the claims done by considering the whole of the disclosure, including the specification and drawings (see also *Whirlpool Corp v Camco Inc*, 2000 SCC 67 at paras 49(f) and (g) and 52). In accordance with the *Manual of Patent Office Practice*, revised April 2018 (CIPO) at §13.05 [*MOPOP*], the first step of purposive claim construction is to identify the skilled person and his or her relevant common general knowledge (CGK). The next step is to identify the problem addressed by the inventors and the solution put forth in the application. Essential elements can then be identified as those required to achieve the disclosed solution as claimed.

[13] The RFA noted that the inclusion of a step in the CGK does not preclude it from being an essential element. We agree, noting that *MOPOP* at §§13.05.02*b*–13.05.02*c* indicates this as well. Nonetheless, the identification of the problem and solution—which guides the identification of the essential elements—is itself guided in part by the CGK, bearing in mind that the skilled person reads the specification with the expectation that it sets out something beyond commonly known solutions to commonly known problems.

[14] The Applicant disagreed with what it called in the RFA "the problem–solution based approach to purposive construction that allows entire elements of the claims to be ignored if they are not considered essential to the problem." Referring to the test for essentiality outlined in *Free World Trust*, the RFA contended that for an element to be non-essential, "a substituted variant or an omission of an element must perform substantially the same function in substantially the same way to obtain substantially the same result" or that the intent of the inventor as expressed in the claims is for the element to be substitutable or omissible. The RFA also referred to the affirmation in *Canada (AG) v Amazon.com*, 2011 FCA 328 [*Amazon.com*] "that it is the wording of the claims purposively construed…as set out in *Free World*" which must be considered.

[15] In *Amazon.com* (at paras 43, 44, 62 and 63), the Federal Court of Appeal mandated the assessment of patentable subject matter on the basis of purposive construction which "will necessarily ensure that the Commissioner is alive to the possibility that a patent claim may be expressed in language that is deliberately or inadvertently deceptive." The Court gave the situation in *Schlumberger Canada Ltd v Commissioner of Patents*, [1982] 1 FC 845 (CA) [*Schlumberger*] as an example, saying that on a proper construction, the claimed invention there was "for a mathematical formula and therefore not patentable subject matter" despite its appearance as "an 'art' or 'process'" and the fact that the mathematical formula was programmed into a computer.

[16] As explained in *MOPOP* at §13.05.02*c*, not every element having a material effect on the operation of a given practical embodiment is essential to the solution; some recited elements define the context or environment of the embodiment but do not actually change the nature of the solution. Accordingly, purposive construction must consider which elements are required for the solution—proposed by the description and underlying the claimed embodiment—to achieve its result.

Statutory subject matter

[17] The definition of invention is set out in section 2 of the *Patent Act*:

> ***invention*** means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter.

[18] "Examination Practice Respecting Computer-Implemented Inventions", PN2013–03 (CIPO, March 2013) [*PN2013–03*] clarifies the Patent Office's approach to determining if a computer-related invention is statutory subject matter.

[19] As explained in *PN2013–03*, where a computer is found to be an essential element of a construed claim, the claimed subject matter is not a disembodied invention (e.g. a mere idea, scheme, plan or set of rules, etc.), which would be non-statutory.

ANALYSIS

Purposive construction

The skilled person

[20] In the PR letter, we identified the notional skilled person as a person or team skilled in the fields of marketing, user profiling, general-purpose computing systems and client–server computing systems, including such areas as the involvement of the Web in marketing strategies, data mining, and the implementation and use of the software, tools and infrastructure to support the marketing professional. We based this identification on that in the FA (and undisputed by the Applicant), the description in the application of the related art (see e.g. paragraphs 2 to 4) and the general focus of the invention.

The CGK

[21] The following references, either having been indicated as relevant in the FA or having arisen during our preliminary review, were identified as relevant in the PR letter:

- D1: US 5991735 November 23, 1999 Gerace
- D2: Bamshad Mobasher, Robert Cooley & Jaideep Srivastava "Automatic personalization based on web usage mining" (August 2000) 43:8 Communications of the ACM 142.

- D3: Jeremy Goecks & Jude Shavlik "Learning users' interests by unobtrusively observing their normal behavior", *Proceedings of the 5th International Conference on Intelligent User Interfaces (IUI'00)* (ACM, 2000).
- D4: Brij Masand & Myra Spiliopoulou "WEBKDD'99: Workshop on web usage analysis and user profiling" (January 2000) 1:2 SIGKDD Explorations 108.
- D5: Dan Murray & Kevan Durrell "Inferring demographic attributes of anonymous Internet users" in Brij Masand & Myra Spiliopoulou, eds, *Web Usage Analysis and User Profiling (WebKDD'99), LNCS 1836* (Springer, 2000).

[22] Based on the above identification of the skilled person, the general state of the art indicated by the present application (and reflected through its lack of implementation detail concerning the detection of web usage) and the general state of the art indicated by D1 through D5, we identified the following as CGK in the PR letter:

- conventional techniques for providing business services and advertisements to web users;
- conventional marketing strategies, and the concepts of targeting marketing at specific demographics and personalizing product messages for individuals at a large scale (mass customization);
- conventional techniques for data mining and machine learning;
- the profiling of Internet users;
- the collection of demographic information from Internet users;
- the extrapolation of user demographic information;
- the use of cookies, IP addresses, session IDs, etc. to identify users;
- the use of client–server communication devices, and networking and appropriate programming techniques; and
- the detection of a set of web pages accessed by a user having an unknown user profile attribute and analysing the access to determine the profile.

The problem and solution

[23] As the description (paragraphs 2 to 3) explains, personal demographic information is desirable to businesses and advertisers, but when manually entered by website visitors, may be incomplete, false or incorrect. Prior art techniques for machine learning (e.g. the use of neural networks or Bayesian approaches) for extrapolating

these visitors' demographic information, on the other hand, often require excessively large amounts of computation and thus have limited desirability. As a solution, the application (paragraphs 1, 4, 5 and 31; figure 3; claim 1) proposes a better way of analysing web usage to extrapolate user demographic information: a multi-dimensional vector representing a user's web page access pattern is compared to multi-dimensional vectors representing web page access patterns of users with certain demographic attributes.

[24] The description (e.g. paragraphs 37 to 40) does not refer to any challenges in the computer implementation of the solution, or in the determination of a user's web page access pattern. The passages (e.g. paragraphs 32 to 36; figure 1) describing possible hardware configurations are high level and refer to generic components.

[25] Thus, given the level and nature of the detail in the description regarding the implementation, the skilled person would understand the problem not to lie in the determination or acquisition of a user's web page access pattern or in the computer implementation of an analysis algorithm. The problem would instead be understood to lie in the inefficiency of existing algorithms for analysing the data once acquired. This understanding would be consistent with the encompassment within the CGK of computing systems and the detection of web page access for the purposes of later analysis.

[26] Therefore, we view—as stated in the PR letter—the solution as the improved algorithm for analysing the data (i.e. user web page access patterns) by comparing multi-dimensional vectors and predicting user demographic information.

The essential elements

[27] Independent claims 1, 9 and 17 on file are respectively directed to a method, apparatus and software. All claims refer to the detection of a set of web pages accessed by a user and the use of multi-dimensional vectors in the analysis of this access. For convenience, independent claim 1 is provided below as representative of the invention.

> Claim 1. A machine-implemented method for extrapolating user profile information from user web page access patterns, comprising:
>
> > detecting a set of web pages accessed by a test user having an unknown user profile attribute;

> mapping at least a subset of said detected web pages to a first data structure, said first data structure representing a web page access pattern of said test user;
>
> comparing said first data structure to a plurality of a second data structure to obtain a comparison result, the plurality of said second data structure representing clusters of web page access patterns of a sample data set of users having a known user profile attribute in common;
>
> evaluating based on said comparison result the plurality of said second data structure and said first data structure to identify a second data structure matching the web page access pattern of the first data structure; and
>
> assigning said unknown user profile attribute of said test user from the matching second data structure to said test user;
>
> wherein the known user profile attribute in common of the sample data set of users corresponds to the unknown user profile attribute of said test user;
>
> wherein said first and second data structures are multi-dimensional vectors; and
>
> wherein each dimension of said first and said second multi-dimensional vectors corresponds to a separate web page.

[28] The Applicant, referring to *Free World Trust* for support, submitted in the RFA that a computer system is essential to the claimed invention because the inventor's intent for a computer to be essential can be inferred from the specification and the computer cannot be omitted without having a material effect on the operation of the claimed invention: "In particular, the step of detecting can only be accomplished through such means as a computer." The RFA contended that the step of detecting is itself essential because it is required for the device to work as contemplated and claimed by the Applicant. As evidence, the RFA pointed to the step of mapping the detected web pages to a structure, which was identified in the FA as an essential element, and which requires the web pages to first be detected. The RFA also compared the present case to *Re Progressive Casualty Insurance Co's Patent Application 2344781* (2013), 113 CPR (4th) 261, CD 1336 (Pat App Bd & Pat Commr), submitting that just as in that case, the claimed invention here includes various data gathering and processing steps that cannot be omitted without materially affecting the operation of the present invention.

[29] As explained above, purposive construction must consider the application as a whole, including the problem addressed by the application and its solution, and determine which elements are essential for that solution. The problem here is not one of computer implementation or detecting web page access patterns. Our view is that the skilled person, based on the problem and solution, would understand the computer components and the step of detecting not to be essential. The solution works by the rules of the improved algorithm for analysing the data and predicting user demographic information: it does not lie in the computerized gathering or processing of data. Therefore, while these details provide the contextual environment of the invention, they are not essential to the solution provided by the application.

[30] We consider the wording differences between the dependent claims and the independent claims from which they stem to simply reflect different embodiments of the same set of essential elements.

[31] Accordingly, our view—as it was in the PR letter—is that claims 1 to 24 on file share the same set of essential elements:

- mapping at least a subset of said detected web pages to a first data structure, said first data structure representing a web page access pattern of said test user;
- comparing said first data structure to a plurality of second data structures to obtain a comparison result, the plurality of said second data structures representing clusters of web page access patterns of a sample data set of users having a known user profile attribute in common;
- evaluating, based on said comparison result, the plurality of said second data structures and said first data structure to identify a second data structure matching the web page access pattern of the first data structure; and
- assigning said unknown user profile attribute of said test user from the matching second data structure to said test user;
- wherein the known user profile attribute in common of the sample data set of users corresponds to the unknown user profile attribute of said test user;
- wherein said first and second data structures are multi-dimensional vectors; and
- wherein each dimension of said first and said second multi-dimensional vectors corresponds to a separate web page.

Statutory subject matter

[32] As alluded to above, the Applicant submitted in the RFA that the essential elements include a computer and that the claimed subject matter is therefore statutory. As construed above, however, the essential elements of the claims on file are the rules of the improved algorithm for analysing the data and predicting user demographic information—a computer is not among the essential elements. The rules do not manifest a discernible effect or change of character or condition in a physical object. They merely involve the carrying out of a plan or theory of action without the production of any physical results proceeding directly from the operation of the theory or plan itself. Such matter is outside the categories of invention in section 2.

[33] To put it another way, "purposive construction of the claims in issue leads to the conclusion that *Schlumberger* cannot be distinguished because the only inventive aspect of the claimed invention is the algorithm—a mathematical formula—that is programmed into the computer to cause it to take the necessary steps" (*Amazon.com* at paras 63 and 69).

[34] Therefore, claims 1 to 24 on file do not define statutory subject matter and thus do not comply with section 2 of the *Patent Act*.

Proposed claims

[35] As stated above, the Applicant proposed an amended set of 32 claims with the RFA. These proposed claims include eight additional method claims reciting similar steps as those on file but which, instead of basing the analysis on the detection of web page access, base it on the acquisition of browsing information representing a set of visited websites from the user's computer via the network. All the proposed claims generally increase the emphasis on computerized steps and components.

[36] Given that these proposed amendments would not alter the above identifications of the skilled person, CGK, problem and solution, the proposed claims would have the same sets of essential elements as those identified above.

[37] Accordingly, our view concerning non-statutory subject matter also applies to the proposed claims. It follows that the proposed claims are not considered a necessary specific amendment under subsection 30(6.3) of the *Patent Rules*, regardless of whether or not they would introduce a wording defect as indicated in the Examiner's Summary of Reasons.

RECOMMENDATION OF THE BOARD

[38] In view of the above, the Panel recommends that the application be refused on the basis that claims 1 to 24 define non-statutory subject matter and thus do not comply with section 2 of the *Patent Act*.

Leigh Matheson	Paul Fitzner	Howard Sandler
Member	Member	Member

DECISION OF THE COMMISSIONER

[39] I concur with the findings of the Board and its recommendation to refuse the application. The claims on file do not comply with section 2 of the *Patent Act*.

[40] Accordingly, I refuse to grant a patent for this application. Under section 41 of the *Patent Act*, the Applicant has six months to appeal my decision to the Federal Court of Canada.

Johanne Bélisle
Commissioner of Patents
Dated at Gatineau, Quebec,
this 20th day of September, 2018