

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

ORACLE CORPORATION,
Petitioner,
v.
JOSEPH L. DE BELLIS,
Patent Owner.

U.S. Patent No. 6,760,720
Case No. IPR2024-00221

REPLY DECLARATION OF EREZ ZADOK, Ph.D.

I, Erez Zadok, Ph.D. declare as follows:

I. INTRODUCTION

1. I have been retained by Oracle Corporation (“Oracle”) as an independent expert consultant in this proceeding before the United States Patent and Trademark Office (“PTO”). I am not an employee of Oracle or any affiliate or subsidiary of Oracle.

2. I have been asked to reply to certain of the opinions set forth in an October 21, 2024 response submitted by Patent Owner in an *inter partes* review proceeding relating to U.S. Patent No. 6,760,720, which I refer to herein as the ’720 patent.

3. I am being compensated at my current standard consulting rate, plus reimbursement for any reasonable expenses. My compensation is based solely on the amount of time that I devote to activity related to this case and is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other financial interest in this proceeding.

4. The prior declaration I submitted in connection with this proceeding, which I understand has been designated as Ex. 1003, sets forth among other topics my educational background and professional experience (Ex. 1003, ¶¶ 7-29), my understanding of the law (*id.*, ¶¶ 34-56), the ’720 patent’s effective filing date and

the knowledge and characteristics of a person having ordinary skill in the art (*id.*, ¶¶ 57-63), and certain claim construction opinions (*id.*, ¶¶ 144-145).

5. In forming the opinions set forth in this declaration, I have considered and relied upon my education, knowledge of the relevant field, knowledge of scientific and engineering principles, my work with those of ordinary skill at the time of the alleged invention, and my general experience in the field of art. I have also reviewed and considered the materials listed in my prior declaration (*id.*, ¶ 33), Patent Owner’s Response (Paper 13) in this proceeding, and the following materials to the extent relevant to my opinions:

Exhibit	Description
2001	First Declaration of Dr. Joseph L. De Bellis, M.D.
2003	Second Declaration of Dr. Joseph L. De Bellis, M.D.

6. In his Response, Patent Owner takes the position that various claim limitations—including those requiring ***“determining a database schema,”*** ***“providing a list of the database fields,”*** and ***“determining a quantity of entries in the selected database field”***—require what Patent Owner calls a “dynamic search engine” and exclude any search system that is “preconfigur[ed]” to “match the existing structure of the database to be search.” Response at 13.

7. In my opinion, the claims do not require the type of “dynamic search engine” referenced by Patent Owner (*i.e.*, one that is not “preconfigured” to match

the database). But even if such a “dynamic search engine” were for some reason a claim requirement, both Cochran and HyperSQL teach systems that are “dynamic” in the same way as the system referenced in the ’720 patent.

8. Independent claims 1 and 3 of the ’720 patent are directed to a “method ... for searching databases.” *See* Ex. 1001, claims 1, 3.

9. Claim 1 requires “*determining a database schema*” and then “*providing a list of the database fields*.” Claim 3 includes similar limitations.

10. Besides requiring performance of the steps, however, the claims do not include any further limitations regarding how the steps must be performed.

11. For example, there is no requirement in the claim that the “determining” and “providing” steps must be done “dynamically,” or cannot be the result of the performance of some preconfigured process.

12. Indeed, I note that the term “dynamic” does not appear in either claim 1 or claim 3. The term “dynamic” is also not used in the specification when discussing how the ’720 patent’s system operates.

13. Claims 6 and 35 are the only claims (and the only part of the ’720 patent) using the word “dynamic.” Both claims provide that the “the specified limit is determined dynamically” in relation to adapting information to be displayed to a display’s capabilities/characteristics. In other words, the only time “dynamic” is used in the claims is in relation to adapting to a display’s characteristics. I discuss

why the prior art renders this obvious in my prior declaration (Ex. 1003) at ¶¶ 240-244. The '720 patent does not, however, state that claim 1 and 3's determination of a database schema or provision of a list of database fields must be performed "dynamically." In other words, while Patent Owner employed the word "dynamic" in some claims, he did not do so in either claim 1 or claim 3. This, in my opinion, further confirms that the claims are not limited to "dynamic" systems.

14. The '720 patent does appear to include some examples of how its system may go about determining a database's schema and then provide database fields. For instance, in one example, a "search engine ... may identify a database schema ... using a trial and error process...." Ex. 1001, 5:4-6.

15. This, however, is simply meant to be an example. The patent explains that any "other techniques [known] in the art" can also be employed to determine a database schema. Ex. 1001, 5:4-6. A POSITA would have clearly understood that "any other technique" may encompass both static and dynamic techniques, among others.

16. In another example of database schema determination and the provision of database fields, database "information 161" can simply be received "from the database driver 170" and then used to "provide[] a list 163 of available data fields...." Ex. 1001, 4:60-64. This functionality may be entirely "incorporated into the structure of ... the database[]" itself. *Id.*, 4:15-21.

17. Reading this passage, a POSITA would have understood that in the '720 patent, “determining” a database schema and then “providing” a list of database fields as claimed can entail the database accessing its own organizational structure (or an application accessing the database) and then relaying information to another location (such as a user’s location). This appears to be the very type of non-dynamic, preconfigured process Patent Owner now seeks to read out of the claims.

18. As I explained in my opening declaration, both Cochran (*see* Ex. 1003, ¶¶ 178-184) and HyperSQL (*see id.*, ¶¶ 324-332) disclose embodiments that operate in the same way as discussed in the '720 patent: a database relays organizational structure information to another location during searching.

19. Next, even if the claims did require “dynamic” operation and exclude systems that are “pre-configured,” a POSITA would have understood that both Cochran and HyperSQL would still teach what the claims require. Both teach flexible, adaptable systems. Neither reference is limited to a “pre-configured” system as Patent Owner appears to argue.

20. More particularly, rather than limiting itself to a static, pre-configured search system, Cochran repeatedly explains that its system is different from “typical single-hierarchical search systems[]” that employ a “predetermined” search procedure. Cochran, 2:34-3:65.

21. In other words, instead of forcing users to always follow the same “predetermined” search, Cochran “enable[s] a user to view different lists of choices, or search terms, that are available in a unique search situation.” Cochran, 4:20-22.

22. Further, per Cochran, its system is designed such that “[o]nly choices or search terms that are actually available are presented to the user.” Cochran, 4:29-30.

23. This allows the system to “take[] into account the information that is available in the database ... during a particular search.” Cochran, 4:44-46.

24. In view of this, a POSITA would have understood Cochran’s system to be *dynamic*. Rather than being pre-configured and static, in Cochran the database information and search options presented to a user at the time of searching are specifically tailored to reflect the organizational structure of and data within the database.

25. I recognize that Cochran does include an example where its system is used to search a “database ... known by the trade name ‘TRAVEL SEARCH’™” that “consists of database records of more than 13,000 hotels, resorts, and inns in the United States.” Cochran, 6:58-64.

26. A POSITA would have recognized, however, that Cochran’s system is not intended to be limited to just this one database.

27. Cochran itself states this, explaining that it is directed to “user-friendly method of searching computer databases.” Cochran, 4:2-6 (emphasis added).

28. Cochran also references other databases, including a “phone directory,” “a database of products that are for sale,” and a “general information database.” *See* Cochran, 1:26-29, 2:24-57, 2:59-3:4.

29. A POSITA would have understood that when Cochran is applied to search these other databases, the search interface presented to the user would be different. Because the databases include different organizational structures and data, different list indexes will be generated and provided during searching and a different search interface with different search options relevant to the database will be presented to the user for searching.

30. In my opinion, a POSITA also would have recognized that Cochran contemplates that the search interface for the TRAVEL SEARCH database can itself vary.

31. For example, in one location, Cochran explains that the interface presented to a user when searching this database may include only four list identifiers: “Start of Travel,” “Number of People,” “Location,” “Lodging Type,” and “Lodging Name.” Cochran, 7:21-24.

32. In other places, however, Cochran discusses the provision of additional categories of information such as “Amenities” and “Price.” Cochran, 8:59-65; *see also id.*, Fig. 3a.

33. In yet other places, Cochran references search interfaces displaying different set of identifiers: “State Name,” “City Name,” “Hotel Name,” and “Price.” Cochran, Fig. 10a.

34. Further, the selectable options within each of the displayed database fields/identifiers is likewise adapted to match what is stored within the database. *See* Cochran, 11:49-50, 11:56-57, 13:50-55.

35. Based on these disclosures, a POSITA would have recognized that Cochran’s system (1) adapts the search interface to match the database’s identifiers (*i.e.*, it can list amenities and price if the database is so organized) and (2) limits the selectable options within each category to match whatever data is present in the database (*i.e.*, only available options will be displayed in a pulldown list).

36. Because it operates in this way, a POSITA would understand that Cochran’s system does in fact dynamically adapt to the database being searched: the user is provided with a search interface that reflects how data in the database is organized and takes into account the categories of information within the database.

37. HyperSQL also is not limited to a “static” and unchanging search system. It—like the system taught by Cochran—is intended to be tailored to the database in question.

38. In particular, HyperSQL is designed to allow users to search multiple “remote Sybase databases” without having to “look up the names of tables and data items.” HyperSQL, 329.

39. These biological databases were created by different entities at different times (*e.g.*, government organizations, researchers, etc.). I have developed, researched, taught, and managed databases for many years (*see* Ex. 1003, ¶¶ 7-29, qualifications section). In my experience, such databases are likely to have fairly different structures and schemas, because there is often little to no coordination among their creators. This is why HyperSQL is valuable, because it dynamically merges the structures and contents of disparate databases into a unified, coherent view that’s convenient for the end users.

40. While the paper discussing HyperSQL does include exemplary images generated while searching one particular database, a POSITA would readily understand—in view of HyperSQL’s statement to this effect—that the system is meant to apply to various different databases. Indeed, that is the entire purpose of HyperSQL’s system: to provide a flexible, adaptable system that allows for

searching of different databases without specific technical knowledge regarding how that database is structured and operates.

41. Moreover, HyperSQL allows for generation of a query form that adapts to the database being searched by “presenting” the user with “introductory information about the database and displaying a list of queries, organized by subject” corresponding to the database’s organizational structure. HyperSQL, 330.

42. In other words, rather than providing a fixed, static search interface, HyperSQL instead provides a user with information about the database being accessed (such as its organizational structure and the fields of data available) and automatically queries the database based on user selections. HyperSQL, 329-330.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willfully false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1101 of Title 18 of the United States Code.

Date: January 17, 2025

Location: Stony Brook, New York

Signature: 
Erez Zadok, Ph.D.