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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* BEDA CHRISTOPH HAMMERSCHMIDT, ZHEN HUA LIU,  
GEETA ARORA, and THOMAS BABY

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Appeal 2015-008213  
Application 13/172,573<sup>1</sup>  
Technology Center 2100

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Before ERIC S. FRAHM, JENNIFER L. McKEOWN, and  
SCOTT B. HOWARD, *Administrative Patent Judges*.

McKEOWN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner’s Final Rejection of claims 1–13. App. Br. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

Appellants’ invention is directed to “[a] method and apparatus for automatically analyzing and providing feedback regarding the optimizability of a relational database query.” Abstract. In particular, “the present

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<sup>1</sup> The real party in interest is Oracle International Corporation.

invention is addressed to providing tools to help query developers write optimizable queries.” Spec. ¶ 1.

Claim 1 is illustrative and is reproduced below:

1. A method comprising:
  - generating a query plan for executing a query conforming to a database language;
  - wherein generating a query plan includes:
    - incorporating one or more operators into the query plan, wherein each of the one or more operators comprises a primitive operation; and
    - generating query plan formation data that specifies one or more factors causing the incorporating of said one or more operators in the query plan;
  - based on one or more criteria, generating query plan display output that includes for each operator of said one or more operators:
    - output identifying said each operator; and
    - output identifying a factor of said one or more factors causing the incorporating of said each operator in the query plan;
  - wherein the method is performed by one or more computing devices.

#### THE REJECTIONS

Claims 1–9 and 13 are rejected under 35 U.S.C. § 103(a) as unpatentable over Bossman (US 2003/0182276 A1; pub. Sept. 25, 2003) and Larson (US 8,560,523 B2; filed June 26, 2008). Final Act. 5–11.

Claims 10–12 are rejected under 35 U.S.C. § 103(a) as unpatentable over Bossman, Larson, and Manikutty (US 7,120,645 B2; Oct. 10, 2006). Final Act. 11–14.

## ANALYSIS

### THE OBVIOUSNESS REJECTION BASED ON BOSSMAN AND LARSON

#### *Claims 1–9 and 13*

Based on the record before us, we are persuaded that the Examiner erred in rejecting claims 1–9 and 13.

Appellants assert that Bossman and Larson combined fails to teach or suggest (1) generating query plan formation data that specifies one or more factors causing the incorporating of said one or more operators in the query plan and (2) generating query plan display output including, for each operator of said one or more operators, an output identifying a factor of said one or more factors causing the incorporating of said each operator in the query plan. App. Br. 13–15; Reply Br. 4–6. For example, Appellants contend that

the output of Bossman includes “specific recommendations such as new indexes, different join methods, table spaces, etc.” However, these are only general recommendations to address “common causes of SQL performance problems”, as identified by the Office Action on page 7. In contrast, Claim 1 specifically requires that the output identifies a **factor that causes an operator to be incorporated into the current query plan**. None of the art of record, singly or in combination, teach or even suggest this limitation.

App. Br. 15.<sup>2</sup> Similarly, Appellants point out that neither Bossman’s explanation information nor Bossman’s “more detailed analysis of the base access plan” by the estimates validator or the query analyzer identify “a

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<sup>2</sup> We note that Appellants also assert that Larson fails to teach this limitation. The Examiner, however, merely relies on Larson for teaching an output identifying *each operator*, not the recited factor that causes an operator to be incorporated into the current query plan. See Final Act. 7–8.

factor of said one or more factors causing the incorporating of said each operator in the query plan, or otherwise give any reason why any particular operator was incorporated in any particular query plan.” Reply Br. 5–6; *see also* Reply Br. 4–5 (noting that the Examiner’s rejection identifies “numerous factors” but fails to focus on the recited claim language).

We find Appellants’ arguments persuasive. Bossman describes a visual plan hint component that generates an explanation of the query in a graphical user interface (GUI) to display or output to administrators. The visual plan hint component also displays visual plan optimization hints and other suggested modifications. Bossman ¶¶ 37–38; *see also* Bossman ¶ 36 (noting that the visual plan hint may further provide, for example, component level modification of an access path, assistance with optimization hint problem determination, and generation of a partial or complete optimization hint).

We understand the Examiner’s rejection to be that the visual plan hint component output of these various factors, such as the query explanation and suggested modifications, either alone or in combination satisfy the limitation of an output, for each operator, identifying a factor causing the incorporating of said each operator in the query plan. *See* Final Act. 6–7; Ans. 14–16. Notably absent in the Examiner’s rejection, though, is sufficient explanation as to how these generally described outputs read on identifying, *for each operator*, a factor *causing the incorporating of each operator* in the query plan or that it would have been obvious to a skilled artisan at the time of the invention. In other words, we agree with Appellants that the general

teaching of outputting “explanation information” or “recommendations”, without more, fails to satisfy the recited output limitation.

Similarly, while Bossman describes generating explanation information for a base access plan and using that information for further analysis to provide recommendations on how to improve a query plan (Bossman ¶¶ 32, 38), the Examiner fails to sufficiently identify how Bossman’s general reference to explanation information and other intermediate analysis results, such as estimation errors, performance problems, etc., satisfy the limitation of query plan formation data that specifies one or more factors causing incorporating of said one or more operators into the current query plan. *See, e.g.*, Final Act. 6. As such, we are persuaded, based on the current record, that the Examiner erred in finding that the combination of Bossman and Larson teach or suggest the generating query plan formation data and an output identifying a factor limitations, as recited in claim 1.

Accordingly, we do not affirm the rejection of claim 1 as well as claims 2–9 and 13 depending therefrom, as unpatentable over Bossman and Larson.

## ANALYSIS

### THE OBVIOUSNESS REJECTION BASED ON BOSSMAN, LARSON, AND

### MANIKUTTY

### *Claims 10–12*

Each of claims 10–12 depend indirectly from claim 1. The additional cited prior art reference here, Manikutty, does not cure the deficiencies of the combination of Bossman and Larson discussed above. *See, e.g.*, Final.

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Act. 11–12. As such, for the reasons discussed above, we find that the Examiner erred in rejecting claims 10–12.

Accordingly, we do not affirm the Examiner’s rejection of claims 10–12 as unpatentable over Bossman, Larson, and Manikutty.

DECISION

The Examiner’s decision rejecting claims 1–13 is reversed.

REVERSED