

## **ODBMS.ORG User Report No. 14/08**

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Category: **Academia**

Domain: *Research/Education*

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Tore Risch is Professor of Database Technology at Uppsala University (Sweden) where he leads the Uppsala DataBase Laboratory (UDBL) research group. He was previously Professor at Linköping University (Sweden). Before Linköping he was staff member in the Database Technology Department at Hewlett-Packard Laboratories (Palo Alto, California), and Visiting Scholar from HP in the database group at Stanford University.

*Q1. Please explain briefly what are your application domains and your role in the enterprise.*

**Tore Risch:** Development of software for scalable search in data sources of different kinds.

*Q2. When the data models used to persistently store data (whether file systems or database management systems) and the data models used to write programs against the data (C++, Smalltalk, Visual Basic, Java, C#) are different, this is referred to as the "impedance mismatch" problem. Do you have an "impedance mismatch" problem?*

**Tore Risch:** We have developed software to bridge the impedance mismatch.

*Q3. What solution(s) do you use for storing and managing persistence objects? What experience do you have in using the various options available for persistence for new projects? What are the lessons learned in using such solution(s)?*

**Tore Risch:** We are using relational databases and other data repository systems as back-ends and provide an object-oriented query language interface to existing back-end repositories from several programming languages.

*Q4. Do you believe that Object Database systems are a suitable solution to the "object persistence" problem? If yes why? If not, why?*

**Tore Risch:** It is not sufficient to have only a navigational interface to a particular object-oriented programming language. There is need for a query language and a query optimizer for scalable processing of queries over the back-end repositories. Furthermore, there is need to decouple the data model in the back-end from the data model in the query language. One should not enforce programming applications using a particular programming language when searching for data of each different kind. Instead one should have an architecture where different kinds of data sources using different data model can be hooked up and transparently viewed and queried in a 'mediator'.

There should of course be transparent interfaces to the common object-oriented programming languages used today such as Java, C++, Ruby, Python, and C#. When new programming languages come along only new programming language interfaces need to be rewritten, but not the interfaces to the repositories and the (object-oriented) view and query definitions over the repositories.

*Q5. What would you wish as new research/development in the area of Object Persistence in the next 12-24 months?*

**Tore Risch:** There is more need for less strict models to represent and query data as well as systems to dynamically translate between data models. For example, when modeling information it is not always possible or desirable to order everything in a strict class hierarchy. It must be possible to search efficiently across several existing data stores with different data models.

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