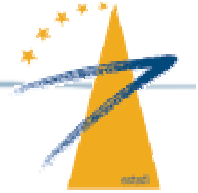


Dipl.-Inf. Dipl.-Ing. Bernd Reiner

Tertiary Storage Support for Large-Scale Multidimensional Array Database Management Systems

Knowledge Bases Research Group (R. Bayer, Ph.D.)

**Bavarian Research Center for
Knowledge-Based Systems (FORWISS)
Munich, Germany**



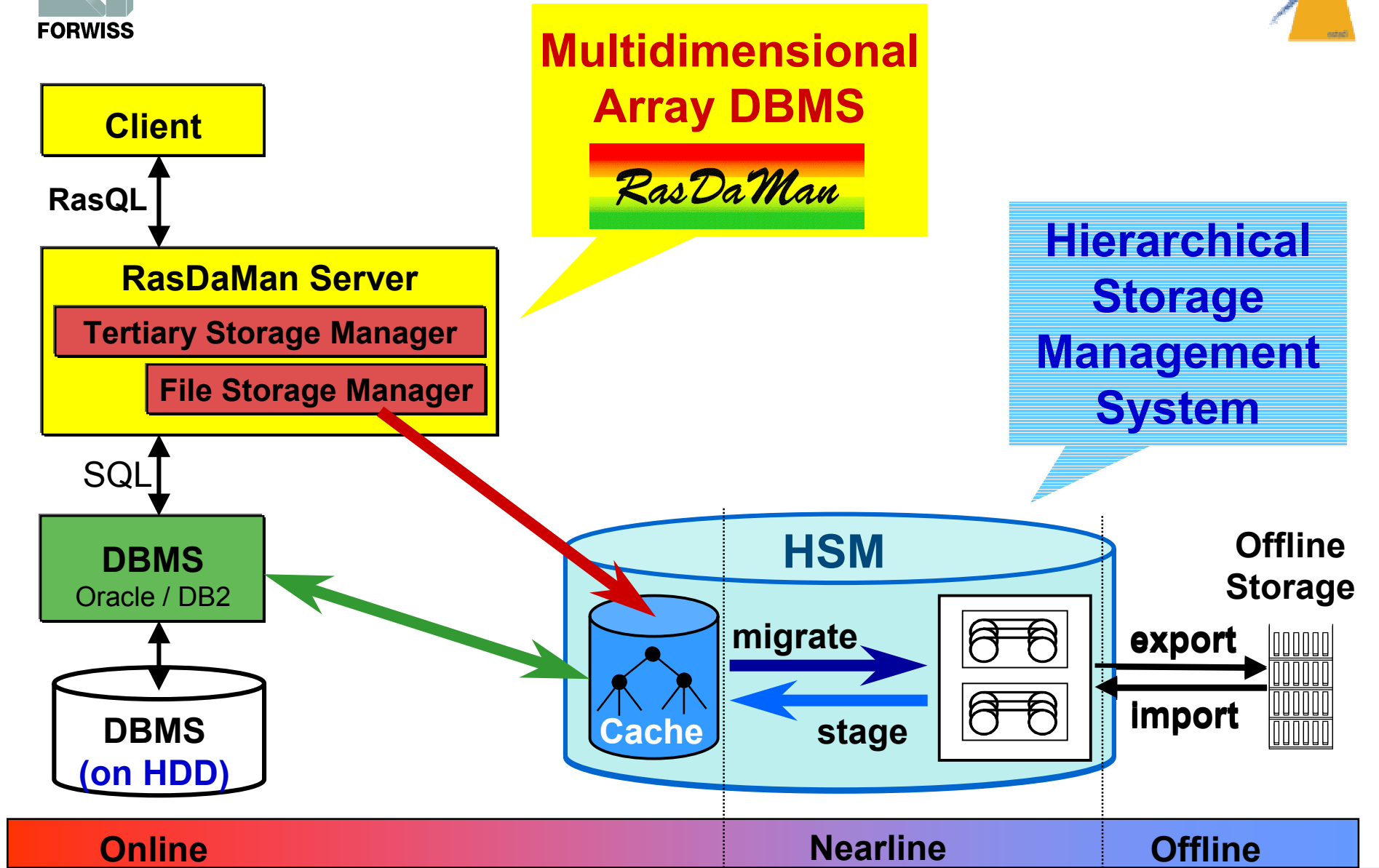
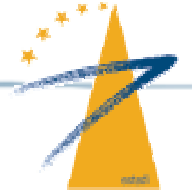
- Increasing amount of data (up to Petabyte)
- Hard disks too small/expensive to hold hundreds of Terabytes
- Typically data stored as files on Hierarchical Storage Management Systems (HSM-System, e.g. Tapes)
- With DBMS RasDaMan only subsets must be transferred instead of whole MDDs (files)



RasDaMan needs a connection to mass storage devices (for handling Terabytes)

- New functionalities of applications can be developed (e.g. WWW based access to data stored on tertiary storage media)

System Architecture





Multidimensional object (MDD)

▣ set of multidimensional tiles

➤ tile = subarray



Tiles stored in relational DBMS as BLOBs

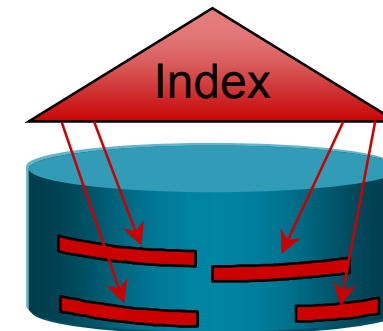
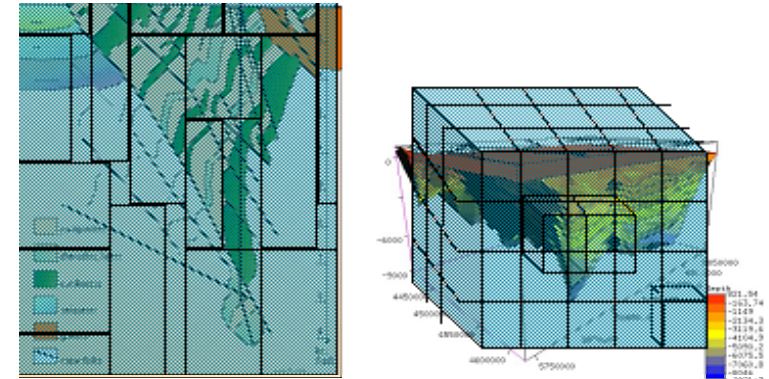
➤ multidimensional index (R+ tree)



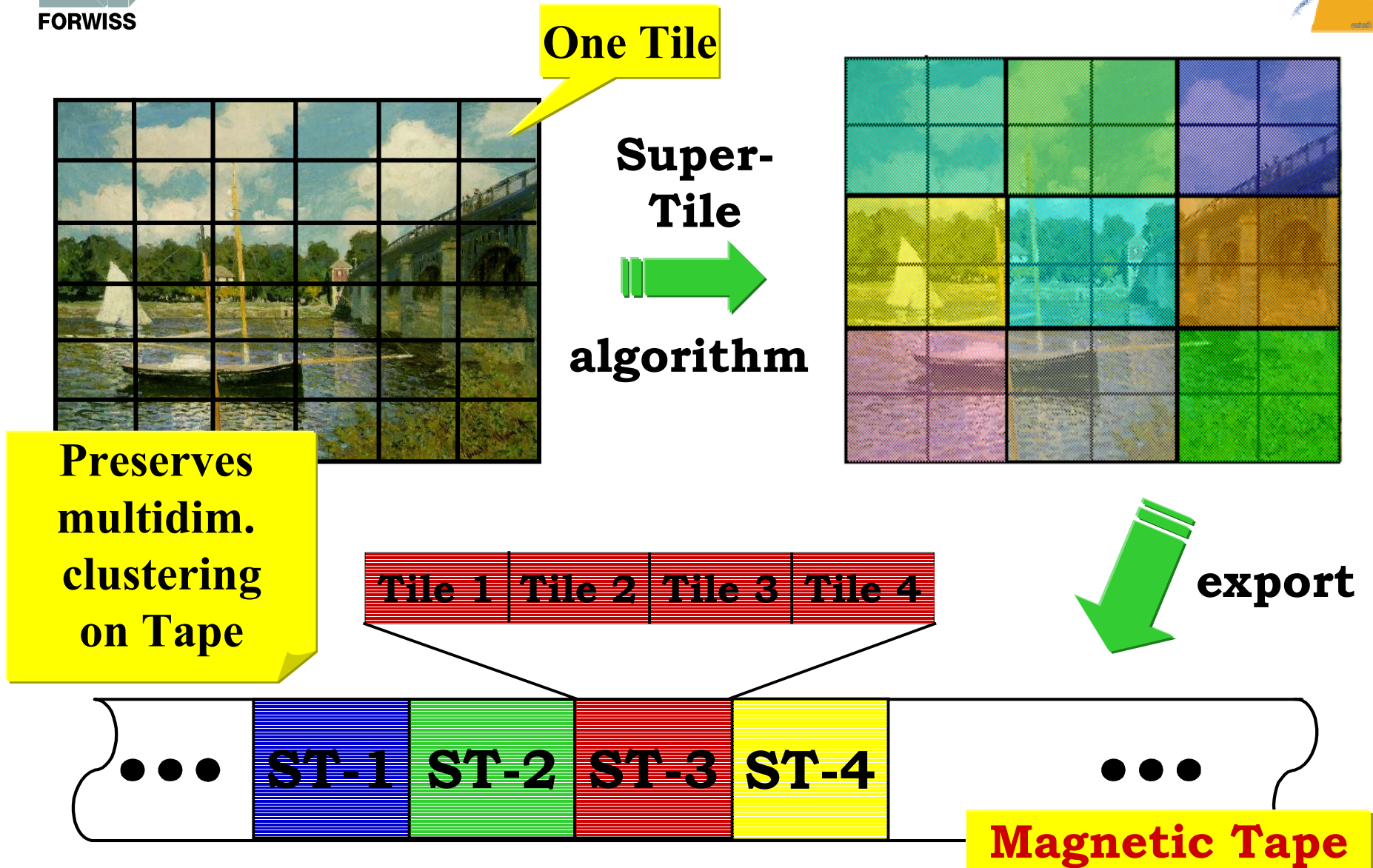
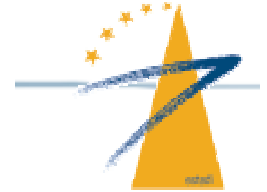
Access to subsets of MDDs

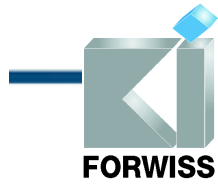


Multidimensional Query Language RasQL

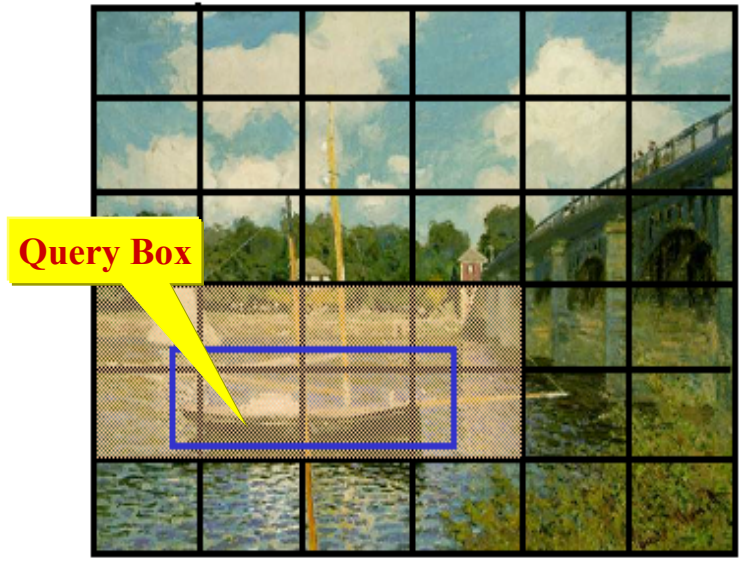


Export Data to Tertiary Media





Import Data from Tertiary Media



Compute required



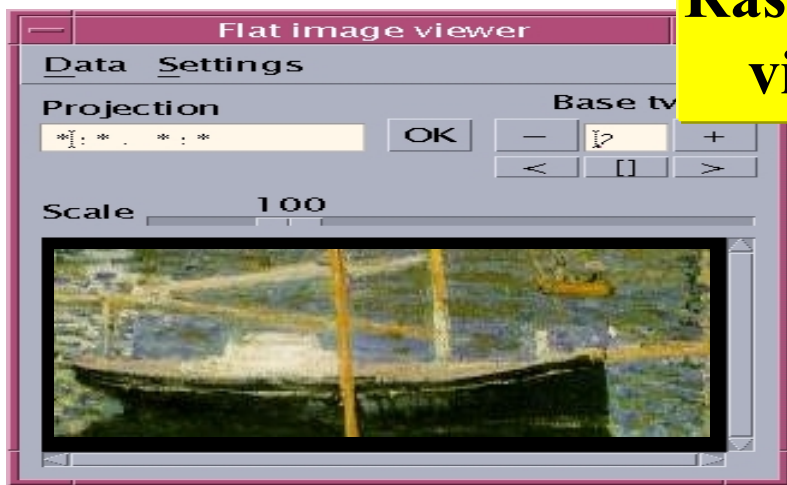
Super-Tiles



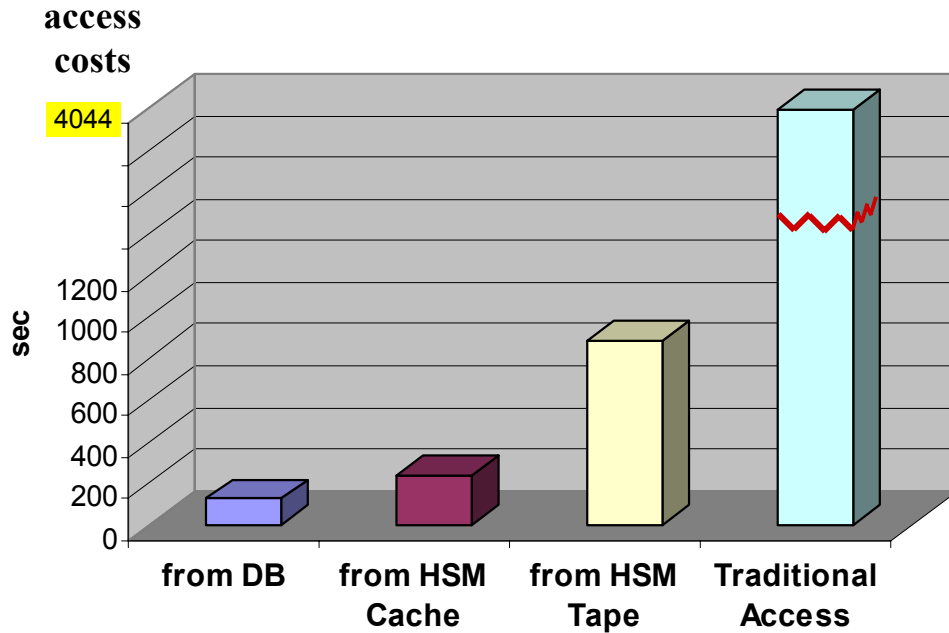
Import Super-Tiles from Tape



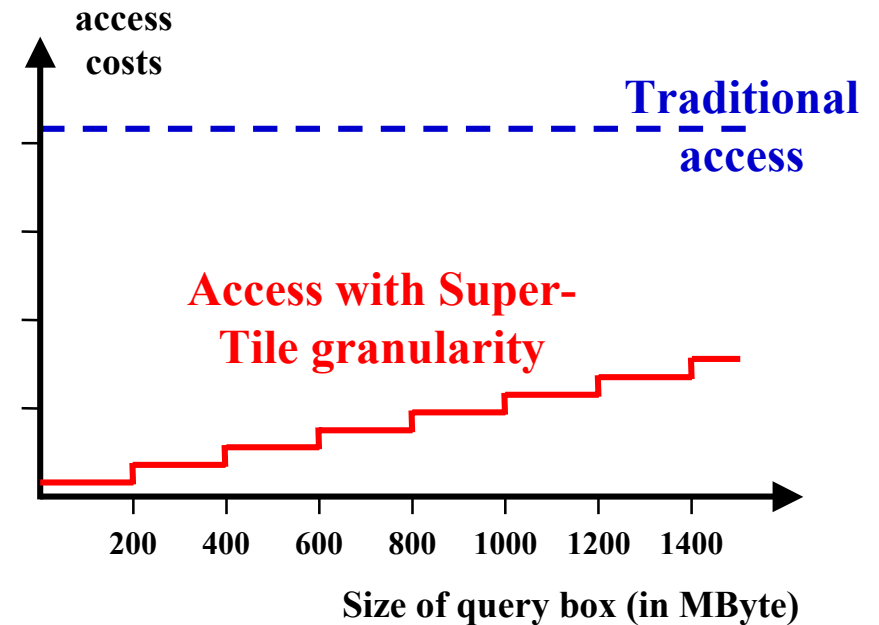
RasDaMan viewer



Fixed MDD size / Fixed Query Box



Fixed MDD size



The response time scales with the size of the query box, NOT with the size of MDD