

Oracle Database In-Memory feature at CERN

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About Emil

- Senior DBA at CERN
 - First joined CERN in 2000, staff member as of 2012
- Previously DBA team lead at Hewlett-Packard Poland
- 16 years of experience with Oracle databases
- Specializes in:
 - High availability solutions – RAC, Data Guard
 - Database performance and testing
 - Oracle In-Memory
 - Data warehousing



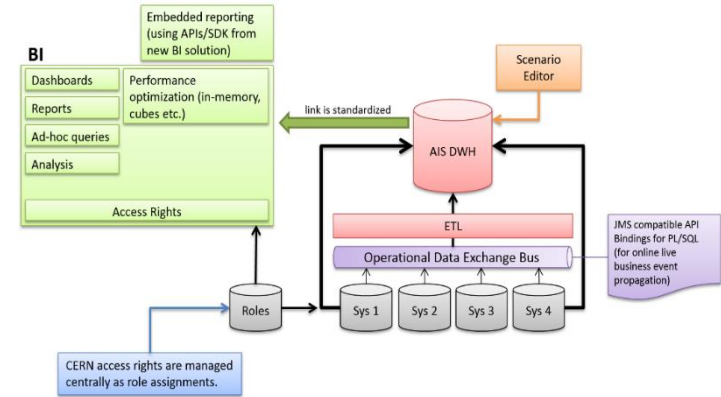
About CERN

- CERN - European Laboratory for Particle Physics
- Founded in 1954 by 12 countries for fundamental physics research – Higgs boson discovery in 2012
- Today 22 member states + world-wide collaborations
 - About ~1000 MCHF yearly budget
 - 13000 employees and users from 110 countries
- Over 100 Oracle databases, mostly RAC
 - Running Oracle 11.2.0.4 and **12.1.0.2**
 - 750 TB of production data files, NAS as a storage



Administrative Data Warehouse

- Currently in production, uses In-memory feature
- Supports CERN reports, dashboards and data analytics
 - HR data and personal records
 - Financial data, orders/purchases
 - Resource usage planning
 - Electronic recruitment and others
- Unique data source for all BI applications – for data consistency
- Bi-temporal data model – full change tracking



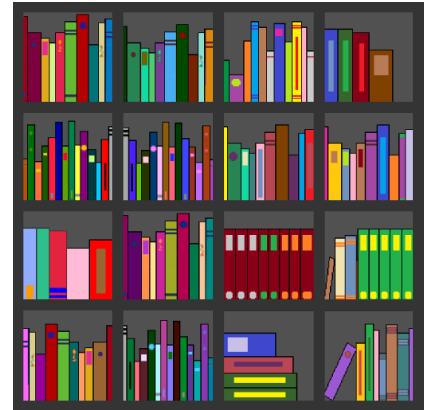
Reporting Before In-memory

- Many different reporting / analytics applications
 - Completely separated for performance reasons
 - Data model optimized for each application
 - Data consistency was a serious issue
- Maintenance cost was huge
 - Several teams of developers + DBAs
- Performance far from satisfactory
 - Some complex queries used to run for hours
- Simply speaking – **it was a mess!**

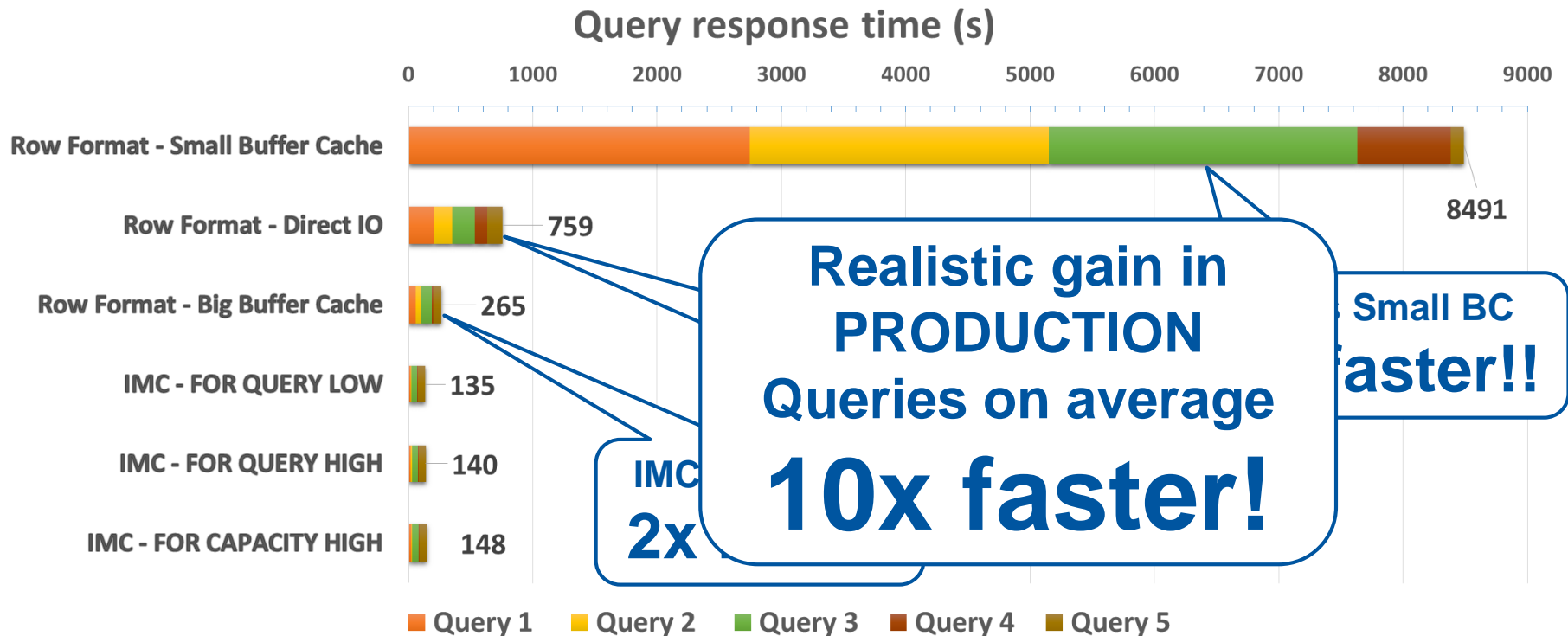


Reporting with In-memory (ADW)

- **In-memory** – natural choice for BI applications
- Early tests at CERN (12.1 beta) *very promising*
 - Purchased license in December 2014
- Unified *Administrative Data Warehouse* only possible with In-memory
 - Designed specifically for In-memory
 - In production since July 2015
- Greatly improved performance!
- Significantly reduced maintenance cost

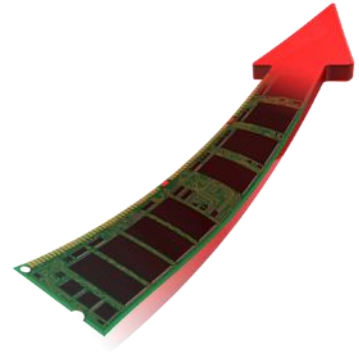


ADW In-memory Benefits



In-memory – Conclusion

- Use for **Business Intelligence, Data Warehousing, Data Analytics** and **Reporting**, including ad-hoc
- Biggest benefit for very wide tables and when queries select only few out of many columns
- Queries scan big data sets – full table scan
- Data sets fit entirely in memory (compressed)
- Big performance boost guaranteed for such use-cases!
- Simplification! also reduces maintenance costs



Thank you for your attention!

