Pragmatic Solutions for BI Architecture

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Oracle BI Symposium, London March 11th 2009
Introducing Rittman Mead Consulting

- Oracle BI&W Architecture and Development Specialist
- Co-Founder of Rittman Mead Consulting
  - Oracle BI&W Project Delivery Specialists
  - Clients in the UK, USA, Europe, Middle-East
- 10+ years with Discoverer, OWB etc
- Oracle ACE Director
- Writer for OTN and Oracle Magazine
- Longest-running Oracle blog
  - http://www.rittmanmead.com/blog
- Ex-Chair of UKOUG BIRT SIG
- Co-Chair of ODTUG BI&DW SIG
- Editor of “Oracle Scene”
- Speaker at IOUG and BIWA events
Components of a BI & Data Warehousing Architecture

- Storage
- Hardware & OS
- Database Server
- OLAP
- Query tools
- Metadata
- Security
- Ability to upgrade, replicate, clone, disaster recover
BI & Data Warehouse Architecture Decisions

- Do I actually need a data warehouse?
- What sort of hardware do I buy?
- Where do I store all my data?
- Do I go for 64-bit servers?
- Do I use OLAP?
- How do I get data in?
- What do I use to report on my data?
Now, let's look at another world - the world of the Business User

- They want to be able to get answers, now
- In as easy a form as possible
- With as little upfront work as possible from themselves
- And with the ability to change their mind as they go along
- And they want it tomorrow
- And they're certainly not interested in all this architecture nonsense
What they want is often quite different to the DW architect wish list

- They want it in Excel
- They want to be able to print it out and give it to their boss
- They want a flexible data model (or even worse, to load it all into Access)
- They want a continuous process from analysis through to planning and consolidation
- And they want to plug it into EBS and have it working tomorrow
A Pragmatic Oracle BI&DW Architecture

- One that puts the data at the centre
- But that is driven by user requirements and user priorities
- Based around Oracle’s latest enterprise BI, DW and performance management tools
- Is flexible, allows you to develop in an agile way but with an eye to a sustainable architecture
- Takes advantage of new agile developments in how BI is delivered
Major components

Security

Data Sources

Information Sources

Data Warehouse

Information Management

“Data Warehouse”

ETL, Messaging and Metadata

BI / PM Tools

Information Access
Major components - data sources
Many DW designers take a “one or the other” approach to design
Kimball-style star schemas are good for providing information access
Inmon-style 3NF / CIF designs are good for storing and preserving data
Ideal approach is to combine the two
- 3NF “atomic storage layer” to preserve a process-neutral view of data
- Star Schema “access and performance layer” to provide optimized access to data
Major components - information management
Integrating Pre-Build Data Warehouses with the Core DW Architecture

- An option when building the data warehouse is to leverage pre-build models
- Useful for providing the core elements of your DW
- Fast deployment, also puts in place design standards
- Ideal scenario is that the pre-built model covers the generic parts of your business
- This is then extended out by the customer to cover the unique parts of the business
Major components - information access
Self-Service One-Stop Shop for Reporting and Analysis

- Users need self-service access to their data
- A core of standard reports, plus the ability to create their own
- A single place to bring together reports, analysis and planning
- Single sign-on
- Integration with MS Office
- Protection from changes to the underlying data sources
Pervasive BI through Business Processes and Applications

- Business intelligence insights delivered directly within your application
- Reports, metrics, graphs embedded within an application page
- Metrics and KPIs available to business processes
Major components - Master Data Management
Master Data Management - A Separate Process or Part of the DW?

- Master data refers to the reference data for the organization
  - Customers, products, geographies etc
- Historically, often maintained as part of the data warehouse
  - Leverages DW functionality such as ETL, mapping, consolidation
  - However the DW is not traditionally good at pushing changes back to the sources
- Consider MDM as a separate, upstream process
  - Manage reference data alongside your applications
  - Become central source of reference data
  - Primary data source for DW dimensions
Major components - Load from sources
Major components - To Data Warehouse

Data Sources
- Syndicated/External
- Unstructured Data
- Master Data
- Operational Systems
- COTS

Staging Layer
- Temporary Loading Structures
- Rejected Data

Foundation Layer
- Process neutral 3NF model

Access and Performance Layer
- Embedded Datamarts, MV's, AW's, Views, C/TAS...
- Analysis Sandpit
- BI Applications Data

ETL, Messaging and Metadata

Security

Performance Management Apps
Web Services
Alerts
Dashboard
MD-Analysis
Reports
Query
Advanced Analysis Tools
ETL: Batch, Real-Time or Mini-Batch?

- ETL is no longer just about daily batches
- Data warehouses are now often operational systems, need an up-to-date view of data
- Active data warehousing and real-time data warehousing now possible
  - Changed data capture
  - Streams, queues and Enterprise Service Bus
  - Real-time Integration
  - Federated queries
Data Quality - When and Where?

• Handling data quality is a continuous and key process
• Data profiling to understand the nature and quality of your data
• Data cleansing and standardization to provide data that can be trusted
• Filter out data before it’s loaded
• Add cleansing routines into the ETL process
• Alerts and continuous monitoring
• Make use of MDM upstream to provide a source of pre-integrated and cleansed reference data
Major components - Information Provisioning
Oracle BI Server Protects Against System Consolidation or Change

- This pragmatic BI&DW architecture is facilitated by two key OBIEE features
  - Federated query, can source data from DW and multiple other sources
  - Presents data to users as a single logical model
  - Logical model’s physical data mapping can evolve over time, preserving reports
Major components - Security

![Diagram of Major components - Security](image-url)
End-to-End Security Across the BI Architecture

- Security needs to be “baked in” to the architecture right from the start
- Pervasive across the data warehouse, BI tools, planning tools
- Enabled by a common middleware framework
- Single sign-on, single identity
- Provisioning process, leverage corporate directory (LDAP, AD etc)
- Access profiles for data
- Synchronized with corporate on-boarding and promotion process
Conclusions

- In the future, Oracle BI&DW architectures will be able to satisfy both IT & business needs
- A pragmatic approach to building the BI solution
- Based around data
- Driven by users
- A flexible architecture that can adapt as requirements evolve
- Oracle have the range of products to meet these requirements
- Rittman Mead have the experience to get it working
- Speak to us after the event to find out how
- Or contact me at mark.rittman@rittmanmead.com, +44 7866 568246
- Thank you for listening, enjoy the rest of the event