

Database Suitability Assessment and Framework Manager Best Practices

to New England Cognos Users Group
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Agenda

- Background/Introductions
- Organization At MassMutual
- Database Suitability Assessment
- Framework Manager
- Questions
- Resources

Speakers

- Isaac Stein- Massachusetts Mutual Life Insurance Company
 - Systems Consultant – (Enterprise Technology Organization)
 - Senior Framework Modeler
 - Database Modeler
 - Responsible for:
 - Creation of most Framework Models at MM
 - Review/ Oversight of Best Practices & Quality Control of all others
 - Author of Best Practices Guides for Modeling in distributed fashion
- Tim Kreytak – The Ironside Group, Inc.
 - CEO/Principal Consultant
 - >14 Years as a Cognos/BI/DW Consultant
 - Strategic Advisor to MassMutual around BI and Data Warehousing

MassMutual Overview

General Information...

Founded in 1851, Massachusetts Mutual Life Insurance Company (MassMutual), headquartered in Springfield, MA, is a leading mutual life insurance company that operates for the benefit of its members and participating policyholders.

- **MassMutual provides a range of quality products including:**

- Life insurance
- Disability income insurance
- Long-term care insurance
- Annuities
- Retirement planning products.

- **The MassMutual family of companies includes:**

- Babson Capital Management LLC
- Baring Asset Management Limited
- Cornerstone Real Estate Advisers LLC
- First Mercantile Trust Company
- MassMutual International LLC
- MML Investors Services, Inc.
- The MassMutual Trust Company, FSB
- OppenheimerFunds, Inc.

Key 2009 Accomplishments	
Insurance In-Force Worldwide	\$532 Billion
Assets Under Management ¹	\$420 Billion
Premium and other deposits ²	\$27 Billion

1. Assets under management include assets and certain external investment funds managed by our subsidiaries. All financial information is as of and for the year ended December 31, 2009.

2. Premium and other deposits include the premiums of our worldwide insurance operations and deposits made into certain external investment funds managed by our subsidiaries.

The Ironside Group

- Ironside is a northeast based consulting firm focused on helping it's customers leverage information as a strategic asset
- Competencies include:
 - Enterprise Business Intelligence
 - Performance Management
 - Data Warehousing
 - Cognos Training Public/Private
- IBM-Cognos Partner (since 1999) Software ValueNet Member
- HQ in Lexington, MA
 - Branch Offices in (Cleveland, OH and Deer Park, NY)
- Certified and Experienced Consultants
- Trusted, Flexible, and Dependable Partner
- IBM Premier Business Partner

Ironside/MassMutual Engagement

- Began in Mid 2007
- Focused on Building Enterprise Organization (BICC)
- MM Resources had very limited knowledge of Cognos 8
- Diverse assortment of BI/Reporting Tools at MM
- Engaged with Ironside as Strategic Partner to lead down the path
 - Establish Architecture, Governance, Best Practices
 - Plan and Execute Migration from Legacy BI tools to Cognos 8 platform
 - Lead initial engagements partnering with MM employees
- Ironside's role has evolved from heavily involved to an advisory position

BICC Drivers

- The MassMutual Enterprise BICC was formed under a Technology simplification mandate
 - Centralize Administration and Governance of BI Technology
 - Provide standard tools, process, and resources to enable reporting and BI throughout enterprise
 - Provide an single place for business information across company
 - Standardize elements of Developer and User Training to gain economies of scale, and allow reuse of resources across projects and organization
 - Provide an internal “Consulting Service” from Enterprise IT (ETO) to Business Unit IT
 - Remove burden of architecture and security infrastructure from BU IT reporting Projects

Database Suitability

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Database Suitability

- Reporting Engagement Process and concept of Database Suitability assessment
- Typical Reporting Project Engagement Model
 - Establish Project Scope
 - Triage
 - Establish Database Suitability for Reporting
 - Architecture / Design
 - License Management and Definition
 - Requirements Templates and Reporting Templates
 - Architecture and Framework Modeling Support
 - Code/Standards Review
 - Third Level Support

Establish Database Suitability for Reporting

- An often overlooked component of any reporting project is the organization, size, and optimization of the underlying database
- Ignoring this critical fact can lead to:
 - Impact on transactional (production) environment (response times, record locking)
 - Slow response times for reporting
 - Rework, once these non optimal affects are realized

Preliminary Steps for Reporting Engagement

- Preliminary reporting usage requirements are necessary:
 - Are reports required to have up to the minute data (real time)?
 - Can some reports be “as of” last night, last week, etc..?
 - Will the report show a subset of the records in a database, in a detail view, or will the reports typically summarize information across multiple entities
- Assessment should be focused on the following points:
 - Data Quality
 - Data Model (Normalized vs. Denormalized)
 - Indexing Schemes
 - Backup schedules
 - SLA’s

Database Suitability

- Database Size, Table sizes, Database Statistics
- Query volumes
- Update frequency (real time, daily, weekly.....)
- How many databases will be involved? Are they in the same environment? Are they compatible (what vendors)?
- Security model ?
- Data Quality?
- Is it a transactional or reporting database?
- Do the defined database(s) indexes provide the acceptable response time for reporting
- Is current scope, same as future state, or will requirements grow significantly?
- Could we redesign or augment existing database (add summary tables)
- Should we build a Data Mart, ODS or Data Warehouse?

Value of Database Suitability process

- Identify issues which will potentially cause delays
- Further best practices, utilizing:
 - Business Data Dictionary (Enterprise MetaData Management)
 - Enterprise Data naming standards / team involvement
 - BW / DataWarehouse
 - Reuse of existing work
 - Opportunity to educate staff on benefits of properly modeled databases for reporting purposes
- Deliver a more cohesive organized and consistent data strategy, while consolidating databases, and making reporting consistent, trusted and timely

Framework Modeling

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Final Preparation Steps

- Once you have a clear understanding of the target database, or databases you are in a position to begin the FM Modeling process.
- Before creating objects in FM, we recommend modeling in freehand on paper or a white board, to identify cardinality, outer join, aliases, joins and other idiosyncrasies of target databases
- Having a notional idea of security at this point will be helpful, in understanding strategy for any object (Query Subject) or data (Row/Column) security that will be required

Layered approach to modeling

- We recommend a multiple layer approach to FM Modeling
 - Database (or Physical) – Direct representation of database objects, joins (in every database but Teradata)
 - Logical – Contains organization, renaming, aliases tables, calculations, filters, summary joins, references Database Objects
 - Presentation – Contains subject areas specific short cuts to Logical Layer, organized by user community
 - Dimensional – Contains objects modeled on top of metadata based star schemas for DMR Reporting, references Logical Layer

Database Layer

- Create database or physical namespace
- Query Subject/Item names must be unique within namespace
- Use folders to organize tables or subject areas
- Direct import of database tables and fields
- In almost all cases do not change from “select * from tablename”
- Define/Validate Cardinality (see resources slide)
- We recommend not accepting/inheriting joins from database
- Manually define relationships/joins
- Define determinants
- Recommend database only processing where possible (set in properties of data source in FM)
- If normalized data source, think about building a virtual star schema to ease in report development

Logical Layer

- Create logical or business namespace
- Use folders to organize tables or subject areas
- Do not create data source query subjects here, if elements are not in physical layer, add them to physical layer and follow steps to define relationships
- Organize elements into logical query subjects
- Rename technical names into business friendly terminology
- Add derived fields, calculations, filters
- Arrange query items in a user friendly manner (possibly alphabetically)
- Validate output formats and usages
- Use search and set format across multiple objects easily
- Add prompts, cascading prompts and prompt based calculations
- 50 to 70 percent of modeling work occurs here.

Presentation Layer

- Create single or multiple presentation layer namespaces
- Use folders to organize tables or subject areas, or packages
- You may want to create separate presentation layers for developers vs ad hoc business authors (Greatly simplifying what you provide to users at first)
- Use shortcuts to logical layer query subjects, if not available create in logical layer and create shortcut here.
- Folders or namespaces are ways to organize content

Dimensional Layer

- Create dimensional layer namespaces
- Only effective when data sets are concise, and properly modeled
- To use this feature it may be necessary to clean up your data
- This feature is used to give the appearance of a cube, even with flat relational data.
- Built upon logical layer
- This effort is very similar to building an olap model, ie defining dimensions, levels, measures
- Don't attempt to rename or transform data here
- PowerPlay and TM1 Cubes use lightweight modeling where no modeling is done in FM, this is not the case with DMR

High Level Guidelines

- Remember the goal of an FM model is represent the database in way that is understood by the business
- If your report developers are struggling then likely your FM model needs work (or they need training 😊)
- If you are going to give your users QS or RS, then design less complex packages for them to start and learn with
- Even if your data is not dimensional, think dimensionally when designing a model, it will make it easier for report developers (although performance could suffer)
- Use hand coded sql sparingly, if at all
- FM Modeling is as much an art as it is a science
- All best practice is a guideline, not an rule, YMMV

Challenges we have faced in designing FM models at MM

- Normalized Databases
- Multiple Federated Databases
 - Combining OLAP and relational databases in same model
 - Combining different relational in same model (Sybase/DB2)
- Resolving Data Quality Issues
- Resolving poorly modeled or optimized databases

Final thoughts

- Each FM model will likely require unique application of best practices and common sense
- The goal of a model/package is to deliver a business friendly view of information to report developers and business authors that yields predictable performant results
- Understanding of the business need coupled with knowledge of how Report Studio/Query Studio uses the metadata created in FM, will result in a more successful solution

Questions?

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Resources

■ Best Practices from Ironside Group:

- <http://www.ironsidegroup.com/2010/07/08/best-practices-in-cognos-8-framework-manager-model-design/>
- <http://www.ironsidegroup.com/2010/08/01/best-practices-in-cognos-8-framework-manager-model-design-part-2-%E2%80%93-advanced-modeling-issues/>

■ Best Practices from IBM:

- <http://www.ibm.com/developerworks/data/library/cognos/modeling/design/page496.html>
- <http://www.ibm.com/developerworks/data/library/cognos/page60.html>
- http://publib.boulder.ibm.com/infocenter/c8bi/v8r4m0/index.jsp?topic=/com.ibm.swg.im.cognos.ug_best.8.4.0.doc/ug_best_id79bp-relational_modeling_concepts.html

■ Training:

- <http://www.ironsidegroup.com/2010/08/25/ibm-cognos-8-framework-manager-fundamentals-and-advanced-training-nov-2010/>
- <http://www.ironsidegroup.com/services/ibm-cognos-training/>

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