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IBM Software

## Innovate2011

The Premier Event for Software and Systems Innovation







## Software drives today's innovation for a smarter planet Transforming the way we live, work, and play







What is required to monitor and improve your software delivery capability?





## Some reporting terminology

- Reporting is a general term that has several related aspects
- Development Intelligence refers to the application of Business Intelligence techniques to development data
  - Report authoring tools are used to define the output presentation
  - The result often contains charts, graphs, tables, cross-tabs, gauges dashboards, etc.
  - e.g. Rational Insight supports development intelligence
- Document Generation refers to the automatic creation of documents from development data based on templates
  - The documents are often deliverables, e.g. a Requirements Specification
  - The output is normally Word or PDF
  - e.g. Rational Publishing Engine supports document generation





## Why reporting is challenging

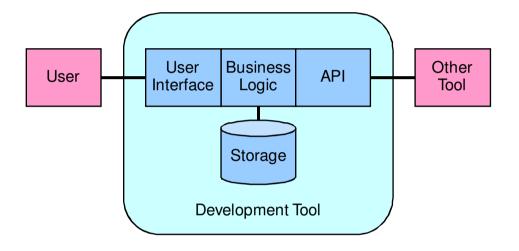
- Organizational process/unity
  - Different departments, different processes
  - Roll-up of data doesn't compare well
  - Lack of visibility into organization metrics
- Various disparate data sources
- Individual product reporting
  - Lack of functionality/customization
- Training & Resources
  - **\$\$\$**





## Why reporting is challenging - cont'd

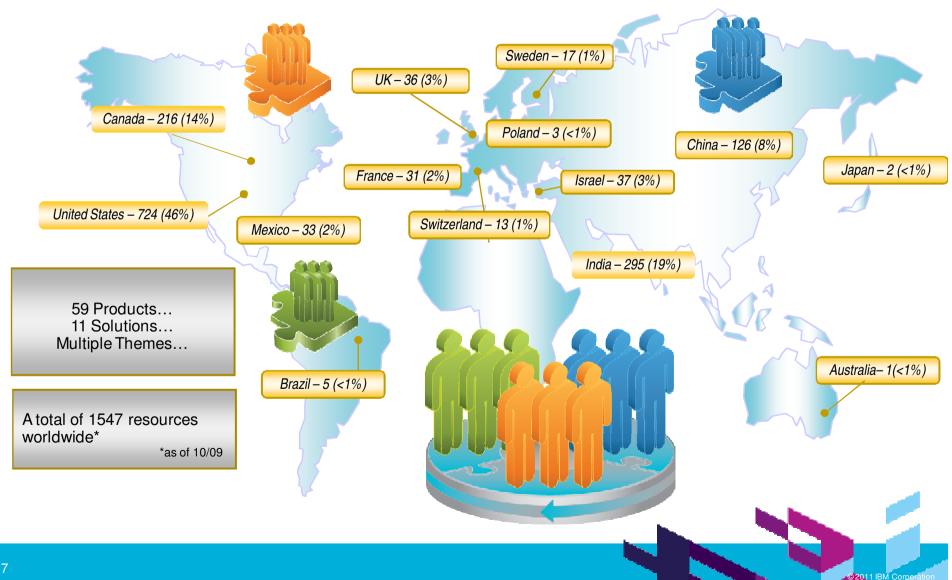
- Most development tools have the architecture of a transaction processing application
- The tool "hugs" its data by guarding it with a highly controlled API to preserve data integrity and hide implementation details
  - ▶ API is normally proprietary
  - Implementation may change from release to release
- The physical design of storage is optimized for fast updates and simple queries required by the user interface
  - ▶ There is minimal indexing since that slows updates
  - ▶ Complex gueries often run very slowly
- Most data resides in disparate silos...
  - Cross-product queries are not natively supported





## The global IBM Rational core development team

Our challenges are the same as our customer's challenges...





## Gain Holistic View of Disparate Information – Rational Insight

**Architecture** 

**Business** 

**Support** 

### Portfolio Analysis

- Financials / Profits
- **Customer Data**
- Expenses/ Risks



- Skills Management
- As Is vs To Be
- Reuse



### **Support Operations**

- Technical Debt
- Maintainability
- Quality / Support



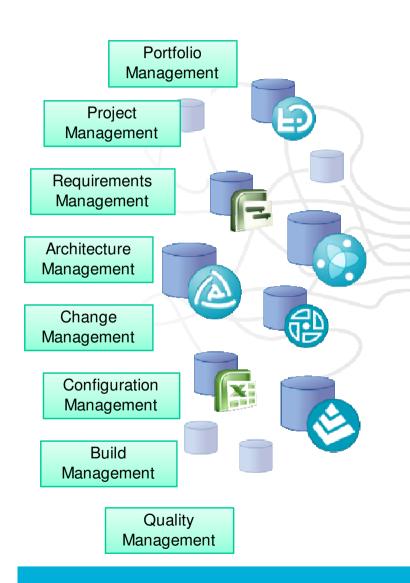
### **Development Development Execution** (Executive Dashboard)

- Day-to-Day Execution
- **Project Status**
- **Productivity**



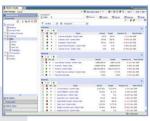


## Providing the right information at the right time...











### **Enterprise Reporting & Business Analytics**

Rational Insight delivers enterprise performance management and analytics across multiple Rational and third-party products and in-house applications

> Rational **Publishing** Engine







### **Automated Document Generation**

Rational Publishing Engine delvers automated document generation across multiple Rational (including Telelogic), thirdparty products and in-house applications



## Rational Insight

## Enterprise Reporting & Development Intelligence

IBM Rational Insight provides a comprehensive performance management solution tailored for Software and Systems **Development** 

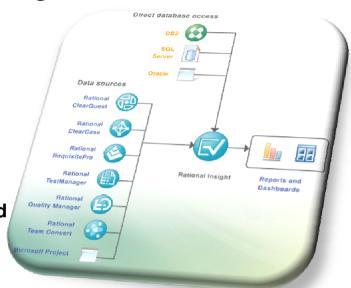
- Includes Cognos 8.4.1 BI Reporting In-The-Box
- Pre-built customizable data model, ETL, reports, and dashboards

### Utilize Rational Insight to measure current process efficiency and process improvement effectiveness

- OOTB reports and dashboards based on many Rational Method Composer best practices
- OOTB reports and dashboards grouped by CMMI process area and level

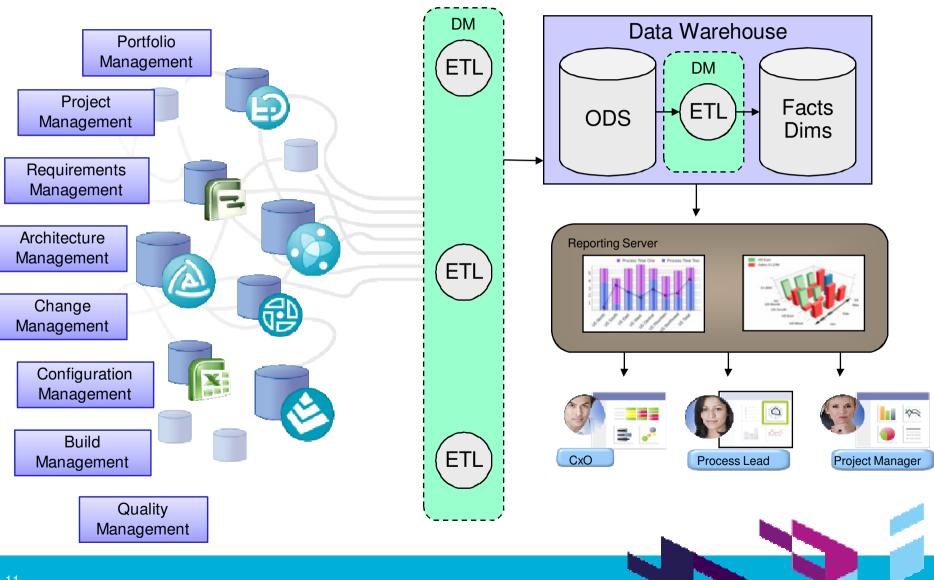
Leverage Rational Insight analytics to quickly locate root causes, prescribe corrections predict outcomes

- OOTB scorecard framework for weighted KPI indicators and alerts
- Integrates with additional Cognos analytic applications (analysis studio, SPSS, etc.)



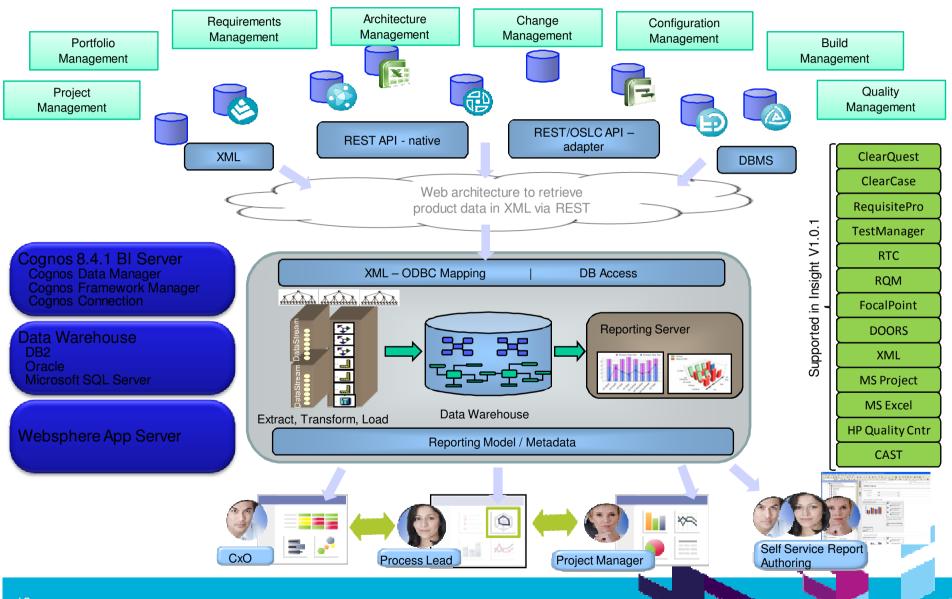


## Rational Insight data warehouse reporting



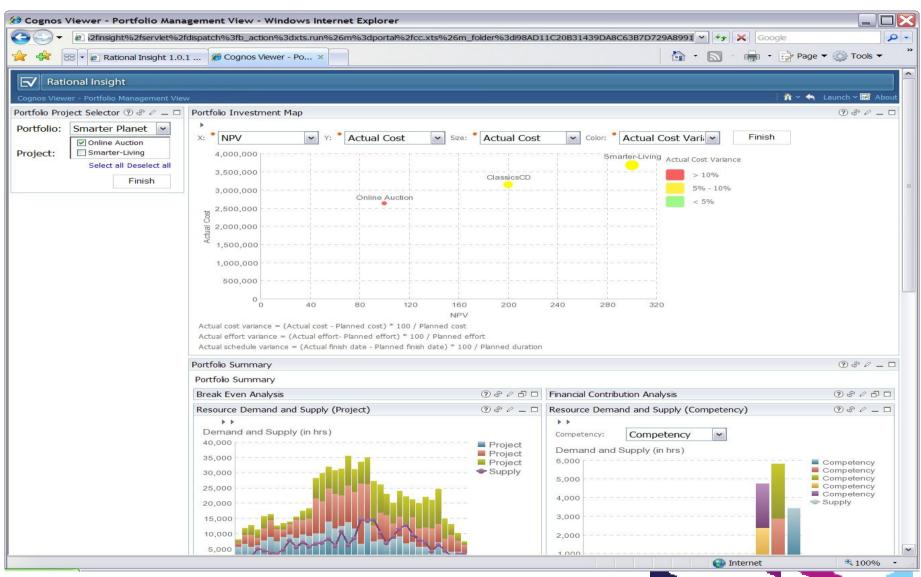


## Rational Insight High-Level Architecture



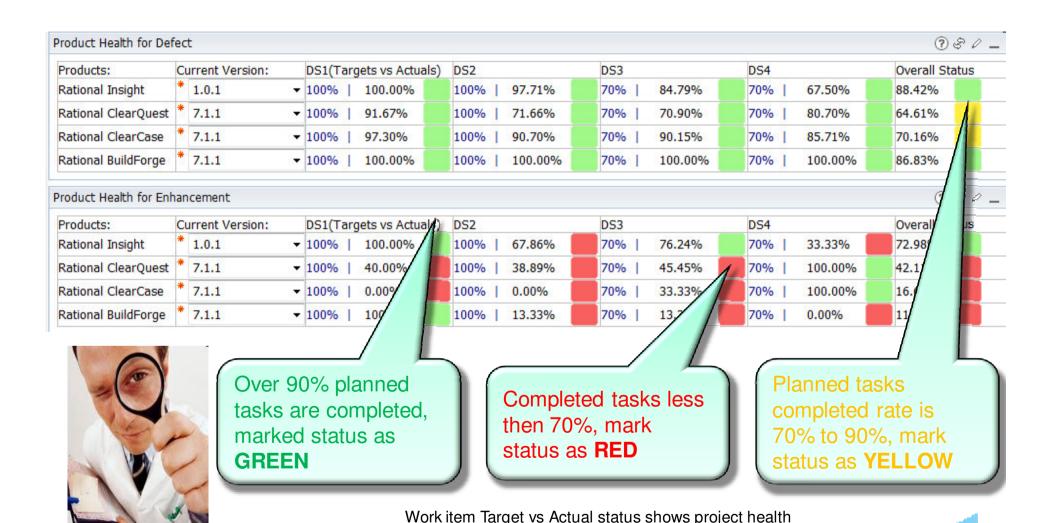


## Insight Portfolio Management Dashboard



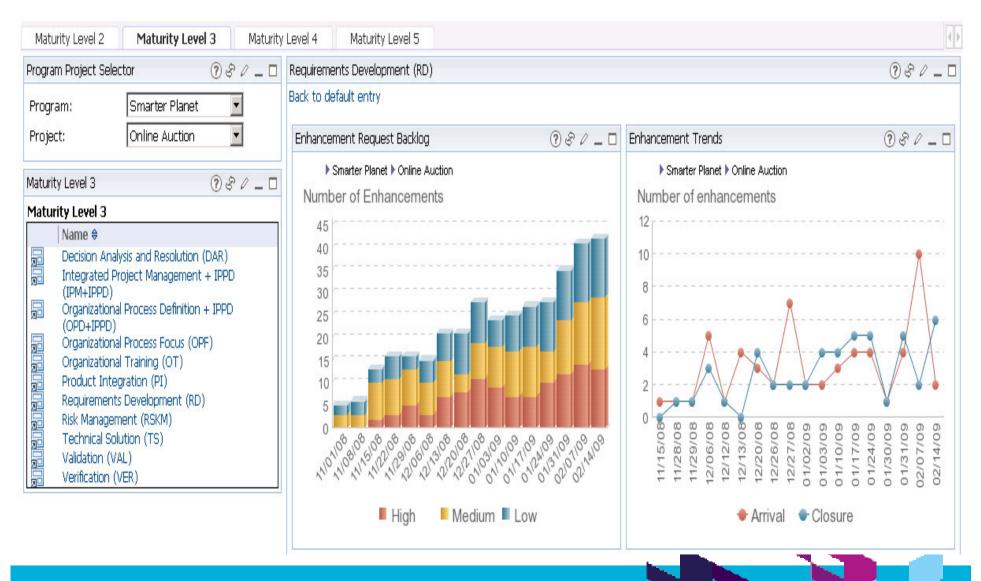


## Insight Project Management Dashboard





## Insight CMMI Integration Dashboards and Reports





## **Project Health Scorecards**

### Project Health

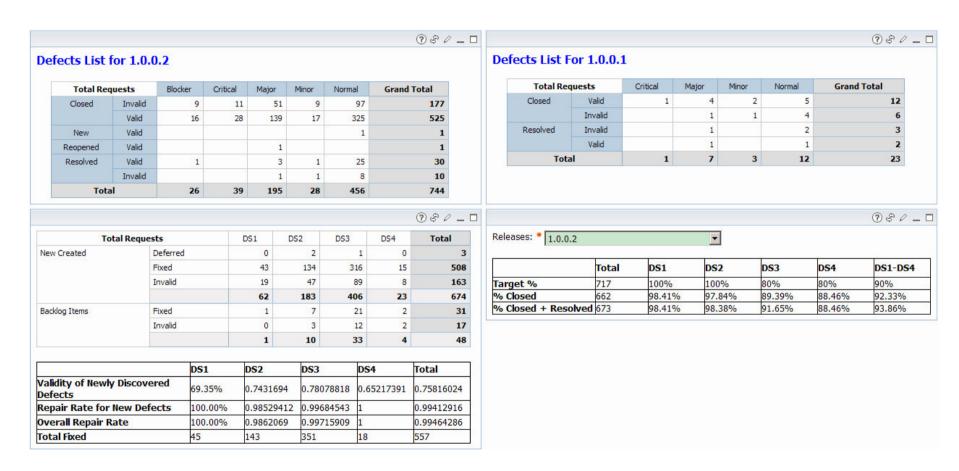
Project	Overall Health	Reducing Time-to-Value	<u>Improving Quality</u>	Improving Customer Satisfaction
ClassicsCD	•	<b>A</b>		<b>♦</b>
Online Auction	■ ▼	A	■ ▼	<b>♦</b>
Smarter-Living		■ ▼	A	A

### About This Report

The Scorecard report monitors the overall health of your projects based on three objectives; reducing time-to-value, improving quality, and improving customer satisfaction. Reducing time-to-value measures how effective you are in reducing the time it takes from when a project begins development to when the project is considered valuable to the business. Improving quality measures your projects based on stability, functional completeness, and so on. Improving customer satisfaction tracks whether clients will be happy when using your product. One example is your responsiveness to client requests. In general, you want all performance indicators to be green and to have an upward trend. A red indicator means that a metric has exceeded the tolerance level, and certain aspects of your project are at risk. A downward trend indicates that a problem might be developing. It is advisable to investigate the potential issue now, rather then to wait for it to become a real problem. Click on any objective or performance indicator to drill through to another report that shows you the metrics that support the objectives.



## Project Management - Details



Current/backlog defects number shows project status

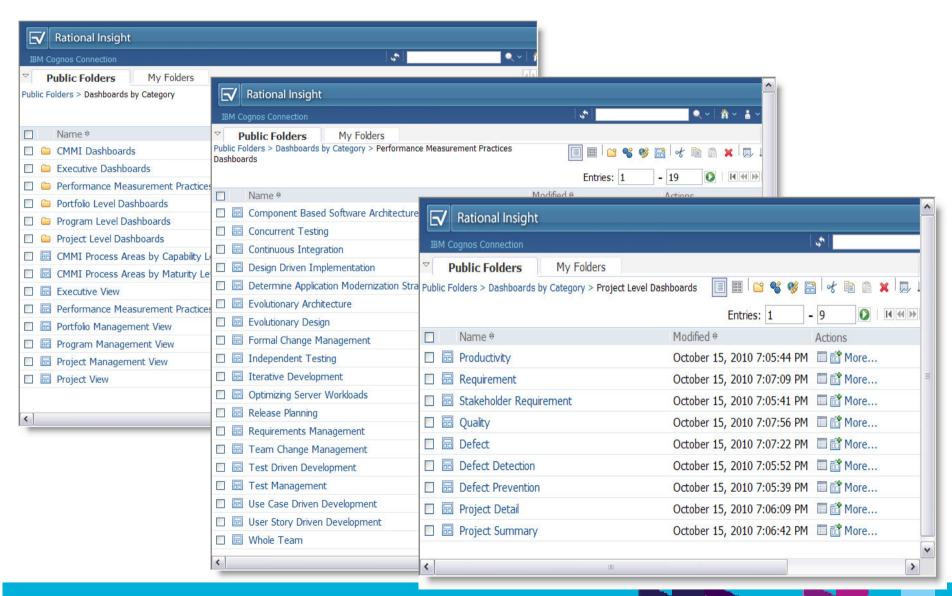


### **Code Review Metrics**





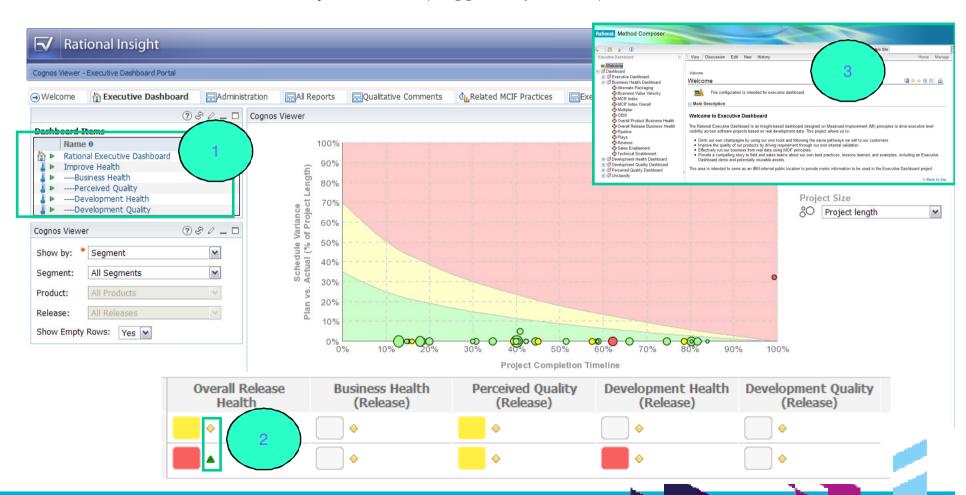
## Insight has Many OOTB Dashboards and Reports...



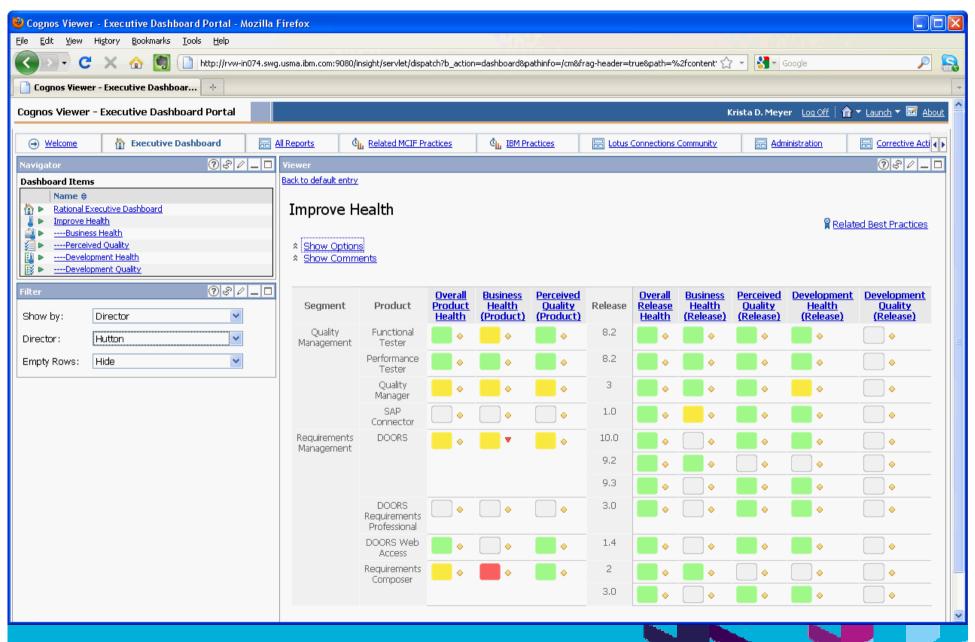


### Measured Improvement Realized in Executive Dashboard

- Assess: Where are we now? (Against standard business/operational objectives)
- Steer: Where are we going? (Based on trending data)
- Act: How do we adjust course? (Suggested practices)



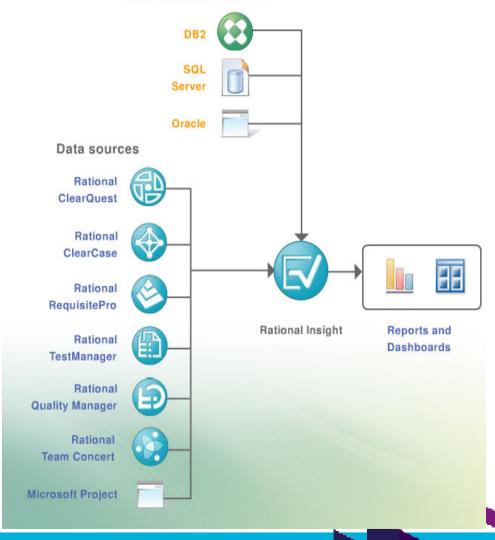


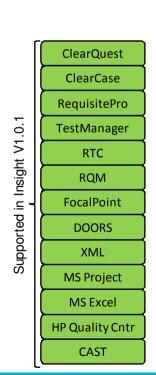




## Integrating Data with Rational Insight







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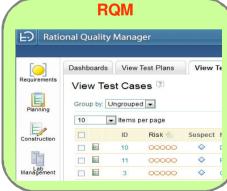
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## The Rational Insight Data Flow





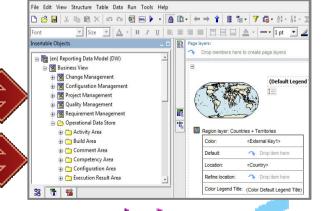


- 🖹 🖁 Business View Em Change Management 📥 👺 Configuration Management Project Management
  - 🛓 📳 Quality Management 🛓 濖 Requirement Management
  - 📥 🗀 Operational Data Store

### Your Dashboard















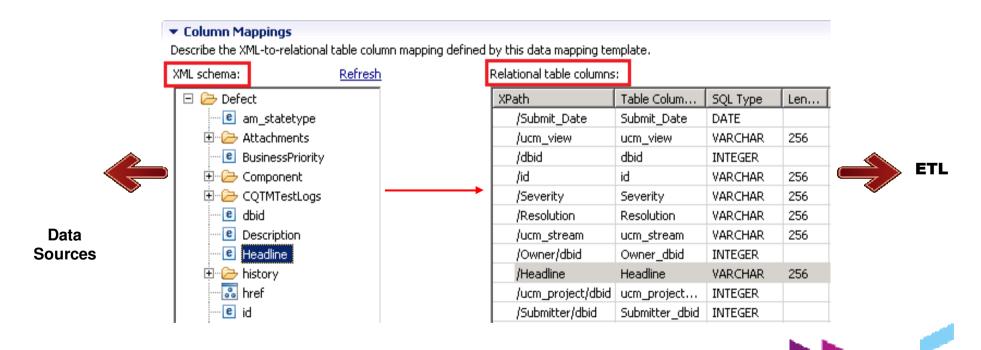


## Mapping Source Data into Rational Insight



### **XML Data Configuration**

- Expose data and define mapping templates
- Define one xdc file per data source

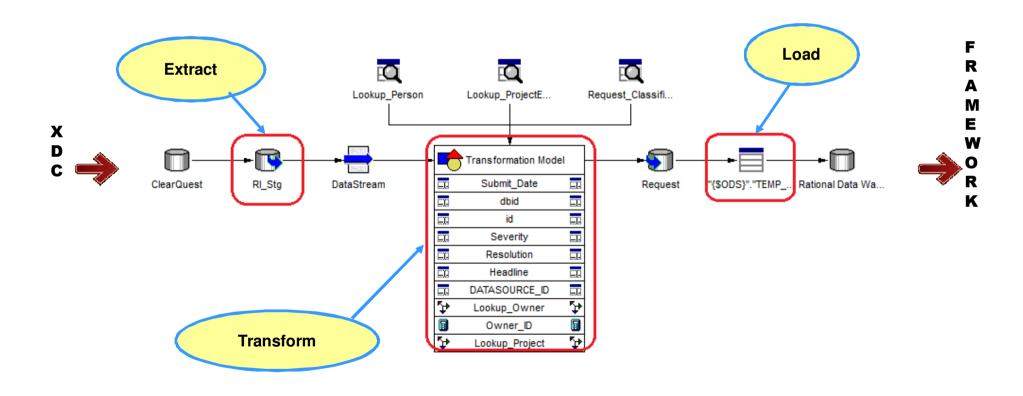




## Extract, Transform, and Load Data into Rational Insight



### Extract, Transform, Load data via Data Manager



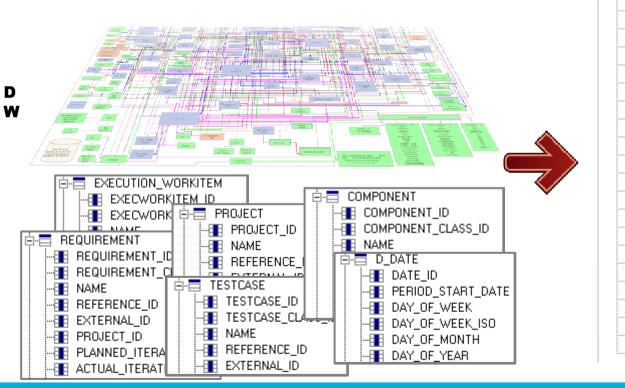


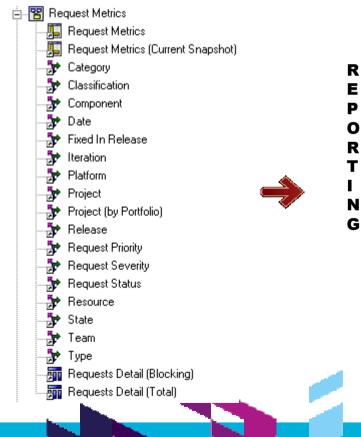
## Expose data through the reporting metadata model



### Map the Data Warehouse data to a framework via Framework Manager

- Map your data to a framework
- Publish package



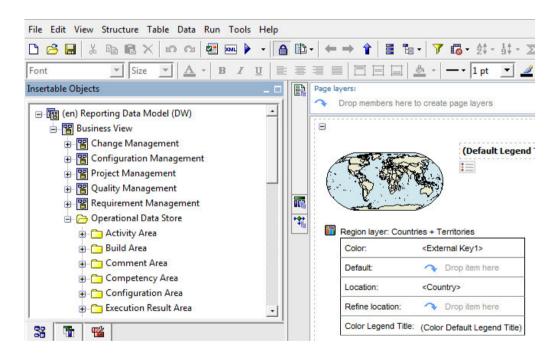


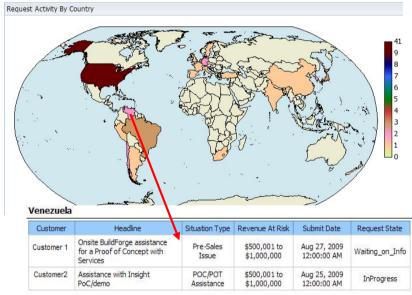


## Build and run Rational Insight reports...



### **Create / Run Reports**





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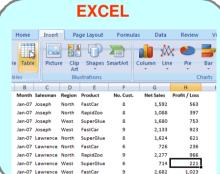
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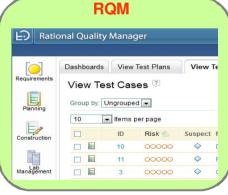
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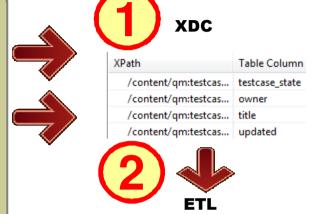


## The Rational Insight Data Flow











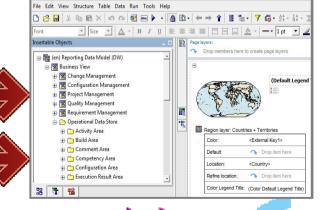


- 🖹 🖁 Business View Em Change Management 📥 👺 Configuration Management
  - Project Management 🛓 📳 Quality Management
  - 🛓 濖 Requirement Management
  - 📥 🗀 Operational Data Store

### **Your Dashboard**













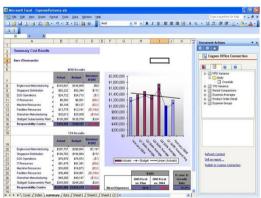




## Leveraging the Cognos platform to extend the reach of Insight

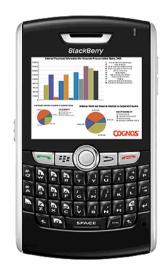


View dashboards and reports online...



Embed charts and reports in spreadsheets / presentations...

View reports on mobile devices...



Search for reports using standard paradigms...



Easily create and customize graphical dashboards...



#### **Best Practices and Lessons Learned**

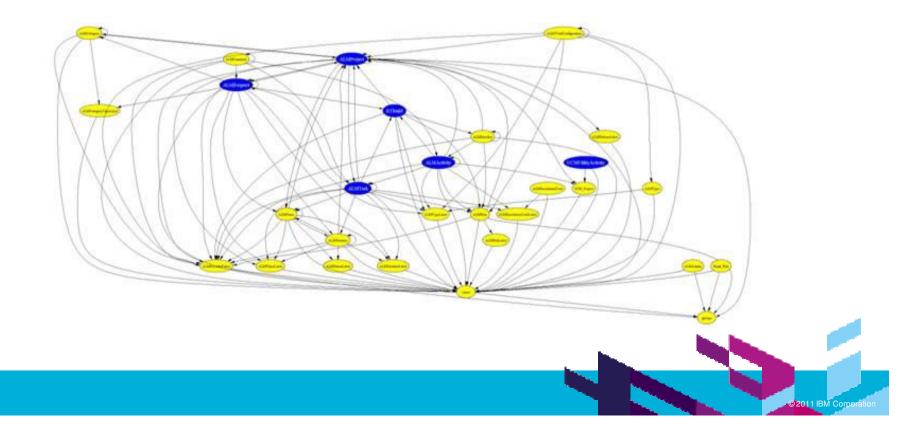
- Identify a minimum of two people to own/manage the deployment
- Developer role Back end work: product integration, data extraction, data transformation, Data Warehouse loading, Data modeling
- Report Author Front end work: Dashboard/report designs, everything the end user will see





### **Best Practices and Lessons Learned**

 Prior to extraction, understand the basics of the data source's purpose, what it is capturing, and its schema





#### **Best Practices and Lessons Learned**

- Leverage the versatile integration capabilities of Insight REST, ODBC, XML
- Integrating with Excel can be helpful and painless if crucial data is stored in xls sheets and is needed to be reported on in Insight
- Create tables in Excel sheet, integrate with Insight via ODBC driver, business as usual





## Development Analytics – Extending the power Rational Insight

How can we achieve the best outcome Stochastic Optimization including the effects of variability? Prescriptive Rational Insight 2.x (Analytics) How can we achieve the best outcome? Optimization Predictive modeling What will happen next if? Forecasting What if these trends continue? **Predictive** (Analytics) Simulation What could happen....? Rational Insight 1.x Point Product Reporting CALM 2010 / RTC 3.0 What actions are needed? **Alerts** Query/drill down What exactly is the problem? Descriptive Ad hoc reporting (inc doc gen) How many, how often, where? (Reporting) Standard Reporting (inc doc gen) What happened?

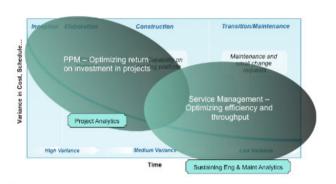


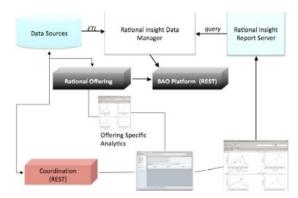
IBM Rational is collaborating with IBM Research to build out industry

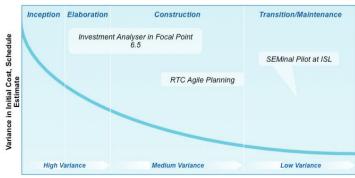
leading BAO for SSD capabilities

 Level of risk and innovation drive selection of appropriate metrics & analytics across SSD life cycle.

- Rational incorporating BAO for SSD into our core platform
  - Delivering BAO via Rational Insight
  - Providing new BAO capabilities in other offerings (Rational Focal Point, Rational Team Concert).
- Rational has delivered / piloted key BAO for SSD capabilities
  - Value and ROI measurement as Investment Manager in Focal Point (in Beta)
  - Schedule uncertainty measurement in Rational Team Concert Agile Planner 2.0
  - Maintenance productivity trends









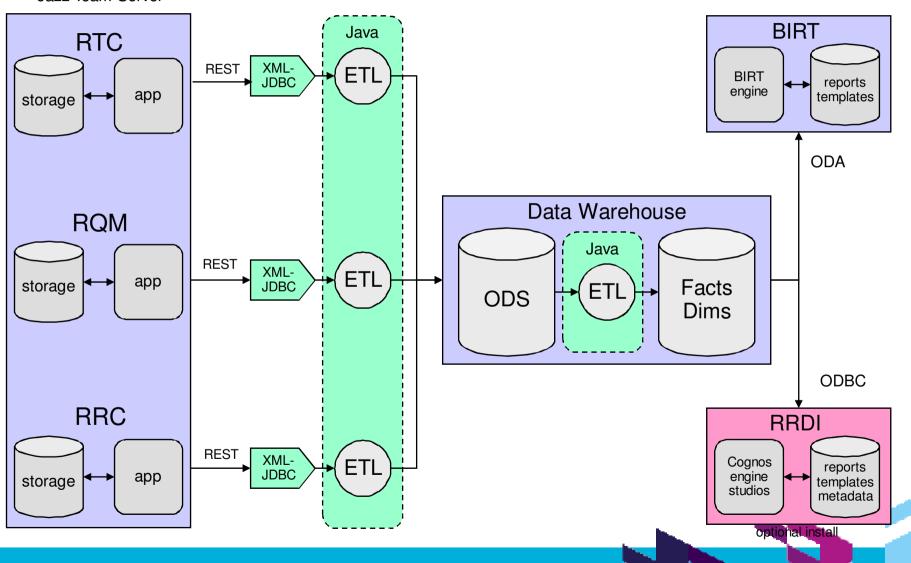
## Rational common reporting component strategy

- Rational is transforming technology from Rational Insight and Rational Publishing Engine into a standard set of common reporting components that can be embedded in any Rational product
  - ▶ Rational Reporting for Development Intelligence (RRDI)
    - Includes common data warehouse technology from Rational Insight and IBM Cognos
  - ▶ Rational Reporting for Document Generation (RRDG)
    - Includes document generation technology from Rational Publishing Engine
- Rational Insight and Rational Publishing Engine extend the OOTB reporting capability provided with RRDI and RRDG
  - They will be built on RRDI and RRDG
  - Provide support for heterogeneous software environments
  - Provide support for enterprise deployments
  - Provide support for dynamic and custom product schemas



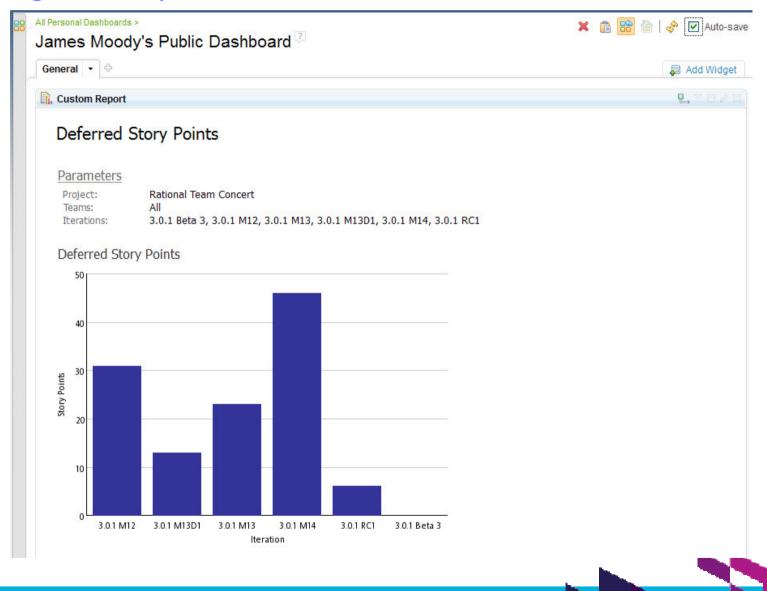
## CLM 2011 data warehouse reporting





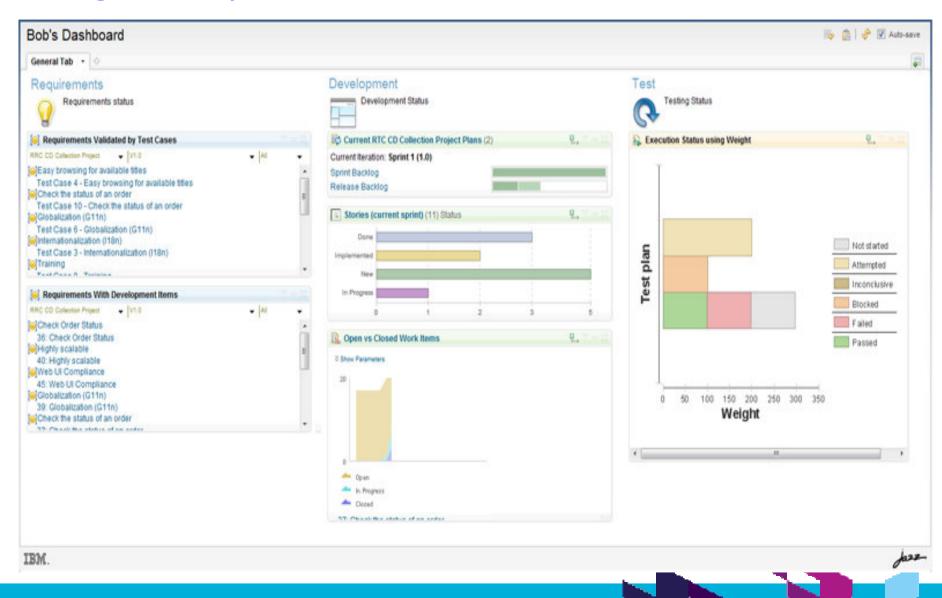


### Viewing RRDI reports in the CLM Web UI





## Viewing team reports in a Jazz dashboard...





## Summary - The Rational Insight Reporting Solution provides...

- Transparency and visibility across your organization
  - ▶ Helps Identify high priority issues
- Unified reporting solution across your organization
  - Process improvement (data capturing)
  - ▶ Roll-up of data will be relative
  - Users have a central location where metrics are accessible
  - Standardize on common measurements and metrics



- View, run, create reports and dashboards
- Stakeholders can access on demand







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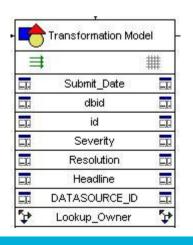
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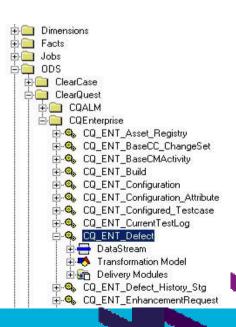


#### Best Practices and Lessons Learned

- Utilize the OOTB collateral to avoid rework and/or leverage it as a guide significant time savings
- Understand the OOTB fact and dimension builds (in Data Manager) and what they do avoids rework
- Review the the OOTB DW tables during development, you'll be familiar with the tables and columns captured









## Rational Insight Component Overview

#### **IBM Rational Insight Data Services**

Rational Insight requires access to data from different product tools and sources. Making data readily accessible for reporting and analytics is a key objective of Rational Insight data services.

### IBM Rational Insight XML data configuration

XML data configuration maps XML data to the table columns in a relational database. This mapping is used by the XML ODBC driver to provide data in relational form to the ETL framework of Rational Insight.

### IBM Rational Insight extract, transform, and load framework

Extract, transform, and load (ETL) is a process in data warehousing that involves extracting data from outside sources, transforming it to fit business needs, and ultimately loading it into the data warehouse.

### **IBM Rational Insight data warehouse**

IBM Rational Insight data warehouse (RIDW) is the component that stores data from various operational systems in a format that facilitates analytical reporting, and provides the engine required for query optimization, multidimensional analysis, and historical trending.

### **IBM Rational Insight metadata model**

Rational Insight publishes metadata that provides reporting tools with a single, integrated business view of multiple heterogeneous data sources.

#### **IBM Rational Insight report server**

The IBM Rational Insight report server (Rational Insight report server) hosts reports and report editors. It embeds the IBM Cognos Business Intelligence server (Cognos BI server), an integrated business intelligence suite for creating and managing reports and metadata, and for accessing data and reports.

### IBM Rational Insight sample reports and dashboards

Rational Insight ships with a set of pre-designed reports and dashboards called sample reports and dashboards. Sample reports serve as a starting point to users for designing reports of their choice. Rather than beginning with an empty screen, you can pick from a wide selection of standard reports to report and track your project's performance.



## Highlights of the Insight V1.0.1 Release

### **Enhanced Rational product integrations**

- ▶ Support for Rational Focal Point
- ▶ Support for RTC 3.0

### Installation and Configuration Enhancements

- ▶ 64 bit Linux and Windows server support
- ▶ Full support for IE and Firefox browsers
- ▶ CLM Workbench compatible DW schema
- ▶ Translation to all Group-1 languages

### Usability Enhancements

- Simplified Data warehouse setup and configuration
- ▶ Simplified Dynamic Schema configuration

### OOTB Report and Dashboard Enhancements

- ▶ Exec DB style Project health scorecards
- ▶ CMMI based dashboards / reports
- ▶ Performance Management / RMC dashboards / reports
- **Event Studio for KPI and Event monitoring and notification**





## Highlights of the Insight V1.0.1.0.001 Release (Feb 201



- iFix release to delivery key bug fixes
  - Numerous minor fixes rolled up to support STG deployment
  - Key license bug fix enabling token license support

## Highlights of the Insight V1.0.1.1 Release (June 2011)

- Fix-Pack release to support CLM 2011 release
  - Very narrow scope due to Fix-Pack rules no new features
    - Greatly reduced overhead of getting this release out
  - Focused on integration/upgrade/interoperability scenarios between CLM products (RTC/RQM/RRC 3.0.1 and Rational Insight)
    - Introduces official support for RRC
    - Insight team working with CLM teams on CLM ETL performance
    - CLM products delivery OOTB Java ETLs
    - CLM products also deliver Cognos DM ETLs which can be installed into Insight to run