The Road to Development Intelligence

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Innovate2010
The Rational Software Conference

Let's build a smarter planet.

The premiere software and product delivery event.

Agenda

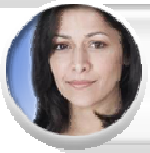
1. **Defining Development Intelligence**
2. The Long and Winding Road
3. Rational's Path Towards Measurement

Successful companies will manage software and systems delivery as a dynamic business process

Are my distributed teams working well together? Can I measure their productivity?

How Can I Monitor and Measure my Teams Productivity?

Are my investments aligned with my business priorities?



Are my assets being utilized and how do I know?

Silos of people, process, and projects

Geographic Barriers

- Poor communication
- Language, culture, time
- Process gaps resulting in rework
- High degree of friction

Organizational Barriers

- Lack of meaningful collaboration
- Weak project governance
- Lack of domain expertise
- Poor LOB oversight
- Security of IP when outsourcing

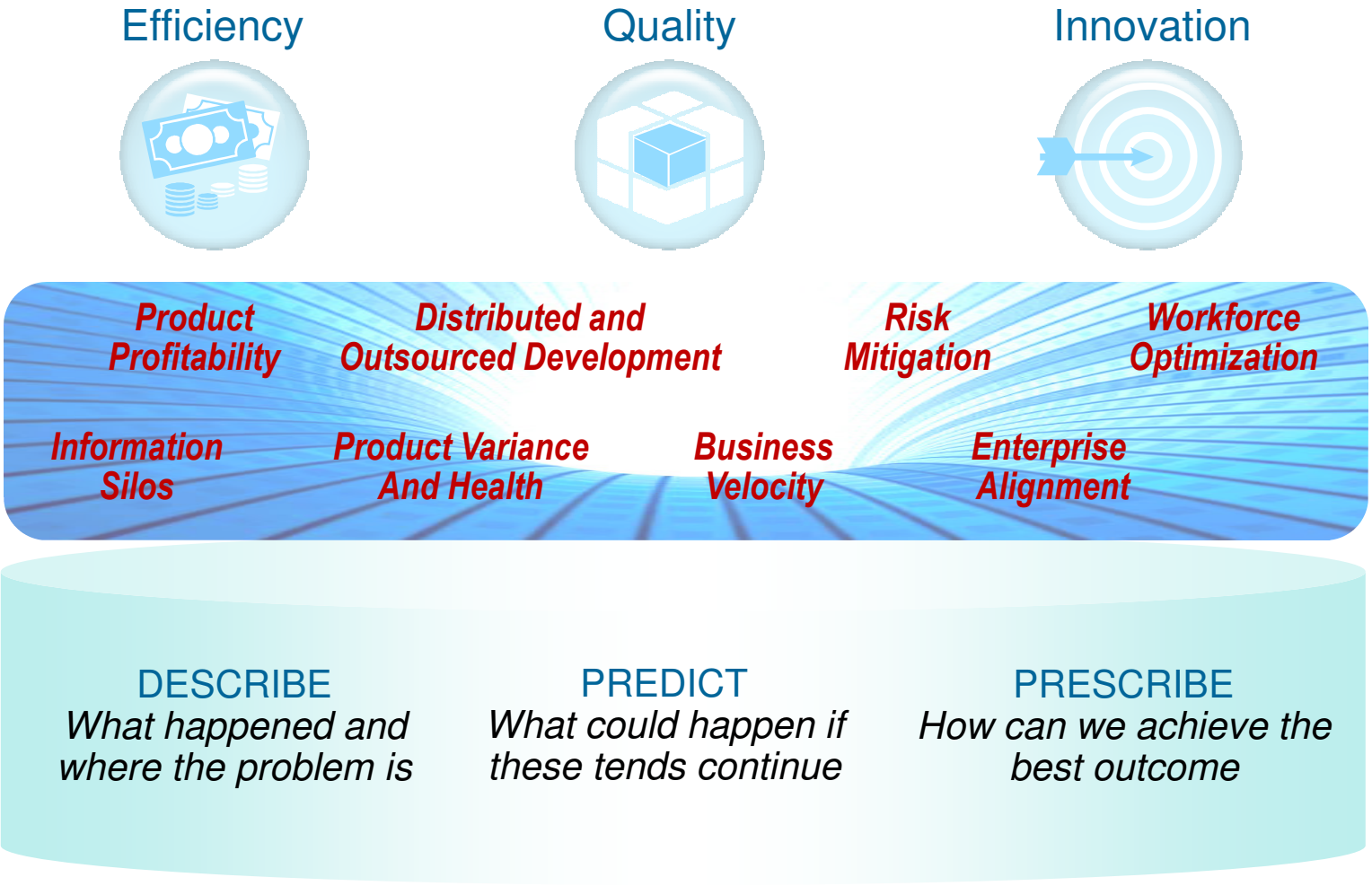
Infrastructure Barriers

- Incompatible tools / repositories
- Unreliable access artifacts
- Lengthy on-boarding
- Inflexible tooling integration

To unleash exponential gains from innovation through their ability to effectively manage risk

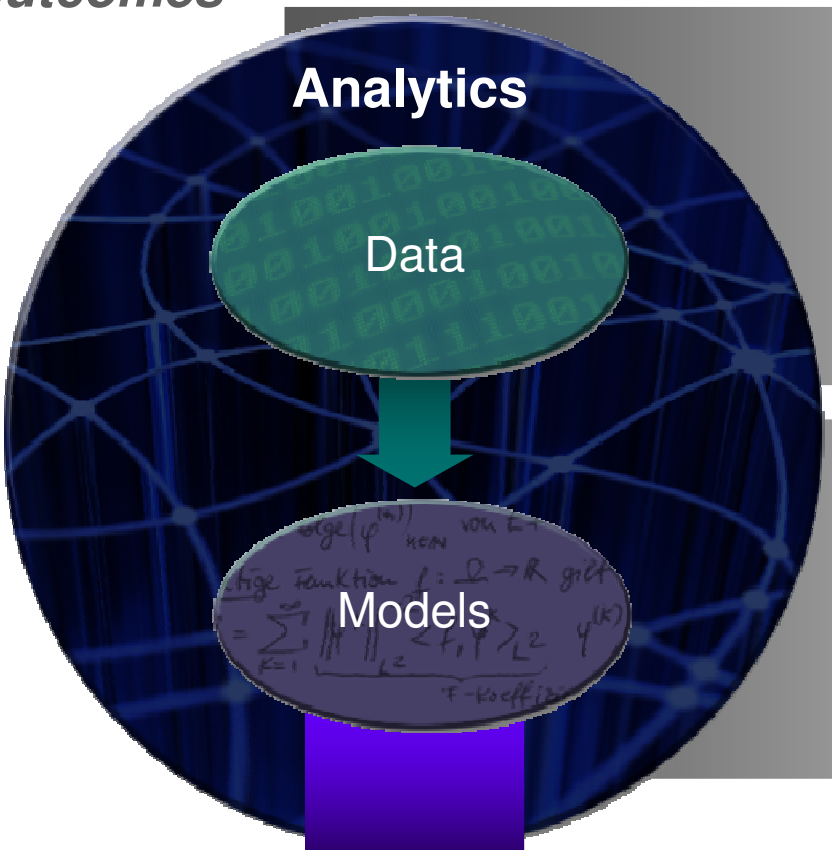
Managing risk requires measuring complexity and causality

Development Intelligence is the ability to have these measures



Development Intelligence: Business Analytics and Optimization

is the use of data and models to provide insight to guide decisions and improve outcomes



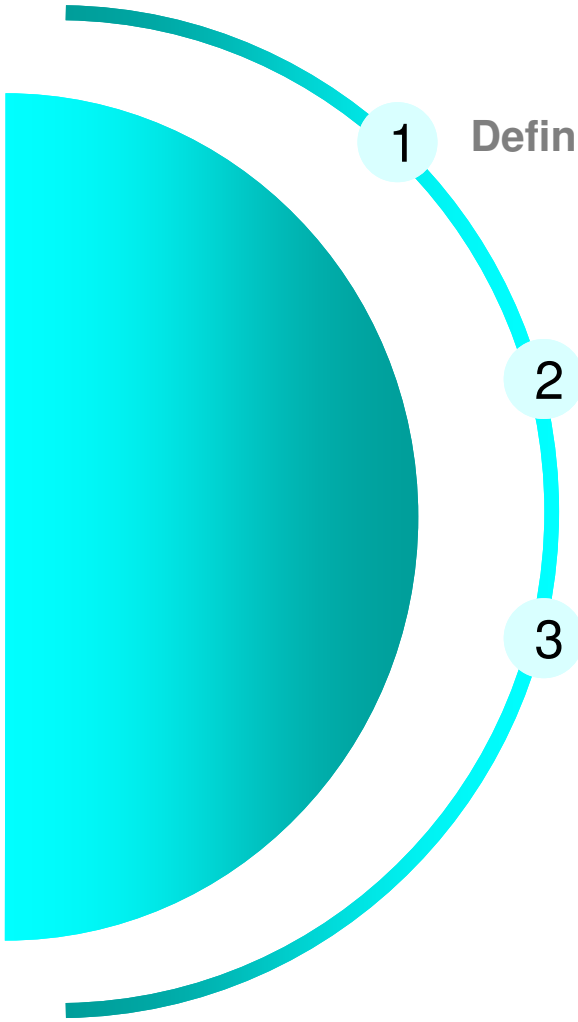
Data sources:
Business automation
Instrumentation
Sensors
Web 2.0
Expert knowledge
"real world physics"

Model:
a mathematical or algorithmic representation of reality intended to explain or predict some aspect of it

Insight

Decision executed automatically or by people

Agenda



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Predictable Business Outcomes Drive Improvements

Development Intelligence is the Key

Measure & Improve

Development Cost Release Cycles Productivity Rework Ratios
Fixed and Variable Costs Velocity Breaches
Acceptance and Adoption Process Adoption Backlog Burn-down
Warranty and Defect Costs Customer Attrition Reuse

"Reduced product development time by 60%, from … to two"

"Reduced development cost by 25%, reduced …"

"Reduced project cycle time by 76 days, completed twice the …"

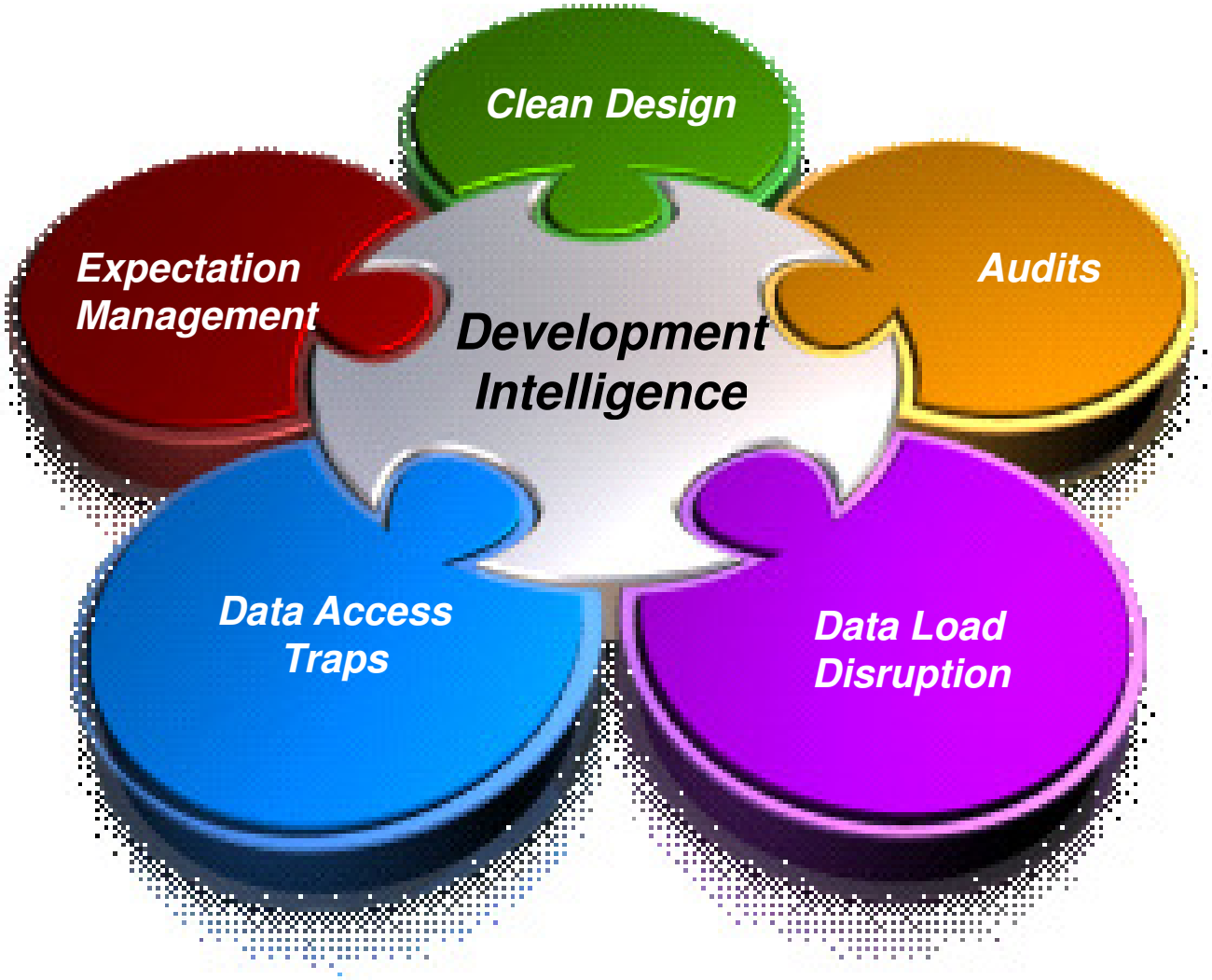
"Achieved 30% … in on … ts."

"Achieved 51% reuse of services"

"Saved more than $25 million in defects, plus $7 million a year in defect avoidance."

"Improved insight is helping managers improve predictability and mitigate business risk."

Five Major "Bumps" in the Development Intelligence Road



Clean Design is Elusive

This isn't a new system, it is a business transformation

- Spreadsheets can be tricky.
- Using volunteer time means divided attention.
- There is no such thing as final.
- Force Change, But Gently
  - Use report design to exactly replicate existing slide layout
  - Provide quick links into locations of "familiar" metrics
  - Give stakeholders direct method for input
  - Ensure report designs support flow of operations discussions
  - Really start using it

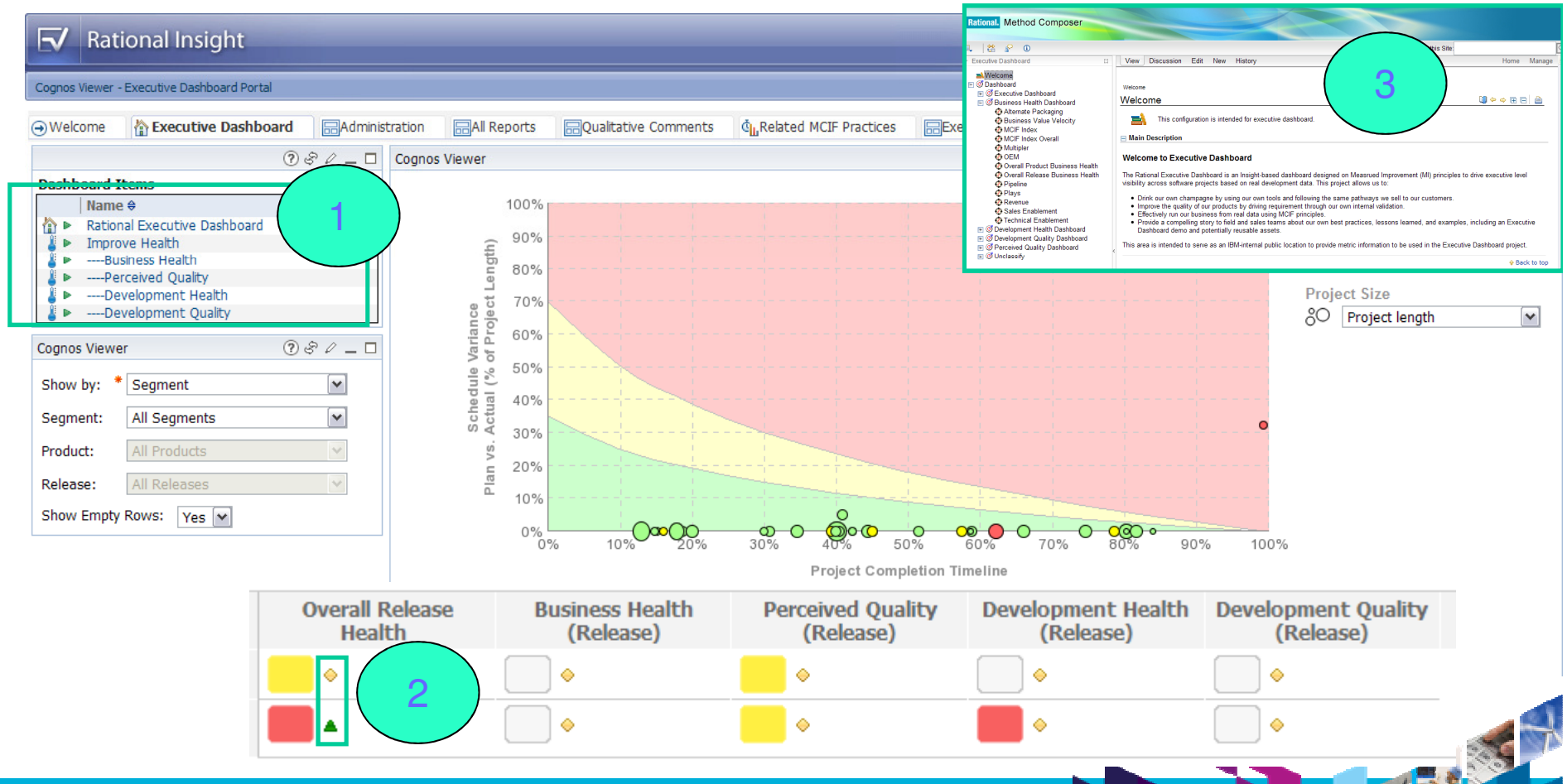
Simple isn't easy.

Hard work to make it seem so.

Plan accordingly.

Measured Improvement Realized in Executive Dashboard

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



Manage expectations

- **What works in a temporary environment will not necessarily work in production**
  - Sample data is not real data
  - If it looks like it works, people expect that it does work
- **Culture change always means some pain**
  - Key staff in existing process may worry they can't provide value in the new system
  - Perceived loss of control moving from subjective to more objective system
- **The truth can hurt**
  - Harder to sweep dust under rug
  - Monitoring means adjustments
- **Dashboard design will not happen overnight**
  - A lot of passionate stakeholders = A lot of opinions
  - Tendency to design by committee

Don’t fall into the data access trap

- **Access to the data does not mean you have usable data**
- **Data traceability does not happen automatically**
  - Example: How do I know which release this requirement is for?
  - Example: What is the context of this test plan?
  - Different teams, different conventions
- **Automating data collections often means working with the teams that use the products to change their conventions**

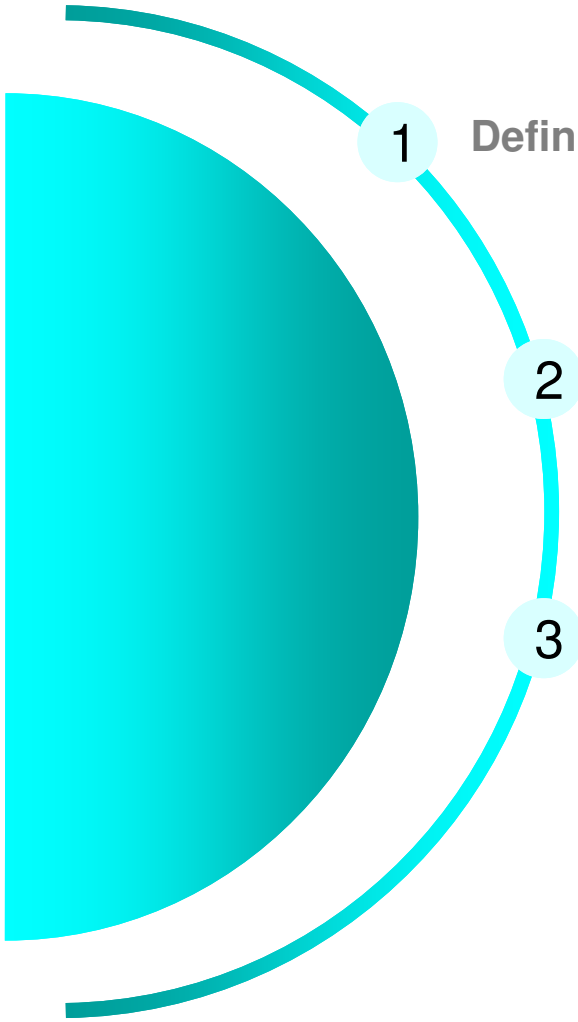
Plan for Audits

- **Switching from presentations to using a live dashboard can cause a gap in your audit strategy**
- **Need to export reports to satisfy audit requirements**
  - Export as PDF
  - Use tools to generate PowerPoint presentations or Excel spreadsheets

Minimize disruption of data loads

- Initial ETL implementations required full **reload** of the current month's data in order to load subjective information from individuals
- During the reload, the current data would be deleted, creating a time period where that **month's data was inaccessible** for all users
- This can cause you to **freeze the data early**, making it impossible to accept data updates after the freeze date
- Moving to **low impact, incremental update capability** that only affects the products and releases being re-loaded
- Other groups can be **reviewing** their data while another group's data is being re-loaded

Agenda



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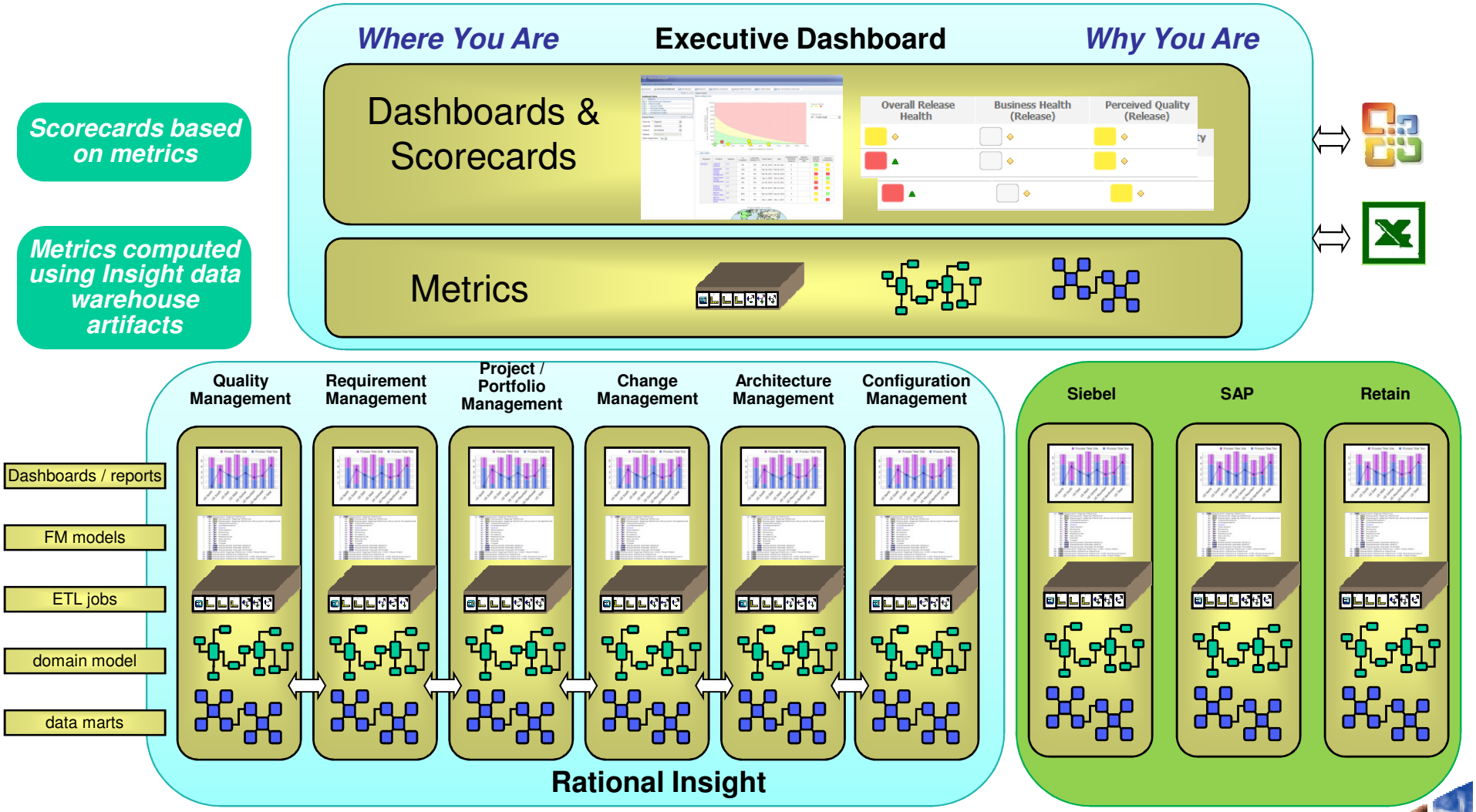
Executive Dashboard Evolution

- Mapping Low Level to Business Objectives
- Define High Level Architecture / Metrics
- "Forced" Internal Adoption
- Evaluate Data Sources

1Q 2009

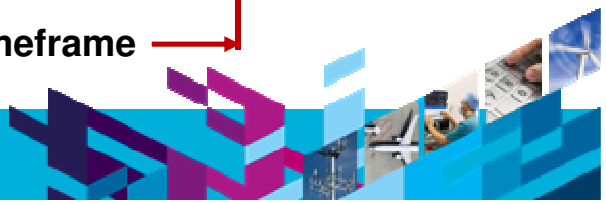
Rational Executive Dashboard



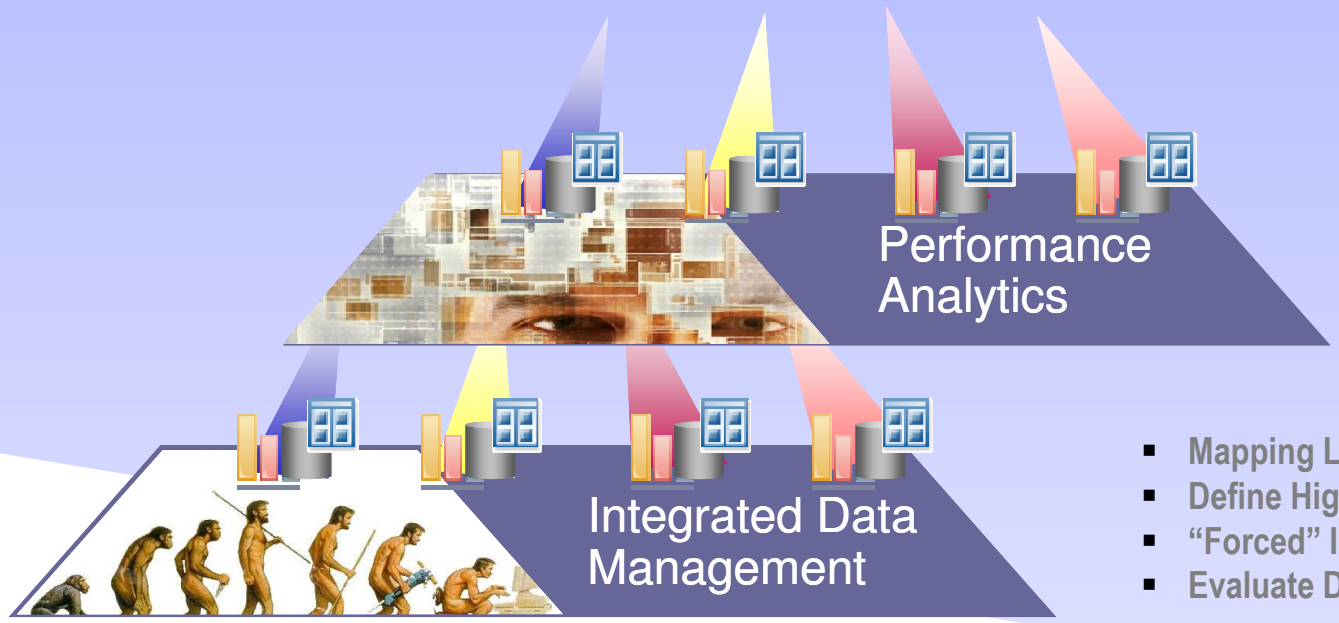
Best Practice Interpretation: Project Health

Metric	Weight	Source	Measure
Defect Backlog	10	Change Mgmt	3 Months
Enhancement SLA	10	RFE Website	60 Days
Cost of Support	10	Analysis	25% Total
Critical Situations	05	Support DB	<1 Month
Defect Density	10	Analysis	By component
Defect Repair Latency	05	Support DB	By product maturity
Build Health	10	Analysis	90% Clean
Project Velocity	10	SCM Tool	Better than Average
Staffing Actuals	10	Financials	10% Variance
Process Timeliness	05	Process DB	<10% off plan
Milestone Status	10	Agile Planner	90% of plan
Severity Analysis	05	Analysis	Depends on timeframe

Project Health



Executive Dashboard Evolution



- Automate Existing Operations
- Refined Data Collection
- Repeatable Processes
- Built in memory for Customer Reuse

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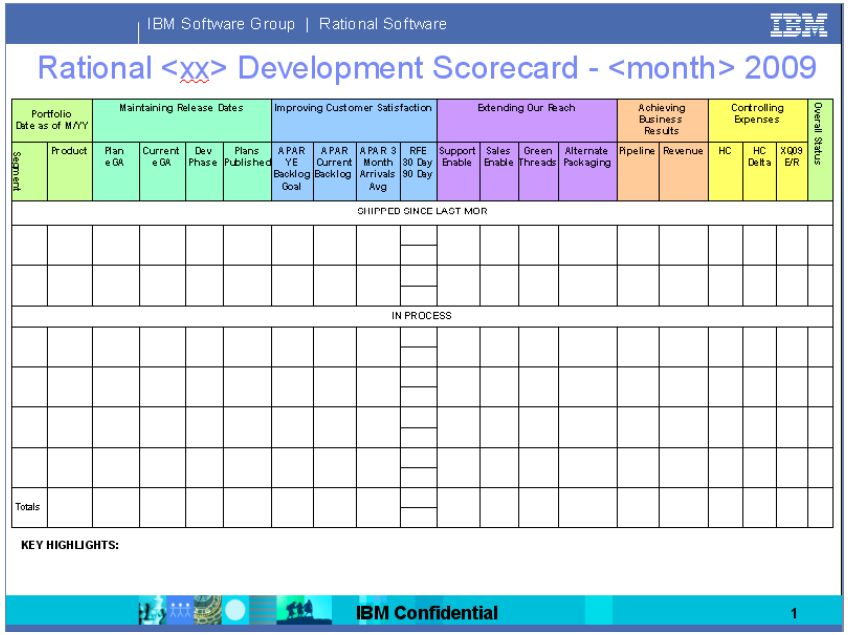
1Q 2010

Automate Existing Operations

Why do this?

- **Non-disruptive**
- **Design validation**
- **Builds stakeholder buy-in**
- **Builds baseline**

- **Rational's existing process:**
  - Standard slide scorecard
  - Completed using variety of data sources and collection methods
  - Trickle-up process, culminating in monthly review conference call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Rational <xx> Development Scorecard - <month> 2009

Portfolio Date as of M/YY		Maintaining Release Dates				Improving Customer Satisfaction				Extending Our Reach				Achieving Business Results		Controlling Expenses			Overall Status
Segment	Product	Plan e GA	Current e GA	Dev Phase	Plans Published	APAR YE Backlog Goal	APAR Current Backlog	APAR 3 Month Arrivals Avg	RFE 30 Day 90 Day	Support Enable	Sales Enable	Green Threads	Alternate Packaging	Pipeline	Revenue	HC	HC Delta	XQ09 E/R	
SHIPPED SINCE LAST MOR																			
IN PROCESS																			
Totals																			

KEY HIGHLIGHTS:

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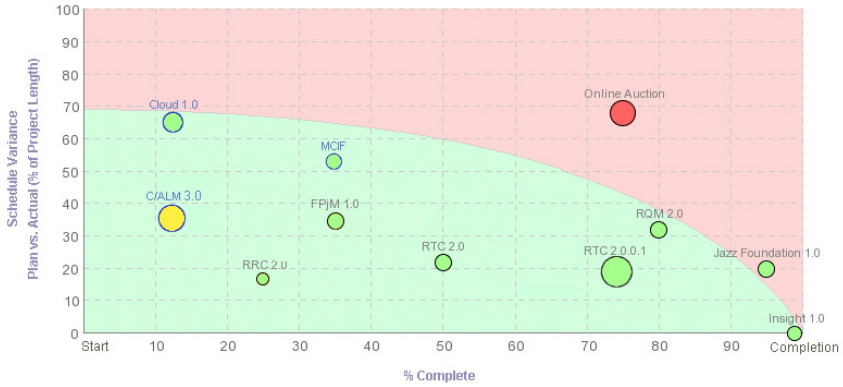
- **Methods:**
  - Observations and value mapping (attend several months of executive Monthly Operations Review meetings)
  - Survey
  - One-on-one discussions with data providers/stakeholders
  - Workgroup for business rules

Refined Data Collection: Metric evolution

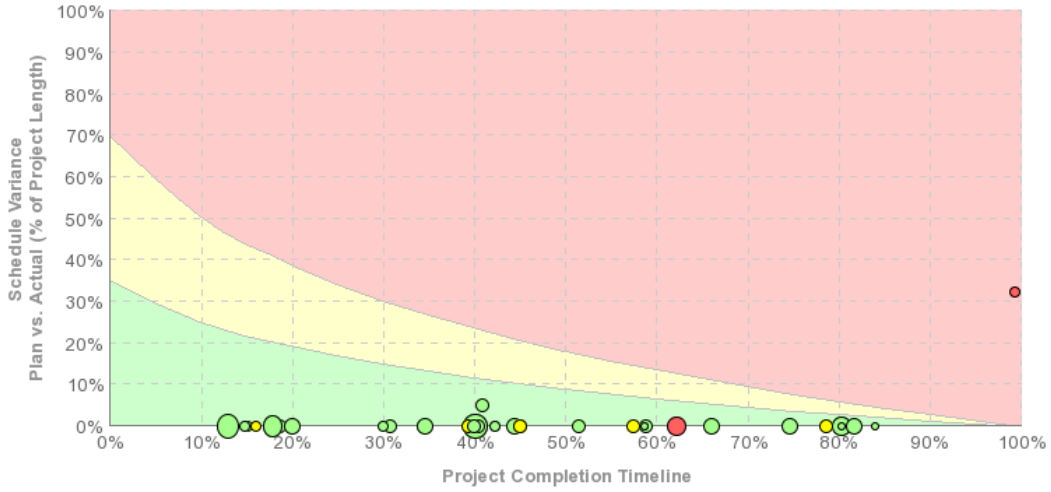


Initially:

- Early data
- Nice distribution of data
- Curve showed landing mode

Production adjusted:

- Real data led to adjusted schedule variance formula
- Curve now is representation of logarithmic model of on-time delivery risk



Executive Dashboard Evolution

- On-Demand Access
- Measurement Dimensions
- Technical Debt
- Composite Products
- Data Extensions (Licensing, Ledger, Support, etc)
- Pattern Analysis

- Automate Existing Operations
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Future - 2011

Executive Dashboard Evolution

- Holistic view of status and trajectory of projects
- Supply Chain / Outsourcing Management
- Productivity Intelligence
- Business Value of Development

- On-Demand Access
- Measurement Dimensions
- Technical Debt
- Composite Products
- Data Extensions (Licensing, Ledger, Support, etc)
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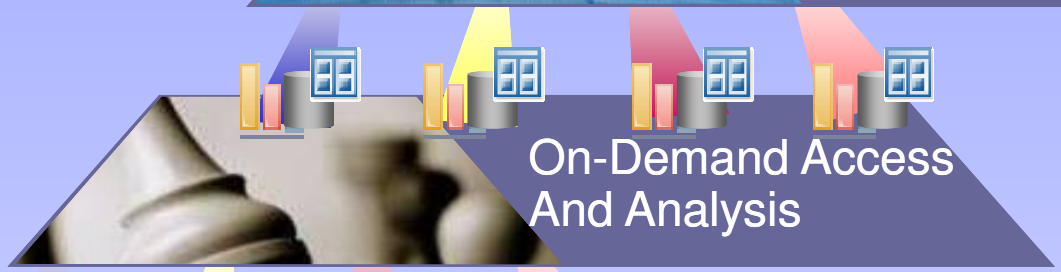

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Not Fast Enough

Executive Dashboard

Executive Dashboard

Development Health	***Perceived Quality***	***Development Quality***	***Business Health***
Build Health	Transactional Survey	Defect Backlog	Sales Plays
Project Velocity	PMR / Call Rates	Test Escapes	Partner Enablement
Staffing Variance	Critical Situations	Functional Test Trends	Support Enablement
Process Timeliness	Cost of Support	Critical Situations	Technical Enablement
Iteration/Milestone Status	Installability	System Test Trends	Sales Enablement
Severity Analysis	RFE SLAs	S-Curve Progress	MCIF Index
Security Vulnerabilities	Usability	Automation Percentage	Alt Packaging
Static Code Analysis	Consumability	Customer Testcases	OEMs
Requirements Met	Scalability	Consumability Scorecard	XL hits
IPD Timeliness	Integrations with other products	Defect Latency	Tactics
	User Experience / Doc	Quality Plan Commitments	ROI
	Time to Resolution	Test Coverage	Pipeline / Multiplier
	APAR:PMR ratio	Defect Density	Revenue
	PostGA metrics		
	Transparency		

Practices

Evolutionary Architecture
Vulnerability Assessment
Concurrent Testing
Test Driven Development
Whole Team
Requirements Management
Team Change Management


Questions

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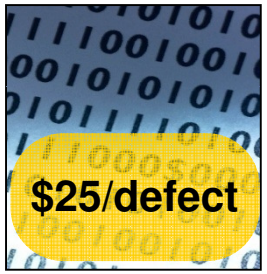
Increasing Accountability of Software: Technical Debt

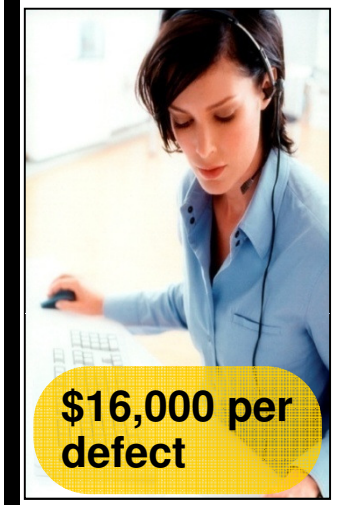
What is the cost of quality



During the coding phase

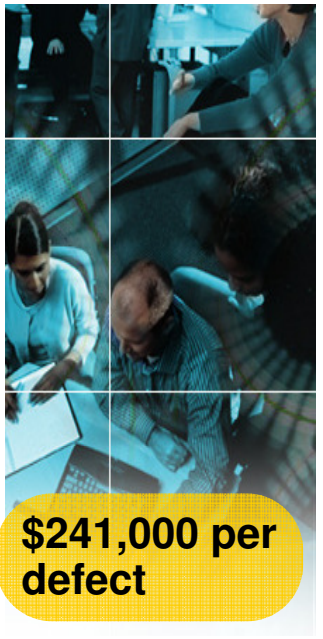
During the build phase

During the QA/Testing phase



Once released as a product (APAR)

Proactive Situation (PROACTIVE)



Product has a critical situation (CRIT)