



| IBM Software Group

# Best Practices for Innovative Software Development

**Rational.** software



# What 765 CEOs from 20 industries and 11 geographies told us in IBM's Global CEO Study 2006<sup>a</sup>

- Renewed focus on top-line growth
  - ▶ Cost-cutting and efficiency are still important but are no longer main drivers
  - ▶ Innovation drives profitable growth
- Numerous external forces are bearing down on the organization
  - ▶ Radical business change is inevitable
  - ▶ Seize opportunities for differentiation
  - ▶ Innovate in new ways to succeed
  - ▶ Need to expand the innovation mix

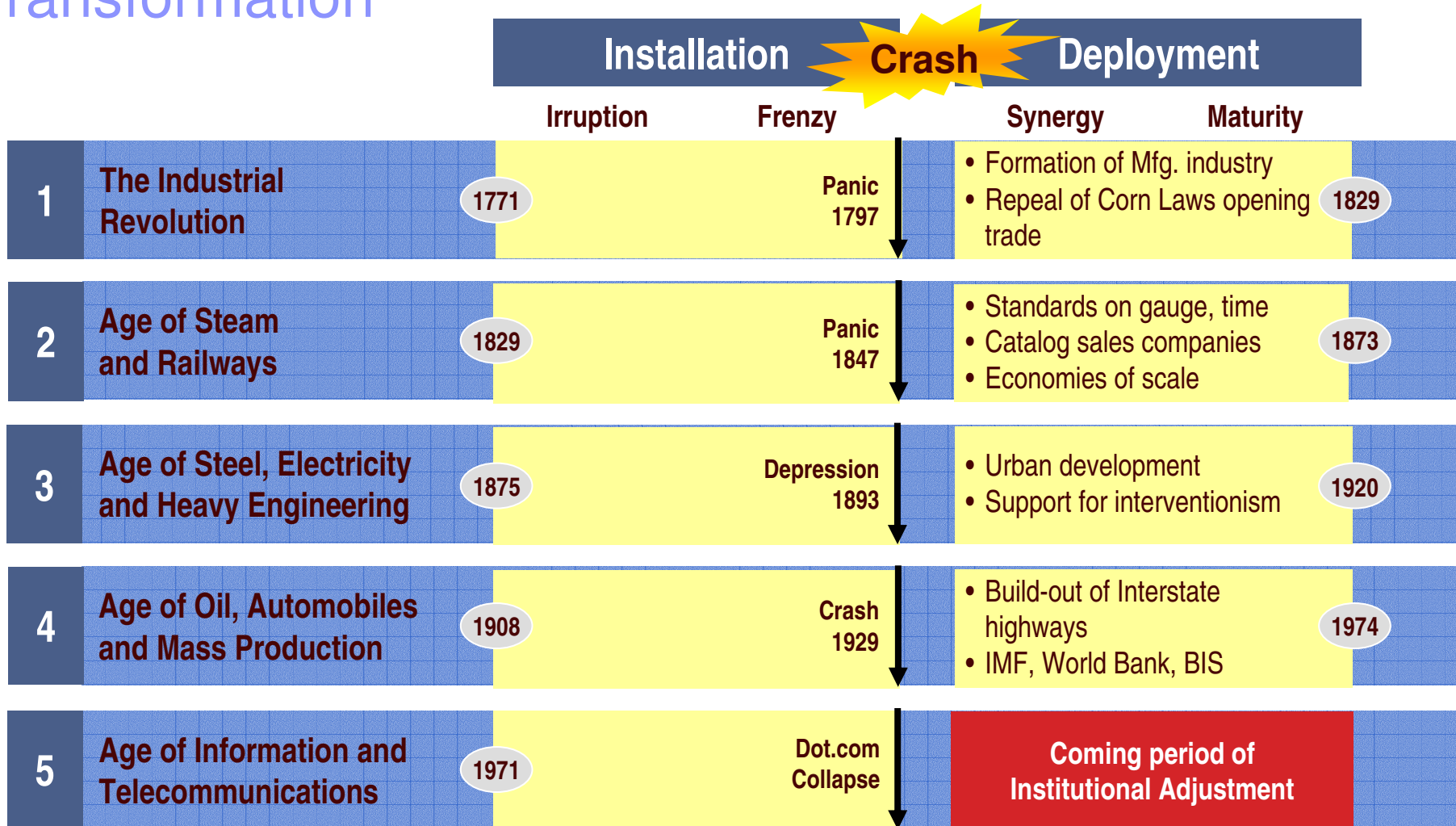


**CEOs are embracing change —**

*“CEOs do not seem intimidated or content simply to cope... [Instead they see change] as both reason and license to expand their innovation horizon...”*

<sup>a</sup>IBM Global CEO Study 2006

# Five Historical Waves of Economic & Social Transformation



Source: Perez, C., "Technological Revolutions and Financial Capital", 2002



## Key focus areas for application leaders

1

### ***Delivery models***

- Focus the in-house team on strategic differentiators.
- Select alternate delivery models for non-differentiated applications and processes.

2

### ***Technology***

- SOA and Web 2.0 enable business agility

3

### ***People and skills***

4

### ***Digital Communities and [internal] open source***

5

### ***Process***

6

### ***Governance***



## The IBM Rational software view

- Strategic
  - ▶ Project Management (for outsourcing and agile)
  - ▶ Agile, hyper-productive teams
  - ▶ Requirements Definition and management (for business alignment, GDD, ODD)
    - Growing into full business analysis suite
  - ▶ Process guidance and enactment (For process improvement and governance)
  - ▶ Portfolio Analysis/ Enterprise Architecture (for strategic project selection)
  - ▶ Packaged applications as well as new development (for delivery models)
  - ▶ Architecture - SOA, Data for mashups (for GDD, ODD, business agility)
  - ▶ Global distribution (for GDD, ODD)
  - ▶ Collaboration, communication, digital communities (for GDD, ODD, innovation, transparency)
  - ▶ Measurements, reports (for governance, project management) gathered silently
    - Painless governance



## What we need

- Tools should be invisible
  - ▶ Users focus on tasks and data
  - ▶ Tools provide role and task appropriate views
- There should be no boundaries between people
  - ▶ Data and tasks from one tool are seamlessly visible in others
- Creative Collaboration across geography and organization
  - ▶ Security and distribution models address organizational and role distribution
- Process is actively supported by the tool, customizable
- Governance is strong but unobtrusive
- Non-creative procedures are automated



## Change is needed

- **Current approaches and technologies for building tools will not achieve our business goals**

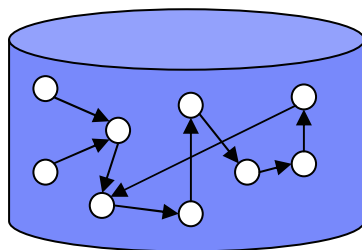
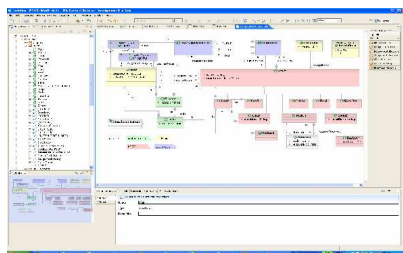
"We can't solve problems by using the same kind of thinking we used when we created them."

A. Einstein

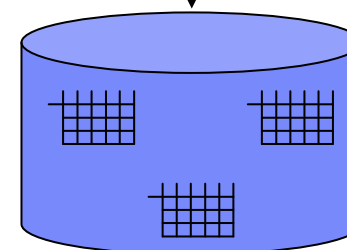
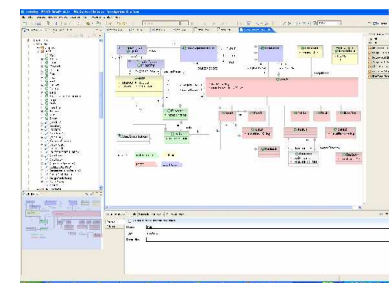


# What thinking led us to here?

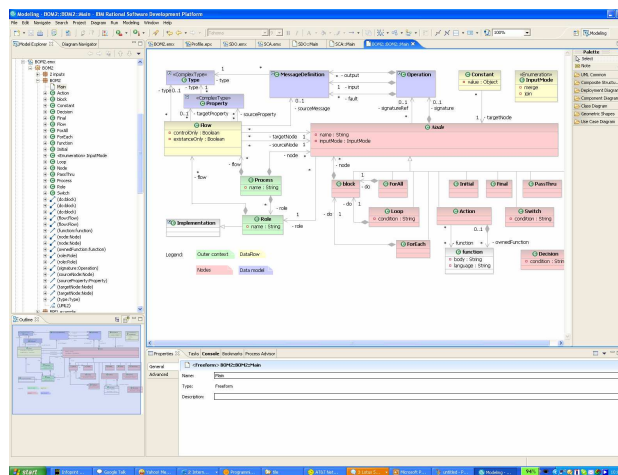
File-based tools tradition



Repository-based tools tradition



## Eclipse UI





## Problem

- We've been stuck with these models for 20 years
- Inadequate on multiple fronts:
  - ▶ Scaling
  - ▶ Integration
  - ▶ Extensibility
  - ▶ Collaboration
  - ▶ Enterprise visibility



## BS Alert!

- By now, you are probably deeply skeptical
  - ▶ Are they going to claim they've invented a new way to write tools that fixes this?
- Yes, and No
  - ▶ We think there is another way
  - ▶ We didn't invent it ...

...Al Gore did



## The Internet

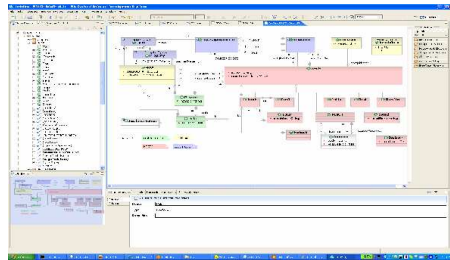
- Amazingly scalable
- Integrates information on a massive scale
- Infinitely extensible
- Collaboration on unprecedented scale
- World-wide information visibility

Suppose we expose all the data on the internet?

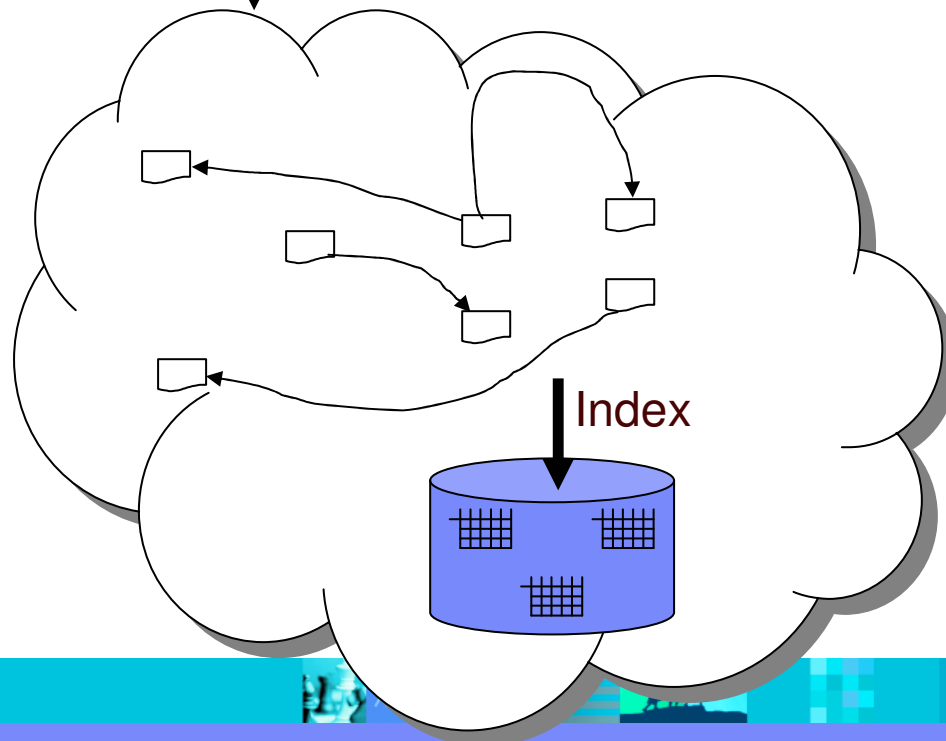
The internet is creating the challenges.  
Maybe the Internet can solve them too.



## What does this mean?



↕ HTTP get/put/post (REST)



- Data specified independently of tools
- All data are resources with URLs
  - ▶ Ubiquitous access
  - ▶ “Model in your browser” (literally)
- Tools (multiple) access data through HTTP/APP
  - ▶ Multiple tools same data
  - ▶ Data integration without forcing same tool for multiple roles
- References are embedded URLs
  - ▶ Cross technology/location
- Resources have representations
  - ▶ XML encouraged, not required
- Unprecedented extensibility
  - ▶ Extend “web”
  - ▶ New [mime-] types
  - ▶ Extend representations
- Search and query through “structured indexes”, independent
  - ▶ “Google for models” (maybe literally)
  - ▶ Not compromised by operational issues
  - ▶ Standard analysis, query, reporting

## Major paradigm shift

### Before

### After

Closed systems, special tricks	Open systems, simplicity
Data <i>in</i> files, rows	Data <i>are</i> web resources
Lists, trees, graphs	Flat resource space with query, search
Assume what's at the end of a "link"	Discover what's at the end of a "link"
Fixed "scope" of the UI	No boundaries on UI
Data formats are proprietary	Data formats are open
Data formats are fixed	Data formats are extensible



## Benefits

- Seamless integration of total lifecycle data, independent of “tools view”
  - ▶ Openness and stability
- Global reach through internet technologies
- Exploit existing infrastructure and skills
- Use of standard tools (browsers, XSLT, XQuery databses, ...)
  
- Leverage internet architecture, technologies, community, documentation (e.g. <http://www.w3.org/TR/webarch>)
  - ▶ Minimal invention
- Desirable characteristics of the internet
  - ▶ Scaling, extensibility, ...
- Implement on standard middleware



## Jazz

- A platform for building artifact-centered, internet standards-based software development collaboration tools



## How is the Thinking Behind Jazz Different?

Desktop/Database Integration → **Global Integration**

Function First → **Team First**

Manual → **Process Aware & Customizable**

Pre-determined Tool Function → **dynamically extensible**

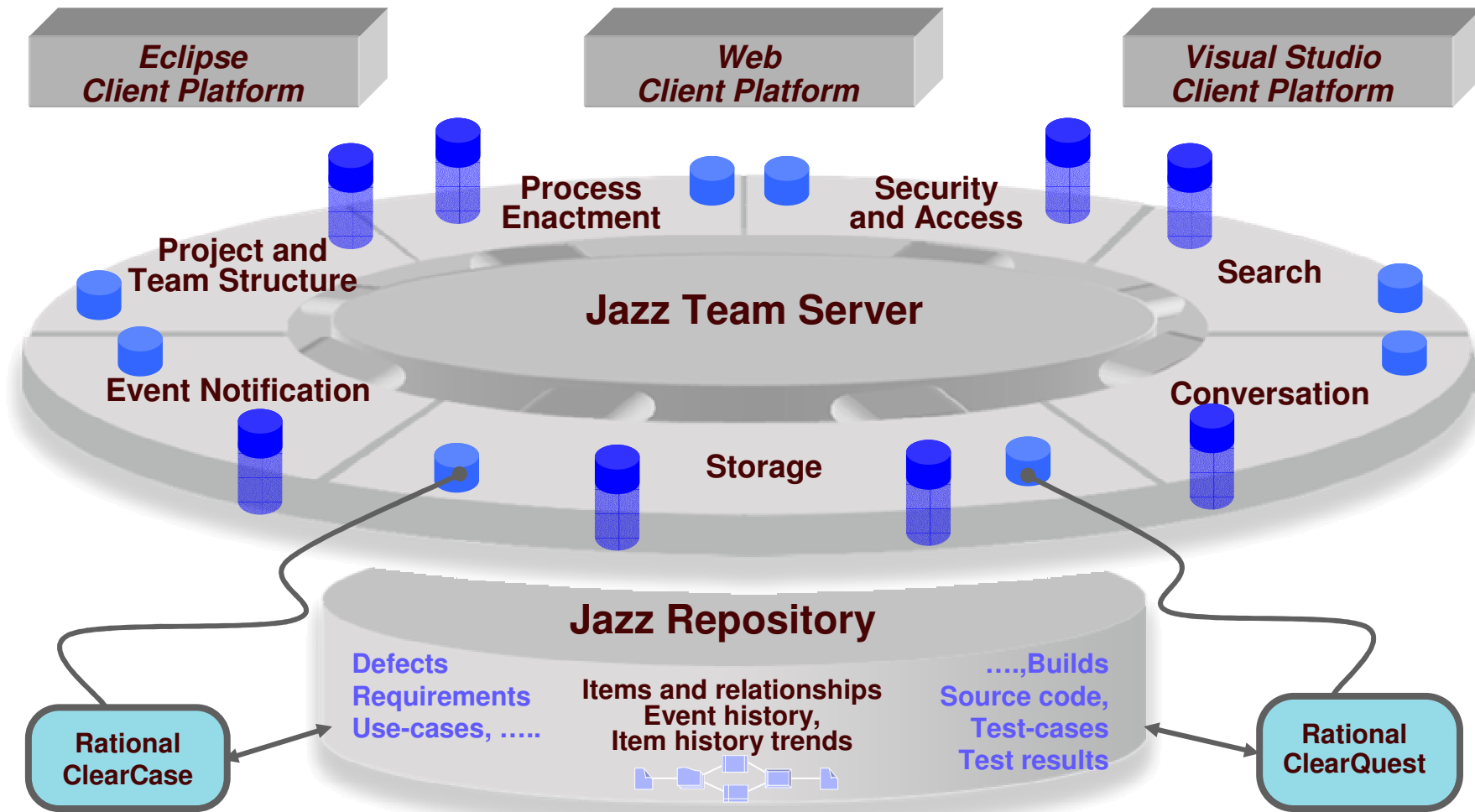
Proprietary infrastructure → **Internet Standards**

Rigid Process → **Creative Collaboration**





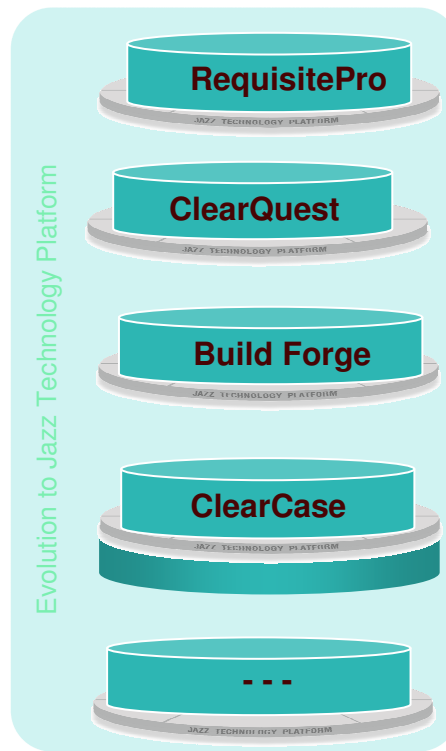
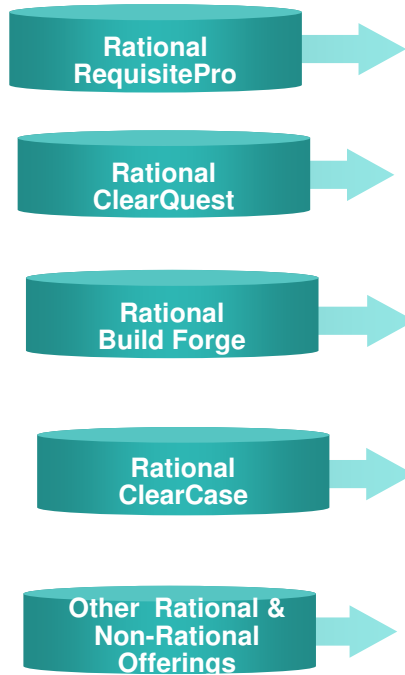
# The Jazz approach



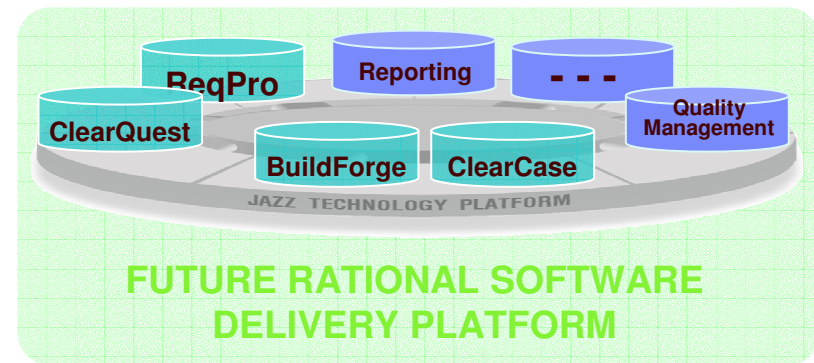
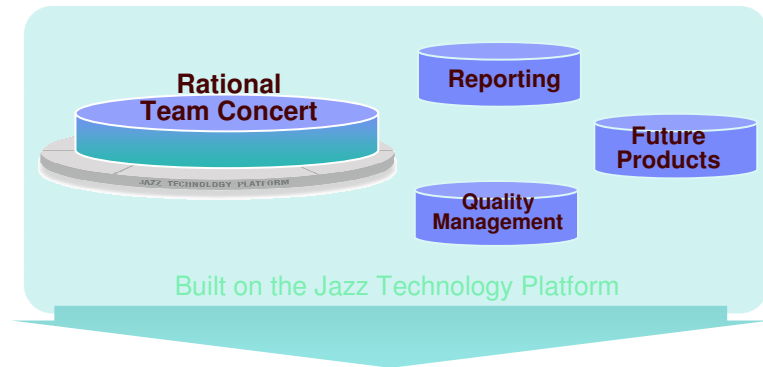
# Evolving to Jazz

## The Evolution of the IBM Rational Software Delivery Platform

### Existing Offerings



### New Offerings





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