



Application Lifecycle Management: Collaboration in Application Development

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IBM Software

ExecutiveSummit2011

A Premier Leadership Exchange

Agenda

- 
- 1 The defining challenge
 - 2 The Jazz Initiative
 - 3 IBM Rational and Collaborative Lifecycle Management

Innovation is Increasingly Delivered Through Software



Mobile banking will be the most widely used banking channel by 2020



Robotic surgery has decreased the mortality rate of bypass surgery by more than sixfold

Software is the Source of Competitive Advantage



**GM reduced
time to market,
delivering the
Volt in only**



29 months

Foundational Practices for Software-driven Innovation



Integrate

*Connecting process
and information*

Software, data, and tools

Collaborate

Unifying teams

Projects, and
organizational cultures

Optimize

Simplifying governance

Plans, scope,
and measures

IBM Software Group's Agile Transformation

Software and systems delivery

Integrate

- Common architectures
- Outside in design
- Process and tools
- Reuse
- Componentization

Collaborate

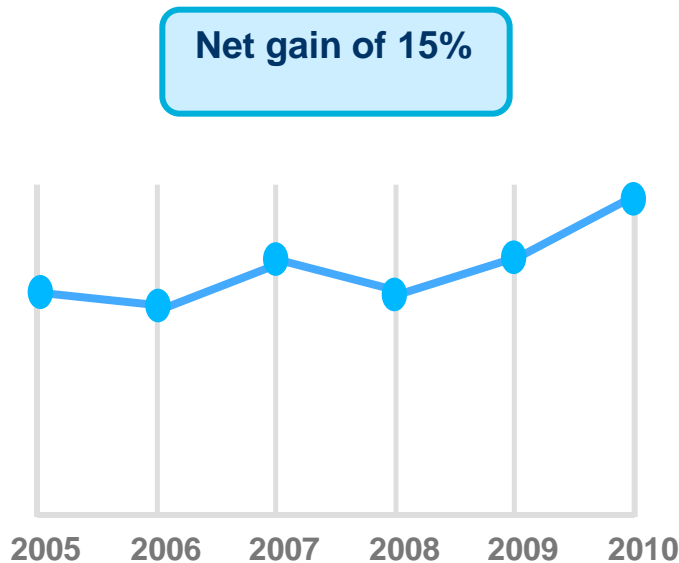
- Open, common platform
- Whole team shared objectives
- Vibrant communities of subject matter experts

Optimize

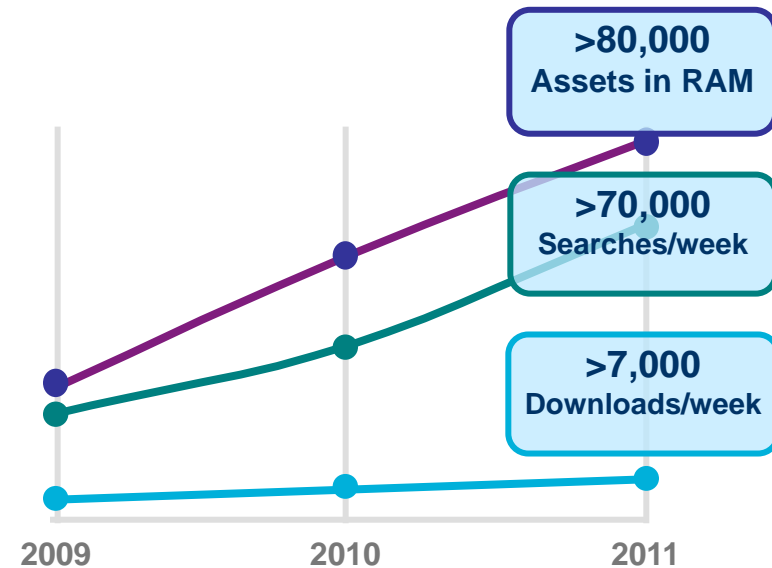
- Economic governance
- Measured improvement (revenue / headcount)
- More efficient operations
- New product investment

Results from IBM's *agility@scale* Transformation

Revenue per Headcount

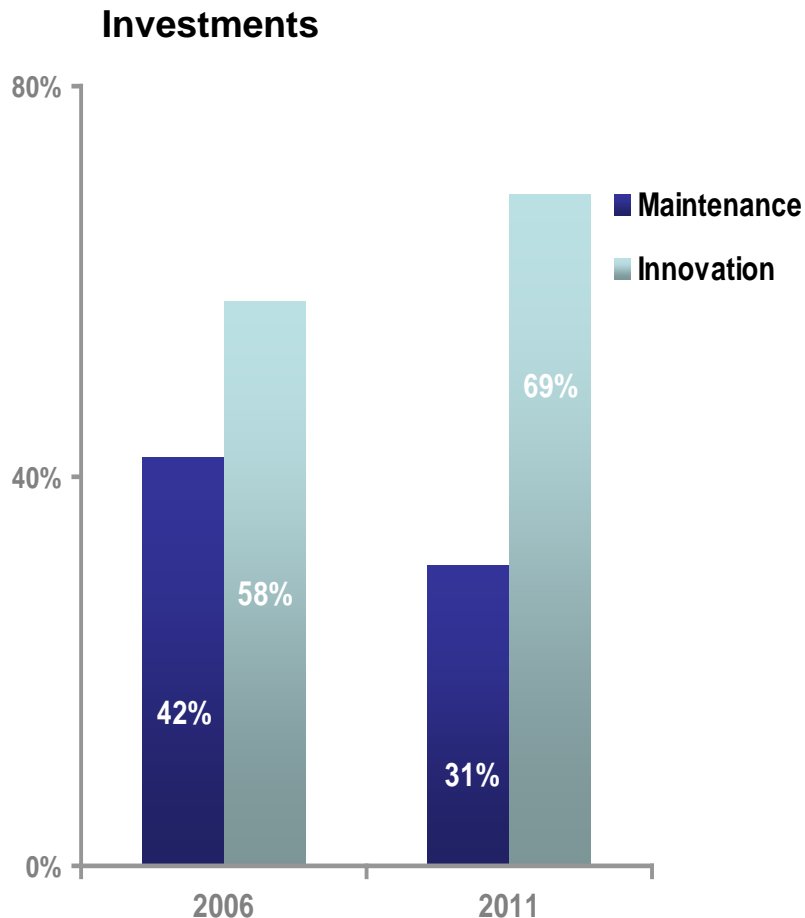


Growth in Asset Reuse *Year-to-year Growth*



Reduced scrap and rework by 4.5% and avoided \$300M in maintenance costs

Rational Transformation: Improved Efficiency Means More Innovation



Efficiency Measures	2006	2011
On time delivery	47%	95%
Defect backlog in months	>9	2.7
Beta defects fixed before GA	3%	95%
Agile / iterative projects	5%	85%

New capabilities on the Jazz Platform

NEW

**Collaborative
Design
Management**

ENHANCED

**Solution for
Collaborative
Lifecycle
Management**

ENHANCED

**Solution for
Software
and Systems
Engineering**

ENHANCED

**Collaborative
Development
& Operations**



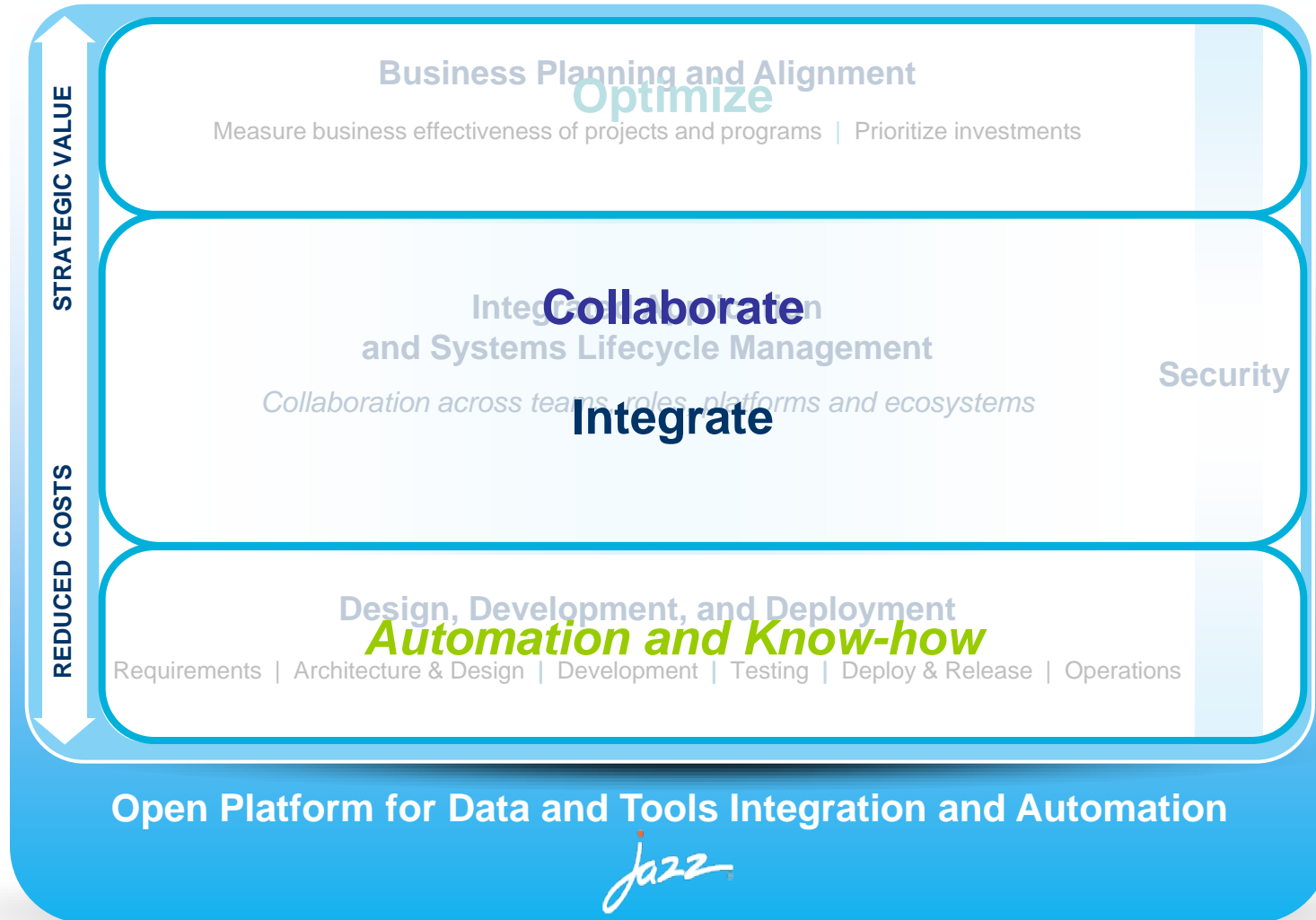
*Open Services for Lifecycle Collaboration
and
Integration Services*

JazzHub



**Rational
Community at
developerWorks**

Our Capabilities to Help You Achieve Breakthrough Benefits



Leveraging the Power of Jazz and OSLC

COMMUNITY

Transparent collaboration and exchange of ideas



PRODUCTS

Application lifecycle tools that leverage the Jazz platform

PLATFORM

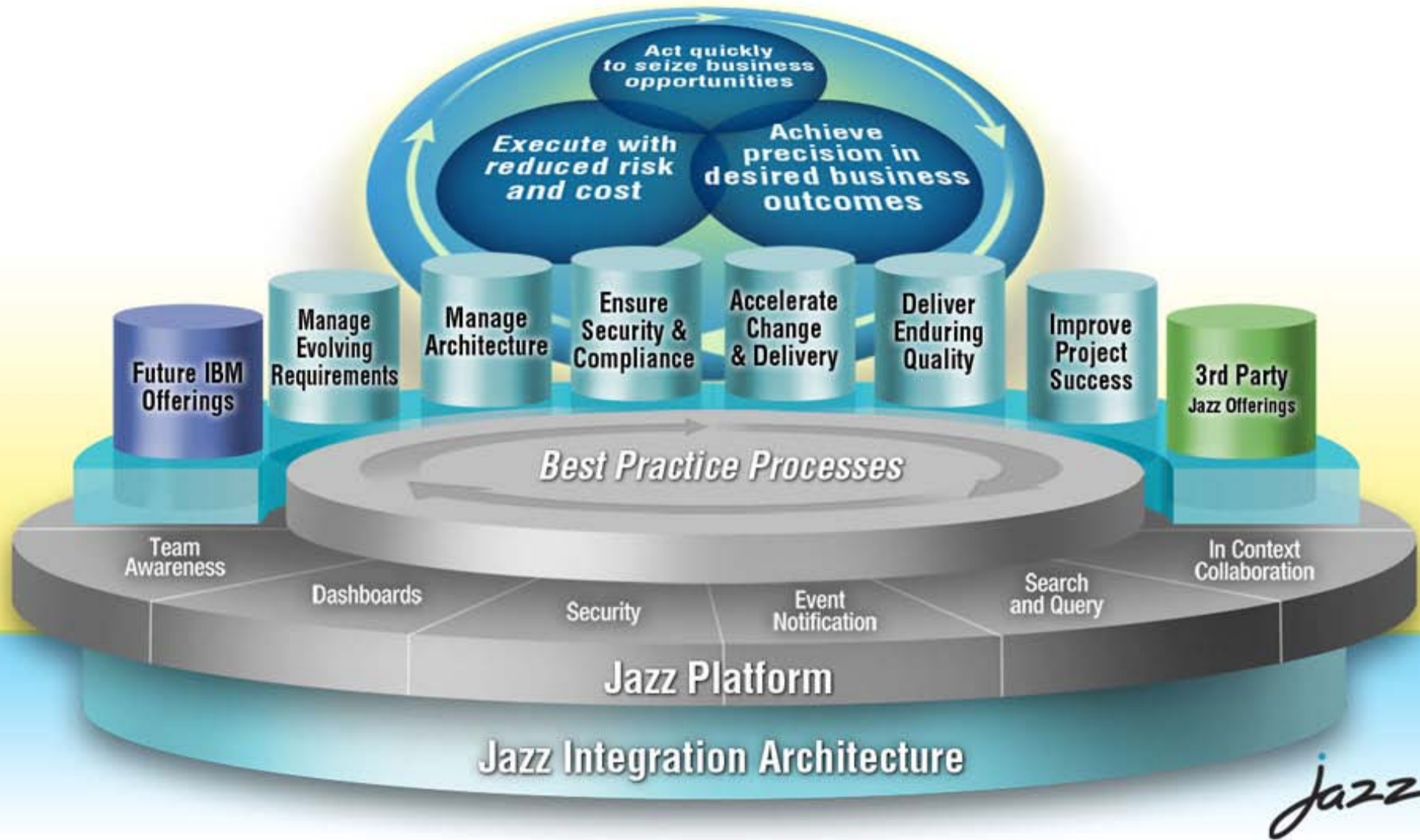


*Open Services for Lifecycle Collaboration
and
Integration Services*



Application frameworks and toolkits

Jazz provides the platform for an integrated and open portfolio



An ALM solution powered by Jazz

Rational solution for Collaborative Lifecycle Management

CREATE SOFTWARE

*Real-time Planning, Lifecycle Traceability, Team Collaboration,
Development Intelligence, Continuous Process Improvement*

Requirement
Definition and
Management

Plan , Change,
Configuration,
Build

Test Management



*extensions

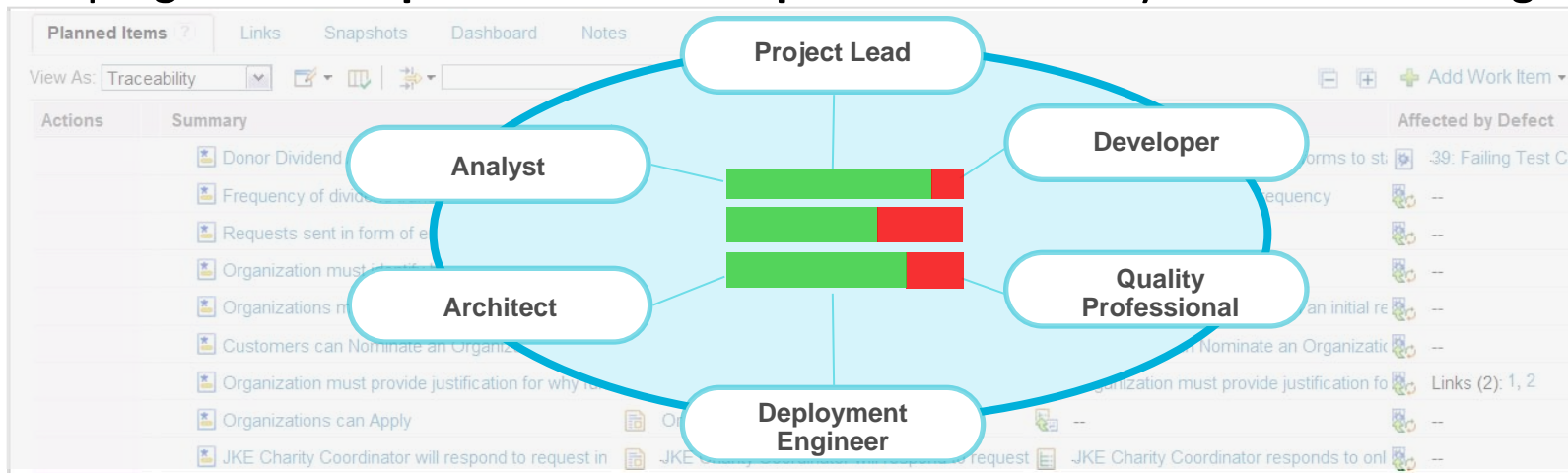
Criteria for effective lifecycle management: ALM imperatives

1. Realtime planning
2. Lifecycle traceability
3. In-Context collaboration
4. Development intelligence
5. Continuous process improvement

What is Real-time Planning?

Real-time Planning improves time to delivery by:

- Providing a **single plan** that spans requirements, development, and test, ensuring a team understanding of the overall scope of a project
- **Integrating planning with execution**, ensuring the entire team understands the true project status
- Allowing **everyone to participate** in keeping the plan current and accurate
- Helping teams **respond to the unexpected** in a timely manner ensuring the



One plan - Multiple views facilitate detailed analysis

1 BRM Sprint 2 (1.0) Plan

26 items: 23 open, 3 closed | Ends in: 3 days

Plan Details Edit

Planned Items Links Snapshots Dashboard Notes

View As: Roadmap (3 items filtered) Add Work Item

Actions	Summary	Effective Estimate	Owned By
	Frequency of dividend transfer	--	Unassig
	Requests sent in form of email	--	Unassig
	Organization must identify how much money is desired	--	Marco
	Implement - Organization must identify how much money	1.5 days	Marco
	Organizations may apply with an initial request	--	Marco
	Implement - Organizations may apply with an initial requ	4 hours	Marco
	Customers can Nominate an Organization	--	Deb
	Implement - Customers can Nominate an Organization	1 day	Deb
	Organization must provide justification for why funds are	--	Marco

2 BRM Sprint 2 (1.0) Plan

30 items: 25 open, 5 closed | Ends in: 6 days

Plan Details

Planned Items Links Snapshots Dashboard Notes

View As: Taskboard

Story	Open	In Pro
Donor Dividend Allocation Criteria	Implement - Donor Dividend Allocation Criteria	
Frequency of dividend transfer		Implement - Frequency of dividend transfer

3 BRM Sprint 2 (1.0) Plan

30 items: 25 open, 5 closed | Ends in: 6 days

Plan Details

Planned Items Links Snapshots Dashboard Notes

View As: Planned Time

Bob	Closed Items: 0 Open Items: 1	Load: 0/8 +8 h
CP	Closed Items: 0 Open Items: 1	Load: 0/8 +8 h
Deb	Closed Items: 3 Open Items: 5	Load: 168/8 -160 h
Marco	Closed Items: 2 Open Items: 14	Load: 92/8 -84 h
Tanuj	Closed Items: 0 Open Items: 0	Load: 0/8 +8 h

Plan at the right level of detail

- Everyone participates in planning

✓ Stories decomposed into the right set of tasks

✓ Plans include all work!
✓ All team members,
✓ All types of work

BRM Sprint 2 (1.0) Plan

3 days

Auto-Save Save

Edit

View As: Work Breakdown (5 items filtered)

Bob
Closed Items: 1 | Open Items: 3

Deb
Closed Items: 0 | Open Items: 3

Actions	Summary	Effective Estimate	Progress	Status	Work Item Type	Change Sets	Attachments
	Improve link colors	1 hour	0/1 h	New	Defect	--	--
	Donor Dividend Allocation Criteria	--	0/5 pts 0/20 h	In Progress	Story	--	Links (2...
	Implement - Donor Dividend A...	2.5 days	0/20 h	New	Task	--	--
	Update router module with ne...	--	0/0 h	In Progress	Task	Changes in P...	--
	create new service for validati...	--	0/0 h	In Progress	Task	Changes in W...	--
	Performance on first startup is bad	2 hours	0/2 h	New	Defect	--	--
	Some links are not working	5 hours	0/5 h	New	Defect	--	--
	Frequency of dividend transfer	--	0/13 pts 0/40 h	New	Story	--	--
	Requests sent in form of email	--	0/8 pts 0/32 h	New	Story	--	--
	Marco	Closed Items: 2 Open Items: 11	Progress: 12/52 -33.25 h	Estimated: 91%			
	Tanuj	Closed Items: 0 Open Items: 0	Progress: --	Estimated: --		No Work	
	Unassigned	Closed Items: 0 Open Items: 2					

Plans tied to execution

- Deliverables and Work Products show results

BRM Sprint 2 (1.0) Plan

28 items: 25 open, 3 closed | Ends in: 3 days

Plan Details

Planned Items ? Links

View As: Work Breakdown

Bob
Closed Items: 0 | Open Items: 9

Deb
Closed Items: 0 | Open Items: 9

Marco
Closed Items: 2 | Open Items: 11

Tanuj
Closed Items: 0 | Open Items: 0

Unassigned
Closed Items: 0 | Open Items: 2

Auto-Save Save

Edit

Add Work Item

Progress: 0/9 | -8 h Estimated: 100%

Progress: 0/100 | -87 h Estimated: 78%

Progress: 12/52 | -33.25 h Estimated: 91%

Progress: -- No Work Estimated: --

✓ Change Sets & Attachments are better !

✓ Progress & Status are good indicators of execution.

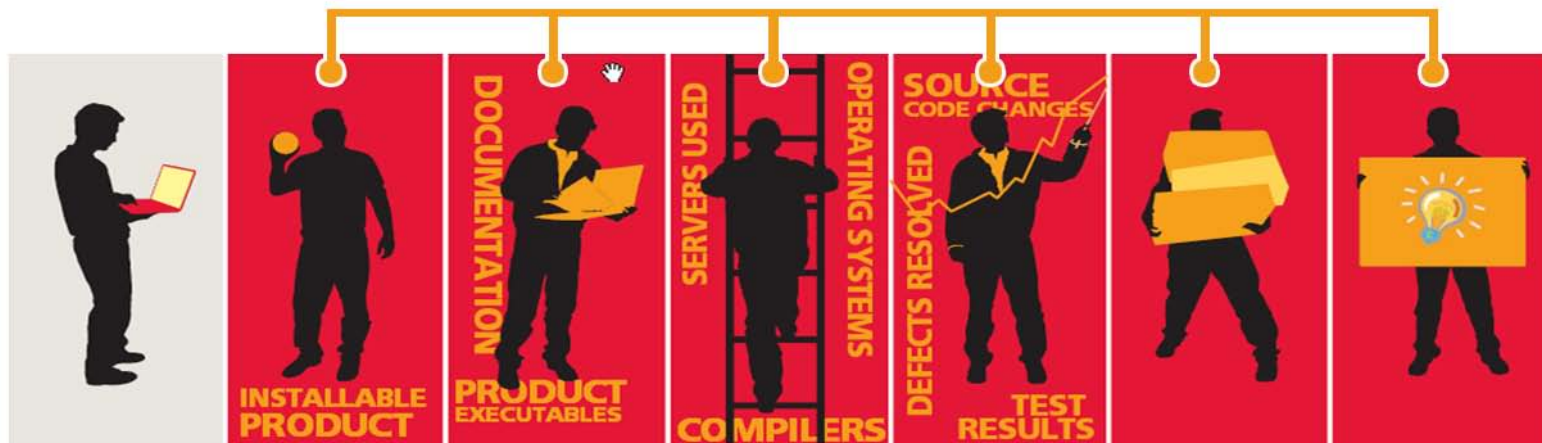
Actions	Summary	Effective Estimate	Progress	Status	Work Item Type	Change Sets	Attachments
	Improve link colors	1 hour	0/1 h	New	Defect	--	--
	Donor Dividend Allocation Criteria	--	0/5 pts 0/20 h	In Progress	Story	--	Links (2...
	Implement - Donor Dividend A...	2.5 days	0/20 h	New	Task	--	--
	Update router module with ne...	--	0/0 h	In Progress	Task	Changes in P...	--
	create new service for validati...	--	0/0 h	In Progress	Task	Changes in W...	--
	Performance on first startup is bad	2 hours	0/2 h	New	Defect	--	--
	Some links are not working	5 hours	0/5 h	New	Defect	--	--
	Frequency of dividend transfer	--	0/13 pts 0/40 h	New	Story	--	--
	Requests sent in form of email	--	0/8 pts 0/32 h	New	Story	--	--

What is Lifecycle Traceability?

Lifecycle Traceability improves quality by:

- Establishing **relationships between software artifacts**
- Helping you **identify and close artifact gaps**, ensuring **coverage** across disciplines
- Provides visibility into the **completeness** of planned items by inspecting all related artifacts
- Provides easy **access to related artifacts** ensuring everyone shares the same view
- Delivers transparency which enables everyone to make **fully informed decisions** based business priorities

Instant access to details from any point in the development process



Customer

Final Product

Build Artifacts

Environment

Supporting Systems

Requirements Management

Initial Idea

IBM Software

Executive Summit 2011



Developer have visibility into the Requirement they will be implementing

For the Developer

- ✓ **Rich Hovers** provides insight at your finger tips reducing time to value.
- ✓ **Clickable links** provides valuable information on requirement

Story 64 *

Summary: * Ir

Overview Accept

Attachments

Add File:

No Attachments.

Links

Add: [Related](#)

Implements Req

- ↳ [29: Custom](#)

Tested By Test Case

- ↳ [6: Organization must identify how much money is desired](#)
- ↳ [7: Allocate dividends by amount and frequency](#)
- ↳ [10: Customers can Nominate an Organization](#)
- ↳ [9: Donors Can Choose to Support an Organization](#)

29: Customers can nominate an organization for the program

Requirement: Customers can Nominate an Organization Brief
Description Customer may nominate an organization for assistance whether a result of a catastrophic event or from some other justification. A

Location

- ↳ [JKE Banking \(Requirements\) Features](#)
- ↳ [Extended Functionality, Release 1](#)

Attributes

Type:	Feature	Format:	Text
Description:		Stability:	Medium
Origin:	Customer	Difficulty:	Medium
Status:	Draft	Business Priority:	Should

Links

- ↳ [Constrained by \(3\): 27, 72, 84](#)
- ↳ [References Term \(3\): 13, 31, 102](#)
- ↳ [Implemented By \(1\): ...](#)
- ↳ [Link To \(1\): 81](#)
- ↳ [Embedded In \(1\): 112](#)

Team Leads have visibility into coverage & completeness

- Proactively respond to gaps as they surface through out the project
 - Issues quickly highlighted and resolved

BRM Sprint 2 (1.0) Plan * ?

26 items: 23 open, 3 closed | Ends in: 3 days

Plan Details Edit

Planned Items ? Links Snapshots Dashboard Notes

View As: Traceability (17 items filtered)

Actions	Summary	Owned By	Implements Requirement	Tested By Test Case	Affected by
	Requests sent in form of email	Unassigned	Requests sent in form of email	--	--
	Frequency of dividend transfer	Unassigned	--	Verify dividend transfer frequency	--
	Organization must provide justification for why funds are nee	Marco	Organization must provide justification for why funds are ne	Organization must provide justificatio	--
	Organizations can Apply	Marco	Organizations can apply	Organizations can Apply	--
	Organization must identify how much money is desired	Marco	Organization must identify how much money is desired	Organization must identify how much	Links (2)
	Donor Dividend Allocation Criteria	Deb	Donor Dividend Allocation Criteria	Donor dividend allocation conforms t	--
	Organizations may apply with an initial request	Bob	Organizations may apply with an initial request	Organizations may apply with an initi	--
	JKE Charity Coordinator will respond to request in the websit	Marco	JKE Charity Coordinator will respond to request in the web	JKE Charity Coordinator responds to	425: Rur
	Customers can Nominate an Organization	Marco	Customers can nominate an organization for the program	Customers can Nominate an Organi	--

Team Leads have visibility into coverage & completeness

Tailor traceability View to highlight planning Gaps

BRM Sprint 2 (1.0) Plan Link Type : value

26 items: 23 open, 3 closed | Ends in: 3 days

Plan Details

Planned Items

View As: Traceability

Traceability

Options

Sorting

Filter

Colors

Colors

Colors

Colors

Colors

Colors

gap | implementsRequirement:unset

gap | testedByTestCase:unset

Defect | affectedbyDefect:set

gap | testedByTestCase:unset

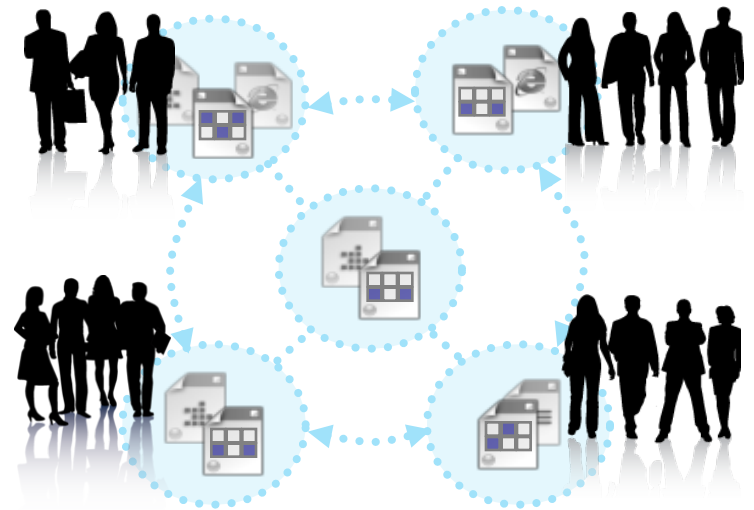
Defect | affectedbyDefect:set

Actions	Summary	Owned By	Implements Requirement	Tested By Test Case	Affected by Defect
gap	Requests sent in form of email	Unassigned	Requests sent in form of email	--	--
gap	Frequency of dividend transfer	Unassigned	--	Verify dividend transfer frequency	--
	Organization must provide justification for why funds are nee	Marco	Organization must provide justification for why fund	Organization must provide justification fo	--
	Organizations can Apply	Marco	Organizations can apply	Organizations can Apply	--
Defect	Organization must identify how much money is desired	Marco	Organization must identify how much money is des	Organization must identify how much mc	Links (2): 1, 2
	Donor Dividend Allocation Criteria	Deb	Donor Dividend Allocation Criteria	Donor dividend allocation conforms to sl	--
	Organizations may apply with an initial request	Bob	Organizations may apply with an initial request	Organizations may apply with an initial re	--
Defect	JKE Charity Coordinator will respond to request in the we	Marco	JKE Charity Coordinator will respond to request in	JKE Charity Coordinator responds to onl	425: Running out of SW
	Customers can Nominate an Organization	Marco	Customers can nominate an organization for the pi	Customers can Nominate an Organizati	--

What is In-Context Collaboration?


In-Context Collaboration improves delivery value by:

- Making **information immediately accessible** to all team members in the context of their work
- Empowering teams to collaborate on and review software development artifacts so they can **incorporate feedback early and often**
- Providing **single source of truth** hosted in a shared repository so that team members can collaborate effectively around the globe




In-Context Collaboration always shows the latest

Comments (4)


-  Bob to Deb, Marco 5 minutes ago (2 replies)

Percentage format - numer of decimal places


How many decimal places should we support for percent

Example: none - 16%, 1 decimal place 16.5%
-  Marco to Bob, Deb 5 minutes ago

RE: Percentage format - numer of decimal places #1

I checked the DB table. We did not take into account decimals for this percentage. If we are going to support decimals I need to know ASAP.
-  Deb to Bob, Marco Now

RE: Percentage format - numer of decimal places #2

Bob, is no decimal support acceptable to the business?
-  Tanuj to Bob 1 minute ago

What is the minimum percentage?

Threaded discussions on requirements

View All Artifacts ? Highlight recently commented

Page size: 20 No grouping

ID	Name	Artifact Type	Last Modified By	Last Modified Date
44	Accounts Overview	Part	JTSAdmin	Mar 26, 2011 5:43:06 PM
50	Transaction History	Part	JTSAdmin	Mar 26, 2011 5:43:10 PM
53	Accounts Overview (Home Page)	Sketch	JTSAdmin	Mar 26, 2011 5:43:11 PM
55	Dividend Contribution - screen flow	Screen Flow	JTSAdmin	Mar 26, 2011 5:43:11 PM
60	Account Details	Part	JTSAdmin	Mar 26, 2011 5:43:13 PM
67	Dividend Contribution	Storyboard	JTSAdmin	Mar 26, 2011 5:43:15 PM
75	Donor must be registered user to access account details	Business Rule	JTSAdmin	Mar 26, 2011 5:43:19 PM
79	Donors will receive confirmation and receipt	Feature	JTSAdmin	Mar 26, 2011 5:43:21 PM
89	Dividend contribution - confirmation	Sketch	JTSAdmin	Mar 26, 2011 5:43:23 PM

Recent Threaded discussions highlighted on requirements

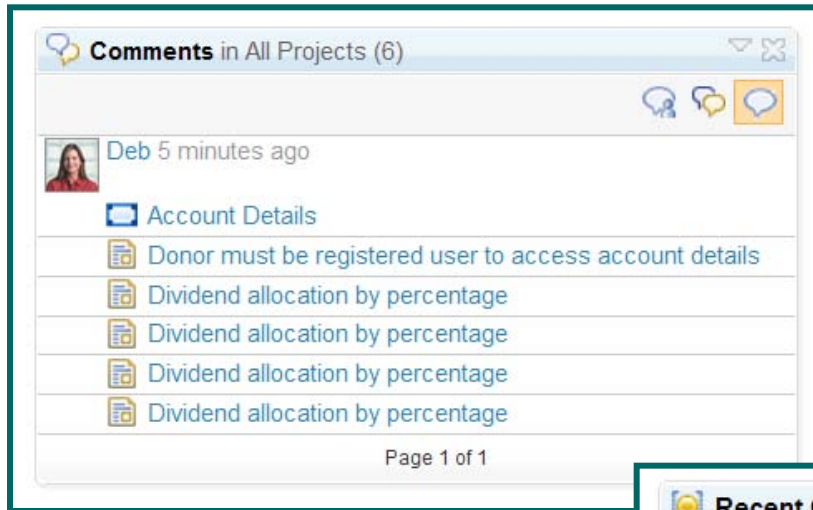
Work Items Tag Cloud Problems

Found 9 work items - Stories (current sprint)

Id	Status	P	Story Points	Summary	Owned By
55	New		13 pts	Frequency of dividend transfer	Deb
59	Implemented		8 pts	Requests sent in form of email	Marco
60	New		3 pts	Organization must identify how much money is desired	Marco
62	New		1 pt	Organizations may apply with an initial request	Marco
64	In Progress		2 pts	Customers can Nominate an Organization	Deb
66	New		1 pt	Organization must provide justification for why funds are needed	Marco
69	New		2 pts	Organizations can Apply	Deb
70	In Progress		5 pts	Donor Dividend Allocation Criteria	Deb
71	New		1 pt	JKE Charity Coordinator will respond to request in the website trigger...	Marco

Unread work Items bolded for developers

Dashboards summarize for quick access to the latest information



Comments in All Projects (6)

Deb 5 minutes ago

- Account Details
- Dividend allocation by percentage
- Dividend allocation by percentage
- Dividend allocation by percentage
- Dividend allocation by percentage
- Dividend allocation by percentage

Page 1 of 1



Requirements comment updates

Feeds focused on Requirement comments focus stakeholders on changes and strip out the noise of attributes changes etc..

Any changes to a Requirement



Feeds on all changes give project leads visibility into all requirements changes so they know exactly what is changing by whom and can access immediately assess the impact for the team.



Recent Changes in All Projects (100)

- Dividend Contribution to Multiple Organizations (122) Mar 26, 2011
- User Story Elaboration Template (121) Mar 26, 2011
- Dividend allocation by percentage (120) Mar 26, 2011
- Use Case Template (119) Mar 26, 2011
- Donors can choose to support an organization (118) Mar 26, 2011
- Allocating Dividends to Cause (117) Mar 26, 2011
- Allocate dividends by amount and frequency (116) Mar 26, 2011
- Donate wizard pg 1 (115) Mar 26, 2011
- Apply for Organizational Funding (114) Mar 26, 2011
- Core Functionality (113) Mar 26, 2011

Page 1 of 10

Formal Reviews drive agreement and prevent re-work

✓ Reviews & approvals insures artifacts are reviewed and/or approved by key team members and captures compliance requirements.

Requirements

JKE Banking (Requirements) > Approval

Participant's Review: In progress 0% completed | Your role: Approver

Overall Review: Draft → In progress 65% completed | Pause Review

Due: Apr 18, 2011

Instructions to reviewers:
List of requirements for our second sprint. All comments have been resolved. Please review and approve requirements as written.

<input type="checkbox"/>	Participant	Type of Participant	Review results
<input type="checkbox"/>	Bob	Approver	Done - 5 Approved
<input type="checkbox"/>	Deb	Approver	Done - 5 Approved
<input type="checkbox"/>	Marco	Approver	60% - 2 Approved, 1 Disapproved
<input type="checkbox"/>	Tanuj	Approver	

Test Artifacts

Work Items

18 : Dividend Allocation by Percentage

Test Case Overview | Snapshots | History

Originator: Tanuj | Owner: Tanuj | State: Under Review

Description: select a list of potential donations and enter percentages for each

Formal Review

List the people who will be reviewers and approvers of this content and define your review process.

View: All

Show All Items per page | Previous | 1 - 4 of 4 | Next

<input type="checkbox"/>	Review Type	Name	Status	Comments
<input type="checkbox"/>	Approver	Bob	Pending	
<input type="checkbox"/>	Reviewer	Sally	Pending	

Task 41 * | Implement - Frequency of dividend transfer

Summary: *

Overview | Links | Approvals | History

Approvals (1) - 1 pending

New: Approval

Type	Name	State	Due
Review	Check of algorithm to prevent transfer on weekend	Pending	Apr 18, 2011
	AI	Pending	
	Curtis	Pending	
	Tanuj	Approved	

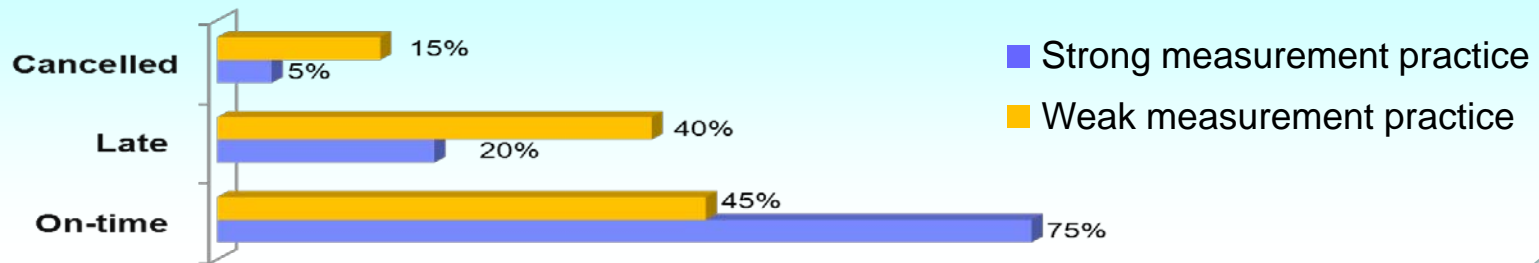
Add Approvers...

What is Development Intelligence?

Development Intelligence improves predictability by:

- Applying **Business Intelligence techniques** to software and systems development
- Enabling **fact-based decision making** (to communicate status, monitor progress, diagnose problems, identify corrective actions)
- **Steering projects and programs** to deliver on-time

Measurement practices impact project success



Source: Capers Jones, *Measurement, Metrics and Industry Leadership*, 2009 and *Software Engineering Best Practices*, McGraw Hill, 2010.

From In Process (Team) To Executive Value

Appropriate Metrics for Each Management level

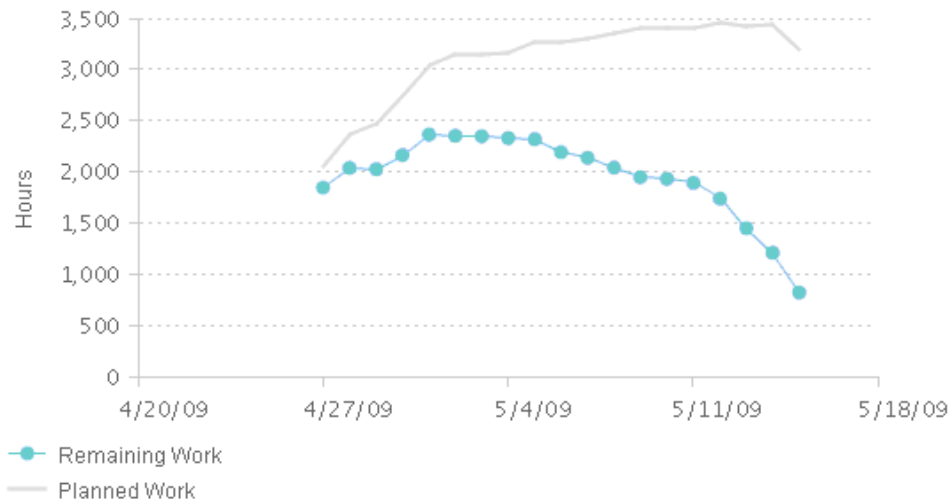
Dimensions	Team (In Process)	Middle Management (Development Mgmt.)	Development Executive (VP Development)
Time-to-Value (Schedule)	User Story Points / Use Case Points		
	Iteration Burndown, Blocking Work Item		
		Release Burndown	
Product Value	Iteration Velocity		
	Stakeholder Feedback, # of Enhancement Request, Age of Enhancement Request		
		Tested and Delivered Requirements, Business Value Velocity, Customer Satisfaction	
Product Cost	Effort (Man-hours)		
		Cost / Unit of work	
			Development / Maintenance Costs
Product Quality	Technical Debt (Defect trend, defect density)		
	Test Status, Test Coverage of Requirement, Test Execution Status		
		Quality at Ship	
Predictability	User Story Points / Use Case Points		
		Planned/Actual Cost and Velocity	
		Trend Variance. Likelihood of on-time delivery	

Measuring Time-to-Value (Schedule)

Iteration Burndown

Showing how much work is left to do in an iteration. It enables the team to adjust scope or resources to finish the iteration successfully.

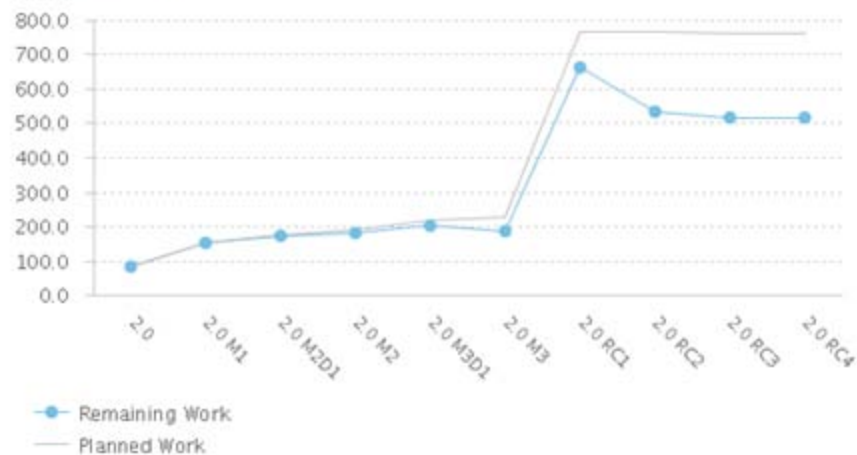
Burndown



Release Burndown

Shows the estimated functionality remaining to complete the current release.

Release burndown

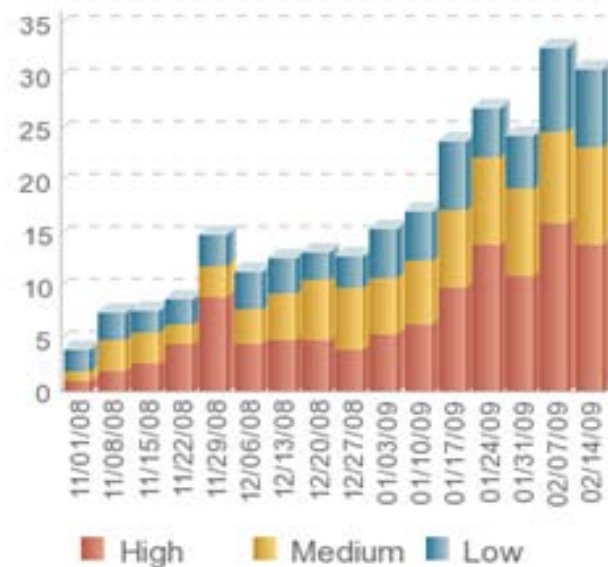


Measuring Delivery Value

Enhancement Request Trend

Shows the trend of enhancement requests received, approved, and closed during the project lifecycle. A high number of enhancement requests can indicate that the system is not functioning as stakeholders expected.

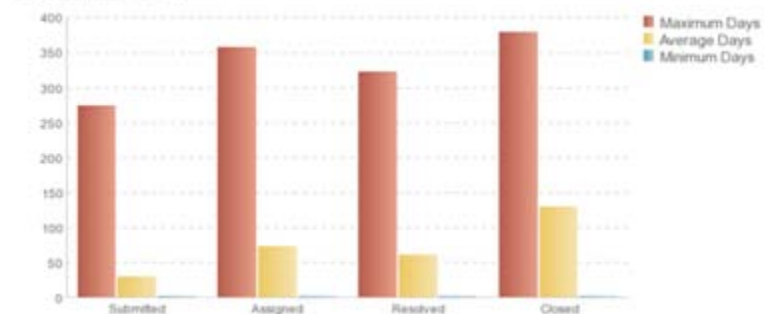
Number of Enhancements



Age of Enhancement Requests

Tracks the length of time stakeholder enhancement requests remain open. Unaddressed requests can impact the stakeholders' perception of value.

Days Spent in Each State



Measuring Delivery Cost

Cost per unit of work

Tracks the cost of delivering a single unit of work (such as a user story point or use case point) across iterations. Monitoring this metric in each iteration helps the team understand if they are burning budget at a sustainable rate.

Cost per Unit of Work

Effort per Story Point



Measuring Delivery Quality

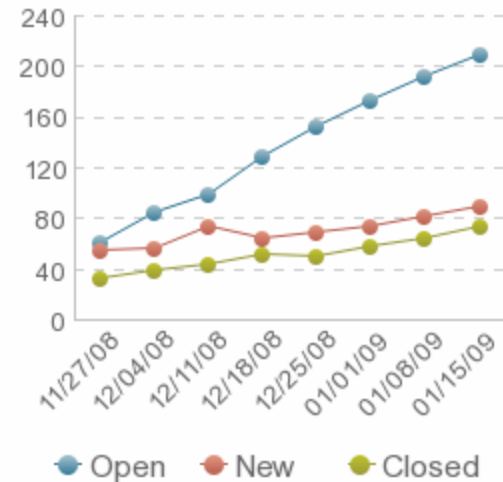
Defect Trends

Shows defect arrival and closure rates, determines the remaining defect backlog, projects the future defect arrival/close rate up to and post-ship

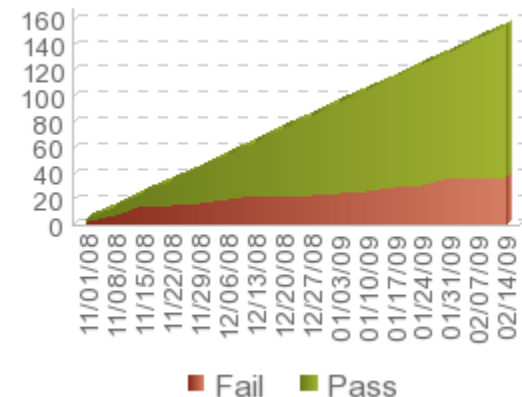
Test Execution Status

Monitors test completion and success

Number of Defects



Number of Executed Tests

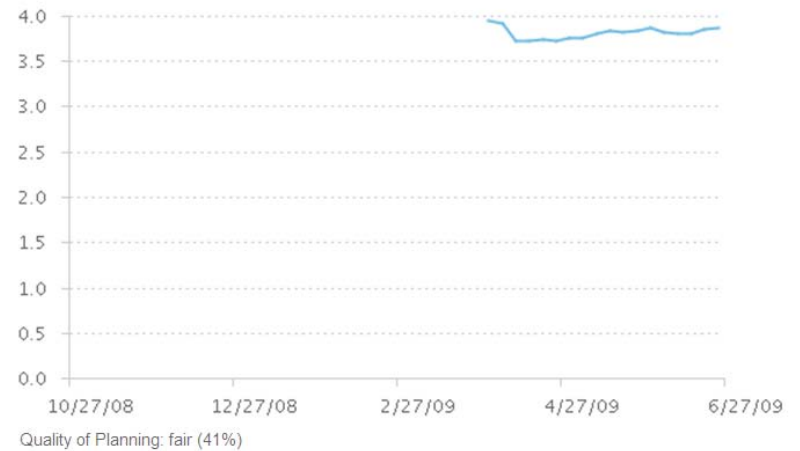


Measuring Predictability

Velocity Variance

Indicates ability of team to deal with uncertainty of the iteration. This helps the team identify the degree to which variance across the lifecycle might impact the cost and schedule of the project.

Estimated vs. Actual Work



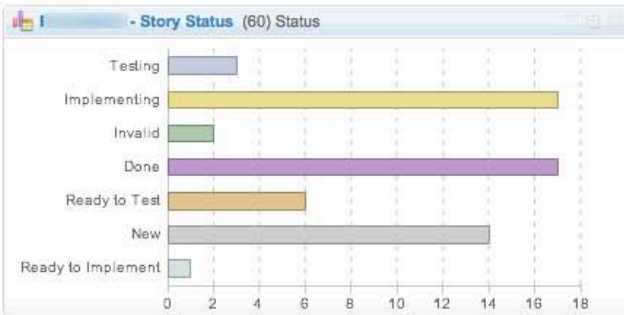
Use dashboards to provide that 1 view of project health

JKE Banking (Change Management)*[?]

Overview | Time to Value (Schedule) | Product Value | Product Cost | Product Quality | Reports | Stabilization

Story Status Current Iteration

Shows the status of all stories planned for the current iteration



- #### 1 - Current Stories (60)
- 150501: Improve Web UI error reporting
 - 154382: Completion (M14) of foundation support for migrating RRC 2.x to 3.0, and JTS consolidation
 - 155918: Provide TVT testcases and testcase updates to TVT team
 - 154263: [Continuation] Create server diagnostics tests and reports that make various checks
 - 155024: Track the fixing of hangs occurring on shutdown of the CLM server
 - 155399: [Repository - M14] Performance, quality and robustness enhancements
 - 156051: Improvements and fixes for CLM migration automation
 - 154929: [Repository - M14] Address high severity defects, Reduce backlog
 - 155033: Explore servlet dispatching enablement as a backup option
 - 155486: [Repository M14] Serviceability and Consumability Improvements
- Page 1 of 6

Burndown Current Iteration

Shows the remaining amount of estimated work in hours of work items planned for the current iteration.



Stories Open/Closed/In Progress

Shows the number of stories which are open, in progress, done during the iteration.



What is Continuous Improvement?

Continuous Improvement reduces cost by:

- Improving software delivery through the ongoing **adoption of best practices and automation** to reduce manual, non-creative and error prone tasks
- Promoting **incremental improvement of a project** when needed
- Enabling breakthrough improvement by **capturing best practices and reusing** across teams
- Allowing **everyone to participate** with easy to adopt best practices at your fingertips.

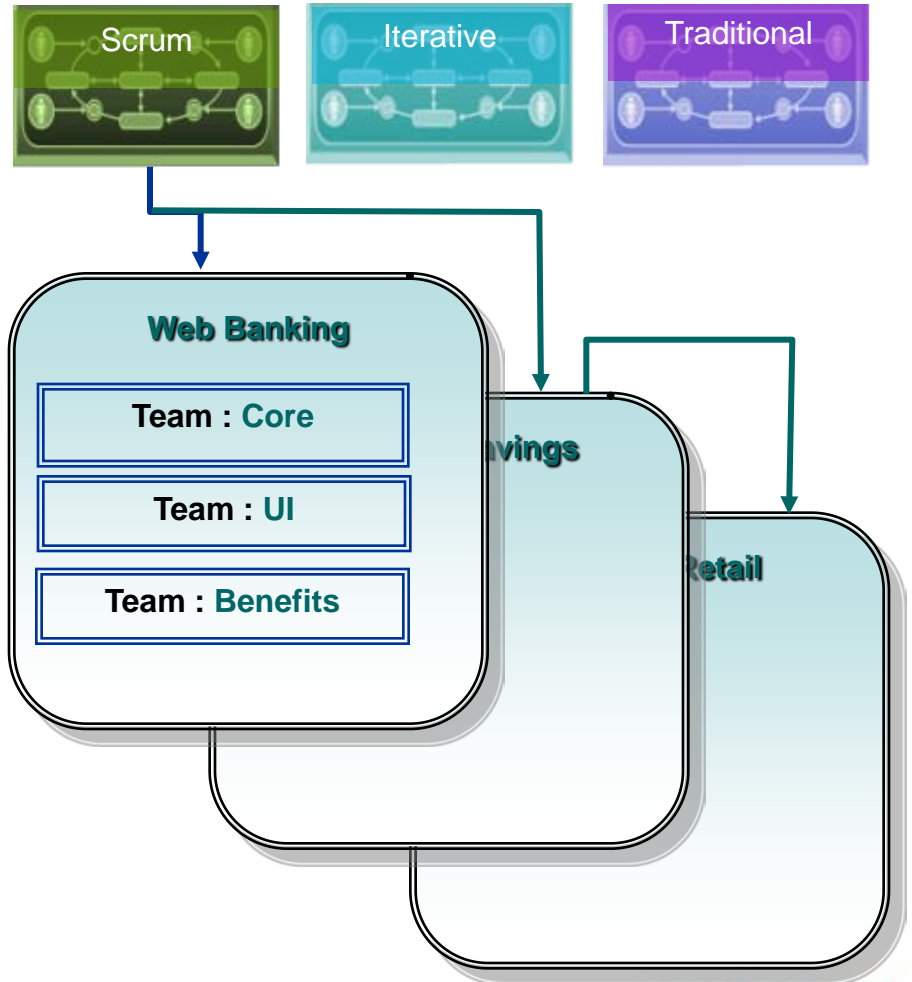
“Successful analytics requires taking it beyond software and reporting, and into the realm of management practices and operations improvement”

Information Management Online, February 23, 2011

Adopt - Process Sharing

Leverage the Best practices from Rational and other teams

- 1 Import/export Templates**
Provides the ability to leverage best practices from Rational and other teams
- 2 Servers support multiple templates**
Allowing administrators to support different processes.
Teams improve their process independently.
- 3 Process updates can be shared**
Allows teams to control when they want to accept improvements.



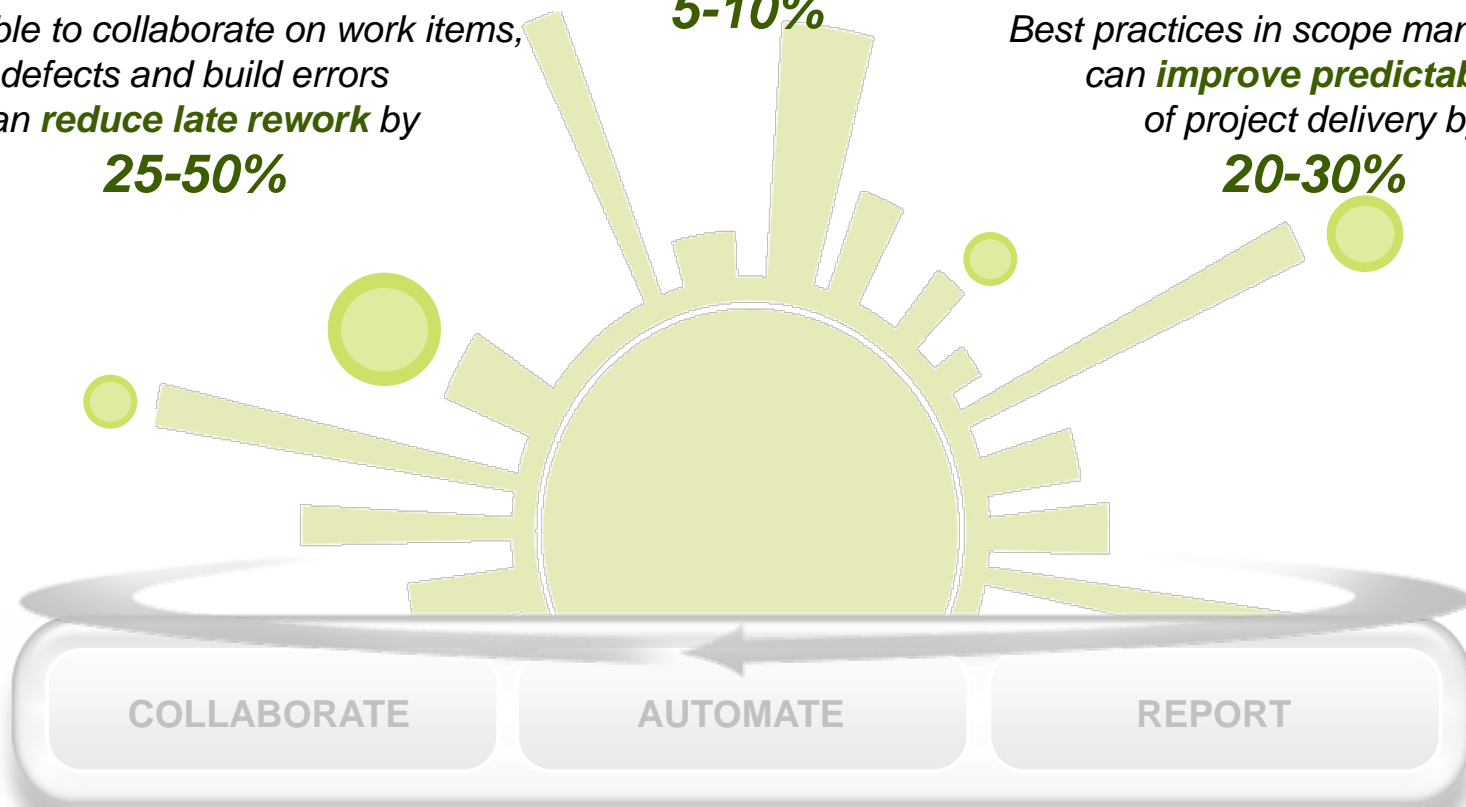
Business results

Automated status reporting
derived from evolving engineering artifacts
can **improve productivity** by

5-10%

Being able to collaborate on work items,
defects and build errors
can **reduce late rework** by
25-50%

Best practices in scope management
can **improve predictability**
of project delivery by
20-30%



Criteria for effective lifecycle management: ALM imperatives

1. Accelerate *time to delivery* with **Real-time Planning**
2. Improve *quality* with **Lifecycle Traceability**
3. Maximize *software delivery value* with **In-Context Collaboration**
4. Refine *predictability* with **Development Intelligence**
5. Reduce *costs* with **Continuous Improvement**



Grazie

ITALIAN

धन्यवाद

HINDI

Merci

FRENCH

ありがとうございました

JAPANESE

Obrigado

BRAZILIAN PORTUGUESE

多谢

SIMPLIFIED CHINESE

Thank You

多謝

TRADITIONAL CHINESE

Gracias

SPANISH

Спасибо

RUSSIAN

நன்றி

TAMIL

ขอบคุณ

THAI

Danke

GERMAN

شكراً

ARABIC

