



IBM Rational Software Conference 2009
As Real as It Gets!



Driving Value and Performance in Software Investment

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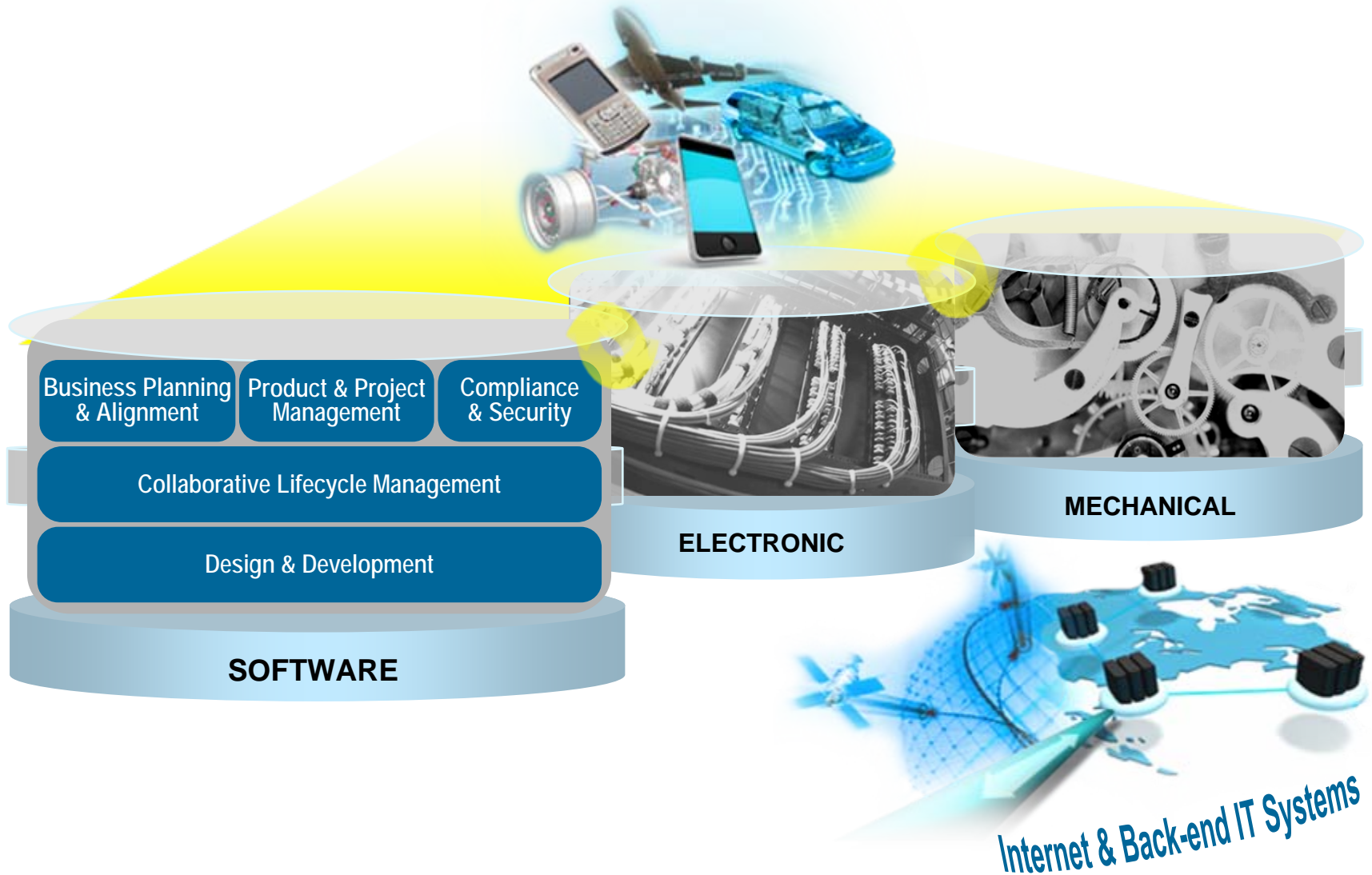
Rational. software

How do you *Get Real* about your software investment?

- Are you confident that you are getting **value** out of the investments you have made in software delivery?
- How should you optimize investment in future software delivery efforts?



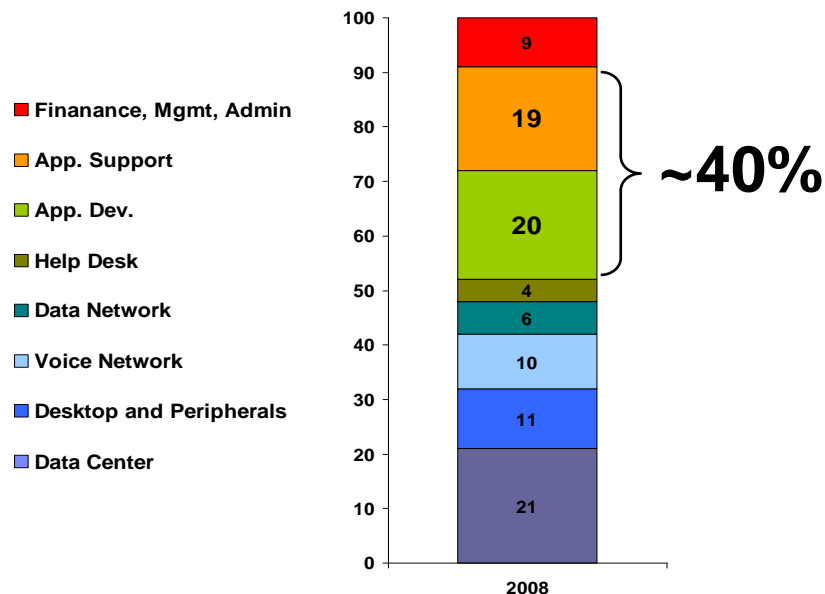
Are you ready for a *smarter* future?



How much do you annually spend on software delivery?

- For traditional IT organizations, nearly **40%** of total spending is for application development and support
- For systems organizations, such as aerospace and defense, software content continues to increase *significantly* over time

Historical IT Spending by Technology Tower



Source: Gartner, "IT Spending and Staffing Report, 2009", Michael Smith, Kurt Potter, 27 January 2009

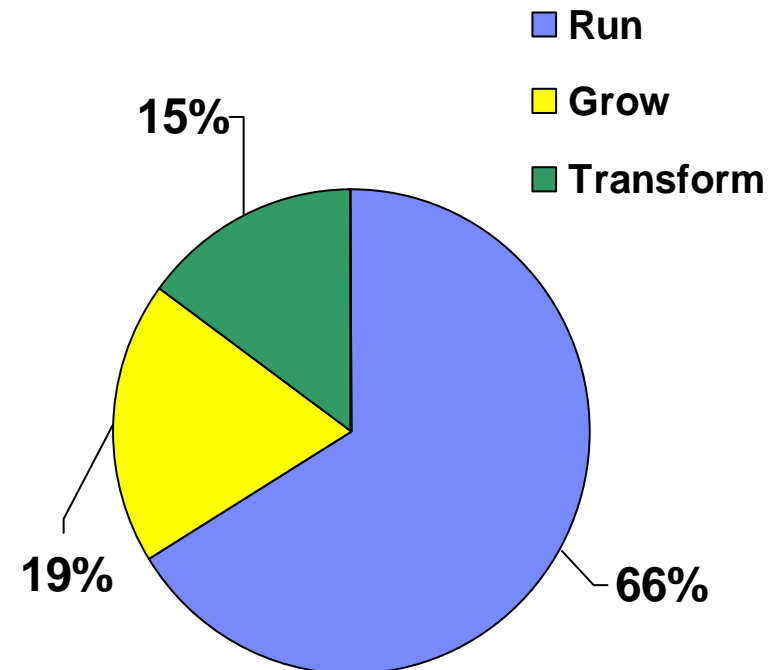
Platform	Year	Percent of Specification Requirements Requiring Software Control
F-4	1960	8%
A-7	1964	10%
F-111	1970	20%
F-15	1975	35%
F-16	1982	45%
B-2	1990	65%
F-22	2000	80%

Source: The Australian Software Acquisition Management Course, Defense Systems Management College, March 2000

Much of your investment is trapped in running the business

- **66%** of typical spending is dedicated to running the existing business
- Gartner estimates only **15%** of a company's annual investment is for ***transformational*** initiatives
- How can you optimize spending to ***increase the value and performance*** of your investments?

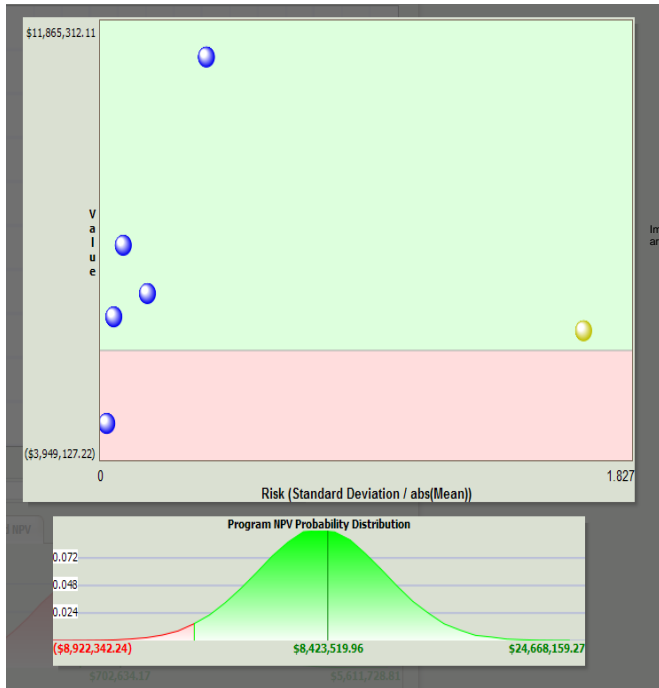
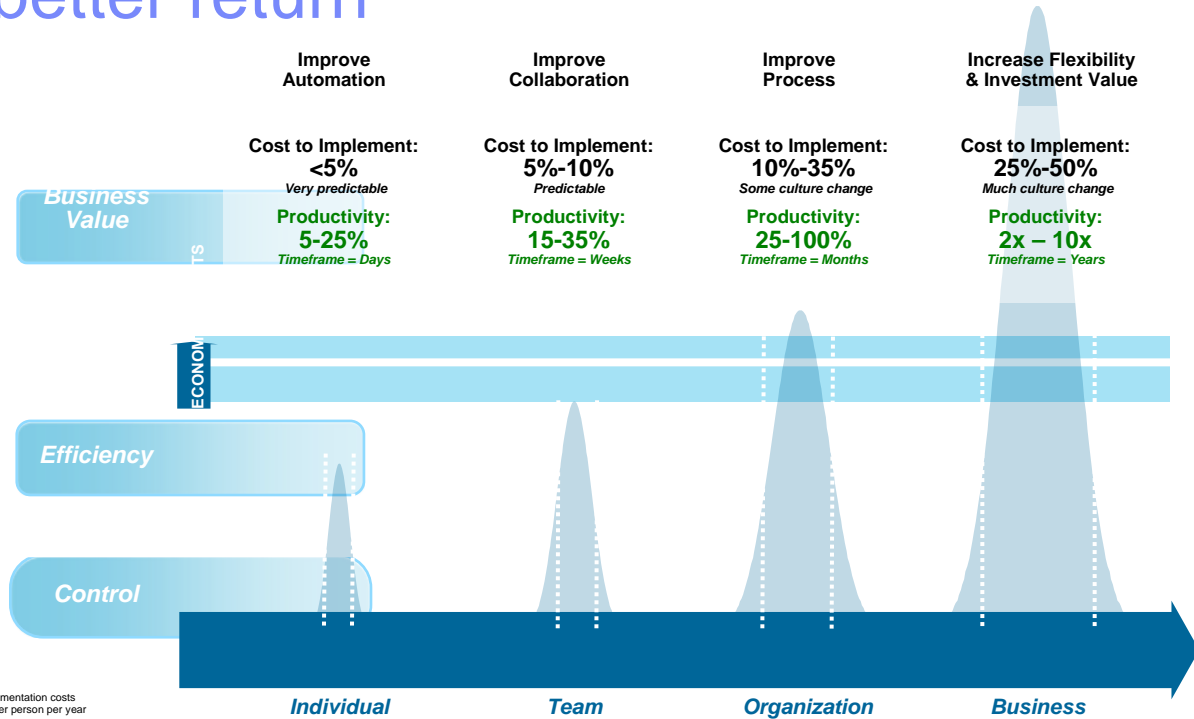
2009 Estimated Run-, Grow-, and Transform-the-Business IT Spending



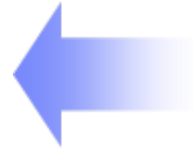
Source: Gartner, "IT Spending and Staffing Report, 2009", Michael Smith, Kurt Potter, 27 January 2009

Two ways to drive a better return

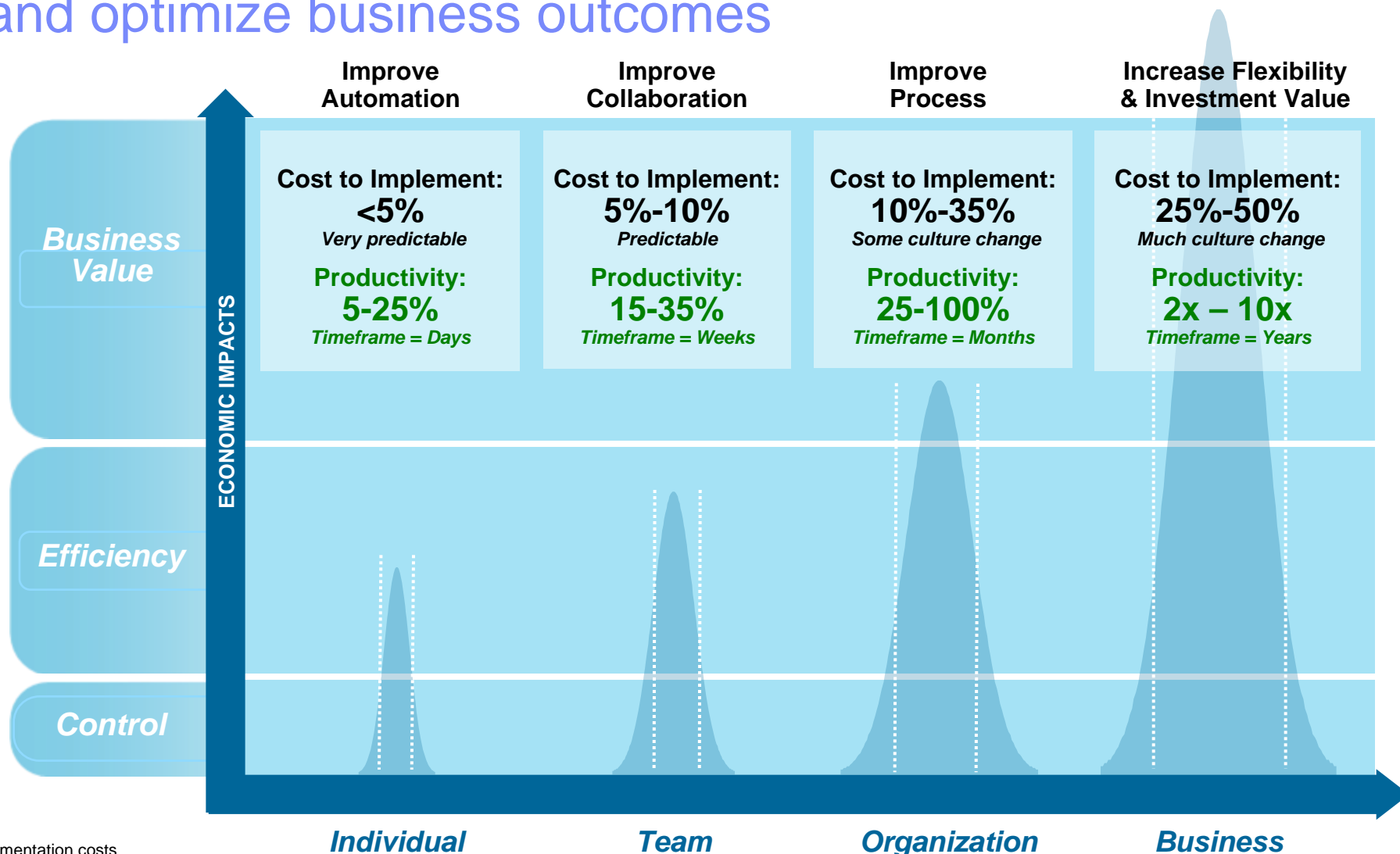
Manage costs by improving productivity



Manage value by investing resources effectively



Invest across the spectrum of improvement to manage risks and optimize business outcomes



Implementation costs are per person per year



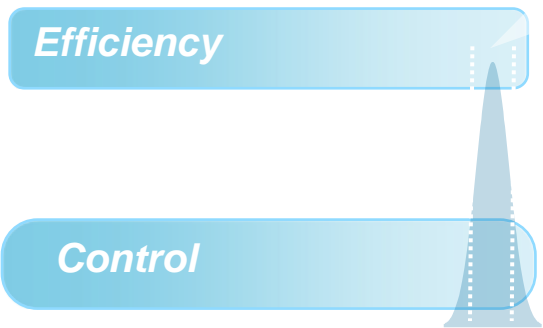
Improve automation to increase productivity by 5%-25%

Implement tools to integrate workflows at low cost and with quick payoffs



Percentage of Reduction in Software Delivery Lifecycle

Value	< 50 people	<500 people	> 500 people
	Days	Weeks	Months
Automating Code Review	2%	2%	2%
Automating Builds	4%	4%	3%
Automating Manual Tests	20%	14%	8%
Automating Metrics Collection and Reporting	2%	2%	2%
Automating Test Setup	4%	4%	4%



Individual

Improve collaboration to increase productivity by 15%-35%

Implement tools and to leverage skills and improve teamwork

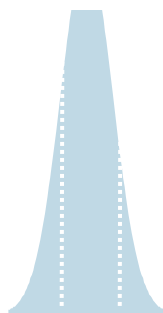
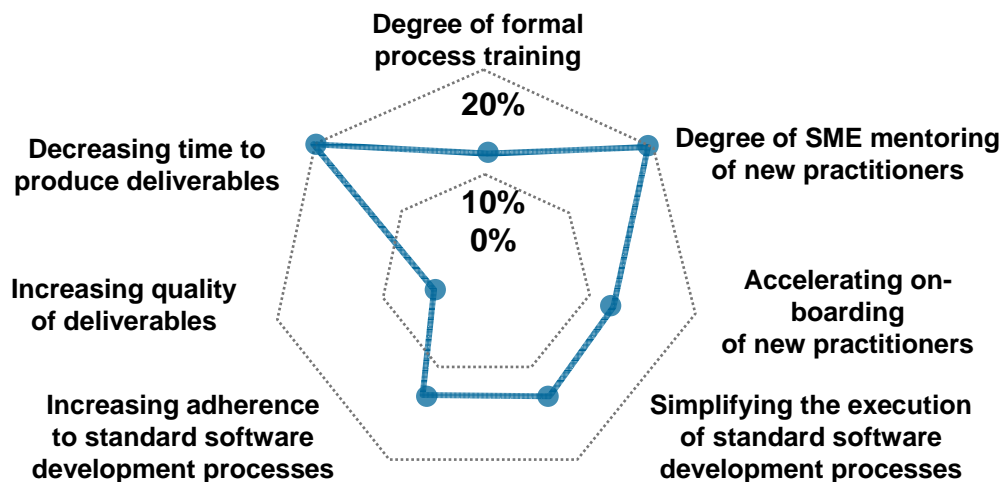


Value



Efficiency

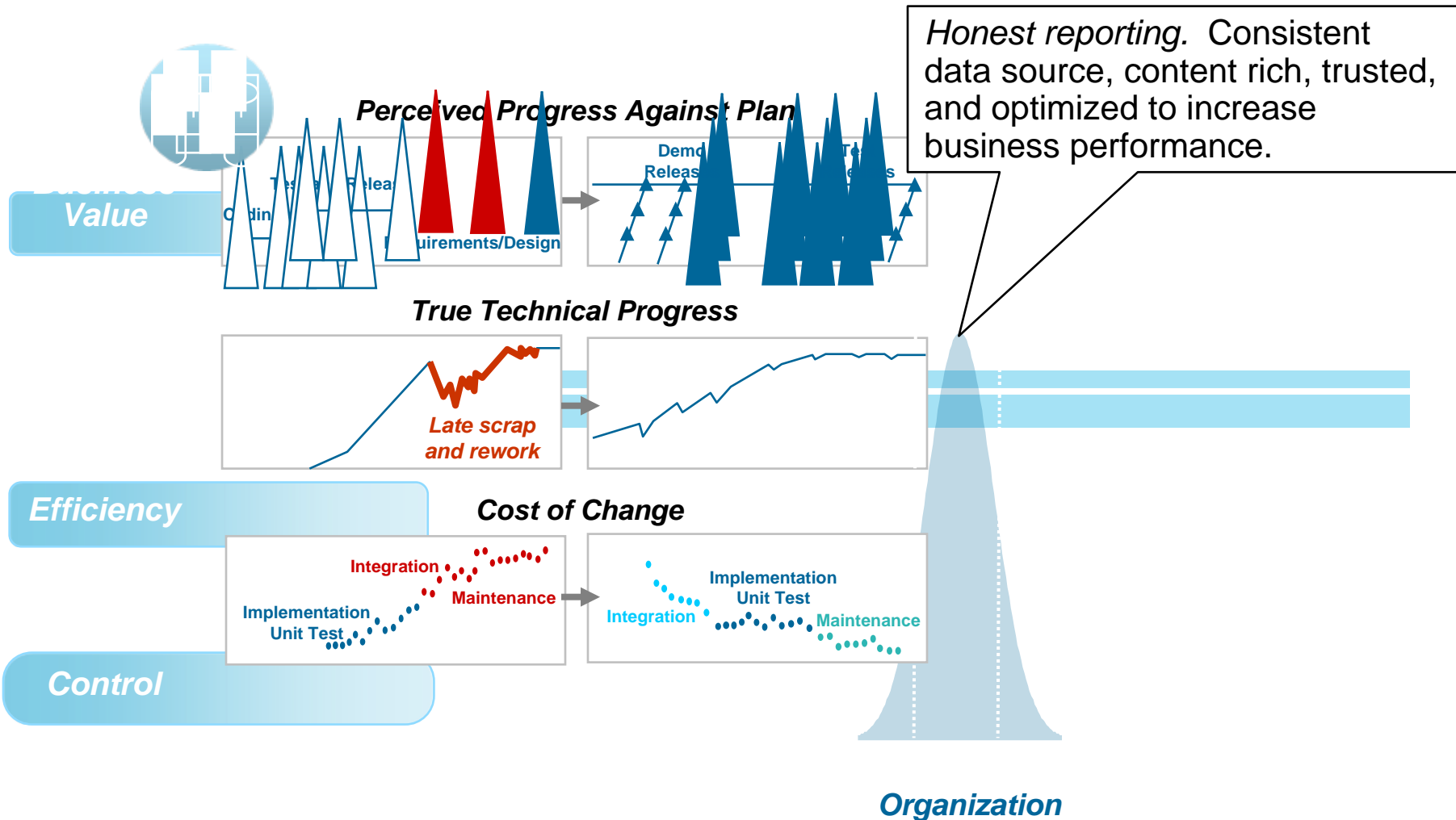
Control



Team

Improve process to increase productivity by 25%-100%

Implement iterative / adaptive processes



Increase flexibility and value to deliver 2x – 10x productivity

Implement an enterprise architecture and reusable Web services

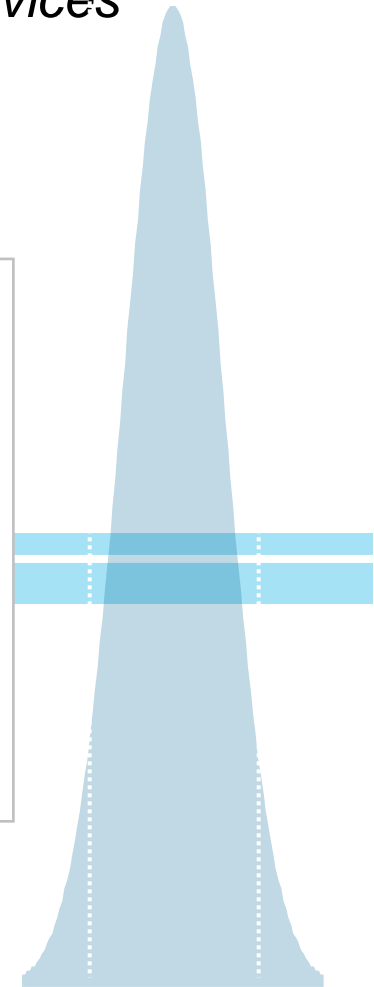
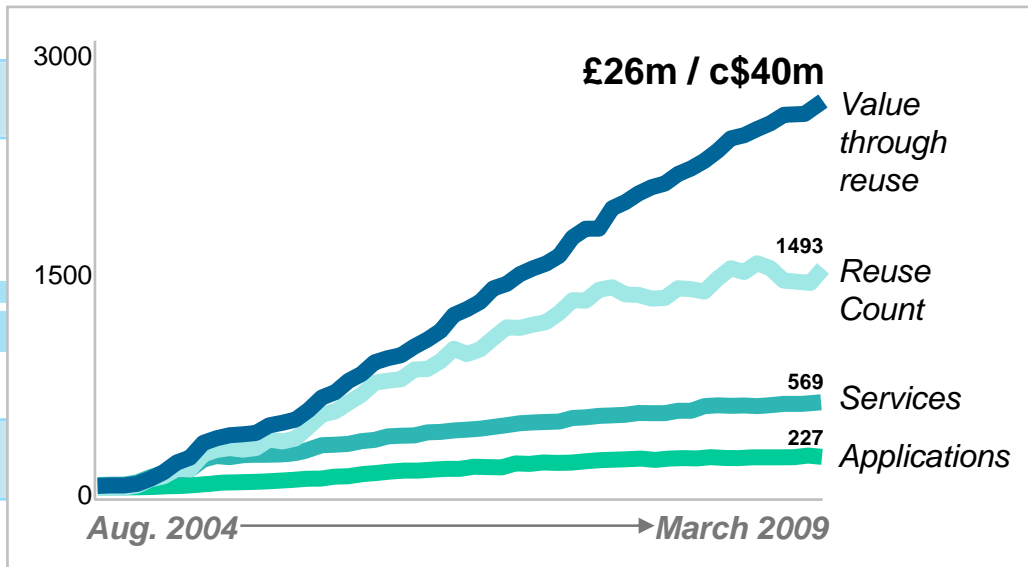


SOA Reuse Savings \$40 million over four years

Value

Efficiency

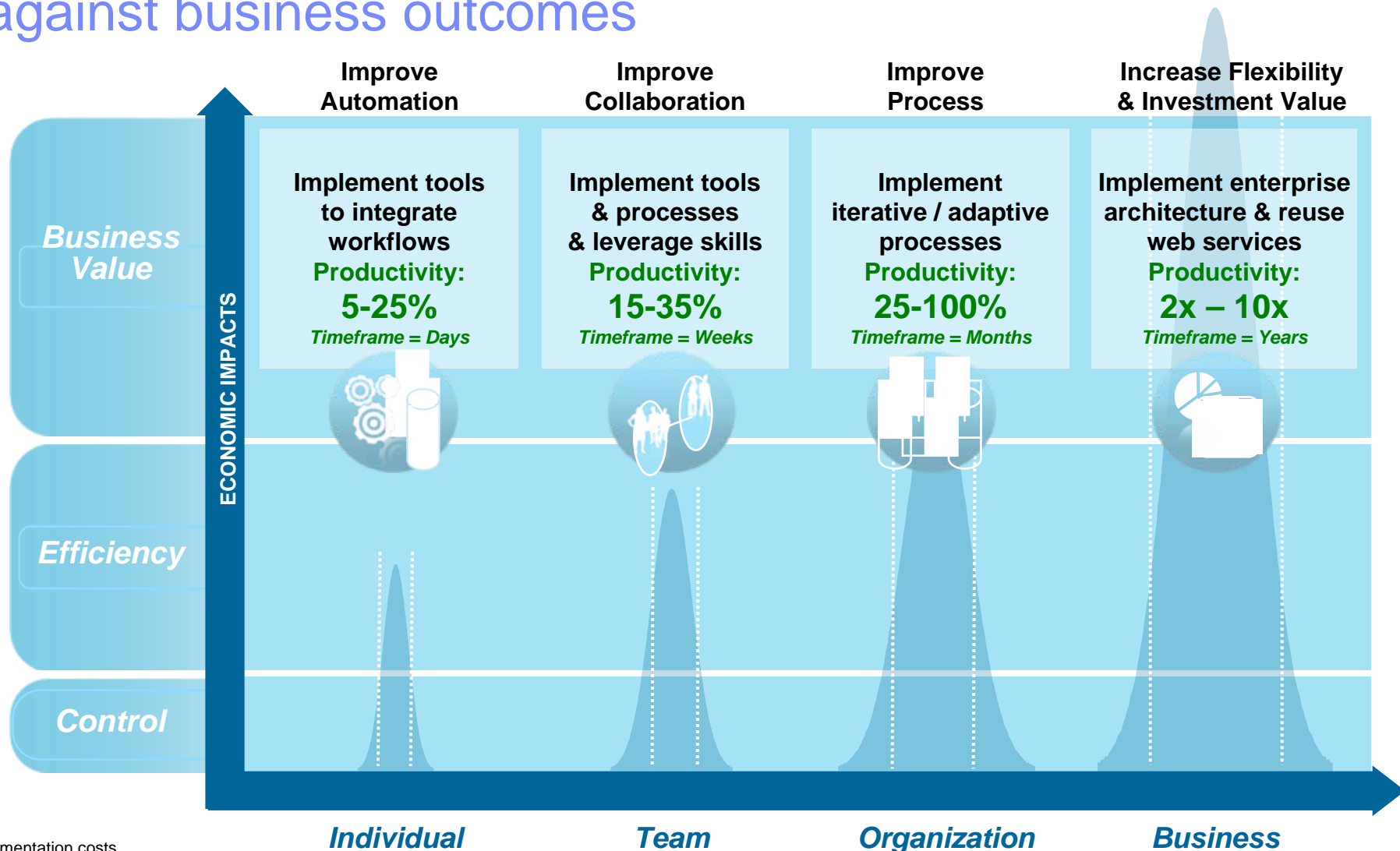
Control



Business

Source: Standard Life Inc. from 2009 Impact Conference.

Achieve continuous improvement by measuring cost against business outcomes



Implementation costs are per person per year



Software engineering metrics must align with desired business outcomes

Control

- Address the risks of development
 - ▶ Perceived quality
 - ▶ Scope uncertainty
 - ▶ Security failure
 - ▶ Failing an audit

Efficiency

- Address development as a cost center
 - ▶ Productivity
 - ▶ Software engineering base quality
 - ▶ Process agility
 - ▶ Global collaboration platform

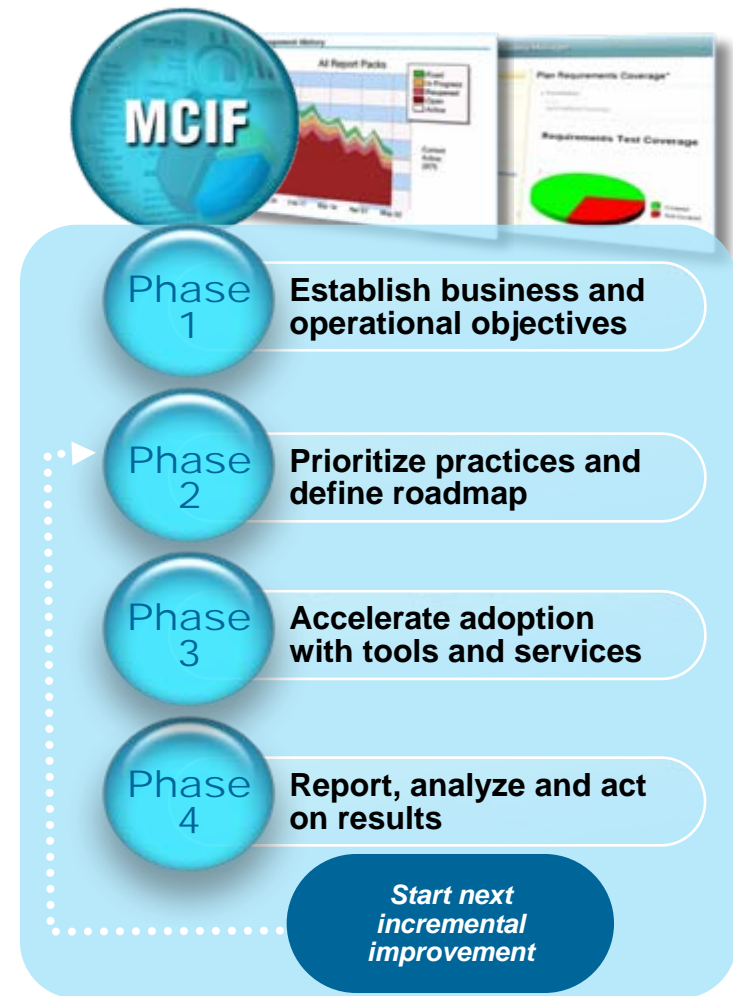
Value

- Address development as a value creation center
 - ▶ Foster innovation and reuse across organizational and geographical boundaries
 - ▶ Enterprise application modernization
 - ▶ Speed merger and acquisition absorption
 - ▶ Reduce traditional development in favor of smart package software integration and SOA

Drive Cost Reduction and Business Transformation through Measured Capability Improvement Framework

Empower teams to measure, manage, and incrementally improve their software delivery capability

- **MCIF** is a phased approach that helps teams
 - ▶ Adopt an incremental, measured approach to transformation
 - ▶ Focus on the core practices that matter most
 - ▶ Accelerate adoption through out-of-the-box assets
 - ▶ Articulate capability improvements in terms of business value
 - ▶ Support any method optimized for Agile practices



However, continuous process improvement is impossible without honest measures and governed controls



*"2/3 of executives make more than half of their decisions based on **'gut feel'** rather than verifiable information"*



*"77% of managers are aware of **bad decisions** made due to lack of access to accurate information"*



*"Poor decisions have generated **revenue 75% or more below expectations**"*

Lack of timely information and in-context insight

Disparate data sources, formats, and definitions

Lack of relevant, timely actionable information

Inability to baseline and benchmark status and progress

Inability to measure and assess unobtrusively



Transform From Cost Center to Business Value Driver



³ IBM Global CFO Study, 2006

We Need Effective Information From Proper Metrics Communicated Back to the Business

5

Create an Information Agenda

Customer & Product Profitability

Financial Risk Insight

Workforce Optimization

Dynamic Supply Chain

Multi-channel Marketing

Business Optimization

4

Optimize Business Performance

3

Establish, Govern & Deliver Trusted Information

2

Optimize Content-based Operational & Compliance Processes

1

Manage Data Over its Lifetime

Information Agenda

Optimized Business Performance

Trusted Information

Flexible Architecture

Integrated Data Management

Optimized Content, Processes & Compliance

DB2[®] software

Informix[®] software

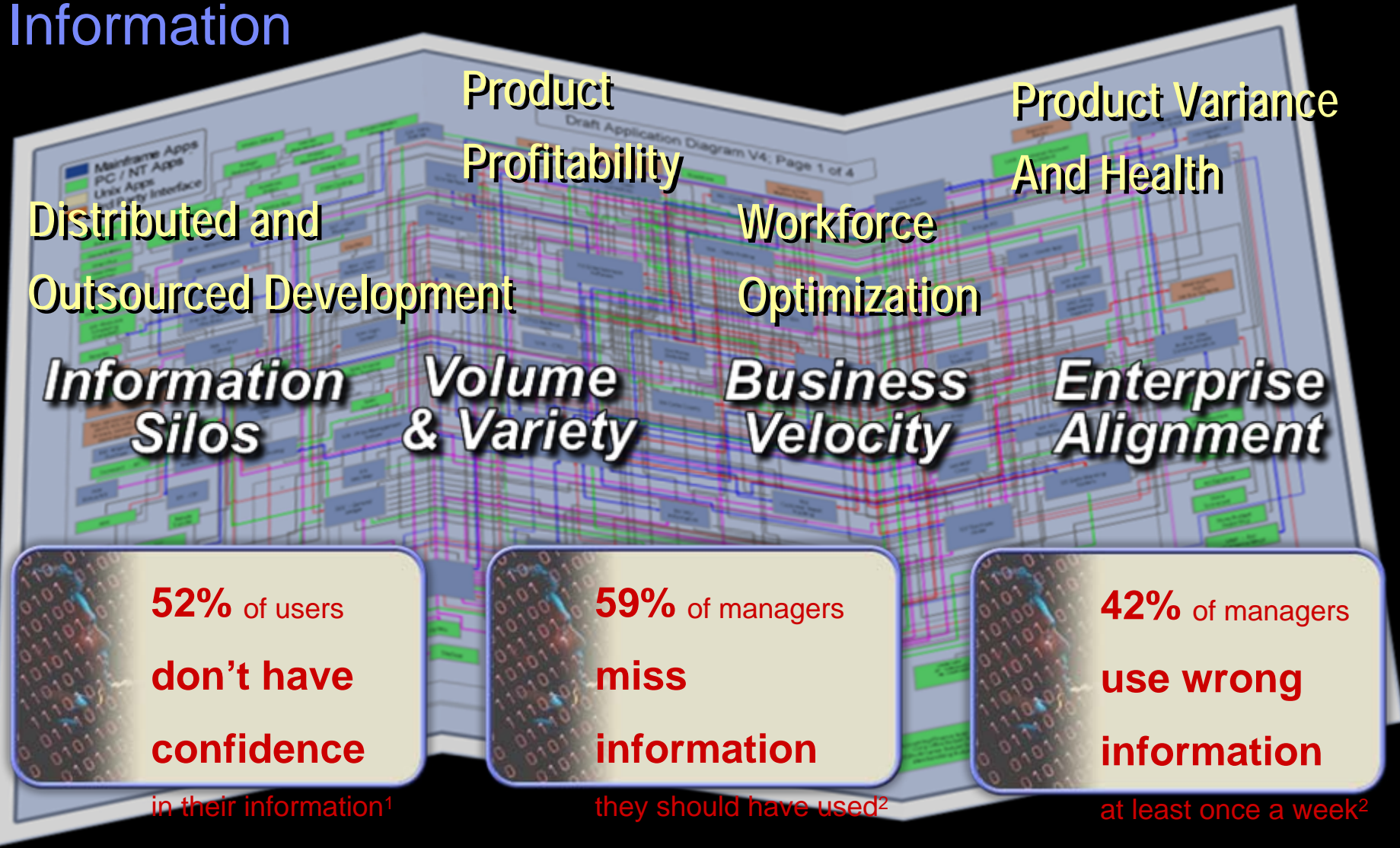
FileNet[®] software

InfoSphere[™] software

Cognos[®] software



Challenge: Contradictions Result From the Quest for Information



The State of Software Measurement - Today

Fortune 500 companies with productivity measures:	30%
Fortune 500 companies with quality measures:	45%
Fortune 500 companies with complete measures:	15%
Fortune 500 companies with missing measures:	85%
Number of software measurement personnel:	5,500
Number of software projects measured:	160,000
Number of software projects <u>not</u> measured:	50,000,000

- Capers Jones

Is the State of Measuring REALLY the problem?

Companies that measure:

On-time projects: 75%

Late projects: 20%

Cancelled projects: 5%

Defect removal: > 95%

Cost estimates: Accurate

User satisfaction: High

Software status: High

Staff morale: High

Companies that don't:

On-time projects: 45%

Late projects: 40%

Cancelled projects: 15%

Defect removal: Unknown

Cost estimates: Optimistic

User satisfaction: Low

Software status: Low

Staff morale: Low

- Software Productivity Research (2007)

Maybe We Should Blame the Project Managers?

Less than 25% of project managers have formal training

Less than 20% of project managers have access to cost / project estimating tools.

Less than 10% of project managers have access to validated historical data

- Software Productivity Research (2008)

How about “lesser known” Metrics?

- WSR (Work-to-Sleep Ratio)**
- DODO (Days On per Day Off)**
- HBT (Handbasket Temperature)**
- GALB (Going-Away-Lunch Budget)
or GAAB (Going Away-Alcohol-
Budget)**
- Dilbert Barometer**
- The Laugh Meter**

- Martin L. Shoemaker

Beware of Hazardous Metrics

Cost per Defect (Penalizes quality)

Lines of Code (Ambiguous)

Cost per Line of Code (Penalizes new languages)

Lines of Code per Month (Ignores non-code work)

Staff Work Hours per month (Ignores non-work tasks)

Industry averages (Vague and ambiguous)

- Capers Jones

Measurements must be SMART (Simple, Measurable, Actionable, Realistic, and Timely)

Software engineering metrics that measure absolutes can provide the wrong incentives to your team



Then How Do We Succeed Using Measurement?

Fill in the blank. “The measurement _____.”

...is **meaningful** and potentially **benefits** the customer, manager and performer.

...supports a **direct link** between assessments and quantitative data.

...explains **why projects vary** and by how much.

...is supported by **automation**.

...**supports multiple kinds** of software, metrics, activities and deliverables.

...demonstrates **quantifiable correlation** between process perturbations and business performance (e.g. it is as accurate as financial data)

...is a **natural by-product** of the process (no night job).

“Organizations exercising world-class performance management practices enjoy market returns of 2.4 times that of typical companies”



BusinessWeek Study:
The Payoff of Pervasive Performance Management

Measurement is Difficult Amongst the Chaos



Executive

Achieve Profit **Market Share** **Business Alignment** **Quality**
Success can only come from a tight linkage from the development and delivery process to the business.
 Headcount Time to Market Readiness Renewals
 Enablement Satisfaction Consumability
 Products Productivity Deployment Calls

Business Objectives



Management

Like an annual report synthesizes the state of the overall business.... a development report needs to do the same.
 Project Schedule Requirements Churn Continuous Integration
 Code Coverage Tests Passed/Failed Tests per Build
 Defect Density Tests for Requirements Code Growth
 Defect Priority

Operational Objectives



Development

Communicate the relative facts to give all stakeholders insight as to the health of this critical part of their business.
 agile, test driven development, change management, iterative
 change set, bill of materials, VELOCITY dashboard, WORK ITEM, code scan
 test script, requirements, project schedule, team meeting, chat, waterfall
 UNIT TEST

Processes & Practices

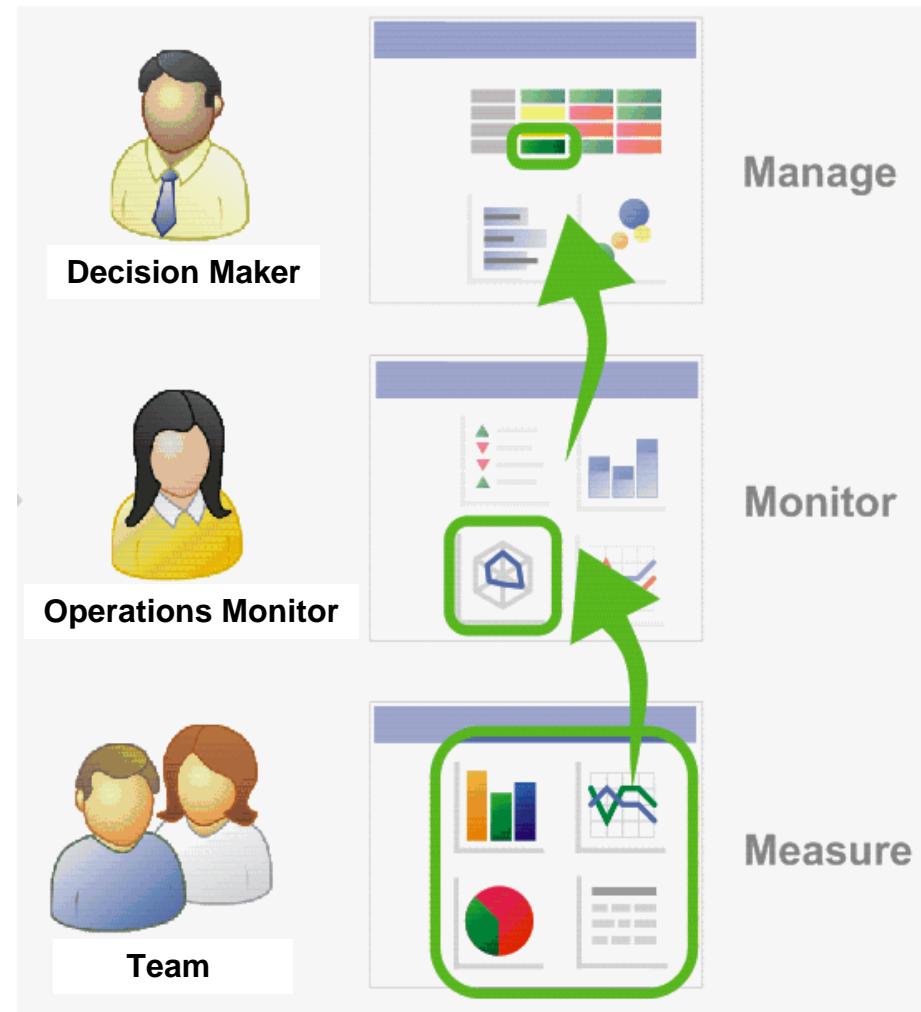
Artifacts

requirement build definition defect **TEST CASE** deploy image change
 set bill of materials **STREAM** custom dashboards design model **WORKSPACE** Eclipse plug-ins
 test script **SNAPSHOT** development assets Demo image



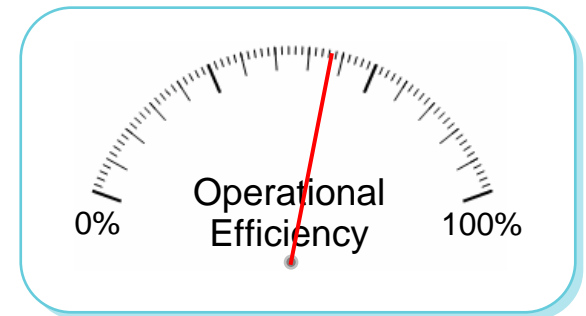
To achieve the right measures, a control framework enables each organization to drive to desired business outcomes

- Decision maker sets and manages business objectives
 - ▶ Reduce costs
 - ▶ Increase market share
 - ▶ Improve customer satisfaction
- Monitor drives operational performance initiatives aligned with business objectives
 - ▶ Manage and optimize resources
 - ▶ Develop transparently
 - ▶ Implement test driven development
- Team executes practices mapped to operational objectives
 - ▶ Build management and health
 - ▶ Automated testing
 - ▶ Iteration velocity
 - ▶ Requirements traceability

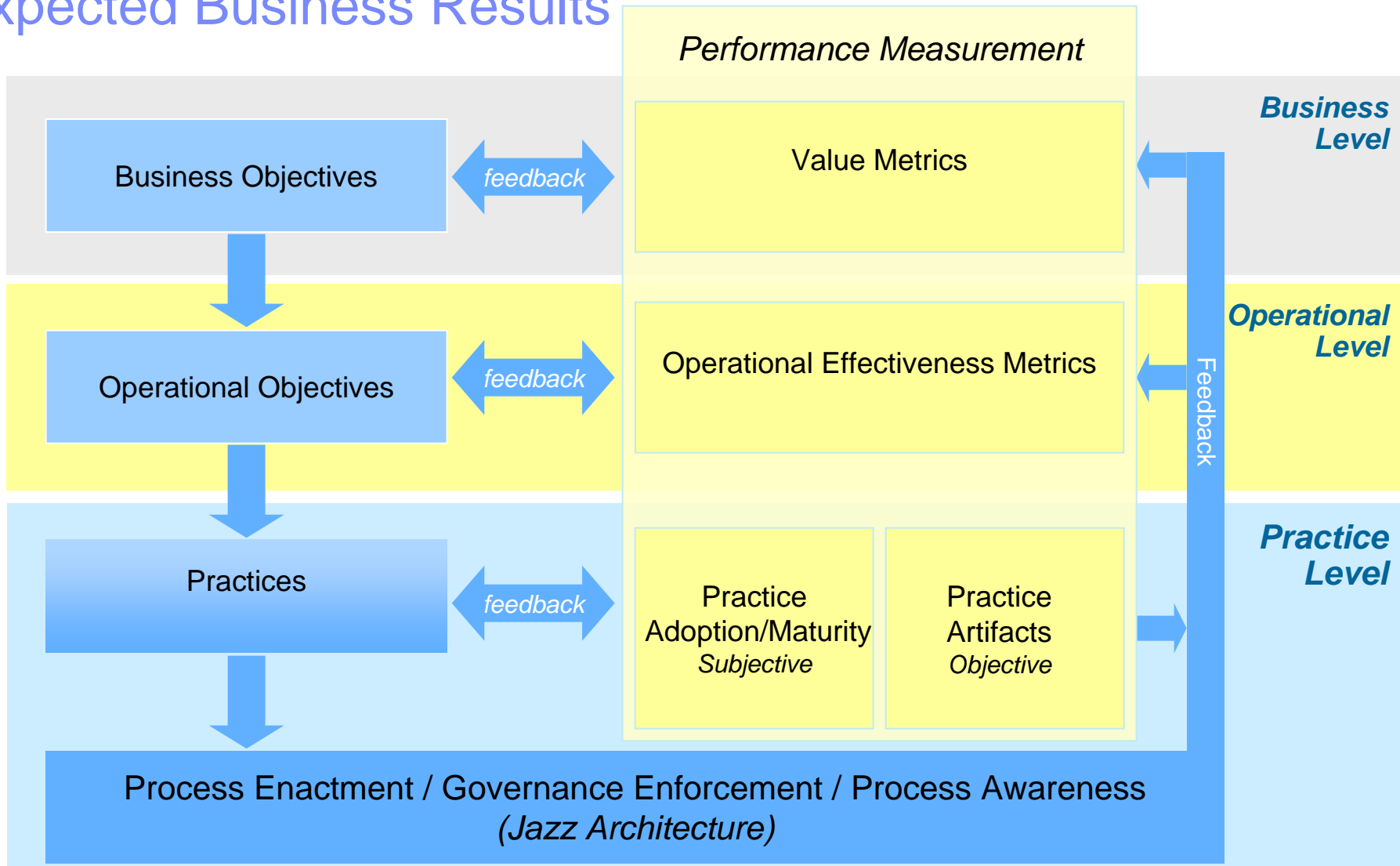


The measures need to be established at the business, operational, and practice levels

- Business value
 - ▶ Return on Investment (ROI)
 - ▶ Return on Assets (ROA)
 - ▶ Profit
 - ▶ ...
- Operational objectives
 - ▶ Productivity
 - ▶ Time to market
 - ▶ Quality
 - ▶ Predictability
 - ▶ ...
- Practice-based control measures
 - ▶ Test Management: Defect density, test coverage
 - ▶ Iterative Development: Velocity, iteration burn down
 - ▶ Continuous integration: Build stability, build frequency
 - ▶ ...



Bottom Line: You Need a Control Framework to Manage to Expected Business Results



Four fundamentals for implementing a control framework

- 1. System definition:** A discriminating ALM system for linking, tracing and accessing information across your SDLC.
- 2. Best practices:** Best practices for monitoring, measuring and reporting throughout the enterprise
- 3. Interpretation:** A capability to interpret your measures correctly and accurately the health of your development practices
- 4. Operations:** Guidance to define the right actions, workflows and policies to improve your measured results and be compliant

A Discriminating System

Lets You Measure, Assess and Improve Information Blindspots

Improving



Where You Should Be!

Assessing

Where You Are
Productivity Rates
Quality Levels

Why You Are
Process Assess
Product Health

Quantitative and Qualitative Data
Information Gaps

Software Lifecycle Artifacts

- Change & Configuration Management
- Rational Definition & Management
- Quality Management
- Build & Release Management
- Architecture Management
- Security & Compliance

3rd Party Data Artifacts

- Project Data
- Headcount & Financials
- Sales & Pipeline
- Customer Support
- Manual Data

Defining a best practice...

*“The likelihood of delivering a **product on time, within budget, with acceptable revenue or benefits and an acceptable level of support costs.**”*

- The definition points us to what we need to project
 - ▶ Time to complete
 - ▶ Cost to complete
 - ▶ Expected revenue/benefits
 - ▶ Expected support and ownership costs
- The other indicators (expected effort, probability of on-time completion and percent complete) can be driven from these

And more specifically...

The indicators that impact **time to complete** –

- ▶ Critical situations
- ▶ Defect density/severity analysis
- ▶ Defect repair latency
- ▶ Build health
- ▶ Velocity
- ▶ IPD timeliness
- ▶ Iteration status
- ▶ Variance in time-to-complete estimates by task

The indicators that impact **expected revenue / benefits** –

- ▶ Benefits of requirements
- ▶ Benefits of demonstrable capabilities by iteration (iteration status)
- ▶ Benefits of RFE 30/90-day SLA

The indicators that impact **cost to complete** –

- ▶ Staffing actuals vs. plan (is also an indicator of project size)
- ▶ Capital expense actuals vs. plan
- ▶ Earned value

The indicators that impact **expected support and ownership costs** –

- ▶ APAR backlog
- ▶ RFE 30/90-day SLA
- ▶ Build health
- ▶ Time-to-resolution for internally-found defects and APARs

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

Rational Executive Dashboard

DB2



Oracle



SQL Server



**Rational
Insight**

Where You Are
Productivity Rates
Quality Levels

Why You Are
Process Assess
Product Health

REST Open Services / ODBC / XML

Quantitative and Qualitative Data



Rational ClearQuest Rational Requirements Composer Rational Team Concert Rational Quality Manager Rational Test Manager Rational Requisite Pro Rational ClearCase

Rational Data Sources



SIEBEL

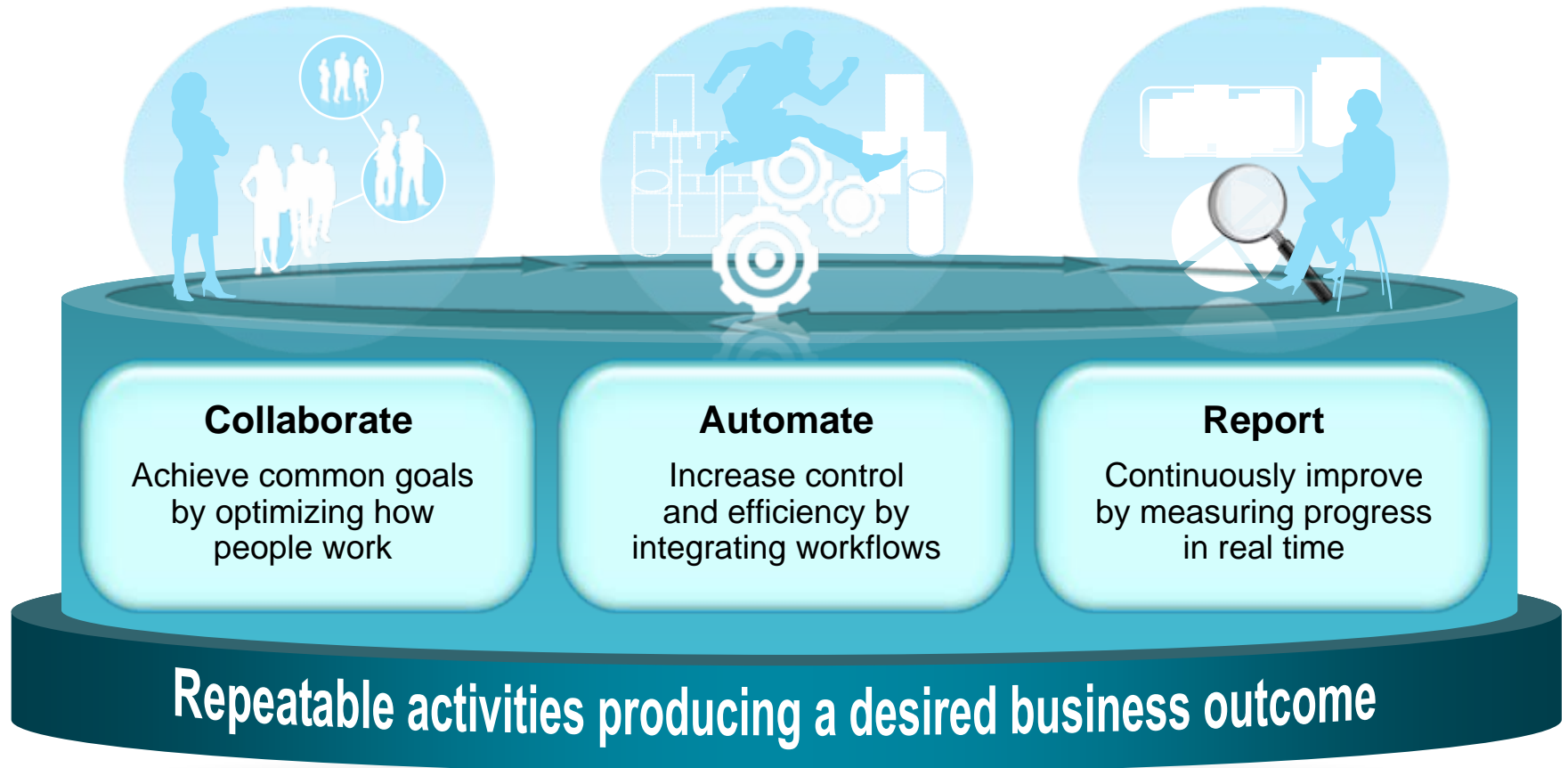


Project Data Headcount & Financials Sales & Pipeline Customer Support Manual Data

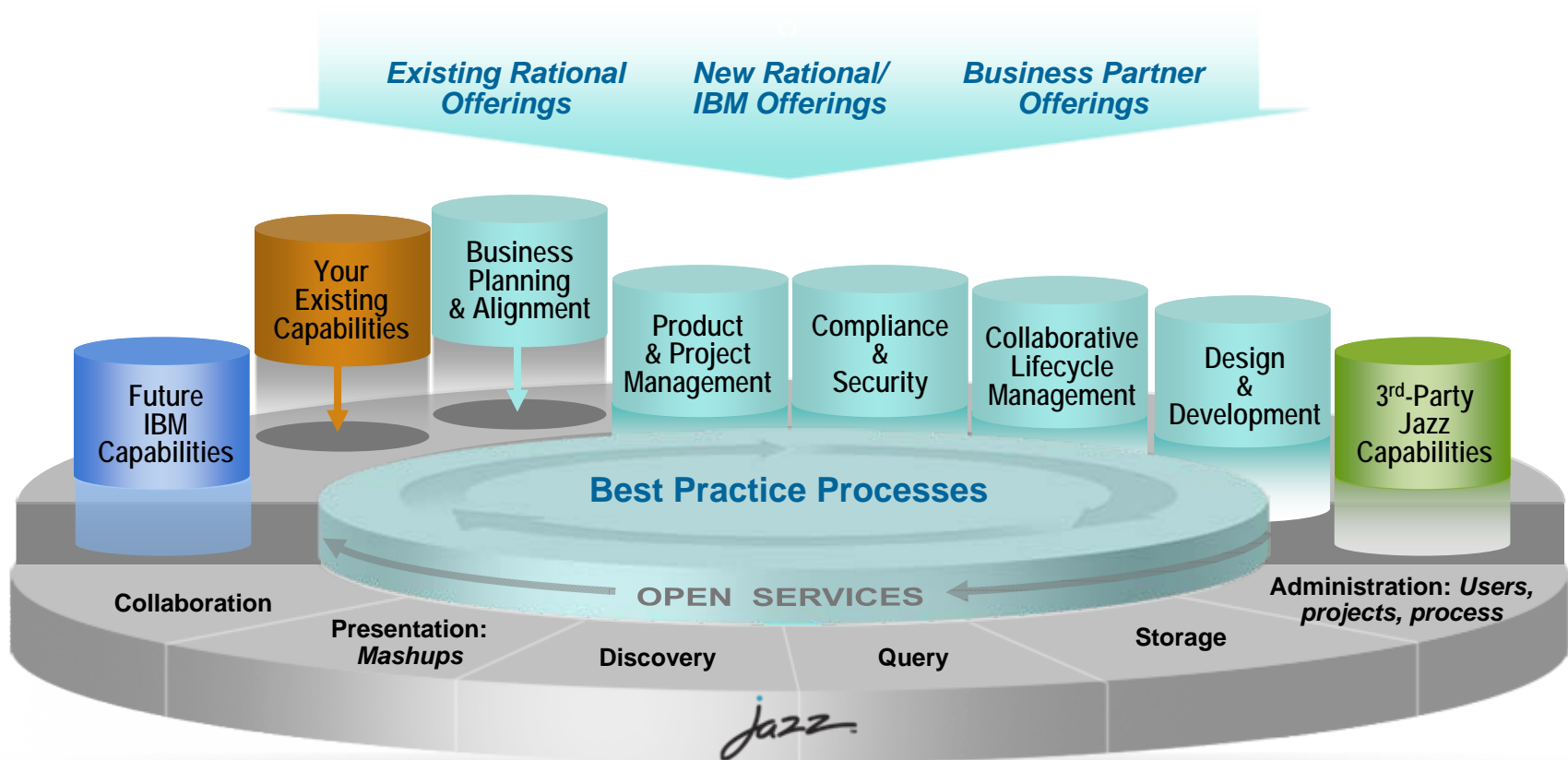
3rd Party Data Sources



Now that we see how to measure software investment, the benefits of a software delivery platform becomes clear



Rational delivers the Jazz platform to enable the business process of software and systems delivery



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Questions