IBM Software Group

Balanced Perspective

Managing software development from a business and technical point of view

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Rational. software

ON DEMAND BUSINESS

Agenda

- The Development Problem
- The Business Problem
- Business Driven Development
- Portfolio Manager and TUP
  - Selected Usage Models

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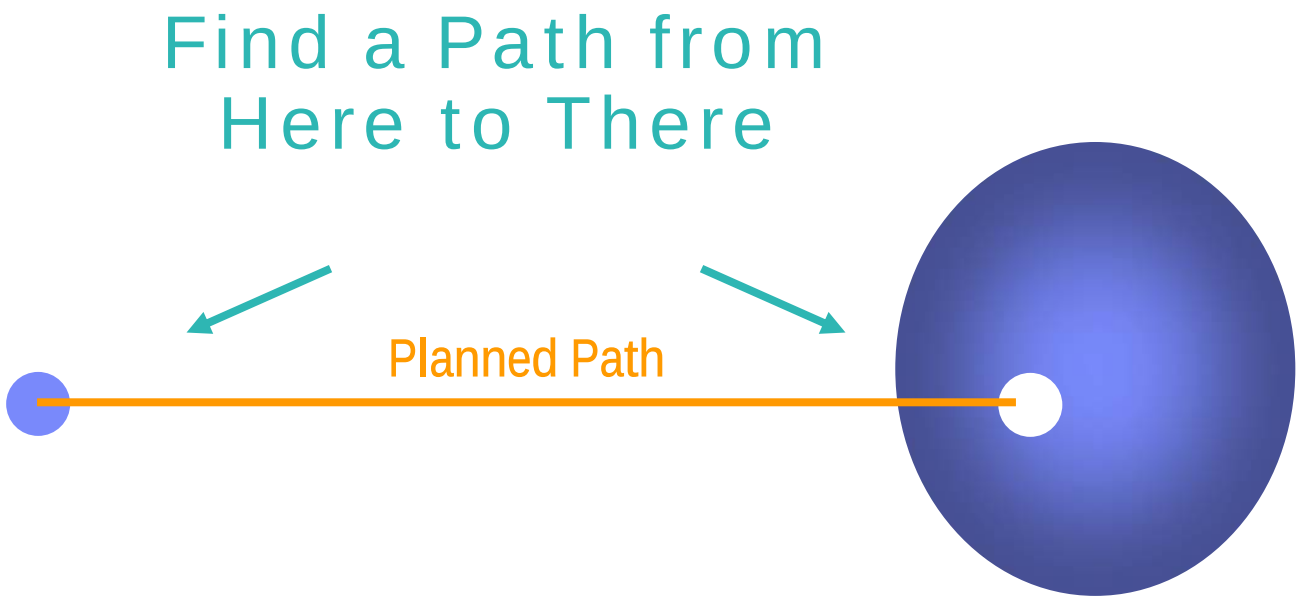
The Development Problem



Initial Project State

- Existing assets, technologies
- Staffing, skills, precedent knowledge
- Resource constraints
- Uncertainties

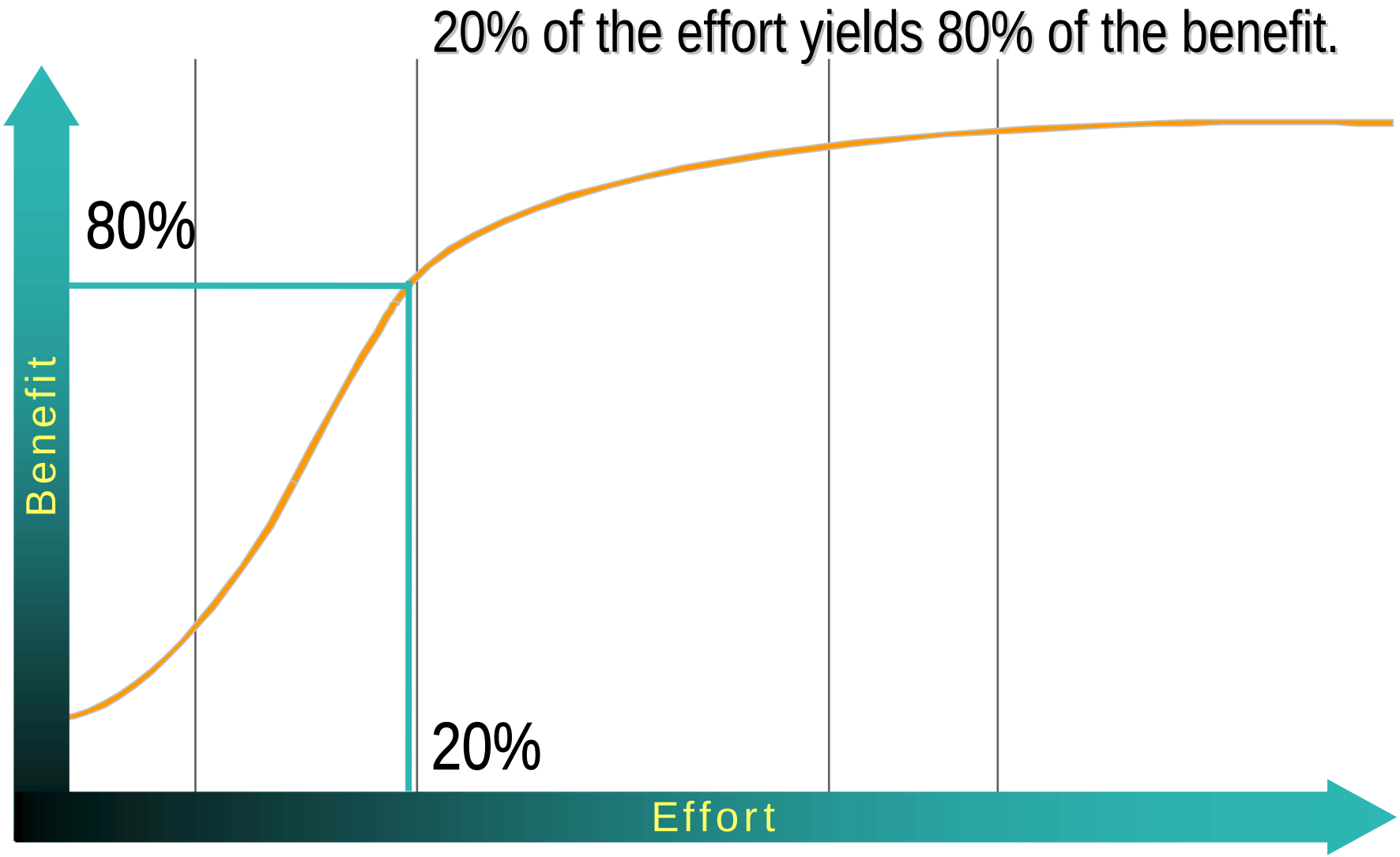
Stakeholder Satisfaction Space

- Value to user (usability, performance, quality)
- Cost (time and money)
- Value to developer (profit, experience, sales, market share, etc.)

Conventional Development Team Approach

- Freeze requirements → size effort →develop plan → make contract → follow plan →fail to deliver → place blame → eventually deliver acceptable system (maybe)
- Assumes
  - Precise, clear understanding of requirements, content, applied technology, level of detail
  - Ability to make firm estimates
  - Ability to make and execute detailed plan

Pareto's Law


20% of the effort yields 80% of the benefit.
80%
20%
Benefit
Effort

Precision Takes Effort

- Requirements are complicated
  - Function/Behavior
  - System ‘ilities’
- Full understanding takes analysis, experiments, feedback, …
- Determining relationship between requirements and architecture
- Required effort subject to 80/20 rule
  - True precision at best unaffordable, more likely unattainable
  - Best obtained during development

Detailed Plans Are Not Followed

- Gant charts consist of a N tasks with some probability of completion

$$P(Executing\_Plan) = \prod_{n=1}^{N} P(task_n)$$

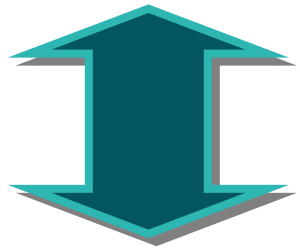
N	*P(task$_n$)*	*P(Completing Plan)*
10	.95	.59
25	.95	.27
50	.95	.07
100	.95	.006
1500	.95	10^{-23}

Uncertainty Is Structural

- Ability to Estimate
  - COCOMO within 40% of actuals 75% of the time even with over 20 years of data, 27 variables
    - Do not expect much improvement
- Not Engineering, But Economics
  - Engineering – precise tuning of well-understood components, “the well-oiled machine”
    - Predictable outcome from initial conditions
  - Economics – Global behavior of many individuals
    - General principles apply, but outcome not determined by initial state
    - Requires constant monitoring, steering

The Paradox

Development commitments are needed to run a business



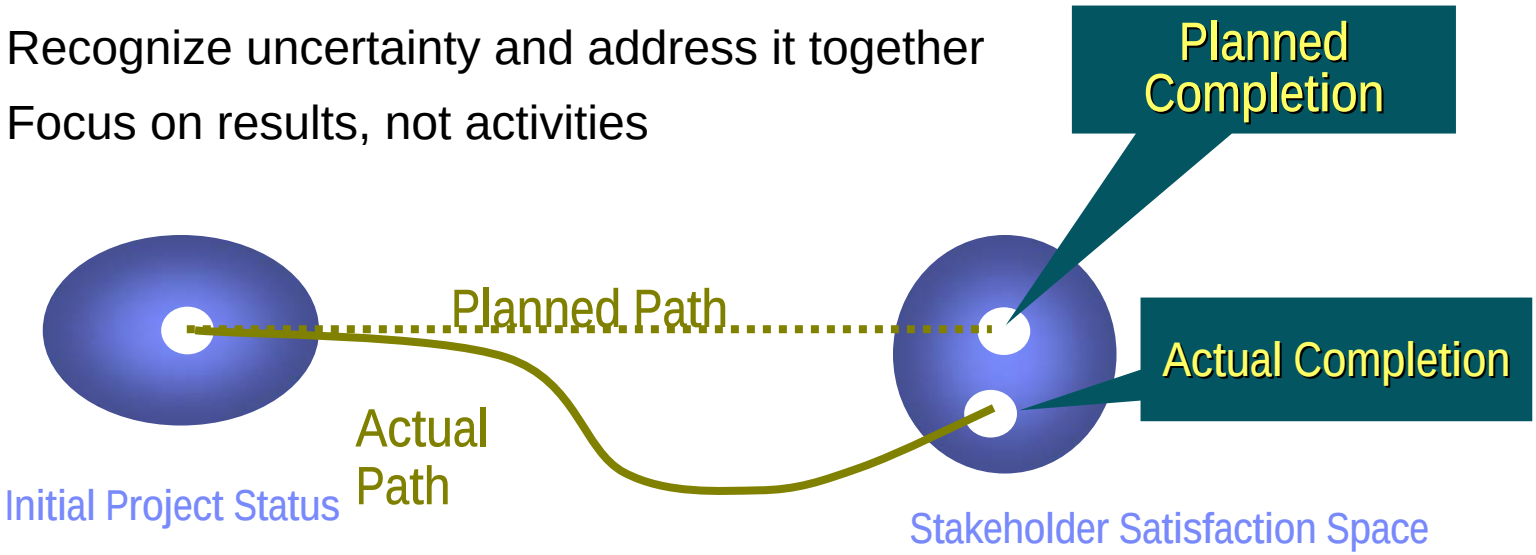
Precise development commitments are impossible

The way out

- Honest collaborate, results-based customer, management, developer relationships
- Iterative development
- Accurate information with increasing precision

Share The Risk, The Blame, Or The Success?

- The approach is
  - All parties share risk to achieve success
  - Recognize uncertainty and address it together
  - Focus on results, not activities



- **Iterative Leadership: "Steer And Adapt" by continually**
  - **Maintain big picture** – Assess variances among stakeholder expectations
  - **Steer and adapt** – Iterations provide a sequence of interim results that help ***steer*** the project and expectations toward success for all stakeholders

Measurements

- Project Management Indicators

Measurement Class	Absolute	Relative
Content Management	*Change Traffic* (Number of open change Orders)	Stability (Trend in accepting change orders)
Work	Artifact completion	Progress
Budget (planned and actual)	Expenditures	Spending Profile

- Quality Indicator Measures

Measurement Class	Absolute	Relative
Cost of Change	Rework (Effort expended on *change requests*)	Adaptability (Rework trend costs)
Density of code needing change	Breakage (Total scrapped product)	Modularity (Breakage trend)
Runtime between failures	MTBF	Maturity

The hub for life-cycle management

Govern the test and development process

IBM Rational ClearQuest

Test **Change** **Defects**

- Single project view
- Global test project coordination
- Configurable, enforceable processes
- Extensible test ecosystem

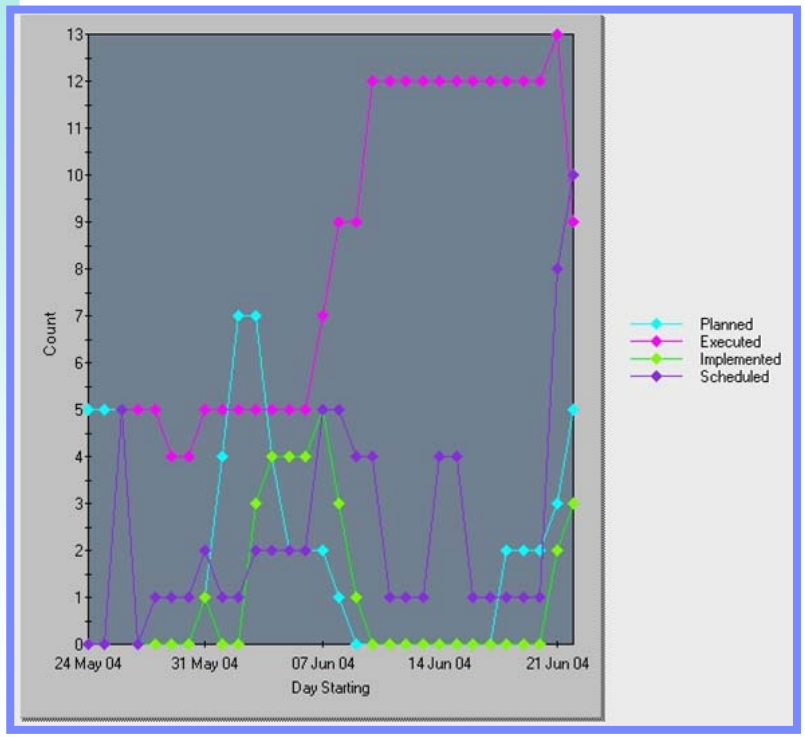
Single project view

Single solution to manage tests, defects and project change

Benefits:

- **Single reporting solution for all development metrics**
- **Traceable, auditable relationships between development, test and project artifacts**
  - Manages test planning, test results, quality metrics, and defects
  - Central repository with integrated version control
  - Comprehensive, customizable quality metrics reports
  - Centralized user management

Defect Trending



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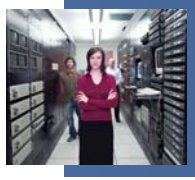
Business Problem

Inability to align and prioritize IT investments against business goals results in sub-optimal use of IT resources

Missed New Business Opportunities



Inability to monitor project and portfolio metrics prevents accountability and cost control and results in risky “go-live” decisions

Overruns, Customer Dissatisfaction

Inability to communicate policies implement controls and document compliance results in painstaking manual efforts

Inefficient processes, compliance risk

Inability to monitor key business systems health and service level agreement status results in system down-time

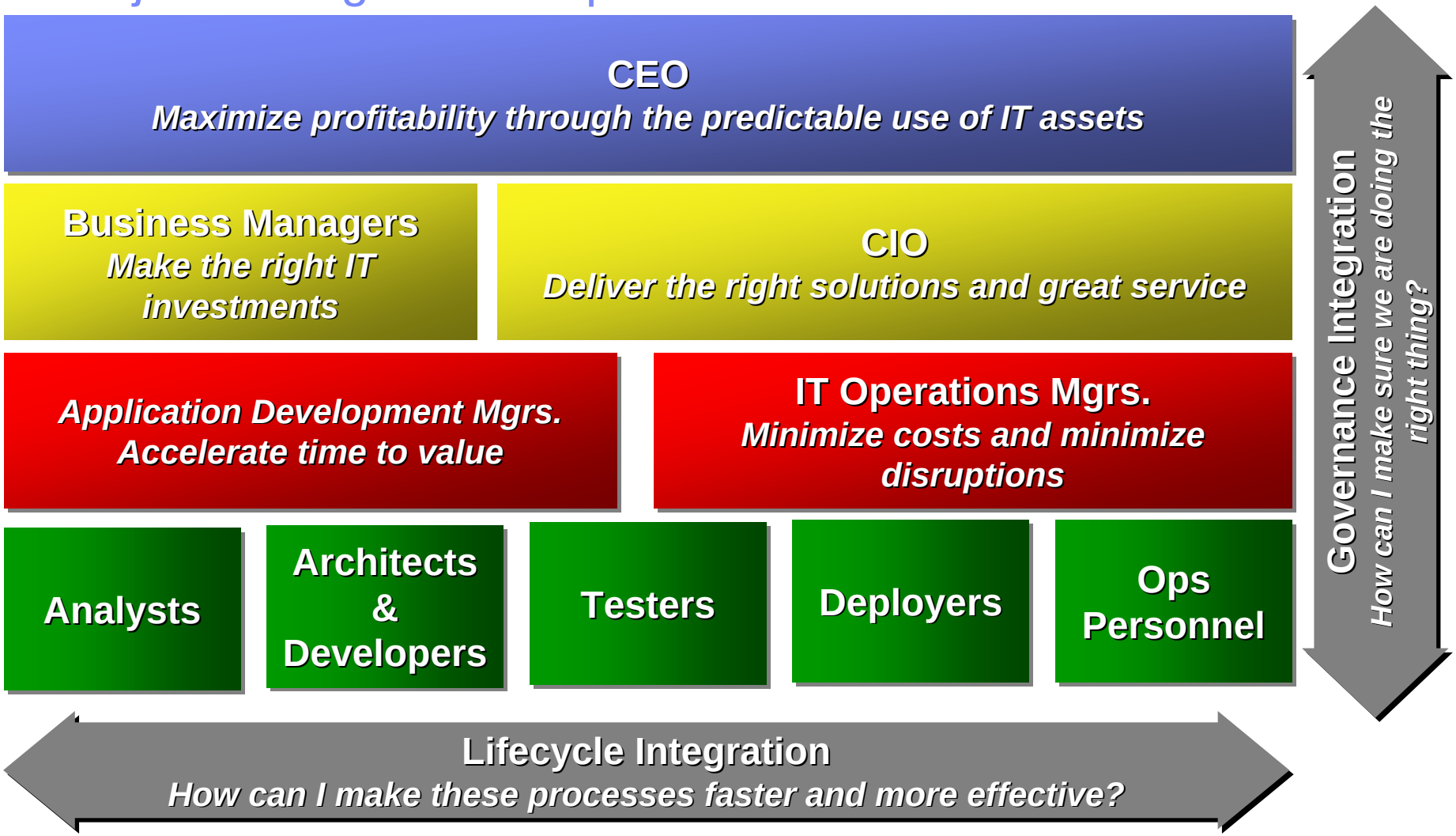
Lost Revenue or Productivity

Inability to automate governance policies from definition to execution to assure execution of strategy

Compliance and Integrity gaps

Collaboration Required

- Not just an organization problem



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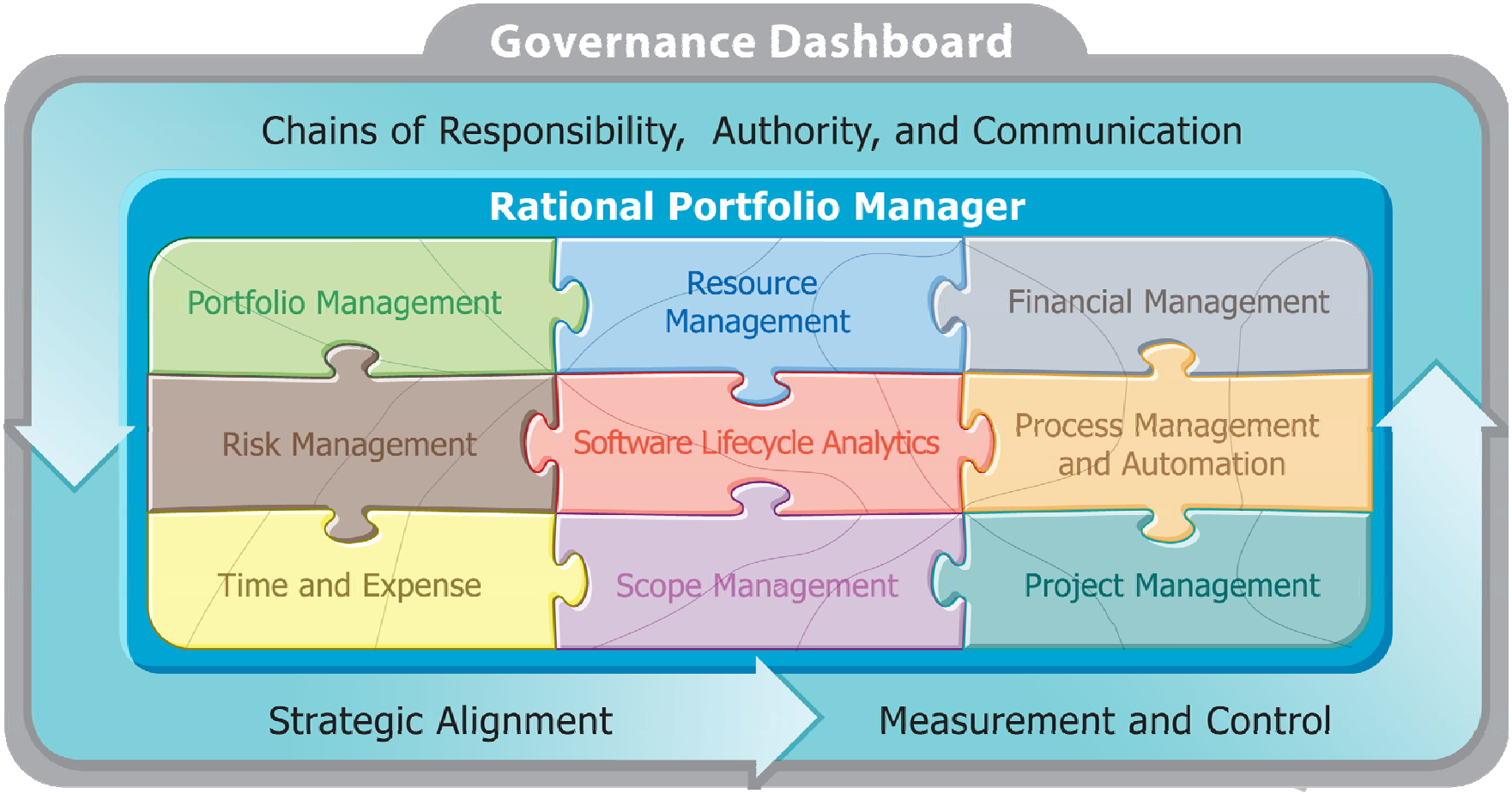
Business-driven development means you start with the business

- Understand business needs
- Evaluate alternatives
- Make decisions based on ROI, cost, time-to-market, risk
- Monitor progress against objectives
- Manage exceptions and change

Aligning priorities, process, and people



From Chaos…To Control

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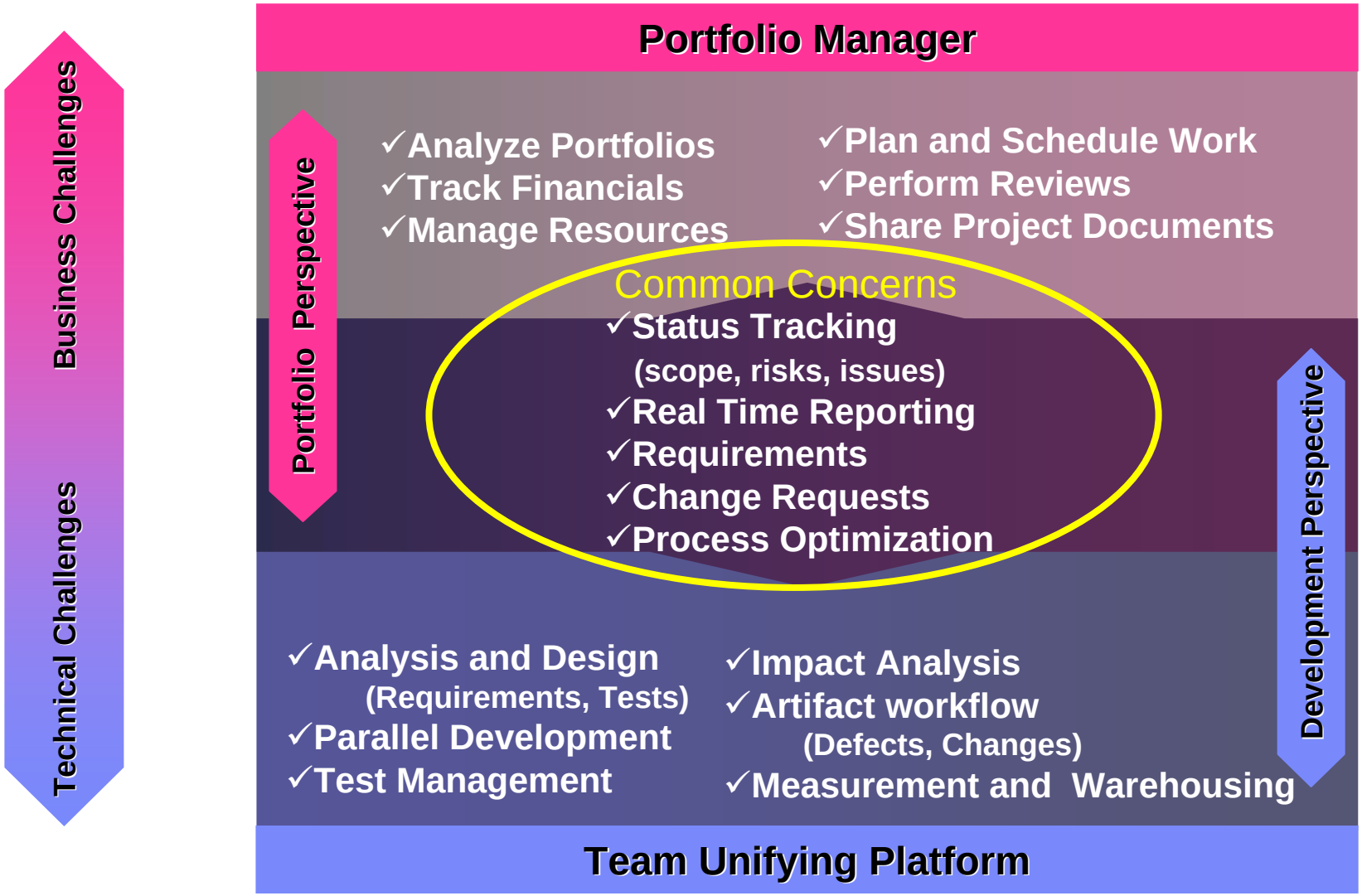
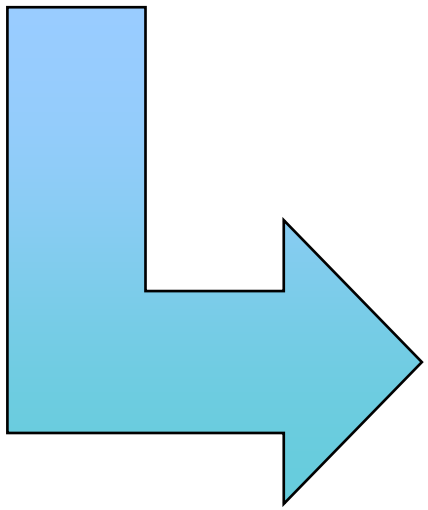
Rational Portfolio Manager and TUP

Align Business and Technology



Selecting and Driving Iterative/RUP Projects

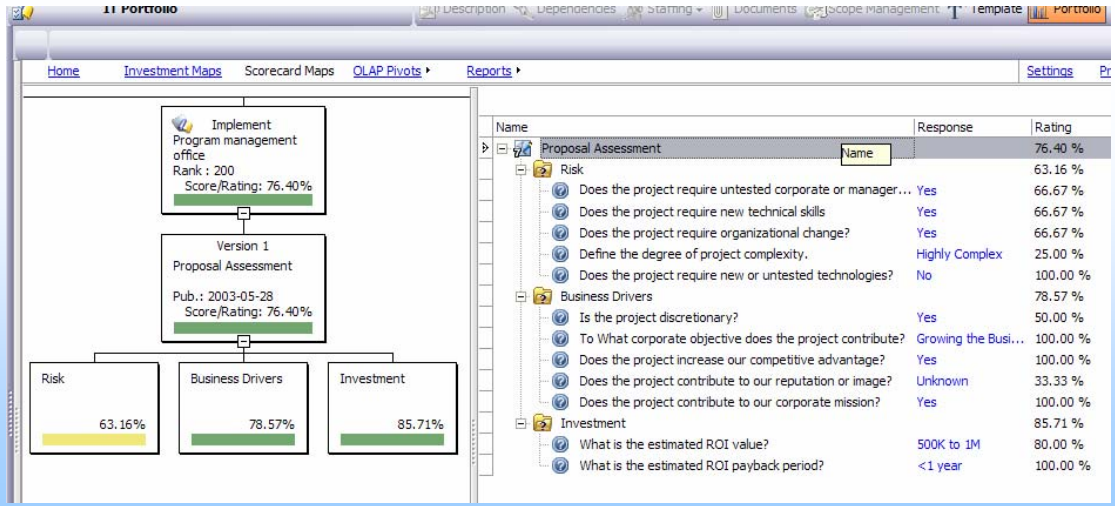
- How can I optimize project selection and funding from significantly different project opportunities?
- How can I execute on, and monitor diverse projects



- Capture and contrast project finances and resources
- Apply scorecard techniques to bring consistency to subjective assessment
- Coordinate resources and dependencies across projects with a centralized project schedule and resource repository

Project Portfolio Strategy

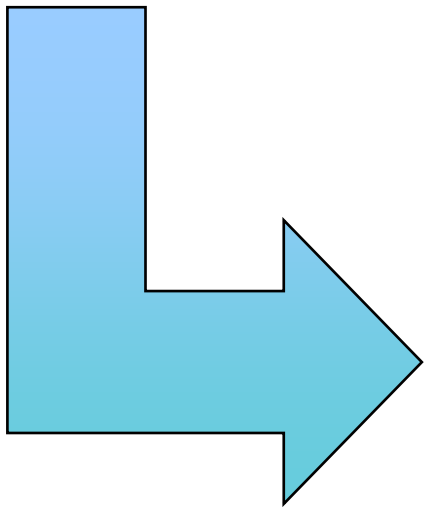
- **Planning/Assessment (Portfolio Manager)**
  - Capture project proposals, budgets (Order of Magnitude), value and risks in Portfolio Manager
  - Improve consistency with ‘managed scorecards’
  - Timing: Corporate budgeting/strategic planning cycles
  - Capture/communicate “PowerPoint level” scope management



- **Execution (TUP)**
  - On project selection / funding -> transport ‘features’ to RequisitePro (CSV)

Managing Risk and Compliance

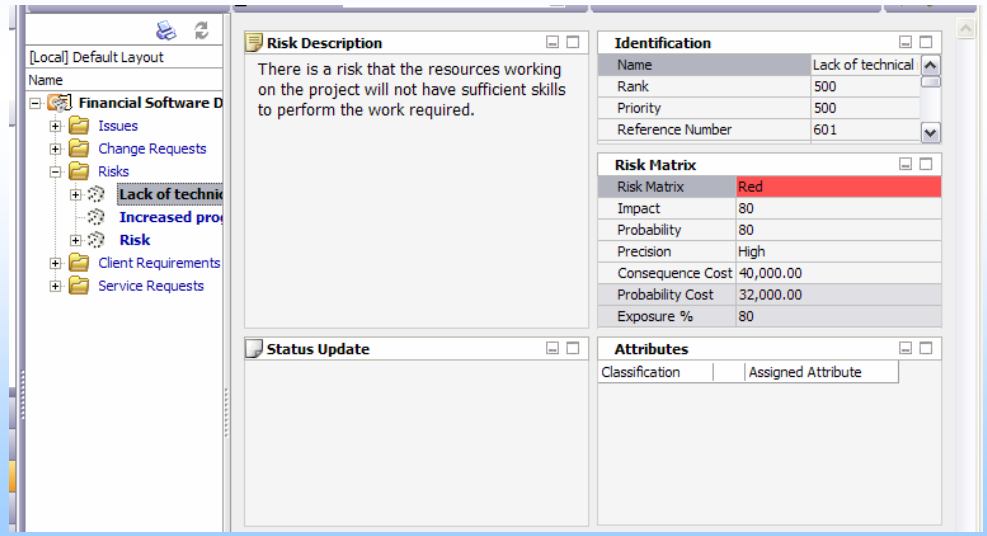
- How can I coordinate compliance documentation and workflow?
- How can I manage, estimate and account for risk?



- Provide formal, multi-user audited communications workflows
- Reference corporate and industry standards and guidelines
- Track and assess risk – from end-user / responsible point of view and from a fiscal point of view

Managing Risk and Compliance

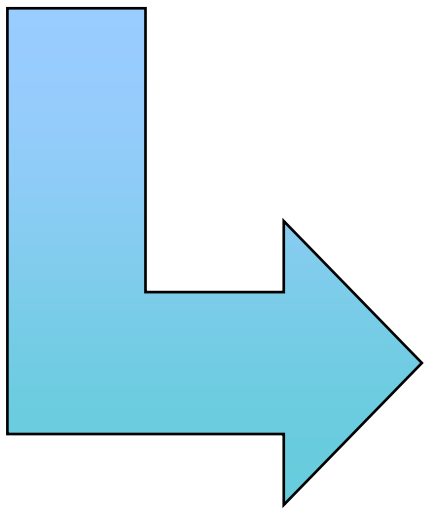
- **Planning - Empower organization to attain compliance (Portfolio Manager)**
  - Unify compliance demands
  - Communicate mandates clearly
  - Enable effective collaboration and response
  - Collect and Manage Risk



- **Compliant Execution (TUP)**
  - Automate desired behaviors (ClearQuest)
  - Audit/archive changes (TUP)
  - Mitigate Risks via defined activities (ClearQuest)

Planning and Scheduling

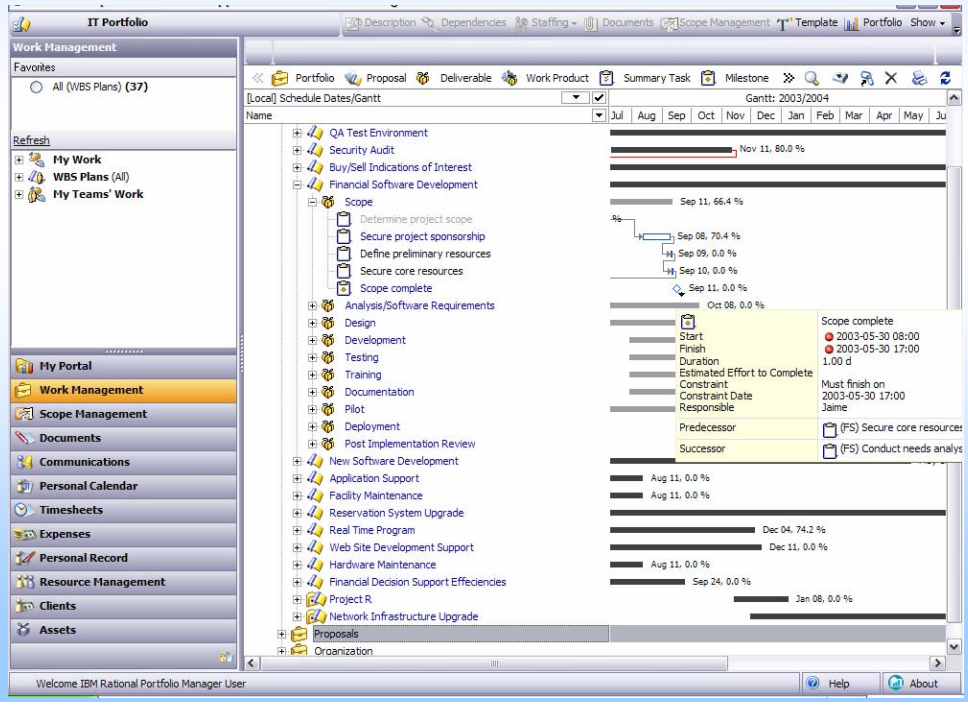
- How can I provide project plans and schedule dependencies?
- How can I assess resource and skill availability?
- How can I link business deliverables and project schedules



- Develop high level and detailed work schedules – (or import/export)
- Manage dependencies at business/cross project and program level
- Leverage real time and forward looking resource inventory
- Associate WBS/Business deliverables

Planning and Scheduling

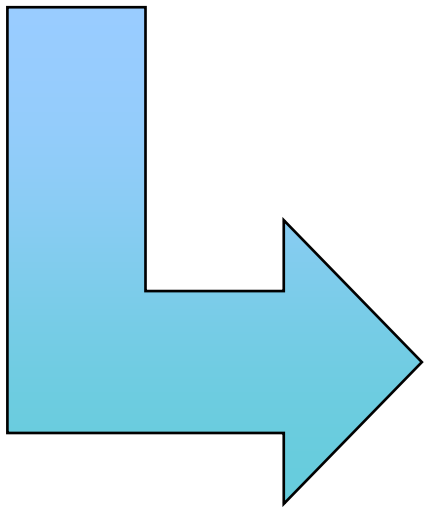
- **Develop Project Schedule**
  - Define Phases/Iterations
  - Map Deliverables to Iterations (Scope items or use case scenarios)
  - Capture effort actuals (budget)



- **Manage Project Detail**
  - Decompose ‘tasks’ into activities
  - Initiate and track change activities (ClearQuest/UCM)
  - Update activity status
  - Report status (Portfolio Manager)
    - Leverage email notification/linkages

Managing Project Documents

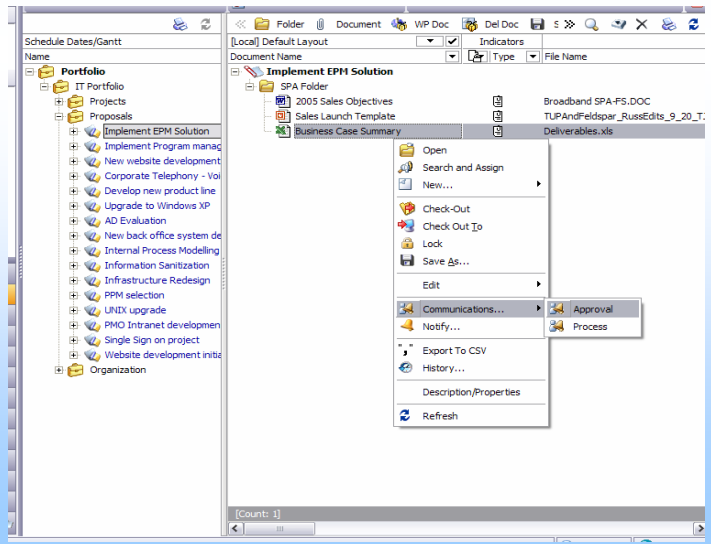
- How can I collaborate on the development of project documents?
- Where can I manage a designed document review process?

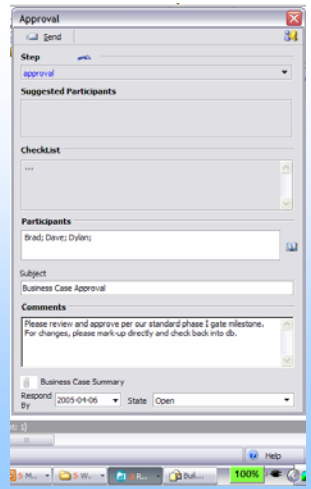


- Publish, share and review business documents in project context
- Design auditable workflows per document or artifact type
- Manage and navigate change histories

Managing Project Documents

- **Review / Accept Project Documents (Portfolio Manager)**
  - Collaborate around project documents
    - Business Case
    - Development Policies
    - Sales/Marketing Plan
    - Test Plan





- **Publish / Share Technical Detail (TUP)**
  - Coordinate and change manage ‘technical’ documents/files
  - Use Case Specifications (ReqPro)
  - Design Models (ClearCase)
  - Code (ClearCase)
  - Test Artifacts (TestManager)

Thank You

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