Are you doing R&D, or Catch-up & D? Are you Building Software, or Hopeware?

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Rolf W. Reitzig

cognence inc

Improving Software Economics

What is Innovation?

From Merriam-Webster

- The introduction of something new
- A new idea, method, or device

From businessdictionary.com

- Process by which an idea or invention is translated into a good or service *for which people will pay*

From wikipedia.com

- An innovation is a new way of doing something
- innovation may be linked to performance and growth through improvements in efficiency, productivity, quality, competitive positioning, market share, etc
- Innovation focuses on *ideas applied successfully in practice* (compared to Invention)

2009 CIO Imperatives Related to Innovation

2009 IBM CIO Study

1. Make Innovation Real
2. Raise the ROI of IT
3. Expand Business Impact

2009 Gartner CIO Study

1. Business Process Improvement
2. Reducing Enterprise Costs
3. Improving Enterprise Workforce Effectiveness
4. Attracting and Retaining New Customers
5. Increasing the Use of Information/Analytics
6. Creating New Products or Services
7. Targeting customers and markets more effectively
8. Managing change initiatives
9. Expanding current customer relationships
10. Expanding into new markets and geographies

How Is Innovation Measured?

- Innovation is difficult to measure
- How are you measuring innovation?
  - Patents?
  - New products?
  - Profitability?
  - Time to market?
  - Customer Satisfaction?
  - Market Share?

- The most widely used measurements for R&D effectiveness are new product revenue compared with R&D expenditures
  - Example: Products/services introduced over the past 3 years delivered $100M in revenue versus an R&D expenditure cost of $20M

Barriers To Innovation

Failure in the cultural innovation infrastructure varies between organizations but the following are common across all organizations at some stage in their life cycle (O'Sullivan, 2002):

- Poor Leadership
- Poor Organization
- Poor Communication
- Poor Empowerment
- Poor Knowledge Management

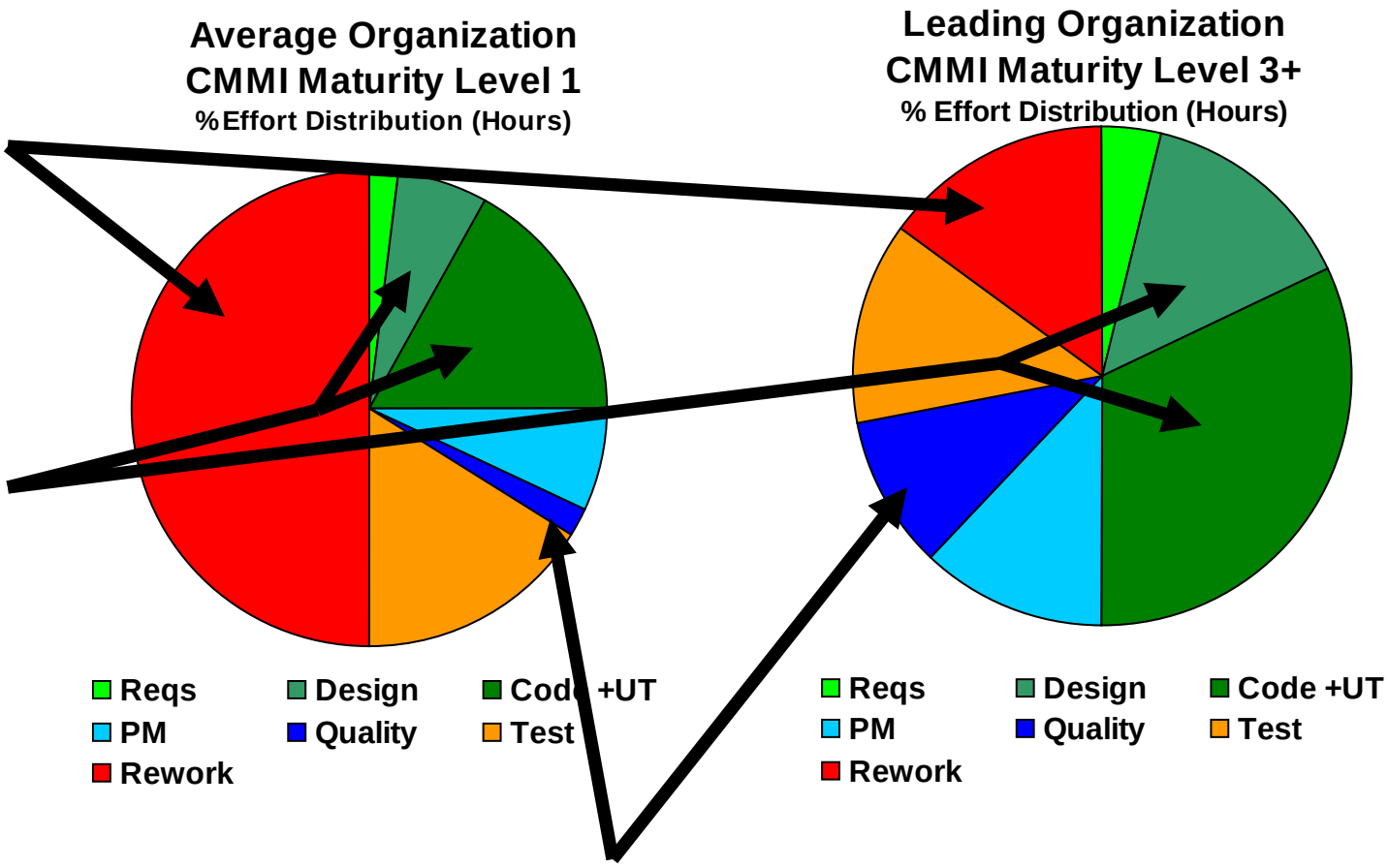
Common causes of failure within the innovation process in most organizations can be distilled into five types:

- Poor goal definition
- Poor alignment of actions to goals
- Poor participation in teams
- Poor monitoring of results
- Poor communication and access to information

Using CMMI to Drive More Innovation

Far less of the organization is fixing problems

So, a larger percentage can develop new solutions!



- ✓ Organizations with mature development and innovation infrastructures incorporate more quality activities that reduce testing/rework later
- ✓ Resources focused where they need to be – new releases/innovation!

Perspective From IBM

While 93% of senior business executives say innovation is a top strategic priority, the gap in their ability to execute has grown three-fold.

At the heart of these new and differentiated solutions is software -- the invisible thread that makes products and services more instrumented, interconnected and intelligent. *It is not clear, however, if companies today have an effective process for delivering software*. Software projects simply haven't delivered:

- 62% failed to meet their schedules
- 49% suffered budget overruns
- 41% failed to deliver on expected business value and ROI

The impact to the business? Rolling out a new product or service six months late drives 33% less profit.

In Short…

Failure to manage how one manages software and systems development directly affects an organization's ability to innovate

How Can You Tell There Are Problems?

- Declining market share
- Declining profit
- Projects are late & over budget
- Products/services are of poor quality
- High cost of quality
- Siloed organization – poor communication
- Employees working forced overtime
- Requirements coming from competitors product sheets
- Testing phase cut to meet schedule targets
- Throwing more developers at the project
- Lack of process and development tool infrastructure
- Grasping for silver bullets

Cost of Quality (CoQ) Concept

- Developed by J.M. Juran and applied successfully by companies like Toyota Motor Corporation to achieve competitive advantages through the development of better quality products
- CoQ represents *all costs associated with poor quality*

Source: Juran's Quality Handbook

Internal Failure Costs

Costs associated with defects that are found prior to transfer of the software to the customer

Examples:

- Design corrective action
- Design re-reviews
- Purchased software corrective action
- Purchased software re-test
- Defect reporting/tracking
- Defect fixing
- 2nd and subsequent integration testing iterations
- 2nd and subsequent system testing iterations

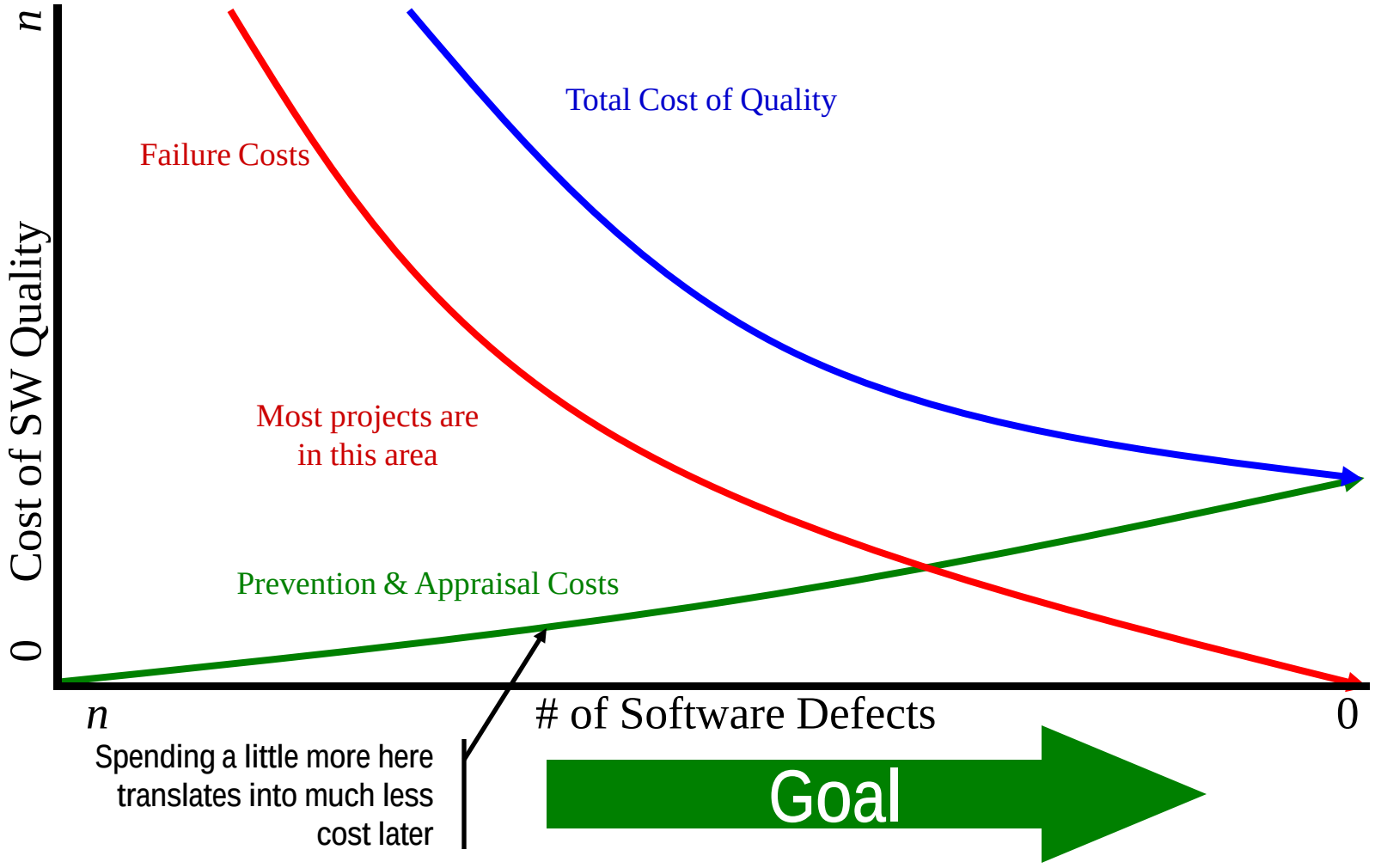
External Failure Costs

Costs associated with defects that are found after the software is shipped to the customer

Examples:

- Next release defect rework (maintenance)
- “Re-engineering”
- Technical support personnel
- Software returns
- Lawsuits
- Contract penalties
- Lost customers
- Lower marketplace perception
- Loss of pricing power
- Lost sales

Graphical Representation of CoQ



Prevention Costs

Costs incurred to keep failure and appraisal costs to a minimum

Examples:

- Quality planning
- Software quality assurance
- Software configuration management
- Supplier capability assessments
- Quality training
- Software reuse
- Requirements reviews
- Design reviews
- Code reviews
- SCM tools
- External process assessments
- Process improvement efforts

Appraisal Costs

Costs incurred to determine the degree of conformance to quality requirements

Examples:

- Purchased software testing
- Defect reporting/tracking
- Test automation software
- First iteration integration testing
- First iteration system testing
- User acceptance testing

Solution to the Innovation Problem (IBM)

- To overcome these challenges, leaders need to:
  - Consider software as a strategic business asset
  - Build an enduring competency in software delivery
  - Manage software delivery as an agile and cost-effective business process
  - Implement a framework to continuously improve this process to achieve desired business outcomes
- To do this successfully, businesses must deploy a more flexible and affordable infrastructure to optimize the *business process of software delivery*.

Food For Thought

If you aren't innovating how you innovate, how will you stay ahead of the competition?

Thank You!

Rolf W. Reitzig

(303) 377-9934

Rolf_Reitzig@cognence.com

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