

Innovate2011

The Premier Software and Product Delivery Event



Measured Improvement in Software Economics

Walker Royce
VP, Chief Software Economist
IBM Software, Rational



Software Delivery is an Economic Discipline



Level 5: Completely irreducible uncertainty

Level 4: Partially reducible uncertainty

Level 3: Fully reducible uncertainty

Level 2: Risk without uncertainty

Level 1: Complete certainty

Engineering →
Engineering →
Engineering →
Engineering →

Software →
Software →
Software →
Software →



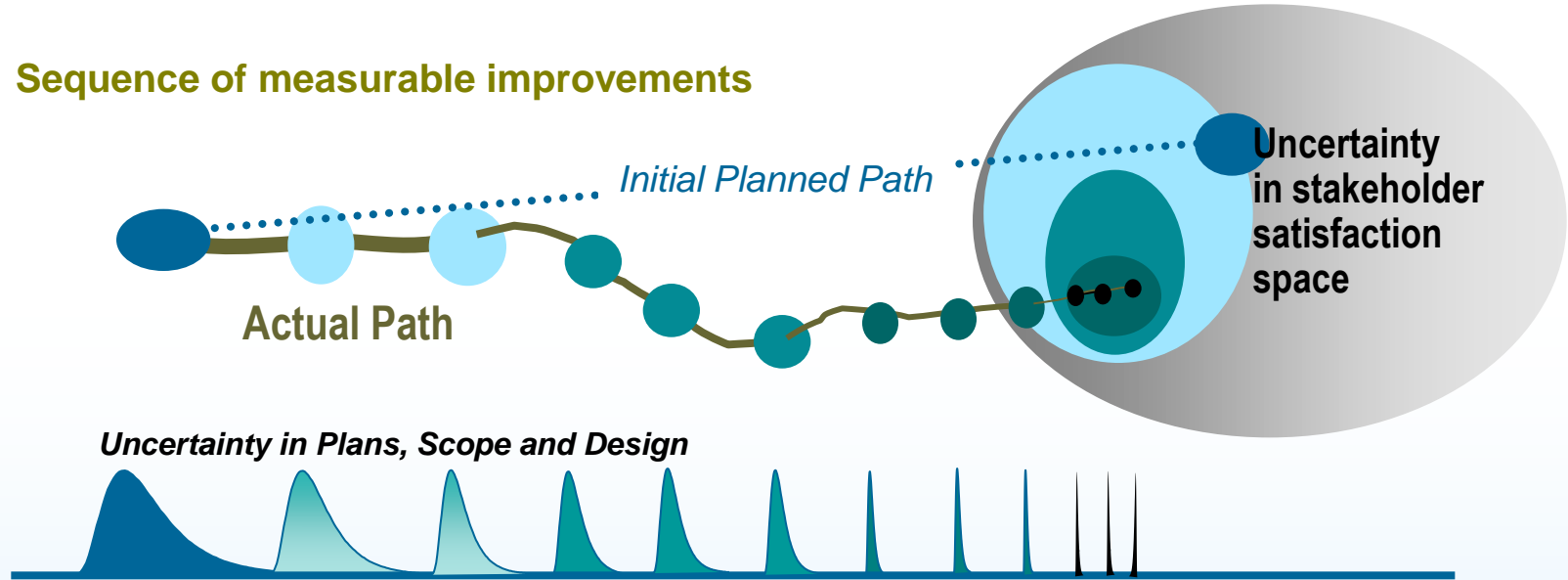
Religion
Philosophy
History
Economics
Biology
Chemistry
Physics
Mathematics

Lo, Andrew, and Mark Mueller. MIT Sloan School of Management,
Moody's/NYU 6th Annual Credit Risk Conference, New York, March 2010.

Economic Governance: Measurement and Steering



Sequence of measurable improvements



Pivotal Culture Shifts



Integrate

Plans/management

Plan for integration to precede unit testing

Avoid false precision in plans and requirements

Collaborate

Progress measures

Quantify progress trends from the integrated code and test base

Don't attack the easy things first

Optimize

Quality measures

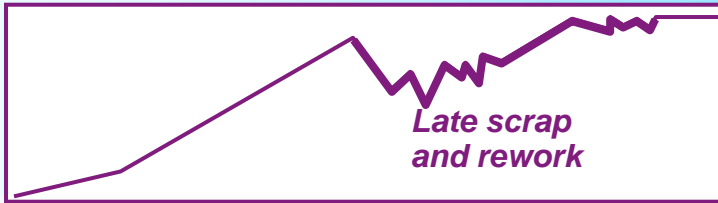
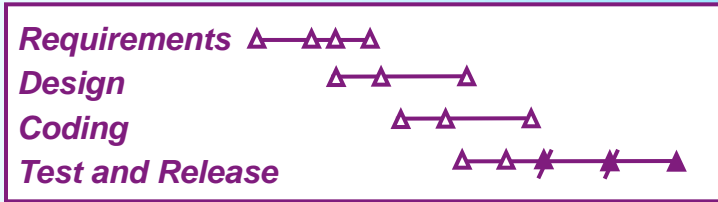
Quantify cost-of-change trends to demonstrate true agility

Don't rely on subjective and speculative measures

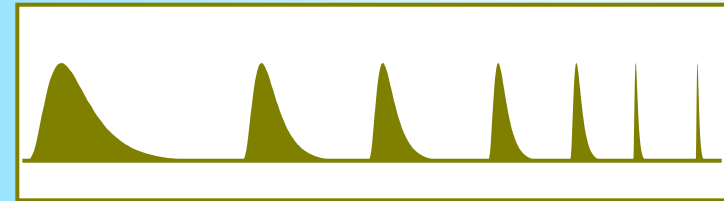
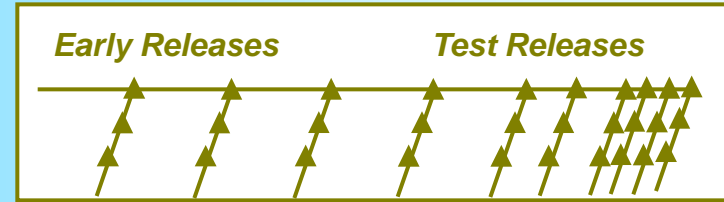
Measured Improvement: Progress Econometrics



Conventional Engineering Governance



Modern Economic Governance



Planning Progress

Technical Progress

Economic Progress



Measured Improvement: Quality Econometrics

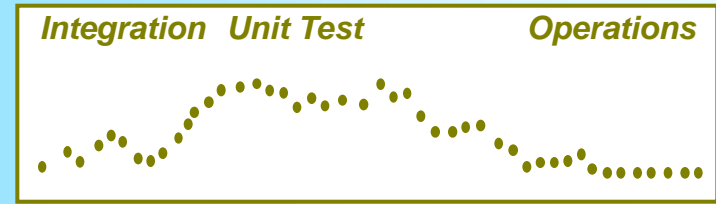


Conventional Engineering Governance



Maturity
Defect
Trend

Modern Economic Governance



Modularity
Change Volume
Trend



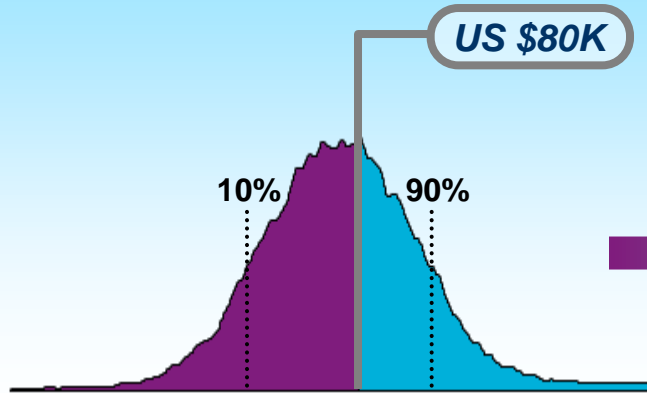
Adaptability
Cost of Change
Trend



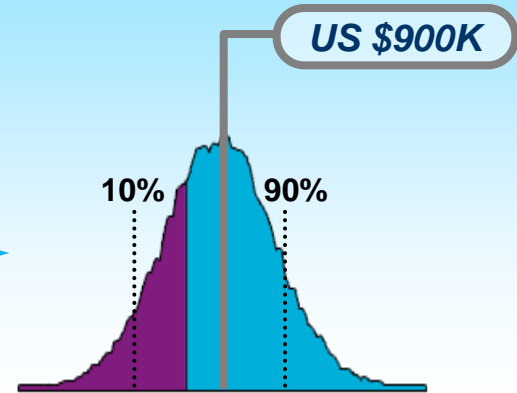
Measured Improvement: Quality Econometrics



Net Present Value using
Conventional Governance



Net Present Value using
Economic Governance



Improving Software Economics



VOLUME OF CODE

- Quality/Performance
- Integration first
- Manage scope
- Asset-based reuse

PROCESS

- Steering
- Good practices
- Maturity
- Domain knowledge

Resources = Complexity *Agility* * Collaboration * Automation

TEAMWORK

- Synchronization
- Skills
- Experience
- Motivation

TOOLING

- Process enactment
- Measurement
- Instrumentation
- Manage complexity

Innovate2011



Software. Everywhere.

Productivity Improvement Leverage



Economic Impacts

Reduce Complexity

Productivity:
2x – 10x
Timeframe is Years

Cost to Implement:
25%-50%
Much culture change

Increase Agility

Productivity:
25-100%
Timeframe is Quarters

Cost to Implement:
10%-35%
Some culture change

Improve Collaboration

Productivity:
15-35%
Timeframe is Months

Cost to Implement:
5%-10%
Predictable

Add Automation

Productivity:
5-25%
Timeframe is Weeks

Cost to Implement:
<5%
Very predictable

Organization

Project

Team

Individual

Innovate2011



Software. Everywhere.

The Moral of This Story



Better software economics is a result of:

1. Measured improvement for improved predictability

- The foundation of economic governance
- Measurement helps you manage uncertainty

2. Agility for improved operational efficiency

- Best measured by cost of change trends
- Best achieved by accelerating integration testing

***If you play better defense
you can play more offense!***

Innovate2011



Software. Everywhere.

Innovate2011



Software. Everywhere.



www.ibm.com/software/rational

© Copyright IBM Corporation 2011. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, these materials. Nothing contained in these materials is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software. References in these materials to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates. Product release dates and/or capabilities referenced in these materials may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way. IBM, the IBM logo, Rational, the Rational logo, Telelogic, the Telelogic logo, and other IBM products and services are trademarks of the International Business Machines Corporation, in the United States, other countries or both. Other company, product, or service names may be trademarks or service marks of others.

ryware.