



Software Testing Industry Trends and Standards in Australia

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K.J. Ross & Associates

Company Background

- Founded in 1997, emerging from safety critical systems
- Pure-play software testing
- Focus on standards:
 - Health
 - Transport
 - ISO 29119



Presentation Overview

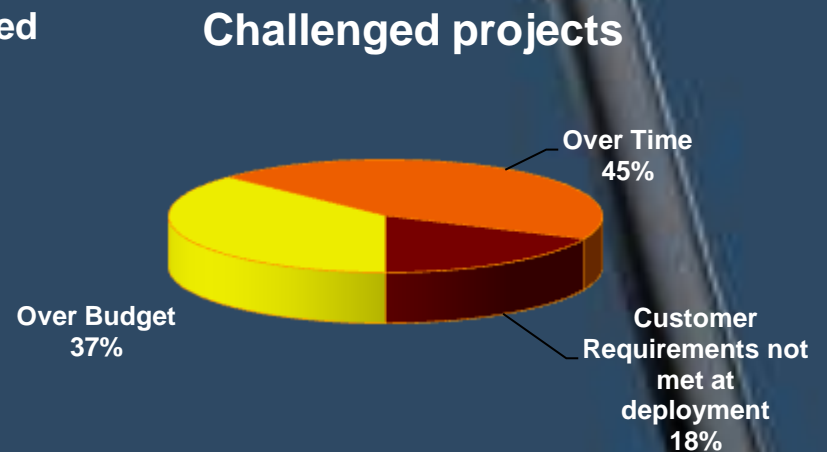
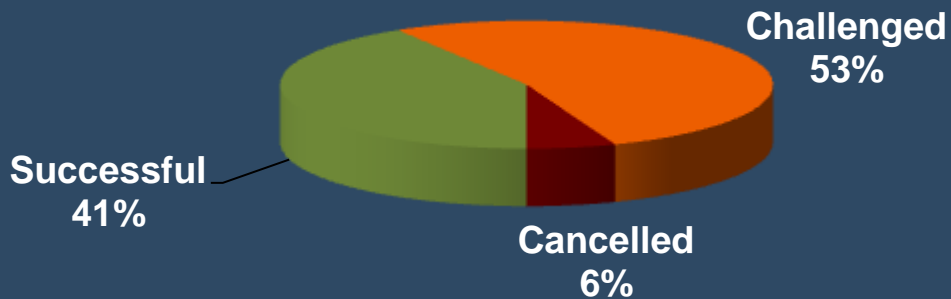
- Highlights of the 2012 Australian Software Testing Industry Benchmark
- The role of standards and accreditation in software testing in Australia; implications for the future



Project Success?



Software Testing Industry Benchmark 2012

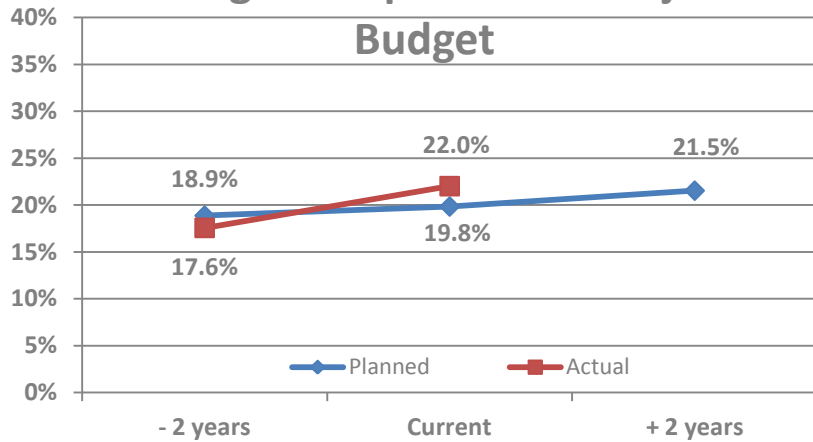


**By 2025, there will be a
“9/11” magnitude
software failure.**

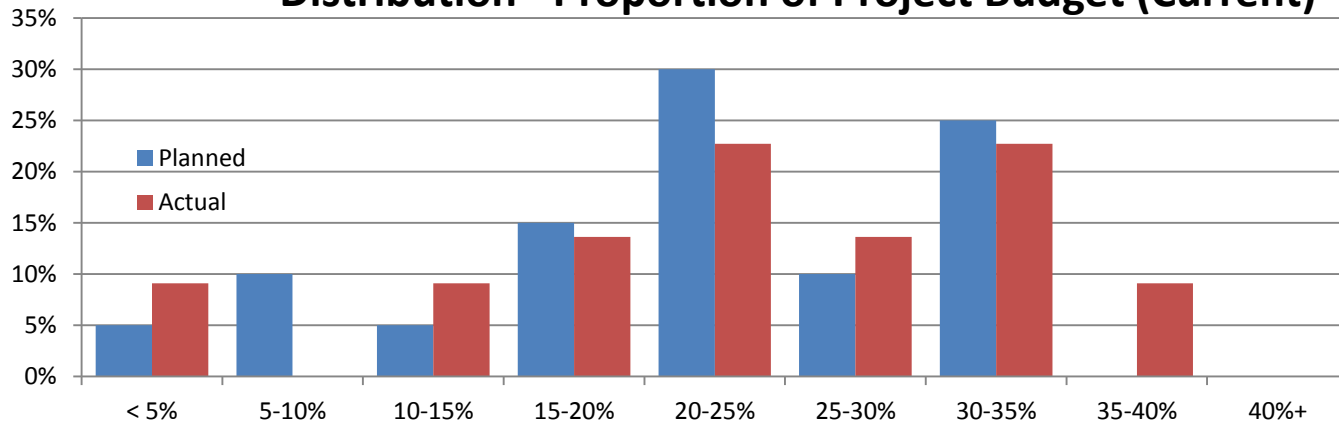
Barry Boehm, 2011

Proportions of Budget

Testing as Proportion of Project

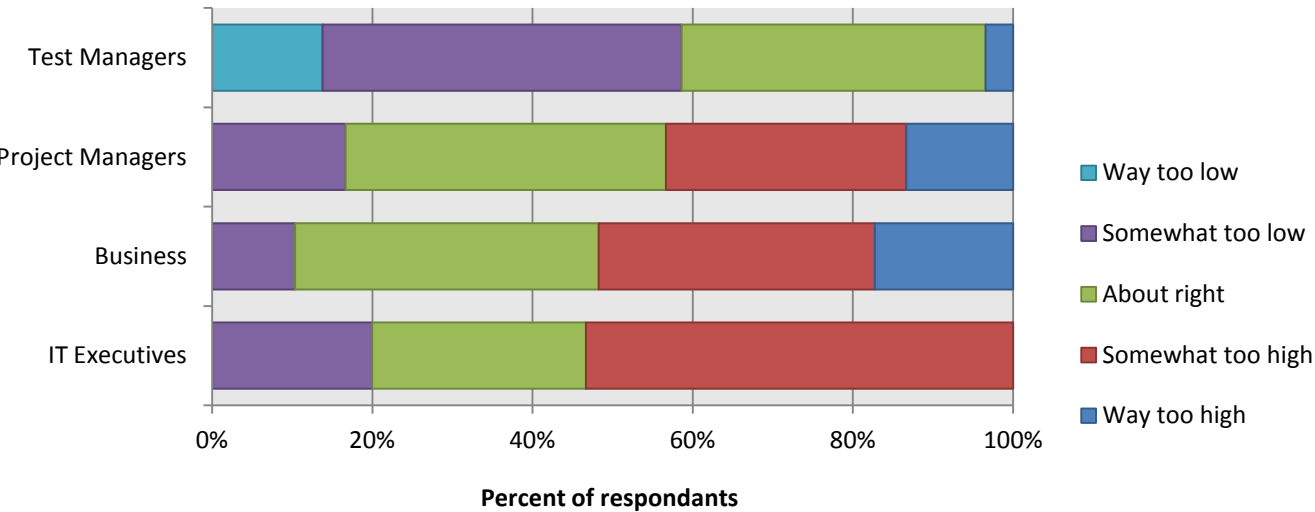


Distribution - Proportion of Project Budget (Current)



Perception of Budget

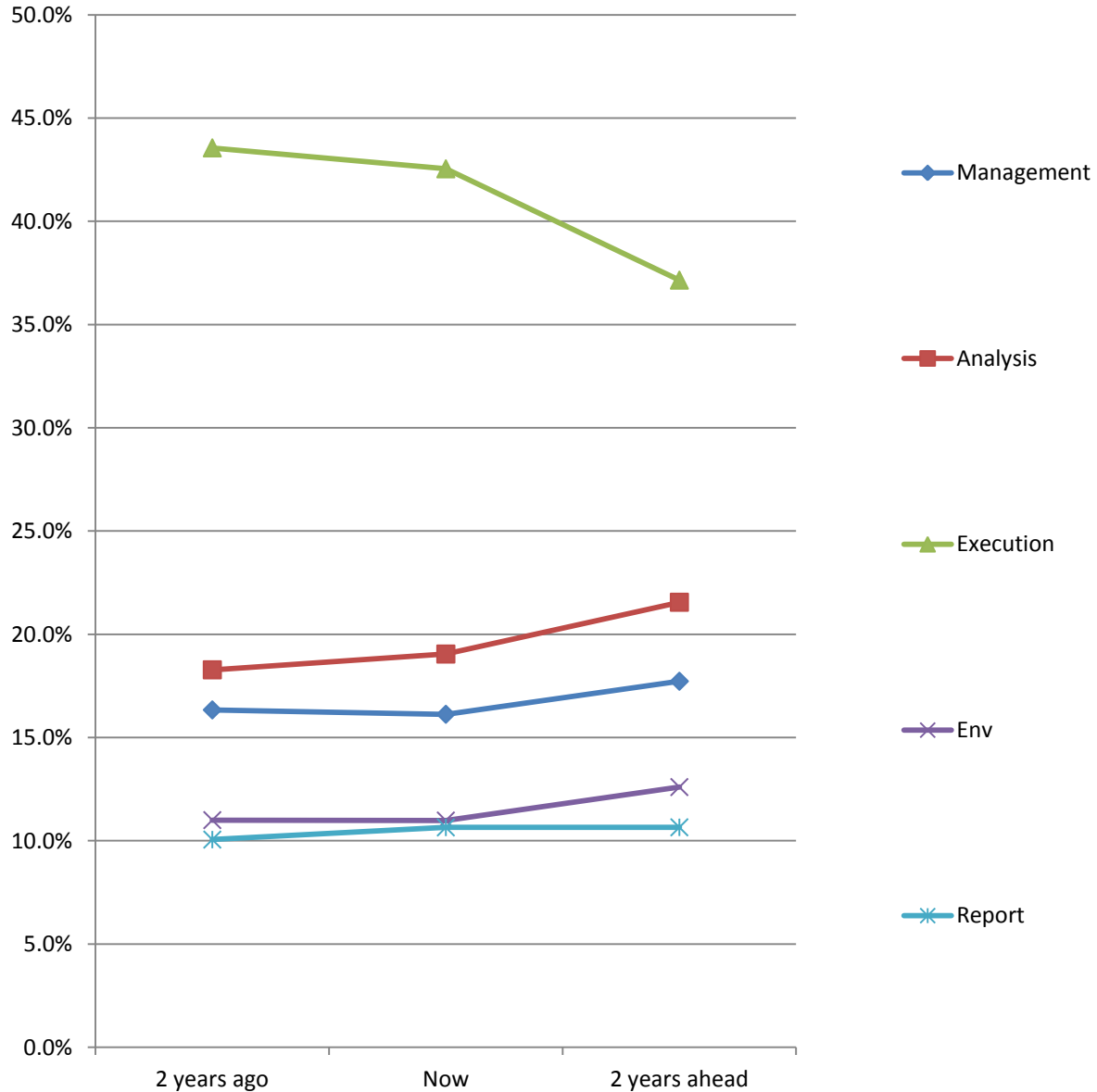
Perceptions on Test Expenditure



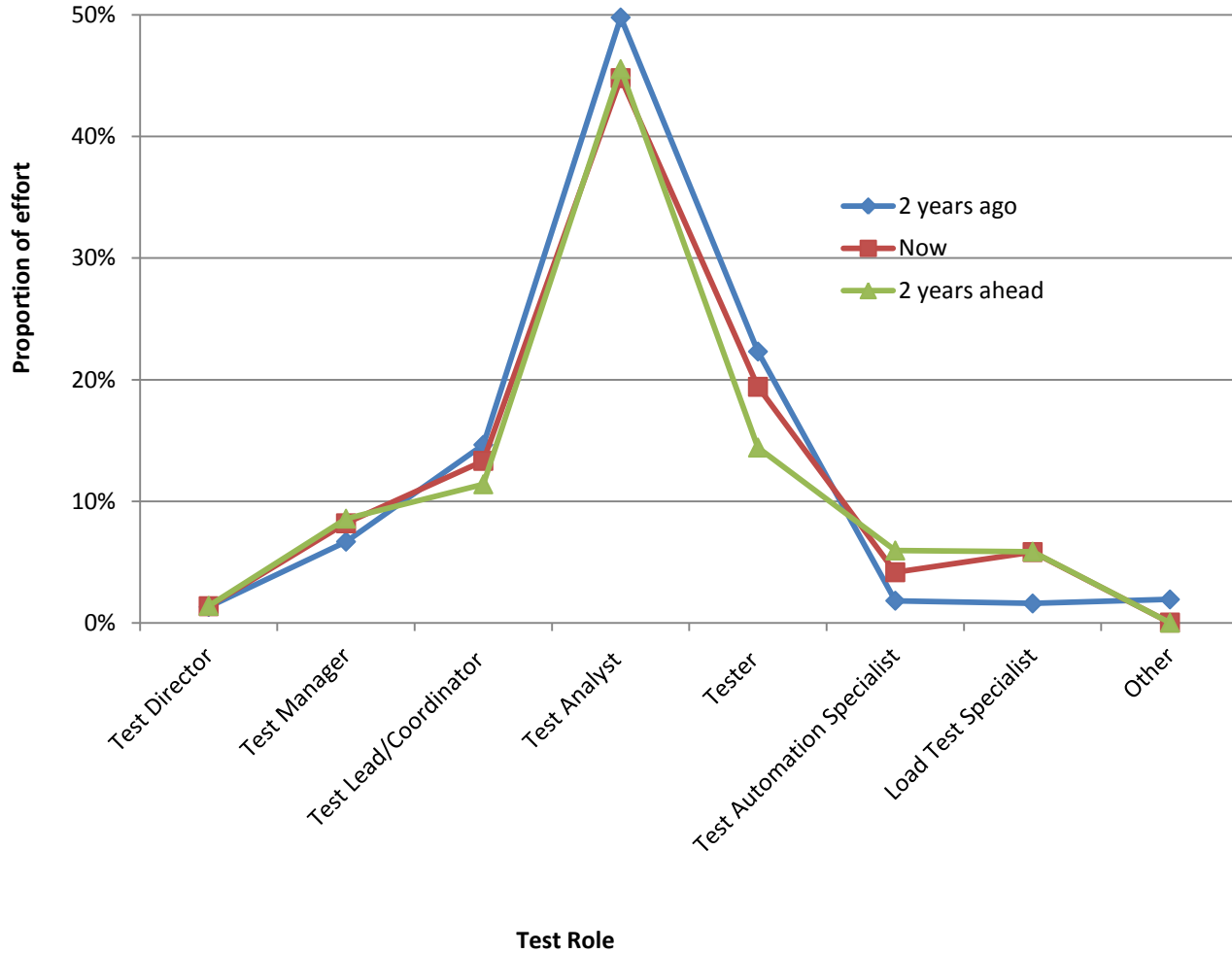
Changing Roles



Test Activity



Team Structure



Team Structure



Ratios

- Test Managers to Team 1 : 11
- Test Directors to Team 1: 70
- Testers to Developers 1: 5

Team Structure

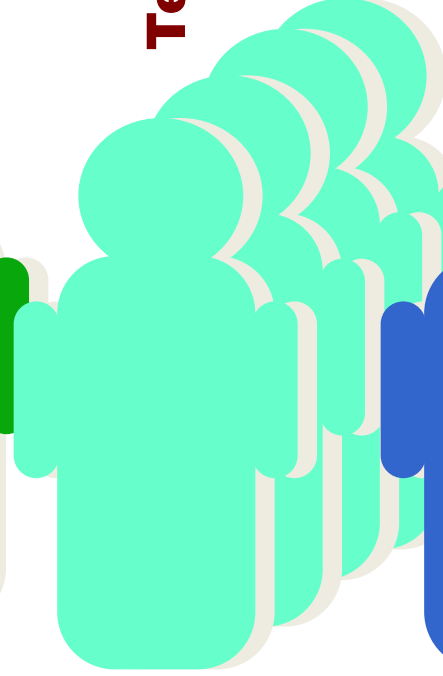
Test Manager



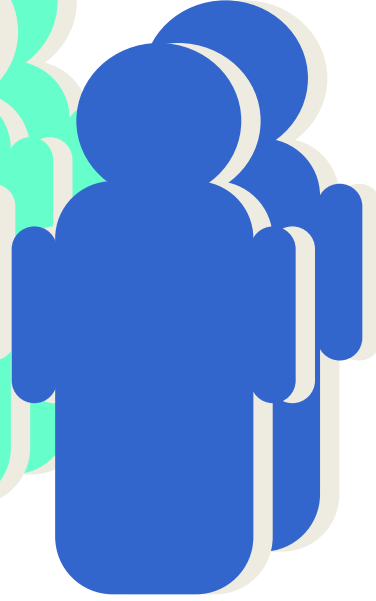
Test Lead



Test Analyst



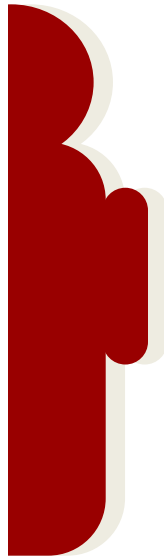
Tester



Test Automation

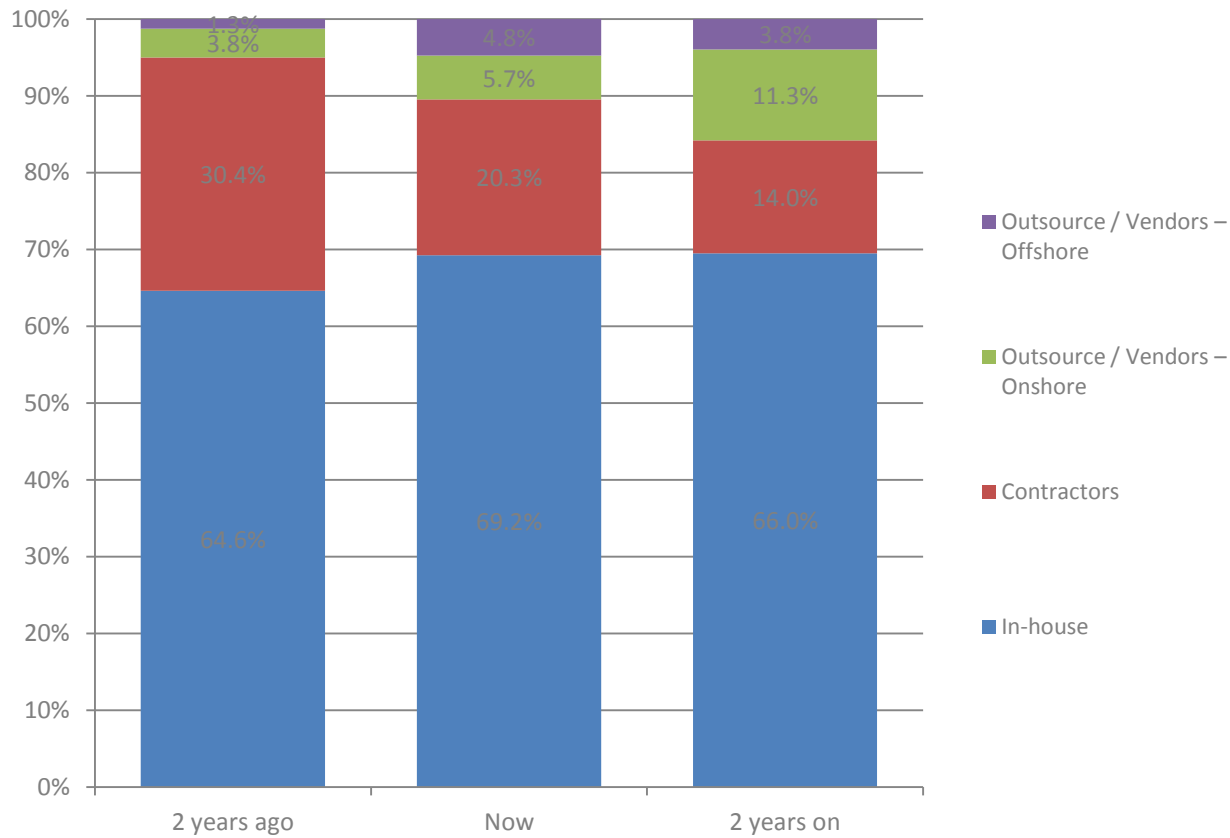


Performance



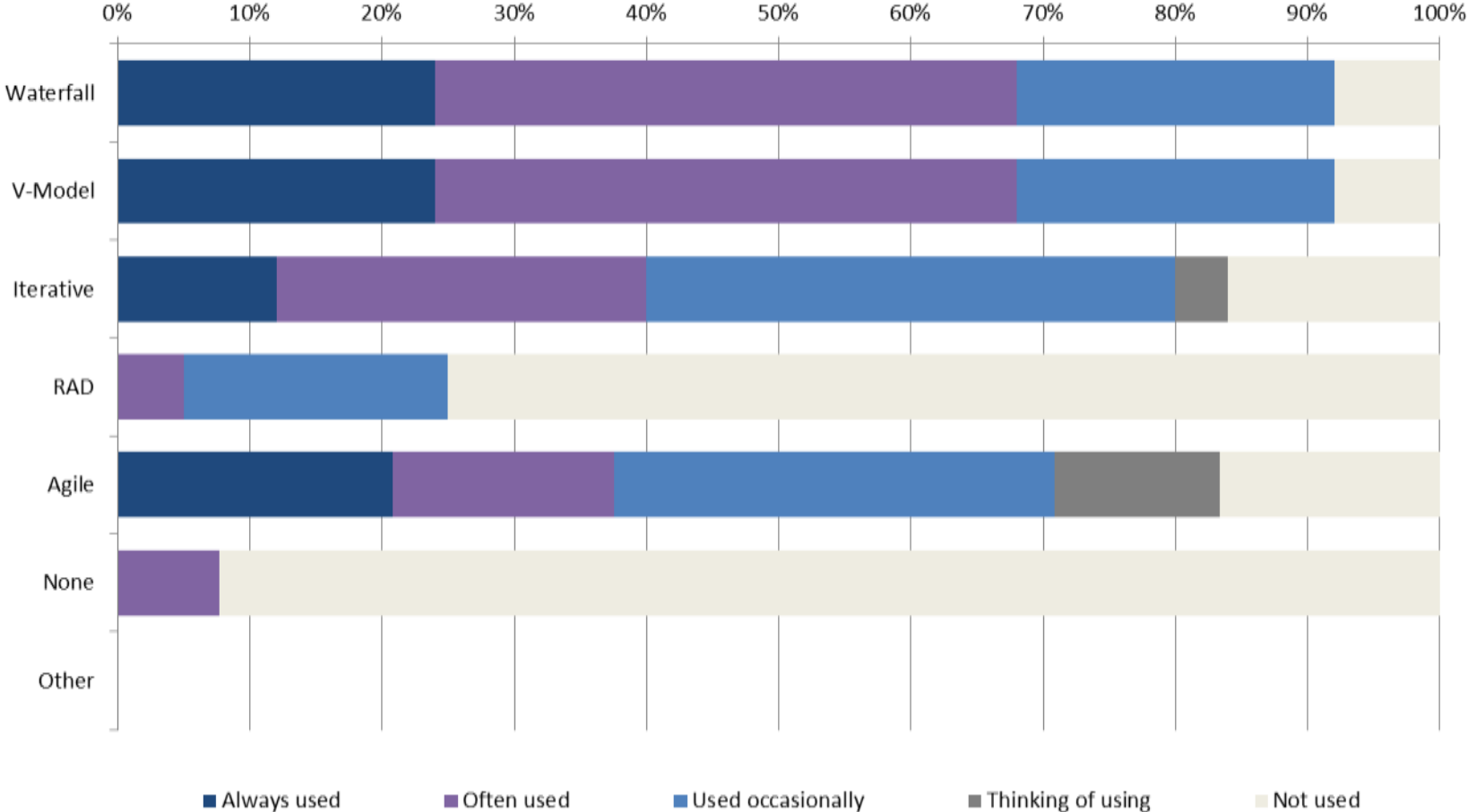
Resourcing Mix

Test Resourcing



Preferred Lifecycle

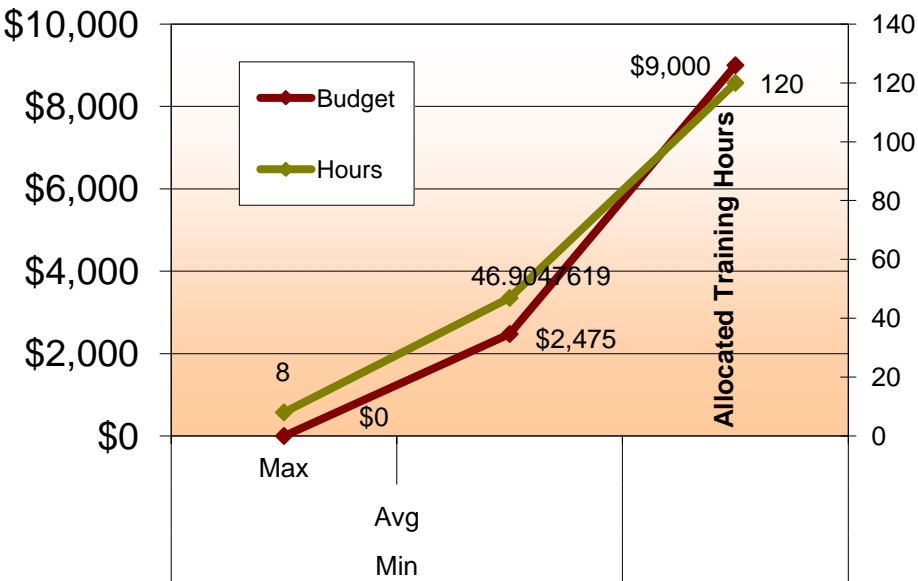
Lifecycle



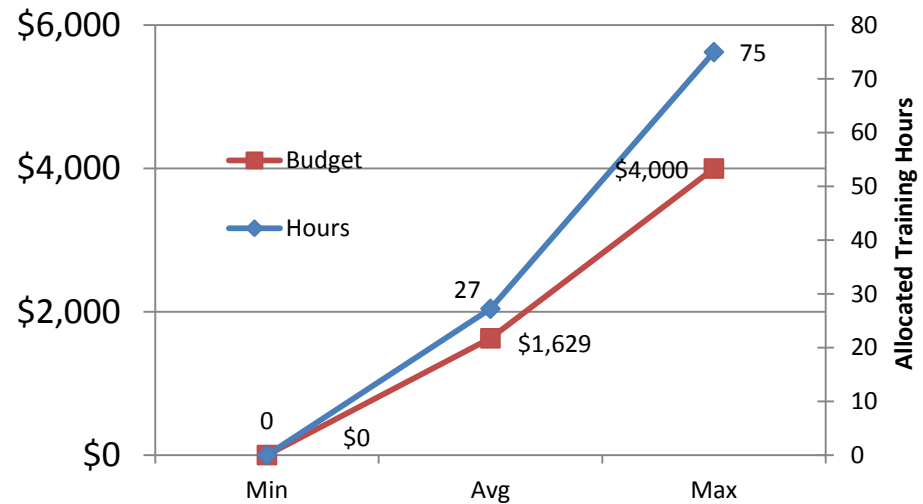
Training budgets down

2010

Average Annual Training Allocation



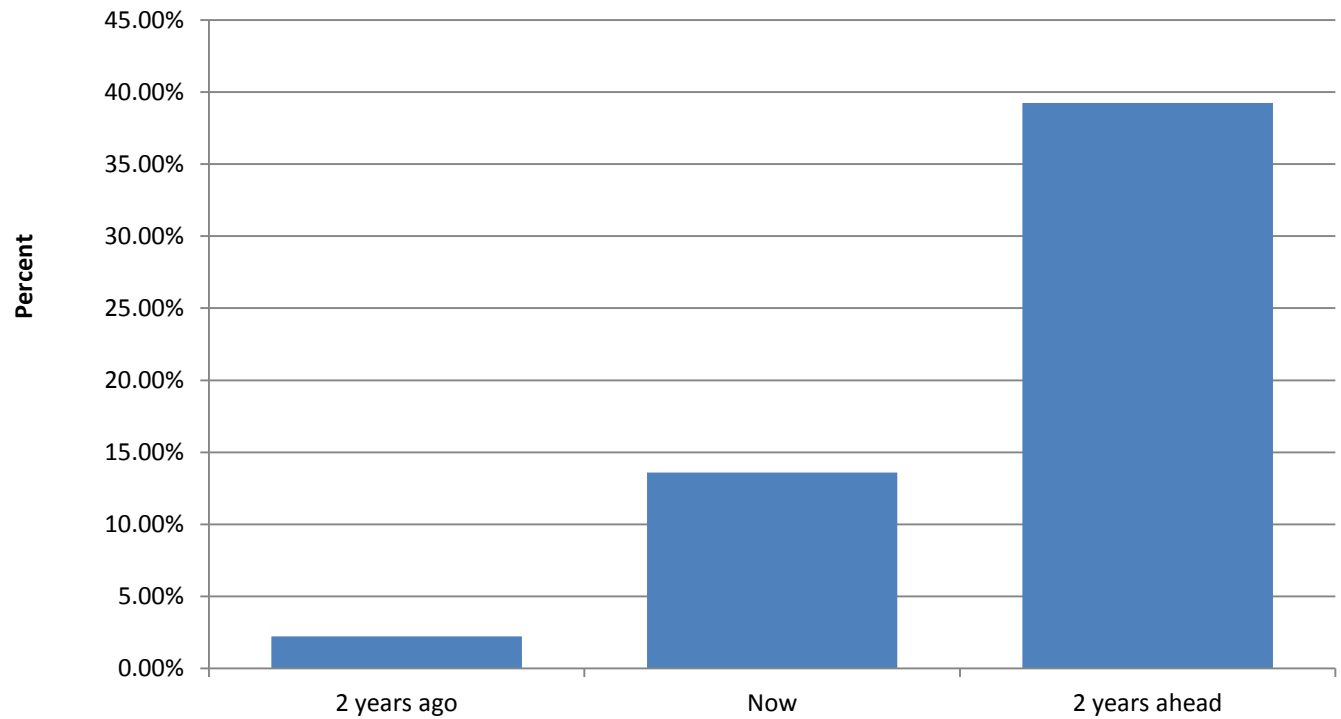
2012





Automation

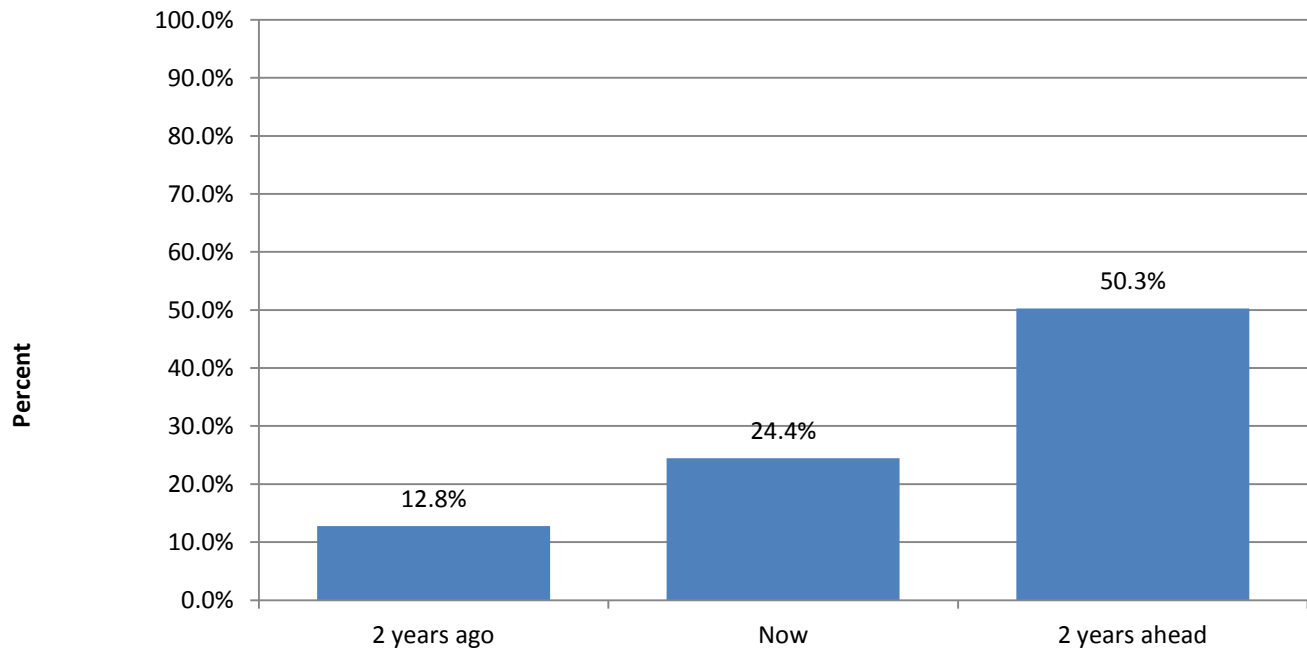
Percentage of Tests Automated





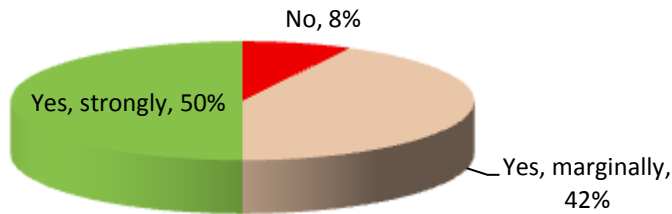
Automation

What proportion of automated test cases are re-executed regularly during regression testing?

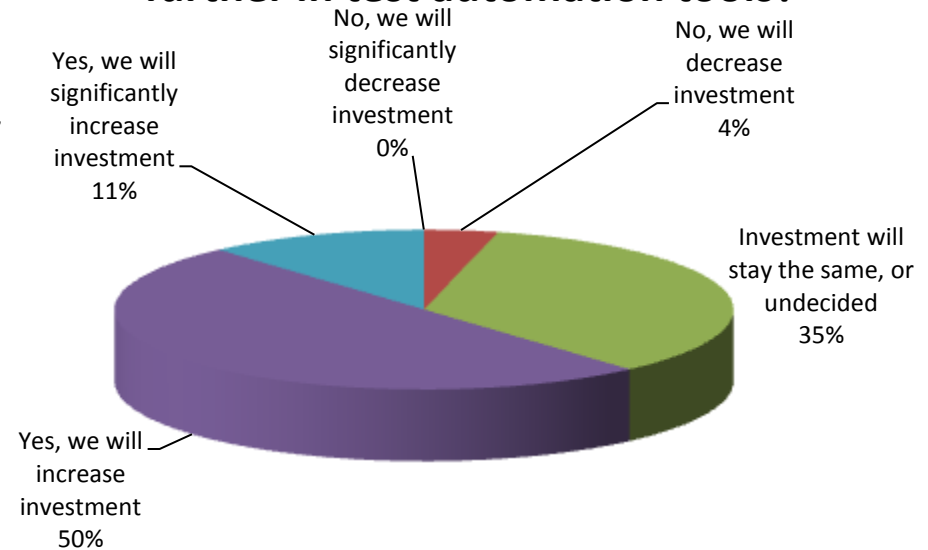


Automation Investment

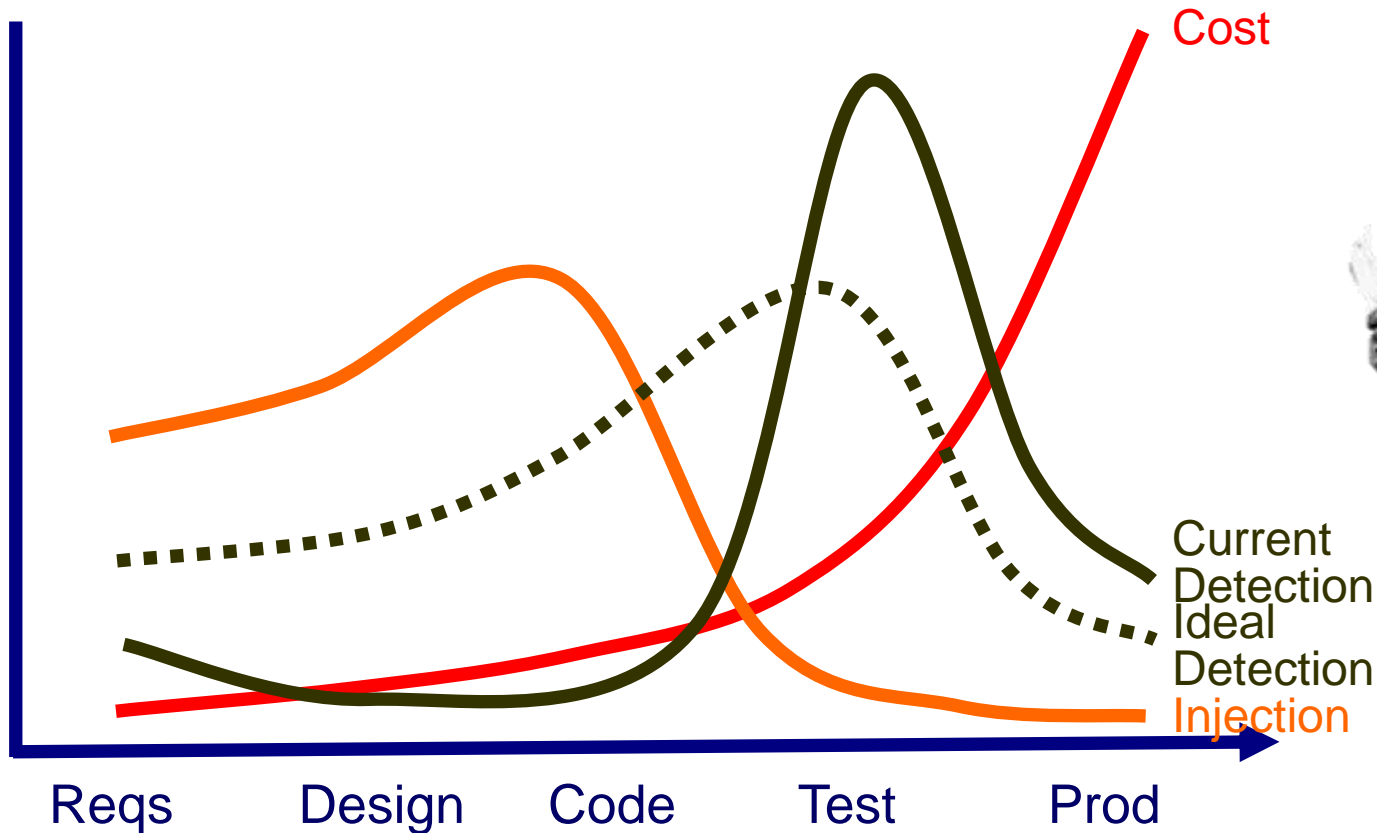
Do you feel that automation can deliver real value and return on investment?



In the next few years, we intend to invest further in test automation tools?

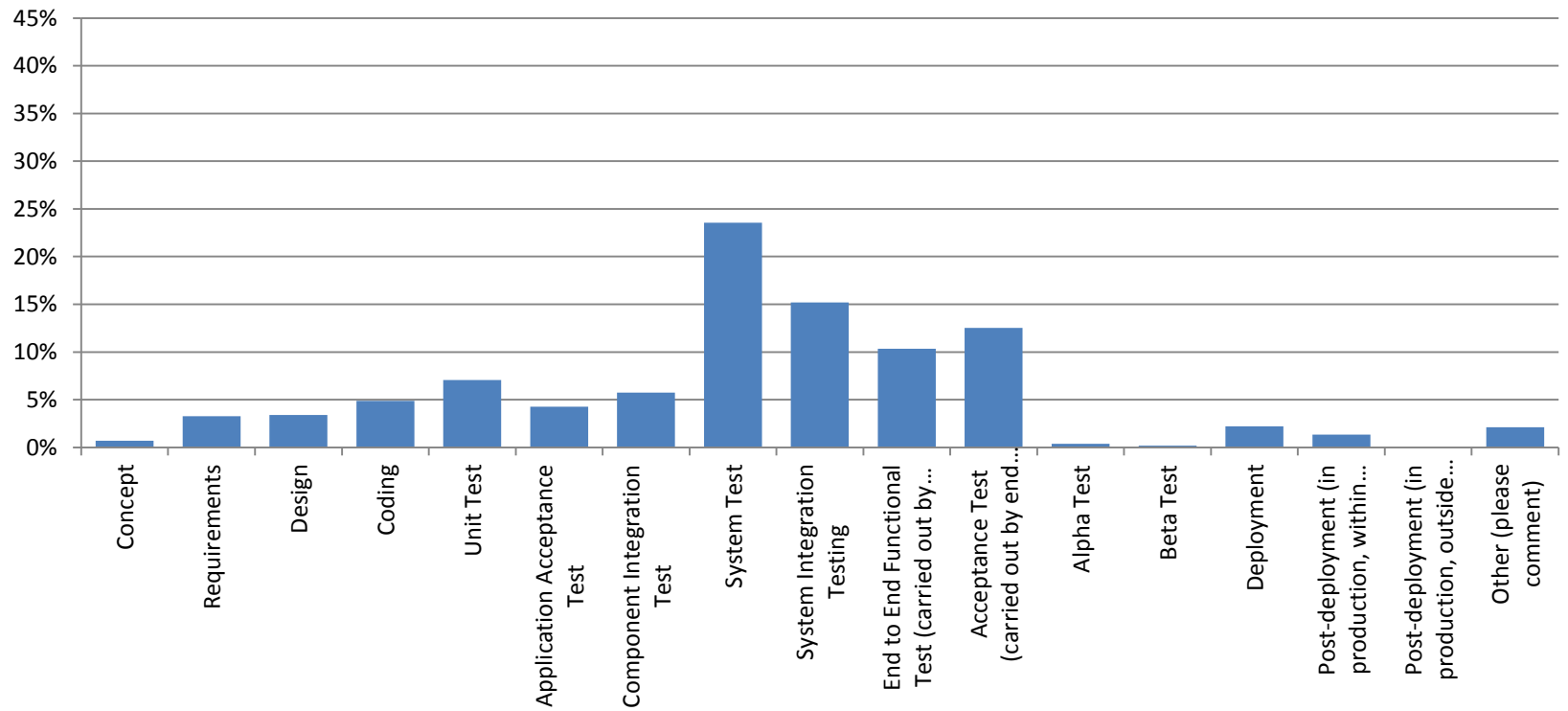


Early Error Detection

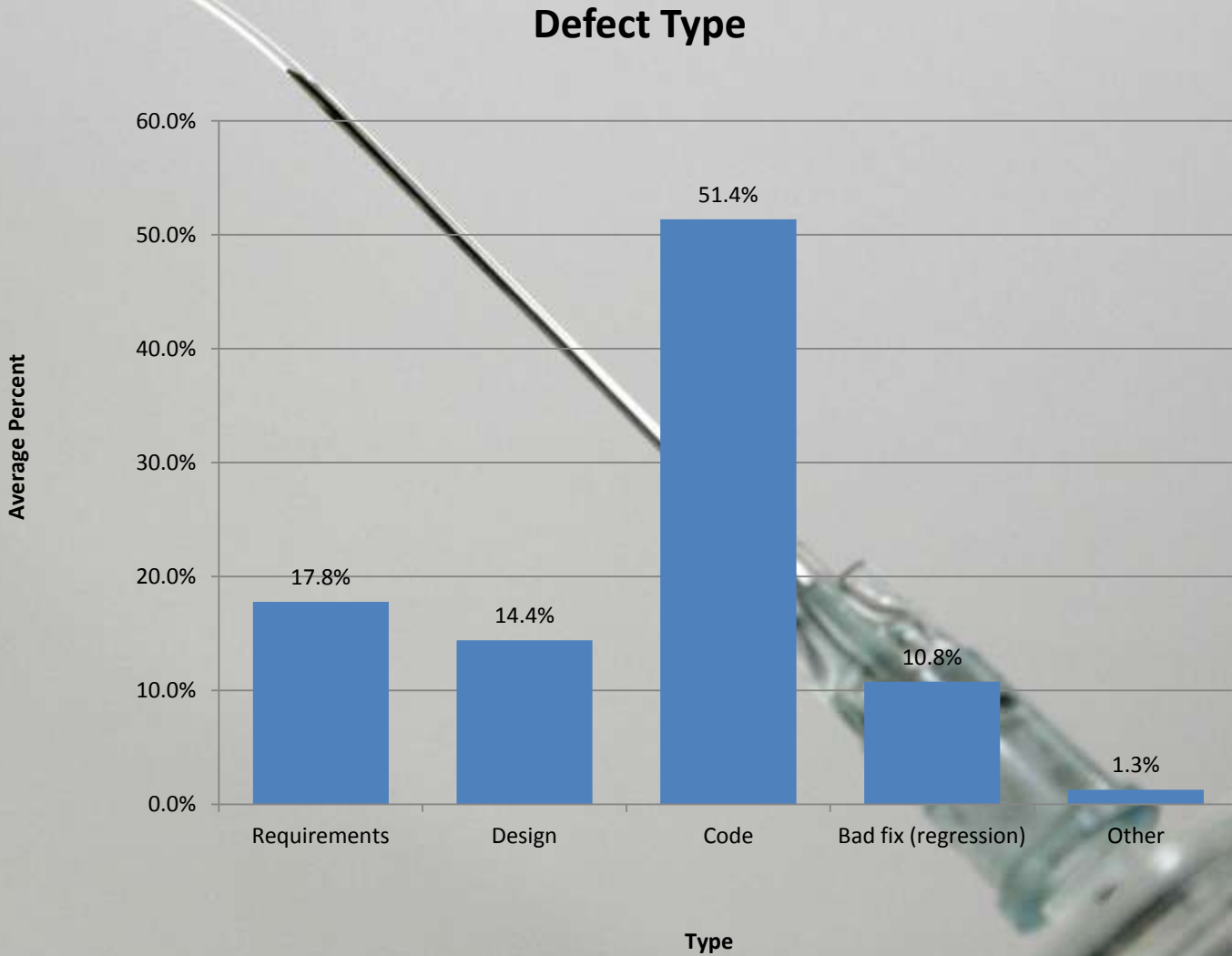


Distribution of Test Effort

Proportion of Project Effort

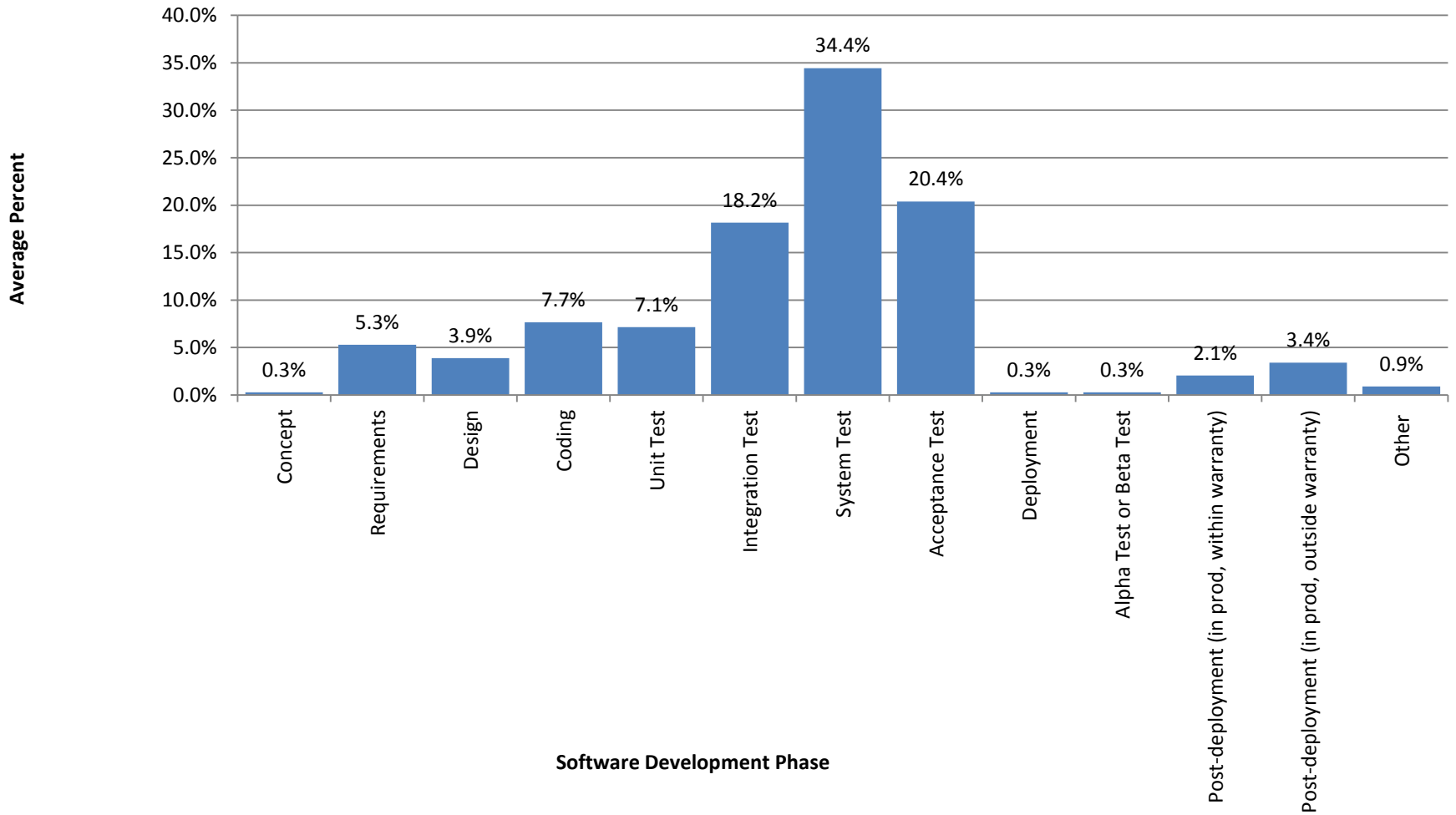


Defect Injection



Defect Detection

Defect Detection

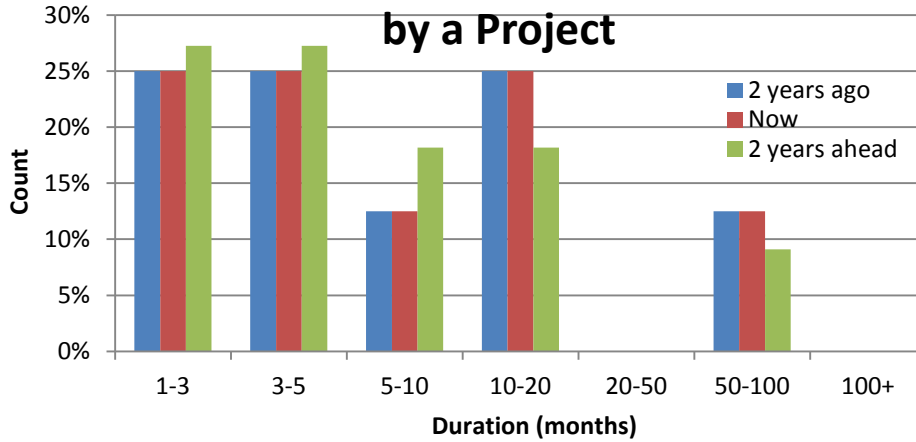


Environment Challenges

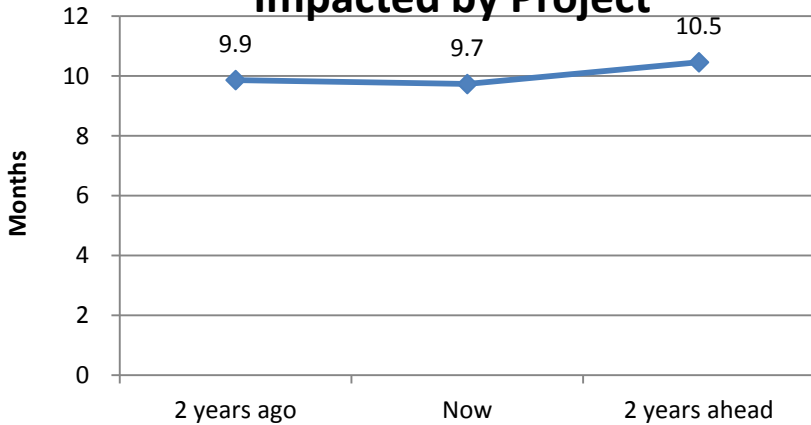


Complexity & Lost Effort

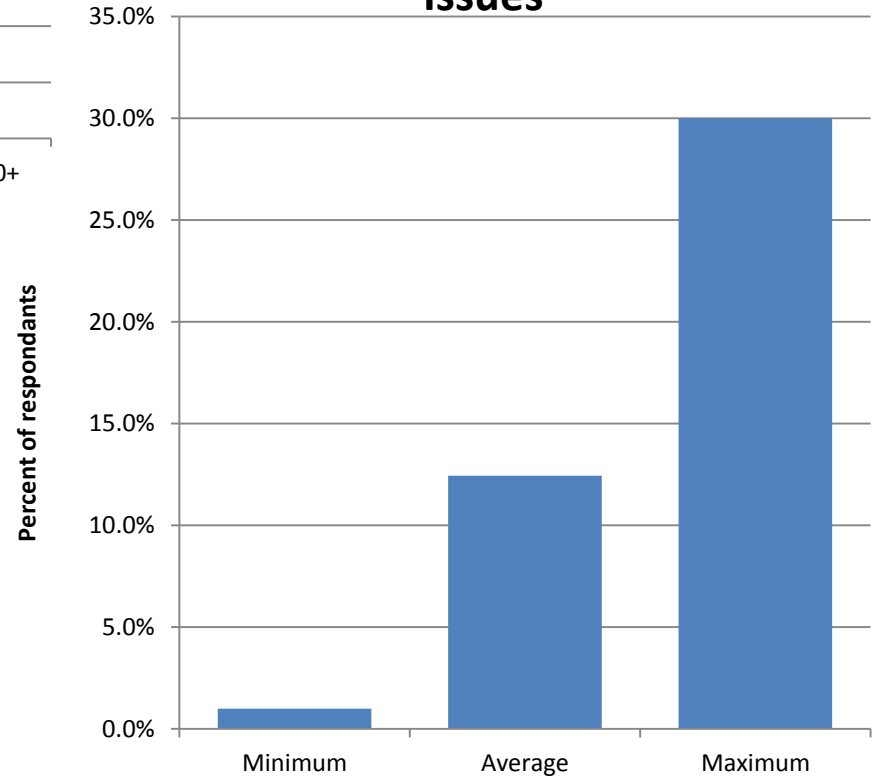
Average Number of Systems Impacted by a Project



Average Number of Systems Impacted by Project



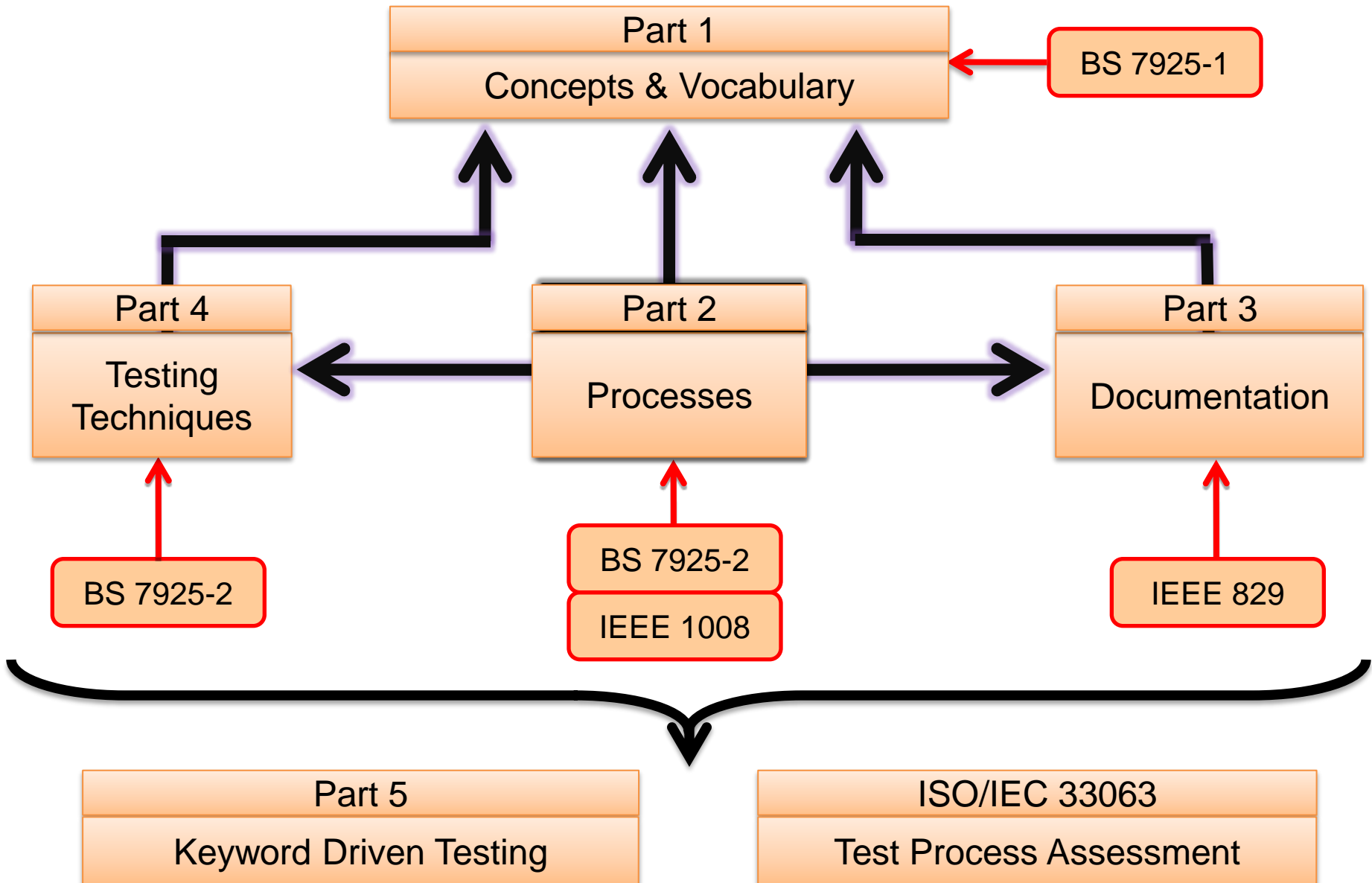
Effort Lost Due to Environment Issues



Software Testing Standards and Accreditation

- ISO/IEC 29119
- NATA accreditation for software testing in Australia
 - NEHTA Secure Message Delivery
 - NEHTA Health Identifiers
- Other standards requiring software testing

ISO/IEC 29119 – Scope & Structure



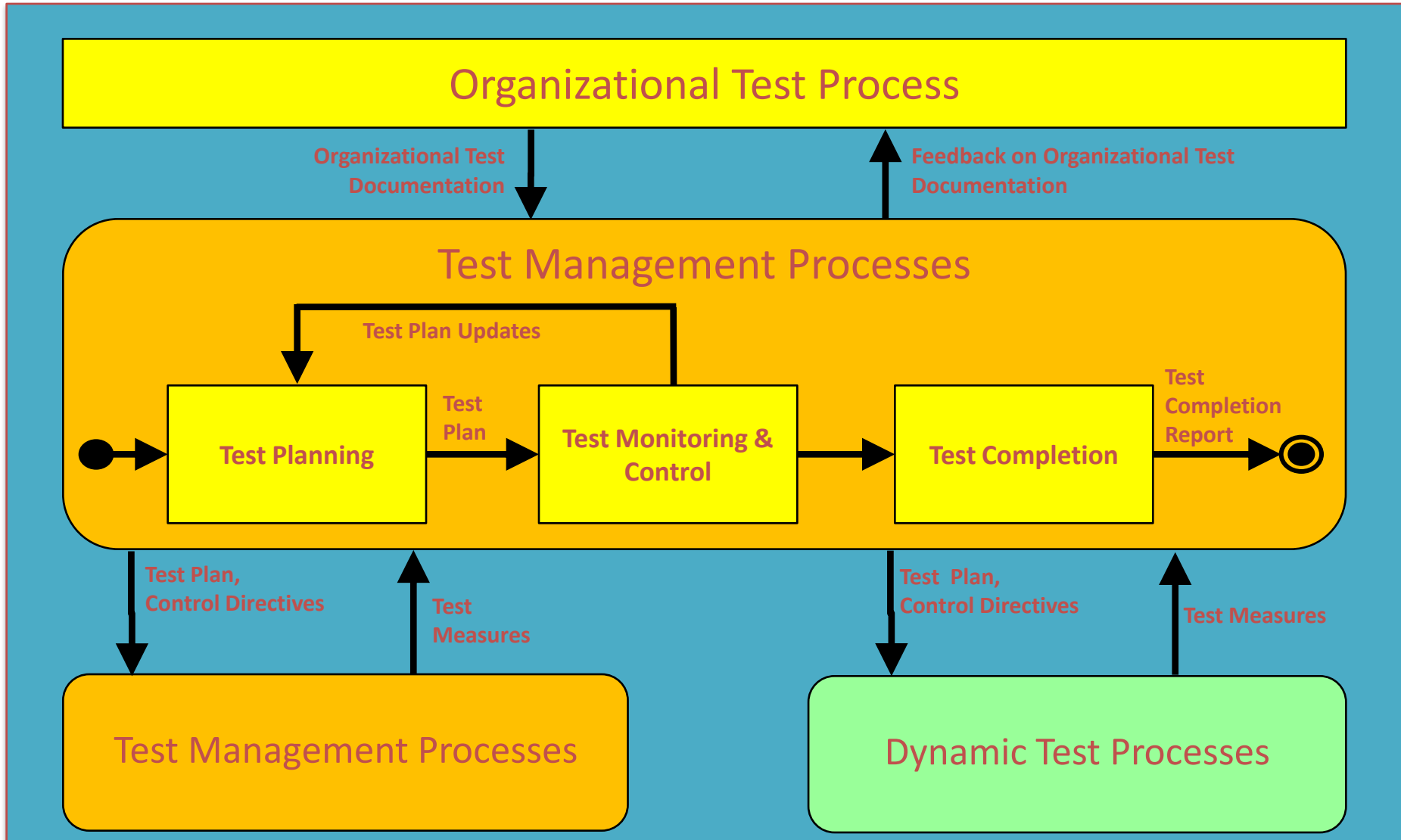
Testing Process Model (Part 2)

Organizational Test Process

Test Management Processes

Dynamic Test Processes

Test Management Processes

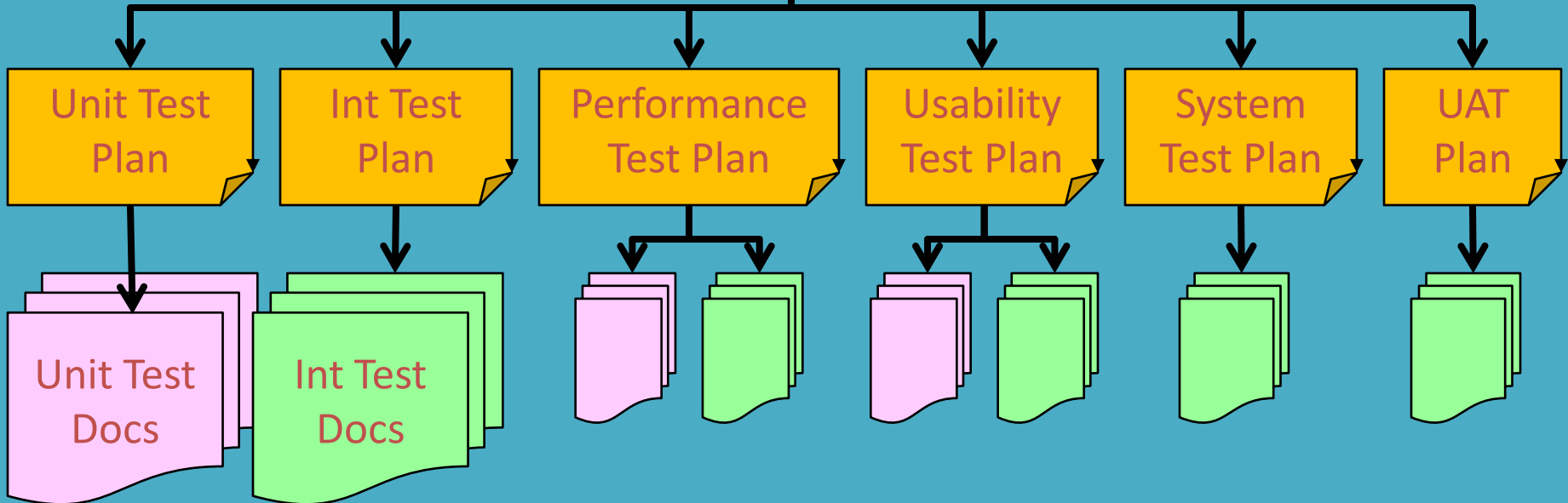


Documentation Example (Part 3)

Organizational Test Policy

Organizational Test Strategy

Project Test Management Plan & Strategy



Techniques (Part 4)

Dynamic Test Techniques

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graph TD; A[Dynamic Test Techniques] --> B[Black-Box]; A --> C[White-Box]; D[Non-Functional]
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Black-Box

White-Box

Non-Functional

Testing in the Health Domain

- National E-Health Transitionary Authority (NEHTA) requires compliance to specific published standards
 - Secure Message Delivery
 - Health Identifiers
- NATA governs accreditation for approved compliance testing labs
- Frequent changes to compliance requirements require a high level of communication and collaboration with NEHTA
- Compliance requirements expected to increase in the future



Testing in Safety Critical Domains



- ISO 50128: Railway applications, communications, signaling and processing systems – software for railway control and protection systems

- 2012 KJ Ross acted as the independent safety assessor for a new signaling system for NSW
- Applied software testing quality control principles across the whole of the client process to ensure compliance with the requirements of ISO 50128.
- Focus on evidence of testing
- State safety authority extremely satisfied.

Conclusion



- Significant contrast between typical “commercial” software testing practice vs. industries where software testing is mandated.
- Significant difficulty in bringing in legislated software testing requirements
- High profile failures for “non-critical” systems (e.g. health payroll), may begin to change the governance culture
- Opportunities for off-shore software testing services are increasing in the commercial arena
- Legislative compliance testing more challenging due to (changing) levels of detail
- Cost imperatives for compliance testing will drive offshore opportunities.



Questions

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