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Concurrent Session  
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# "Scaling Agile at Dell: Real-life Problems—and Solutions"

Presented by:

Geoff Meyer & Brian Plunkett  
Dell, Inc.

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340 Corporate Way, Suite 300, Orange Park, FL 32073  
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**Geoff Meyer**  
*Dell, Inc.*

A test architect in the Dell Enterprise Solutions group, Geoff Meyer has more than twenty-six years of experience as a software developer, manager, and business analyst. Although Geoff's early "agile experience" came while playing peewee ice hockey, it wasn't until 2008 that he first applied agile techniques in a software development setting as a product owner. Geoff is an active member of the Agile Austin community and co-chair of the Agile Steering committee in Dell Enterprise Solutions Group. He works tirelessly to promote the one-team concept and continually root out the organizational anti-patterns that prospered under the waterfall regime.



**Brian Plunkett**  
*Dell, Inc.*

A director of software development in the Dell Enterprise Solutions Group, **Brian Plunkett** has more than thirty-six years of experience in software development. He honed his skills running very large, very regimented, very frustrating waterfall software projects in a large organization. Brian then ran agile-ish projects in small startups and was impressed with the dramatic improvement in productivity. Brian introduced the agile methodology to Dell's System Management Software organization five years ago with a small project, and he has been steadily refining techniques with larger and larger projects.

# Scaling Agile @ Dell

*Real-life Problems – and Solutions*

*Agile East 2012*

**Geoff Meyer**, [geoffrey\\_meyer@dell.com](mailto:geoffrey_meyer@dell.com)

**Brian Plunkett**, [brian\\_plunkett@dell.com](mailto:brian_plunkett@dell.com)

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## Agenda

- Introductions
- Dell's Agile Journey
- Agile @ Dell Model
  - Adaptations for Large-Scale Agile
  - Planning & Forecasting
  - The Automation Culture
- The Lessons of Large

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## Introductions

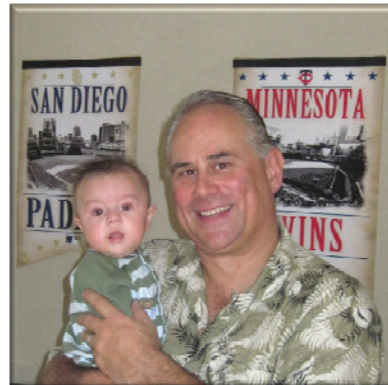


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## Geoff Meyer

- Dell Inc, 1998 – present
  - Responsibilities:
    - › Agile Steering co-chair
    - › Systems Management Software
    - › Software Globalization / Localization
    - › Offshore Development
  - Roles:
    - › SW Manager, Program Manager, Test Architect
- NCR Corp. 1984 – 1998
  - SW developer, Project Lead, SW Manager
- B.S. Computer Science, San Diego State University
- Masters Engineering Management - NTU



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## Brian Plunkett

- Dell Inc.: 2006 – present
  - SW Director
  - Systems Management Software
- Startups: 2000 – 2006
- Tandem Inc/Compaq: 1988 – 2000
- Solar Cell research, Computer Graphics Peripherals: 1978 - 1988
  - SW developer, Architect
- MSEE Brown University/University of Minnesota/University of Vermont



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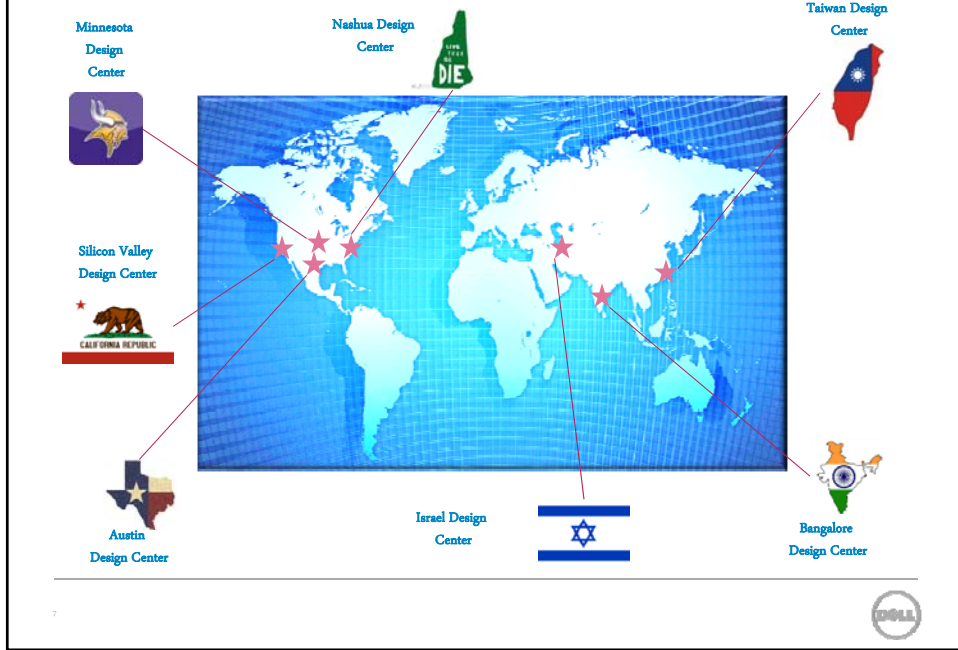
## Dell's Agile Journey



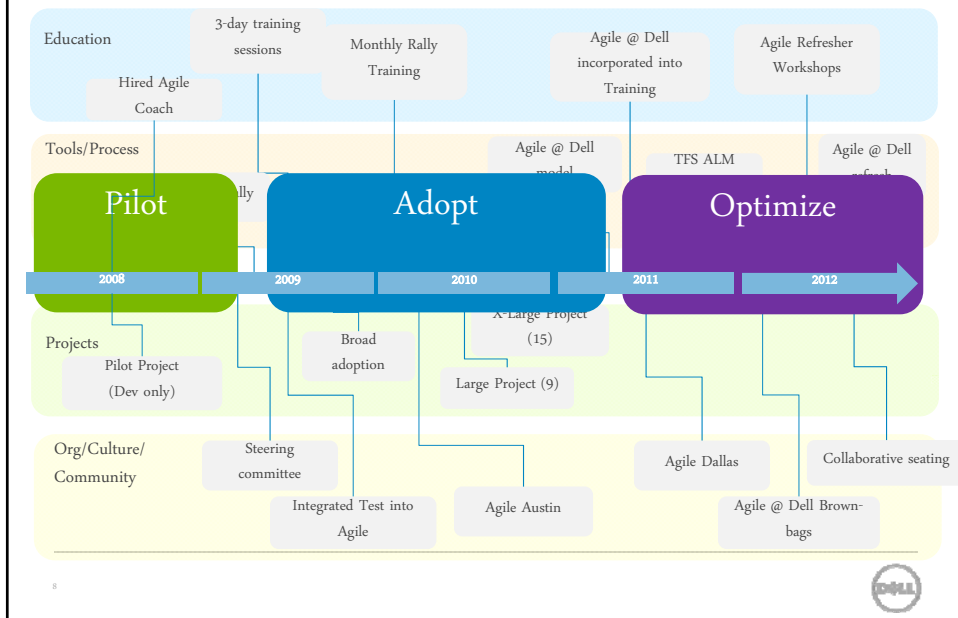
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## Global Design and Development



## Agile @ Dell



## Signs of Trouble

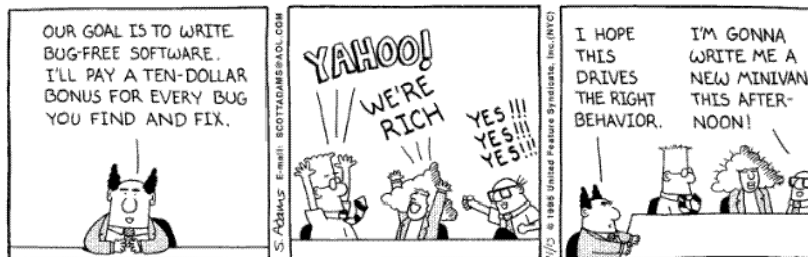
- Thursday's Build
- Planning more stories into sprint than team's velocity
- High % of carry-overs
- Inability to Automate Acceptance Tests within Sprint
- "Engineering" Stories
- Assessing Project Progress by Story Points completed
- Story Splitting at the end of the sprint to 'get credit'
- User Story Blinders
- Insufficient Product Owner bandwidth



Large-Scale

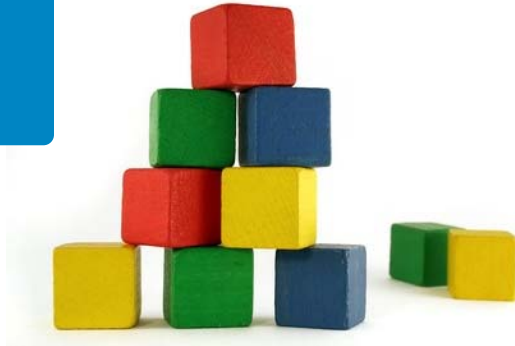
## Culture Transition

- Early commitment on Requirements
- Insufficient Detail in Requirements
- Development vs. Test
- A different "School" of Test<sup>1</sup>
- Fail Early, Inspect & Adapt



1 - Scott Barber "Approaches to Software Testing: An Introduction"

## Agile @ Dell Adaptations



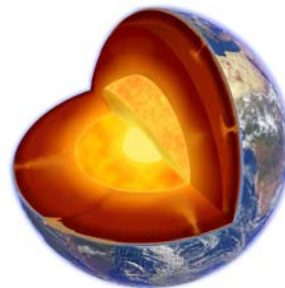
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## Agile @ Dell

### *Core Activities*

- Pre-Sprint activities:
  - Staffing
  - Training - Project tools and processes
  - CI/Build environment
  - Automation Framework and BVT
- Establish Project-wide *'Done' criteria*
- End-to-end, short duration User Stories
- Test Automation is included User Story acceptance criteria
- Scrum Teams are responsible for regression
- Refresher Workshops for new projects

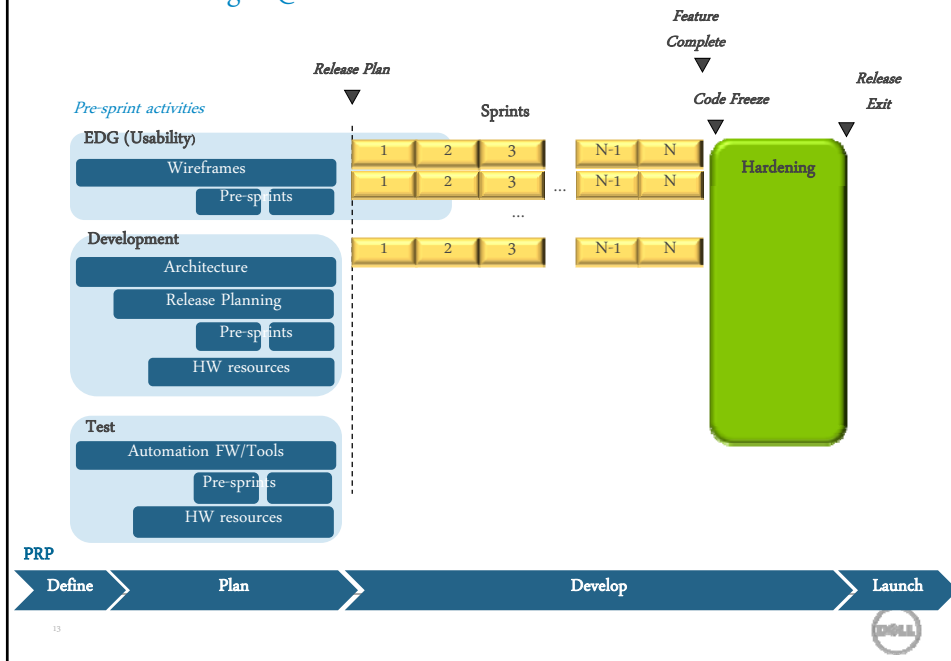


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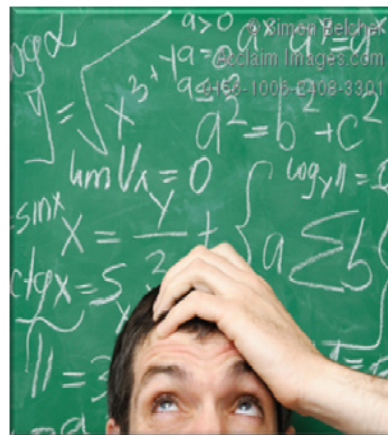
## Base Model - Agile @ Dell



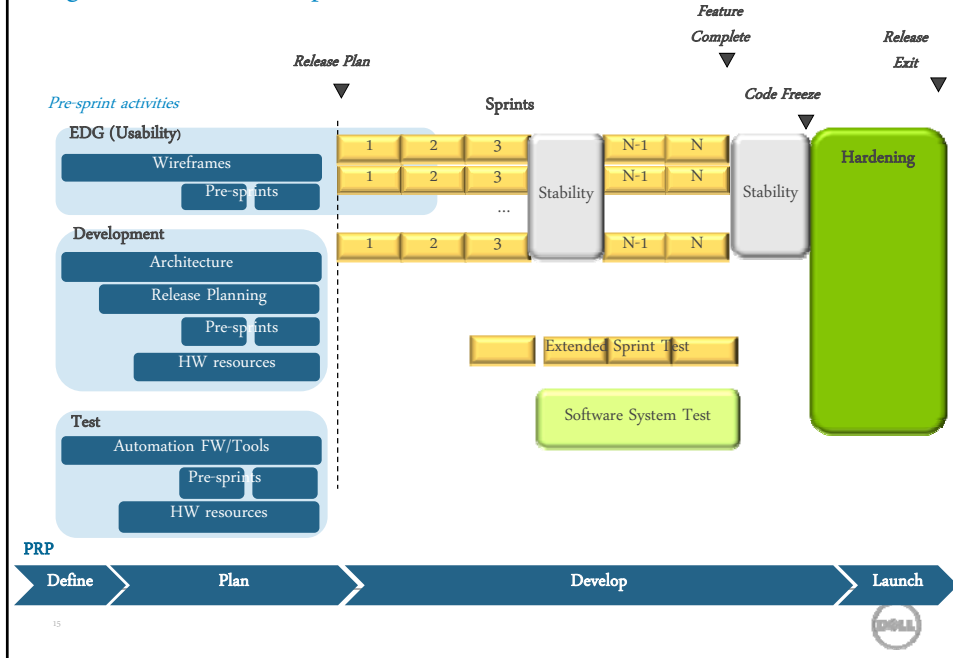
## Project Complexity

### Key Characteristics

Characteristic	Description
Large-Scale	Project consists of more than 4 Scrum teams
Interdependency	Requirements implemented across multiple Scrum teams
Extensive Configuration Matrix	Extensive HW or SW configurations
Waterfall Intersection	One or more components are managed using Waterfall
Geography	Project members are Geographically dispersed

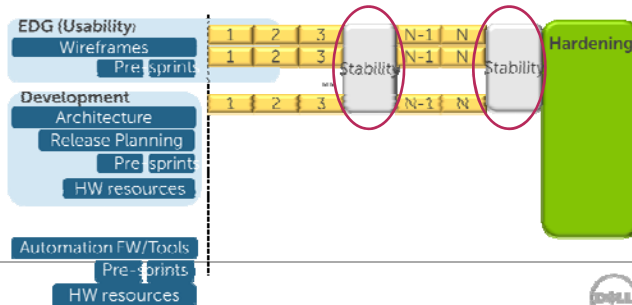


## Agile @ Dell with Adaptations



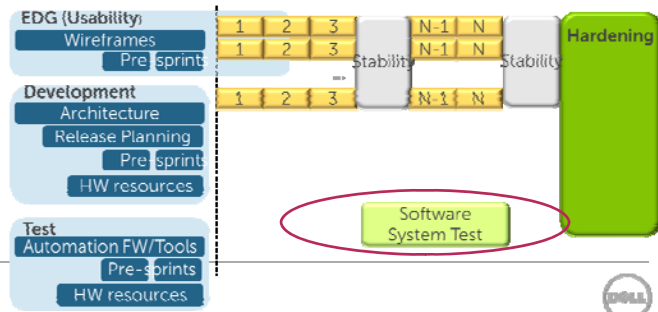
## Agile @ Dell Large-Scale

- High-Level Architecture is completed prior to first sprint
- Conduct Follow-on Release Planning sessions
- Assign Product Owner Proxy to each Scrum Team
- Measure Project Progress by Earned Business Value (EBV)
- Incorporate Stabilization Sprints into Release Plan



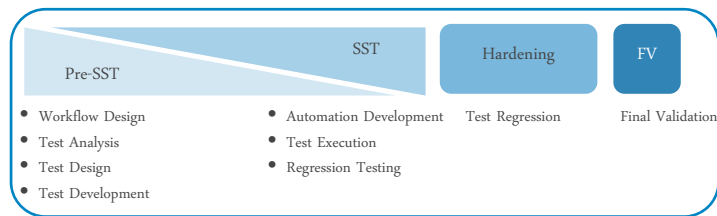
## Agile @ Dell Interdependency

- Minimize the dependencies across Scrum teams
- Release Planning synch-up is conducted after each Sprint
- Solution System Test(SST) effort staffed and resourced
  - Ensures fidelity of intended customer usage
  - Enabler for Customer Beta testing



## What is Solution System Test (SST)?

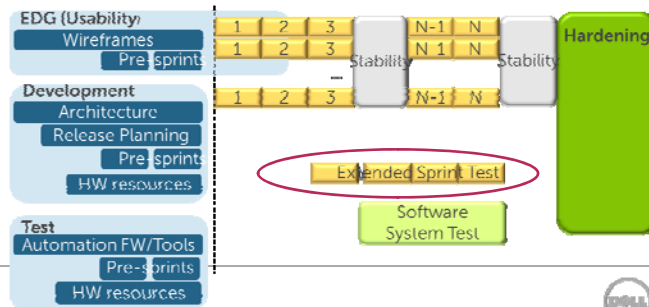
IS	IS NOT
Requirements-based	Functional testing
Customer-usage based	Build verification
Workflow-based Interoperability validation	First time integration
Three phased approach <ol style="list-style-type: none"> <li>1. Test Design/Development</li> <li>2. Test Execution and Regression</li> <li>3. Final Regression</li> </ol>	Performance benchmark testing



## Agile @ Dell

### Extensive Configuration Matrix

- Establish 'reference' configuration(s) to be used for Scrum Test efforts
- For HW-extensive configurations, staff Test-only **Extended Sprints**
- Extended Sprint Test begins work on previously accepted user stories across extended configurations



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### Extended Sprint Test

*Primarily used on SW for HW projects*

- Scrum team establishes Acceptance criteria
- Scrum Test members identify all Test scenarios
- Scrum team owns all test case execution against reference configuration(s)
- Extended Sprint Test team is delegated the Test Execution
- Defects are top priority of the Scrum team

	Configurations					
Positive	x	x			x	x
Negative	x		x	x		
Boundary		x	x	x		
Stress		x		x		
Scalability	x			x		x
Concurrency	x		x	x		
Globalization		x		x		

Candidate for Extended Sprint Test

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## Waterfall Intersection

- Perform iterative planning cycle with the Waterfall team:
  1. Use initial external teams design/schedules as input into Release Planning
  2. Identify User Stories that have external Dependencies
  3. Update Release Plan to align all User Stories which have external Dependencies
  4. Interlock on schedule misalignment
  5. Repeat steps 3-4 until dependency issues are resolved.

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## Geography

- Co-location of a Scrum team is *always* preferred
- Limit geographical distribution of Scrum team to no more than two time-zones
- Scrum teams within a project can be distributed



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## Agile @ Dell

### Project Self-Assessment

#### Key Questions

Does my Scrum team consist of Development and Test?

Does my Scrum team exit Sprint Planning with confidence that they can deliver what they committed to?

At the end of a sprint does my Scrum team deliver "Working Software"

Is Test Automation included in Acceptance Criteria of a User Story

Does my Scrum team conduct Retrospectives at the end of each Sprint with actionable improvements to make in the next?

Does my Project "keep the pipeline full" by having a Prioritized Release Backlog?

Does my Project conduct Release Planning meetings?

Does my Project have an Automated Build Process which includes UT and BVT?

Does my Project execute nightly Automated Regression Tests?

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## Planning and Forecasting



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## Staffing Guidelines

- PG Enterprise is organized into Functional Organizations
- Funding of an Agile Project needs to encompass team membership
- Guidelines for early stages of project concept and planning:

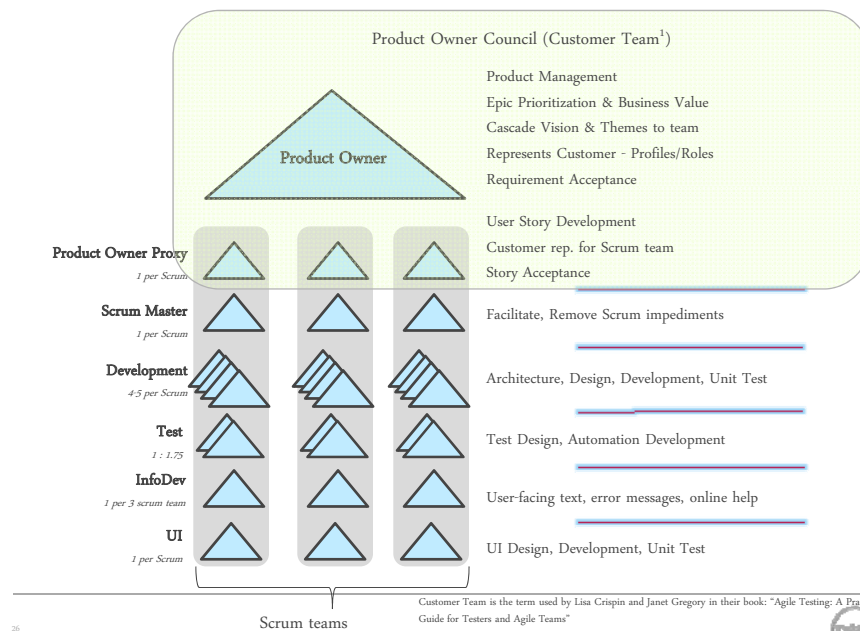


Phase	Organization	Measure	Ratio
Scrum	Test	Dev : Test	2 : 1
	Usability	Usability: Scrum Teams	1 : 1.5
	Documentation	Doc : Scrum Teams	1 : 3
Extended Sprint Test	Test	Test : Scrum Teams	1.5 : 1
Solution System Test	Test	Test : Scrum Teams	1: 1.5

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## Roles/Responsibilities



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## The Automation Culture



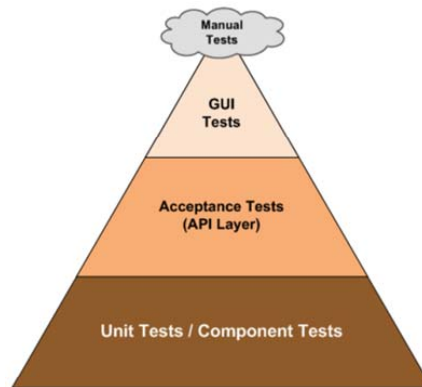
*“Demoted after the ‘incident’, XJ-9 is forced to serve coffee to lazy engineers.”*

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## Automation Culture

- Unit Test Automation
- Web-services led Test Automation for Functional Testing
- In-Sprint, Automated Acceptance Tests
- UI automation on Customer Usage workflows
- Automated CI (UT, Build, BVT)
- Subsystem Integration Verification Test (IVT)
- Automation-driven, Large-Scale performance characterization



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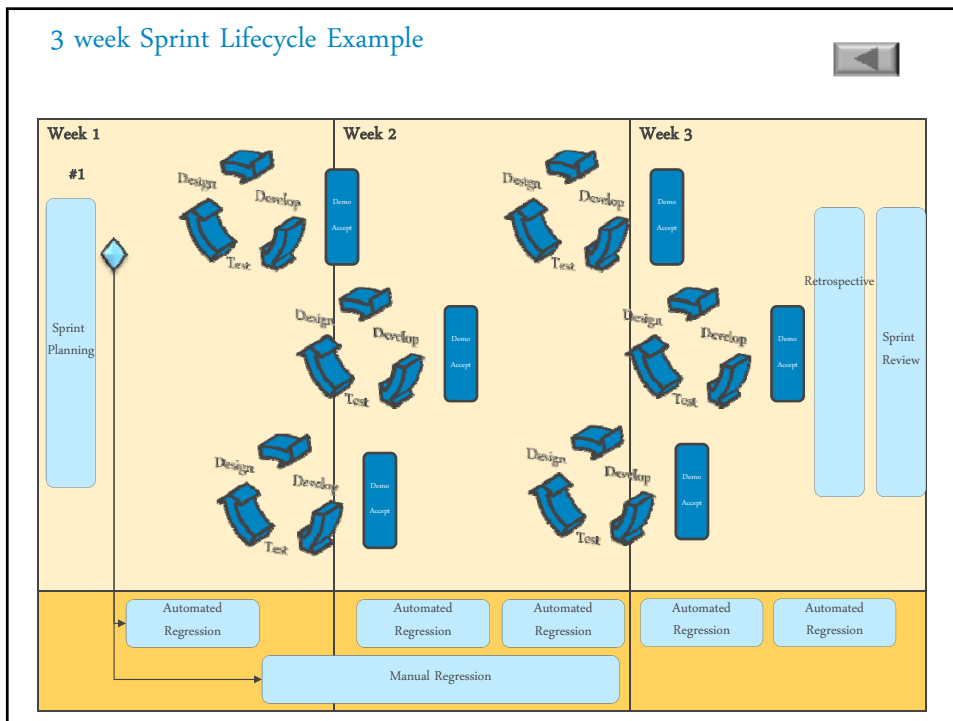
## Success Factors for Test Automation

Critical Tasks	Dev	Test
Identification of Acceptance Tests for a User Story that are automatable within Sprint	Shared	
Design completeness and artifact updates early in Sprint	Primary	
Feature Design/Development that enables Test Automation (hooks, object ID's, etc)	Shared	
Automate-first mindset during Test Case analysis and design		Primary
Unit Test Development and execution (automation preferable)	Primary	Backup
Daily Testable builds and Build Verification	Shared	
Notification of changes that could impact automation	Primary	
SW Development skill-set within Validation organizations		Primary
Test Automation Design reviews	Shared	
Functional Test Development and Execution	Backup	Primary

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## 3 week Sprint Lifecycle Example



## The Lessons of 'Large'



*Courtesy: Gulliver's Travels (2010).*

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## The Lessons of 'Large'

1. Whole Team approach
2. Embrace Inspect and Adapt
3. Co-location is essential
  - Collaborative space is even better
4. Establish a Culture of Automation
  - Across Development **and** Test
5. Establish Dev/Test ratio
6. Focus on Earned Business Value
7. Scale the Product Owner



## Resources

- [Agile Manifesto](#)
- Articles:
  - [Agile Adoption – Vital Behaviours and Influence Strategies](#) by Steven Rogalsky
  - [Scrum Primer](#) – Scrum Foundation
- Books:
  - [Scaling Software Agility: Best Practices for Large Enterprises](#) – Dean Leffingwell
  - [Agile Project Management: Creating Innovative Products](#) – Jim Highsmith
  - [Drive](#) – Daniel Pink
  - [Agile Testing: A Practical Guide for Testers and Agile teams](#) – Lisa Crispin, Janet Gregory
- Presentations:
  - [Scaling Software Agility: Agile Portfolio Management](#) – Dean Leffingwell
  - [Approaches to Software Testing: An Introduction](#) – Scott Barber

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Questions?

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Backup

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## Sprint Planning

- Used to identify the work that the team is going to perform during the sprint
- During Sprint Planning, the scrum team will review the Release Backlog and select stories that could be candidates for inclusion in the upcoming sprint based on it's assigned priority
- The team should determine if the story is ready for development by reviewing the narrative and acceptance criteria and discussing the story with the business owner as necessary.
- Sprint Planning is one of the most important activities in Agile methods

*Agile @ Dell Recommendation:  
The Sprint Planning session should account for 5% of your sprint duration.*

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## Retrospective

- During this process, the team inspects every aspect of their work together and looks for improvement opportunities
- The team should review their velocity trends, the achieved velocity from the most recent sprint and reach consensus on the velocity that they will commit to for the upcoming sprint.
- The team should look critically, and sometimes painfully, at their sprint results and should remind themselves:
  - The value of Agile is to allow a team to “fail early” – to efficiently identify actions and behaviors that can be improved and to identify
  - To Implement changes that can yield a more efficient and enjoyable process that results in delivering increased business value for the organization.
- The Retrospective is at the core of the Agile philosophy.

### *Agile @ Dell Recommendation:*

*The Retrospective session should account for 5% of your sprint duration.*

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## Product Owner Proxy



### Responsibilities

- Understands the customer needs and value of each story
- Agent of Product Owner
  - Is empowered to make decisions
- Develops User Stories
- Reviews & prioritizes backlog
- Available for further story elaboration
- Participates:
  - Sprint Planning
  - Scrum standups
  - Retrospectives

### Skill profile of Good PO Proxy

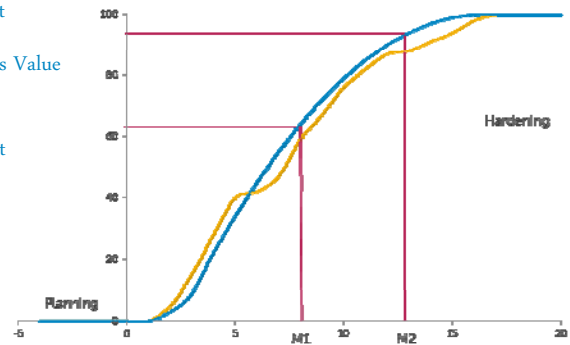
- Respected by the Product Owner
- Enjoys collaborating with team
- Understands what is really important to customer
- Ability to balance features, costs, time and quality for optimal outcome.
- Good negotiation skills
- Understands the technical process and technologies

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## Earned Business Value

- Allows us to track the actual business value delivered during development
- Requirements are assigned Business Value points
- Business Value points are earned at requirement completion
- The release plan projects when requirements will be completed



## The Bottom Line

- EBV gives us a way to track release progress in terms the business understands
- BV gives a finer granularity of prioritization of requirements and aids in scheduling
- Using EBV to talk to executives focuses attention on the value delivered, rather than on defects outstanding or effort expended
- If something slips, the EBV curve gives a summary view of how important that is, and guides discussion on what action to take