



SCRUMP (Scrum + RUP) and CMMI:

The Story of a Harmonious Process and Product Deployment

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Introduction

- **Software Engineering Institute (SEI) Certified SCAMPISM Lead Appraiser**
- **SEI Authorized SCAMPISM B&C Team Lead**
- **Certified Scrum Product Owner**
- **Certified Scrum Master**
- **Member of the SCAMPISM B & C Development Team**

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Outline

- Case Study Description
- SCRUMP (Scrum + RUP) Implementation Plan
- Implementation Results
- Lessons Learned
- Implementation Strategy Recommendations

RUP = Rational Unified Process



Case Study Background Information

- **Goal: Integrate three separate tools currently in production while providing usability enhancements**
- **Currently in second development year**
 - **Year 1:** Prototype development using a modified RUP framework and an experimental modeling tool
 - **Year 2:** Decision to not use the experimental modeling tool and transition from RUP to Scrum
- **Corporate Information Technology (IT) application**
- **Resources: ~6 FTEs, 20 belly buttons**
- **End Users: Potentially anyone in the company**

Agile RUP Approach (Iterations, Plan Driven)



Business Modeling

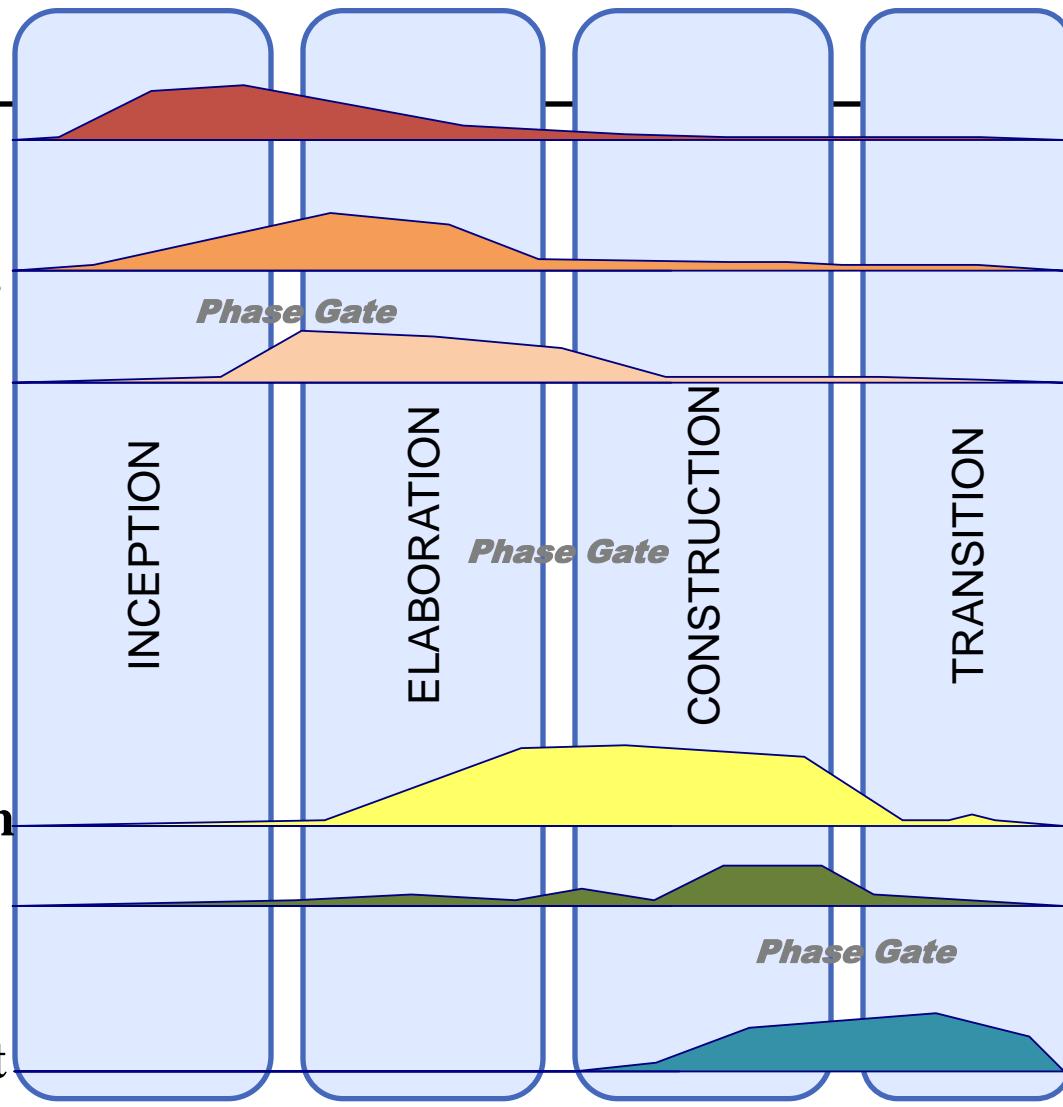
Requirements

Analysis & Design

Implementation

Test

Deployment



Phase Gate

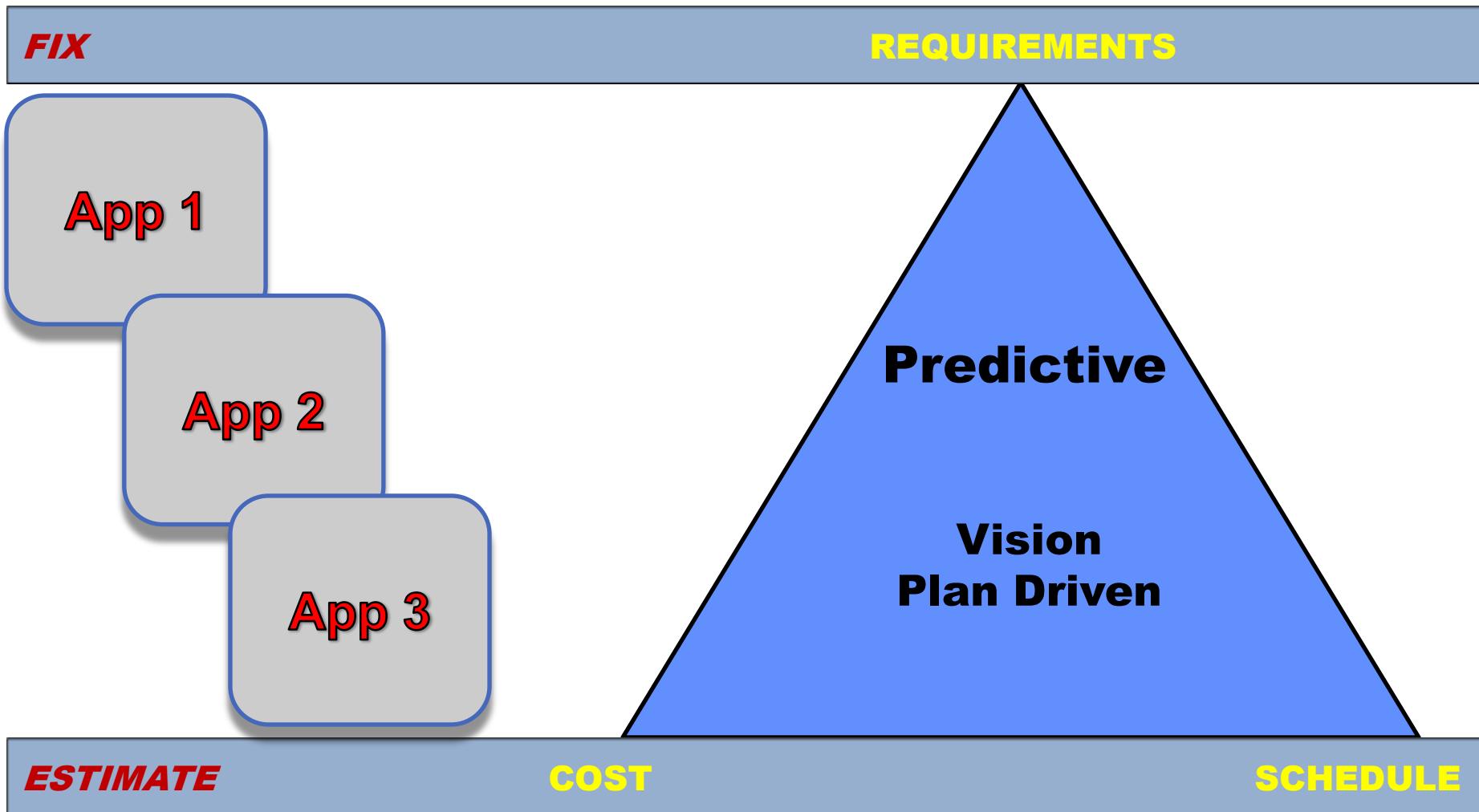
Time



Product

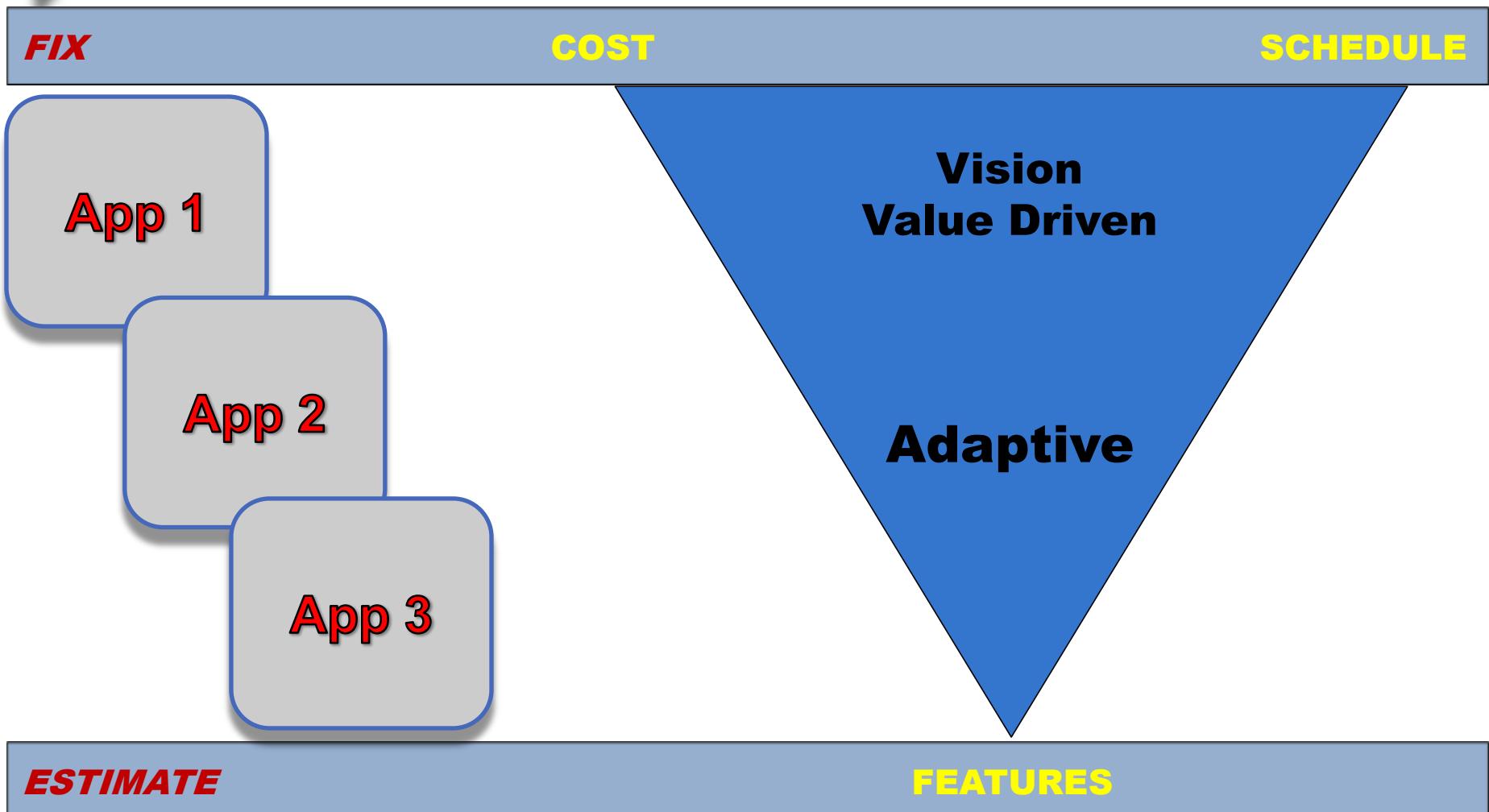


Agile RUP Approach (Iterations, Plan Driven)





Agile Scrum Approach (Sprints, Value Driven)

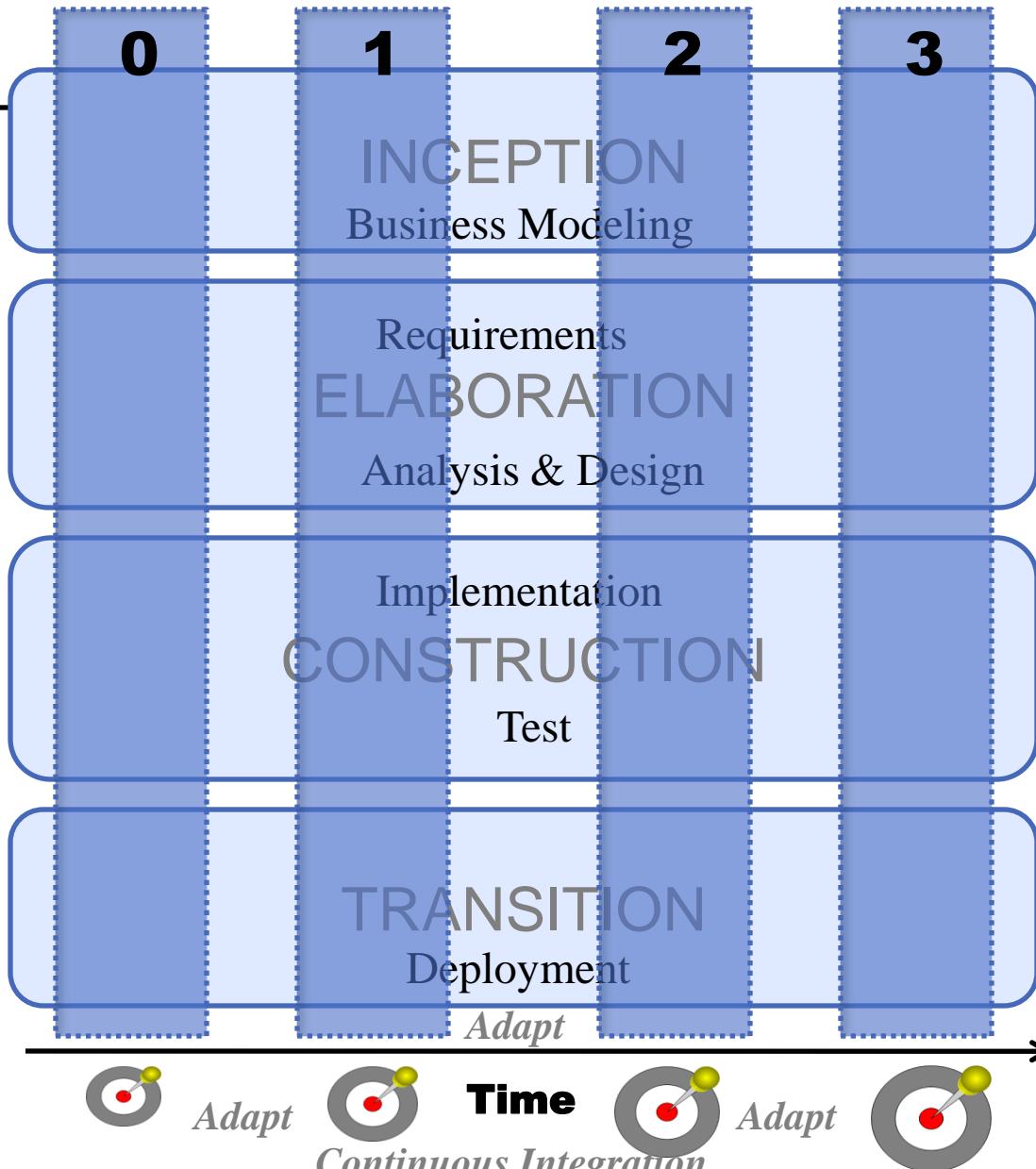


Agile Scrum Approach (Sprints, Value Driven)

Product Backlog



Customer (Priority)
Highest Business Value





Scrum Implementation Strategy





Scrum and CMMI Relationships

Maturity Level 2 Process Areas

- Requirements Management
- Project Planning
- Project Monitoring & Control
- Measurement and Analysis
- Supplier Agreement Management
- Process and Product Quality Assurance
- Configuration Management

Maturity Level 3 Process Areas

- Requirements Development
- Integrated Project Management
- Risk Management
- Technical Solution
- Product Integration
- Verification
- Validation
- Decision Analysis & Resolution
- Organizational Process Focus
- Organizational Process Definition
- Organizational Training

- Strong relationship with a little work
- Some relationship with more work
- Little relationship



CMMI® Implementation Plans

Strong CMMI® to Scrum Relationships

Requirements Management	Document stories in the tool. Conduct backlog grooming (SMEs, analysts), sprint planning, peer reviews. Changes captured within the tool.
Requirements Development	
Project Planning	Project vision, road map, and sprint planning, demos, retrospectives, processes documented in tool. RUP artifacts/templates (SW Dev Plan, Dev Case, etc.) used.
Project Monitoring & Control	
Integrated Project Management	
Measurement & Analysis	Burndown charts, capacity spreadsheets, velocity, etc. tracked and captured in the tool.
Risk Management	Retrospectives and sprint planning, RUP template for tracking risk/mitigation plans.



CMMI® Implementation Plans

Some CMMI® to Scrum Relationships

Technical Solutions	Alternative solutions and selection process conducted using RUP DAR process/templates and prototyping. Design evolving with plans to capture at first release.
Product Integration	Integration issues addressed in each sprint, and strategy is evolving. Team definition of “done” includes integration issues (procedures, establishing environment, evaluation, etc.). Process to be documented at first release.
Verification	All implemented stories have acceptance criteria that is tested by team tester. All work products go through the Product Owner. Peer reviews conducted on code and stories (backlog grooming). Determining how to document better.
Validation	All products and product components are validated through the Product Owner. Product VAL done in conjunction with VER activities. PO acceptance documented in the tool at story level.



CMMI® Implementation Plans

Little CMMI® to Scrum Relationships

Supplier Agreement Management	N/A for this project.
Process & Product Quality Assurance	Use RUP PPQA checklists. Issue is determining <u>when</u> to conduct PPQAs with no phase gates in Scrum. Also, consolidating current checklists is still under review.
Configuration Management	Use RUP CM plan template. Team tool is the CM repository/environment. CM audits with no phase gates is difficult.
Decision Analysis & Resolution	Use the RUP DAR process and templates.



CMMI® Implementation Plans

Little CMMI® to Scrum Relationships

Organizational Process Focus	RUP processes are used here and Scrum activities are actively being shared with the RUP team to see how Scrum can be better defined for the organization.
Organizational Process Definition	RUP processes/templates are the standard and are then tailored to Scrum environment. Primary issues have been identifying useful measures to contribute to the organization and tailoring.
Organizational Training	Use the RUP OT process and templates.



Lessons Learned – The Rewards

- Old RUP roles fit well into Scrum roles
 - Nobody lost their job
- Scrum significantly improved communication and trust between the software development team and the customer(s)
- Scrum empowered team members
 - Team members took on some project management roles
 - No waiting for approvals before moving forward
- Scrum is an excellent method for handling rapidly changing requirements



Lessons Learned – The Challenges

- **Useful organizational measure contributions takes work**
 - Comparison across projects is difficult
 - Inflated estimates slow productivity
 - Limited success masking
- **Determining when to document is a dilemma**
 - Design and product integration attributes
- **Quality issues can be difficult to address**
 - When to test
 - Lacking software development practices (pair programming, coding standards, etc.)



Implementation Strategies

1. **Upper management sponsorship will greatly decrease the time necessary to adopt a new software development method.**
 - Process adoption is strongly encouraged
 - Conflicting project demands that impact milestones can be reprioritized



Implementation Strategies

2. **A full time, experienced Certified Scrum Master (CSM) is ideal.**
 - **½ time works if there are others on the team who will assist with CSM responsibilities**
 - **A Scrum coach could greatly improve the adoption rate**
 - **An experienced Scrum Master will be able to manage team dynamics through stressful times**



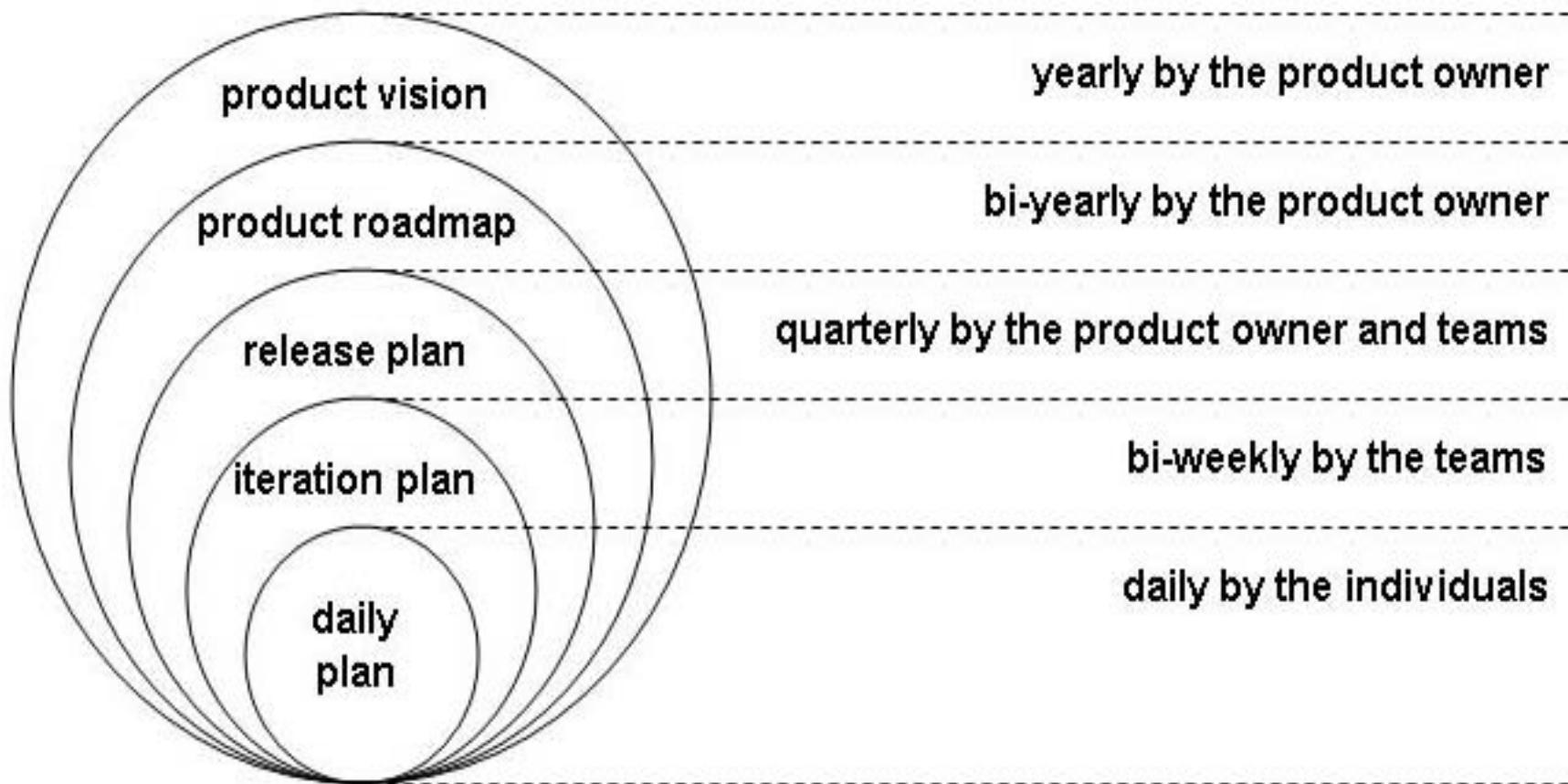
Implementation Strategies

3. **Don't wait for the perfect plan, dive in and learn from your experiences as you go.**
 - **But...make sure you have established code development and testing principles**
 - **Use and modify existing organizational processes**
 - **As new or modified processes emerge, test them through a few sprints before documenting**
 - **Be willing to take risks; be willing to fail**



Implementation Strategies

4. Determine your planning cycles





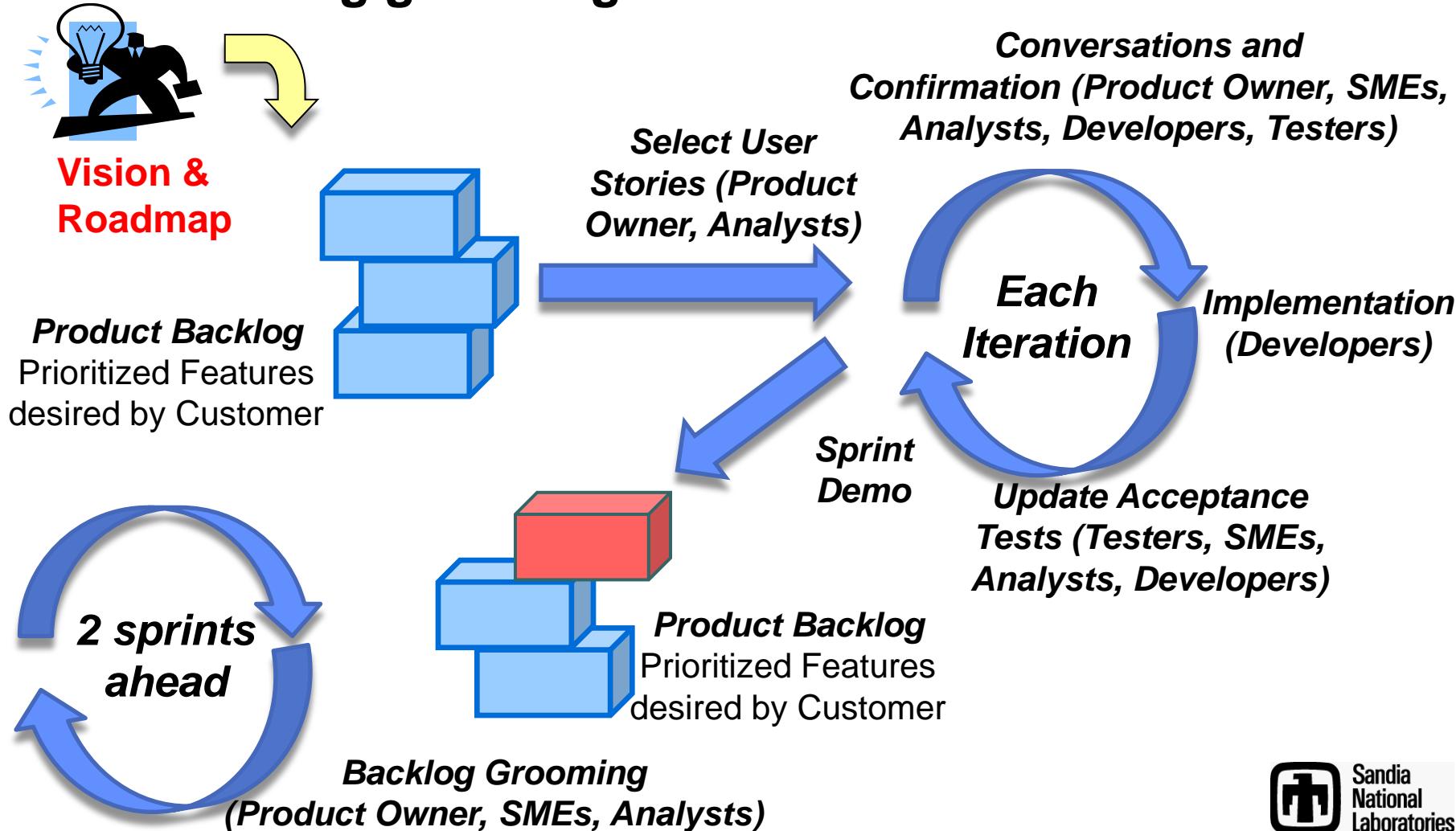
Implementation Strategies

5. If Scrum practices need to meet higher rigor requirements (CMMI, ISO, etc.), tools are highly recommended.
 - Tools help to document team activities and decisions as you go (wikis, Scrum lifecycle management tools, etc.)
 - Tools assist with configuration management and continuous integration builds
 - Tools provide a central collaboration area for all team members



Implementation Strategies

6. Backlog grooming is critical.





Implementation Strategies

7. Resist the urge to go with longer sprints at first.

- Eliminates the need to cancel a sprint because “something” isn’t going as planned
- Provides more opportunities for trying new ideas
- Allows the development team to be more responsive to changing customer needs



Implementation Strategies

8. Establish a realistic team capacity.

Person	Commitment	Possible Hours Available	Hours Away	Base Hours	Buffer	Planned Hours Available
Scooby Doo	90%	64.8	0	64.8	35%	22.68
Scrappy Doo	90%	64.8	0	64.8	50%	32.4
Scooby Dee	90%	64.8	8	57.6	50%	28.8
Howdy Doo	70%	50.4	0	50.4	50%	25.2
Scooby Dum	30%	21.6	24	14.4	50%	7.2
Yabba Doo	30%	21.6	0	21.6	50%	10.8
Dooby Doo	30%	21.6	0	21.6	50%	10.8
Momsy Doo	30%	21.6	0	21.6	50%	0
						Capacity
Total	4.6	331.2	32	316.8		138
Hours in Sprint	72					
Capacity Factor	50%					



Implementation Strategies

9. Identify a strong product owner.

- **Final decisions need to be made by one, not a group**
- **Product owners should be trained**
- **Full-time product owners are ideal**
- **Ensure that the product owner is an integral part of the team**



Implementation Strategies

10. Value your retrospectives.

- **Discuss process improvements**
- **Create action items out identified opportunities for improvements with a goal to close the action items by the next retrospective**



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