

A Framework for Product Development Excellence

TSPSM Symposium
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Workshop Agenda

16:00 - 16:05: Moderator's Introduction of Darryl Davis

16:05 - 17:15: Workshop Presentation

17:15 - 17:30: Coffee Break

17:30 - 18:45: Workshop Presentation and Activities

18:45 - 18:55: Darryl Davis' Conclusion

18:55 - 19:00: Moderator's Conclusion

Introduction and Background

Workshop Objective

To describe a broad and unifying framework of the most important principles and areas supporting the achievement of product development excellence



Product Development Excellence

“Building the Right Product”

Defining a product that effectively meets stakeholder needs

“Building the Product Right”

Designing and constructing an effective and reliable solution for satisfying the stakeholder needs

Framework Objectives

To help unify different software communities, such as the Agile community and the Team Software Process community, who have independently developed approaches that have both much in common and also some important differences

To provide guidance to help organizations identify gaps in their current practice and develop a roadmap for improvement

Leading Software Communities

Capability Maturity Model Integration (CMMI®)

Team Software Process (TSP)

“Home-grown” processes

...

Agile

Scrum

Extreme Programming (XP)

...

Scrum and TSP

Both target small, multi-disciplinary teams

TSP supports teams of 3 to 15 people

Scrum recommends teams of 7 +/- 2 people

Self-directed (teams plan and track their own work, and make their commitments)

Both address planning, execution, and process improvement via retrospectives

[Davis12]

Scrum and TSP Comparison

	Scrum	TSP
Goals	Product	Business and product
Roles	Product Owner, Scrum Master, Scrum Development Team	Business leader, product manager, team leader, 8 team roles, team coach
Process Definition	Implicit through definition of done	Engineering process definition
Detailed Plan	Detailed tasks for sprint (may or may not be assigned)	Detailed tasks for cycle. Process and data-driven task estimates. Assigned and load balanced
Quality Plan	Implicit through definition of done	Explicitly defined and quantitatively managed
Risk Plan		Defined and managed by team
Iteration Length	Fixed length	Can vary in length to fit the work to be done in next iteration. Short iterations encouraged
Metrics	Work remaining	Earned value, task hours, defects injected and removed, product size
Operating Mechanisms	Sprint planning, daily Scrum, sprint review, sprint retrospective	Launch, re-launch, weekly status meeting, cycle and project postmortems, checkpoints
Management Roles	Product Owner	Business and product managers, team leaders



Important Traits and Principles



Important Traits and Principles

Commitment

Participation

Preparation

Simplicity

Iteration and Continuous
Feedback

Regular Adjustment

Objectivity

Openness and Communication

Direct Interaction

Continuous Improvement

Commitment

“The product’s modules are designed, built, integrated, tested, and maintained by a team of software engineers whose skills, discipline, and commitment govern the success of the project.” [Davis03]

“At a personal level, developers... will commit to be professionals, striving always to do their best... given the available environment and resources” [Soria]

“At the values level,...to value people, working software, collaboration, and responding to change... technical excellence, continuous learning and improvement, team building...” [Soria]

“At the Scrum framework level... Commit to fulfill the Sprint Goal... Commit to continuously inspect and adapt.” [Soria]

Participation

By Stakeholders

“Stakeholder participation is critical to your success because it is your stakeholders who are the source of requirements, information, and priorities — without their participation, you cannot possibly build systems that meet their needs.” [Aguanno]

By Team Members

“Although some degree of variation in participation is normal, it is important that all team members strive to meet the team’s goals.” [Humphrey00a]

Preparation

“Start with education, provide training and coaching, and build in continuous learning” [Davis14]

“Teams need both technical and non-technical training

planning

tracking

making commitments

use of data to make decisions

effective inspections and reviews

writing good user stories

using static analysis tools

using unit test frameworks” [Davis09]

Simplicity

“...as simple as possible, but no simpler”

Brief, yet complete, process descriptions

Natural processes and measures

[Davis02]

“Simplicity--the art of maximizing the amount of work not done--is essential.” [Beck]

Iteration and Continuous Feedback

Work iteratively and incrementally [Davis14]

“The TSP process follows an iterative and evolving development strategy... each phase or cycle can be planned based on the knowledge gained in the previous cycle.” [Humphrey00b]

“Scrum employs an iterative, incremental approach to optimize predictability and control risk” [Schwaber]

“Scrum Teams deliver products iteratively and incrementally, maximizing opportunities for feedback” [Schwaber]

Regular Adjustment

“At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.” [Beck]

“Scrum users must frequently inspect Scrum artifacts and progress toward a Sprint Goal to detect undesirable variances. ... If an inspector determines that one or more aspects of a process deviate outside acceptable limits, and that the resulting product will be unacceptable, the process or the material being processed must be adjusted. An adjustment must be made as soon as possible to minimize further deviation.” [Schwaber]

Effective teams “strive to meet demanding schedules while adjusting to changing needs.” [Humphrey00b]

Objectivity

Based on measurement and analysis

“Measures should be

Collected by team members as they do their day-to-day work

Simple

Used to plan, track, adjust, improve, and communicate

Appropriate for small adjustments, and also long-term trends” [Davis09]

“In complex environments, what will happen is unknown. Only what has happened may be used for forward-looking decision-making.” [Schwaber]

Openness and Communication

“Transparency

Significant aspects of the process must be visible to those responsible for the outcome.” [Schwaber]

“When a team communicates openly with stakeholders, they

Get used to receiving good news and bad

Do not get too excited about the good news

Do not panic about the bad news

Trust the team to manage its work” [Davis09]

Direct Interaction

“The most efficient and effective method of conveying information to and within a development team is face-to-face conversation” [Beck]

Continuous Improvement

“High-performance teams don’t rest on their laurels. They systematically look for areas of improvement

Planning

Process

Quality

Technology” [Davis09]



Important Process Areas



Important Process Areas

Product Management

Quality Management

Teamwork

Project Management

Process Management

Product Management

Product Specification

Requirements Management

Product Management

Product Specification

Customer Collaboration

Responsiveness to Change

Continuous Product Feedback

Sustainable Development

Requirements Management

Quality Management

Technical Excellence

Quality Attributes

Quality Planning and Tracking

Verification and Validation

Defect Prevention

Quality Management

Technical Excellence

Design

Construction

Quality Attributes

Quality Planning and Tracking

Verification and Validation

Defect Prevention

Quality Management

Technical Excellence

Quality Attributes

Reliability

Security

Maintainability

etc.

Quality Planning and Tracking

Verification and Validation

Defect Prevention

Quality Management

Technical Excellence

Quality Attributes

Quality Planning and Tracking

Verification and Validation

Verification: Finding Defects

Validation that the product meets customer needs

Defect Prevention

Quality Management

Technical Excellence

Quality Attributes

Quality Planning and Tracking

Verification and Validation

Verification: Finding Defects

Personal and Peer Reviews

Automated Analysis (Static or Dynamic Analysis)

Testing as a feedback activity

Validation that the product meets customer needs

Defect Prevention

Quality Management

Technical Excellence

Quality Attributes

Quality Planning and Tracking

Verification and Validation

Defect Prevention

Root Cause Analysis

Teamwork

“High performance can only be achieved by effective implementation by the individual engineers working together effectively as a team” [Davis02]

“The teamwork aspects ... lead to people motivating and supporting each other” [Davis02]

Teamwork

Environment and Support

Motivation, Commitment, and Trust

Communication and Coordination

Teamwork

Environment and Support

Team Structure

Defined Roles

etc.

Motivation, Commitment, and Trust

Communication and Coordination

Teamwork

Environment and Support

Motivation, Commitment, and Trust

Team Building

Communication and Coordination

Teamwork

Environment and Support

Motivation, Commitment, and Trust

Communication and Coordination

Direct Interaction

Project Management

Planning and Estimation

Progress Measurement

Sustainable Development

Risk Management

Process Management

“Significant aspects of the process must be visible to those responsible for the outcome.

Transparency requires those aspects be defined by a common standard so observers share a common understanding of what is being seen. For example:

A common language referring to the process must be shared by all participants; and,

Those performing the work and those accepting the work product must share a common definition of ‘Done’.” [Schwaber]

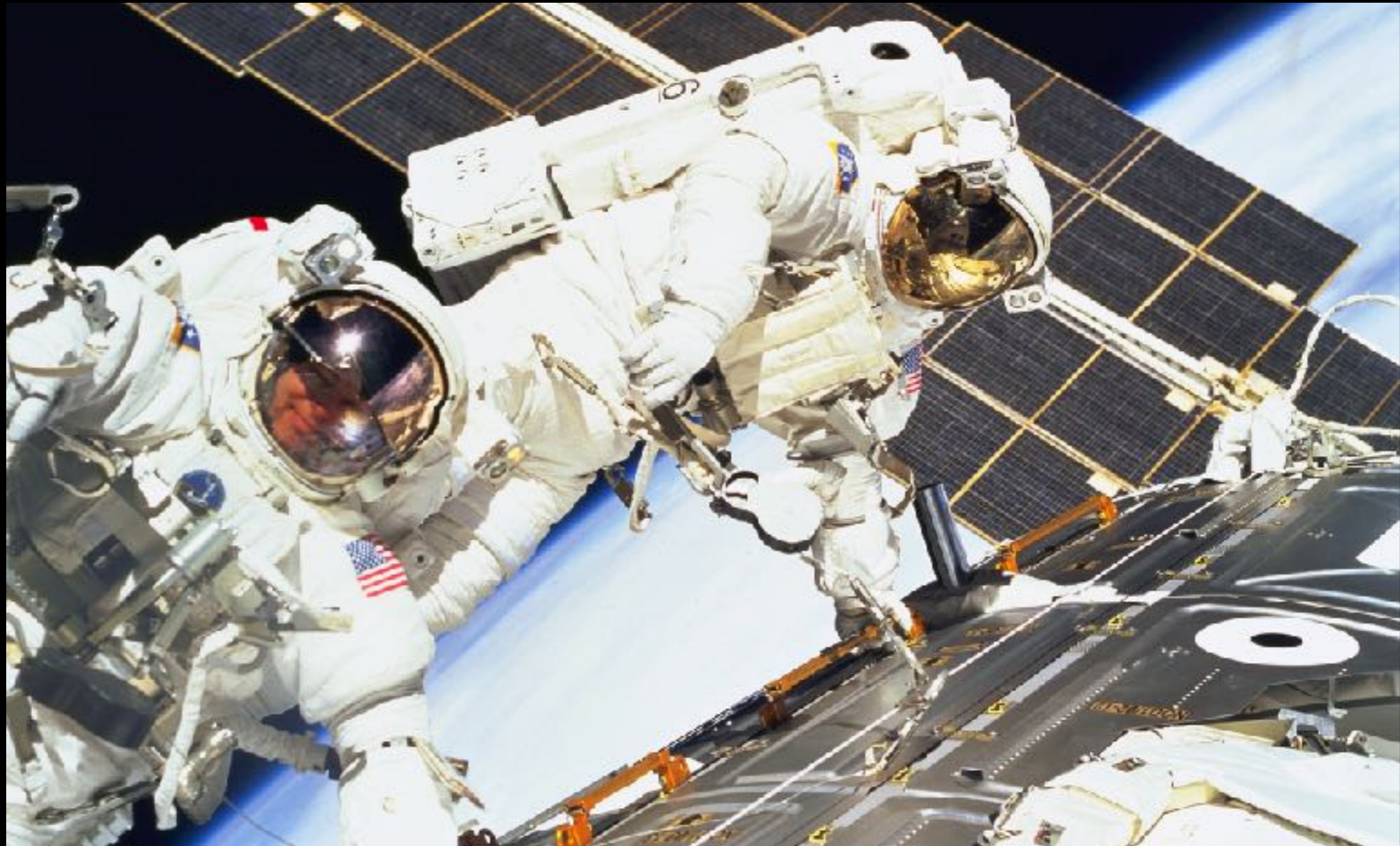


Image Source: NASA

Activities

Mapping and Gap Analysis Exercise

Try mapping your current processes and practices into this framework, and answer the following questions.

What process areas in the framework are you covering? What are the gaps?

Which of the framework's traits and principles do your processes and practices exhibit? Where are there differences?

Improvement Roadmap Development Exercise

Given the gaps and differences that you identified in the previous exercise, are there places where you might like to change your processes and practices? What are the changes you might like to make and how would you order them?

Framework Feedback Discussion

Given what you have learned from the lecture and the exercises, are there changes you would suggest for the framework? Is it too large, too small, or about right? Are there important traits, principles, or areas that are missing? Are there some things that should be excluded?

A photograph of Earth from space, showing the curvature of the planet and the atmosphere. The sun is visible in the background, creating a bright lens flare effect. The word "Conclusion" is overlaid in white text.

Conclusion

Questions and Answers

Any final questions or discussion?

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