



Software Product Quality: Ensuring a Common Goal

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Overview

Issue

- Introduction
- Background

Methodology

- Objectives
- Approach

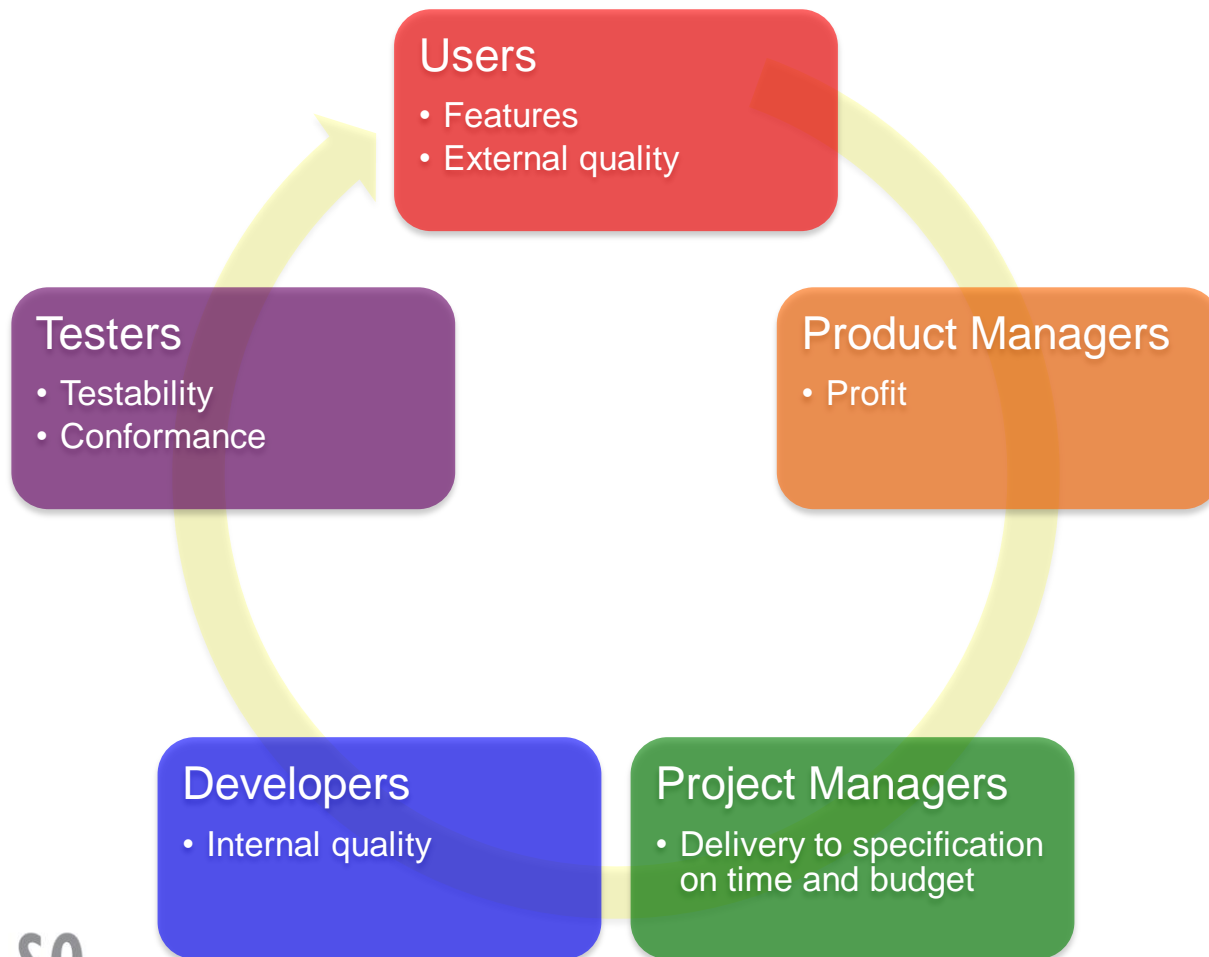
Case Study

- Setting
- Results

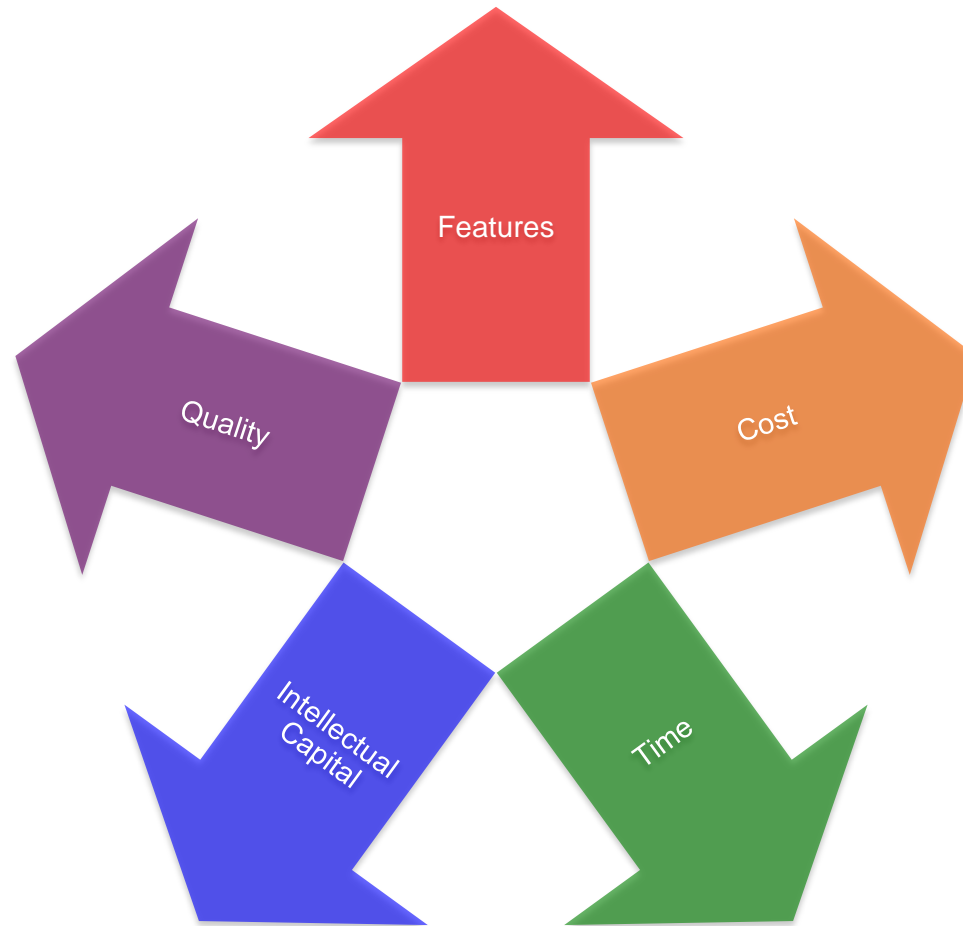
Conclusions

- General findings
- Future work

Conflicting Roles



Software Product Investment



Quality

- Many and varied definitions of quality
- Quality changes with perspective
 - User, manufacturer common in SE
 - Value-based view unites all perspectives
- Many models for quality
 - McCall's, Boehm's, ISO-9126
 - Describe hierarchy of characteristics

Prioritisation Techniques

Analytic Hierarchy Process (AHP)

- Systematic method, using pairwise comparisons on a nine-point scale. Results are presented on a relative scale.

Cumulative Voting (CV)

- Also known as the \$100 method, asks people to assign a set of item a number of points to show relative importance.

Hierarchical Cumulative Voting (HCV)

- An extension of CV, which allows a set of issues to broken up into smaller sets, using hierarchies.

Methodology

Stakeholders

- Identify success-critical stakeholders for software product quality.

Quality Model

- Develop a model for quality that allows the objectives of the study to be met.

Questionnaire

- Use CV to determine the relative priority placed on the different aspects of software product quality.

Analysis

- Group results logically and use a Spearman rank coefficient matrix to determine levels of alignment.

Research Questions

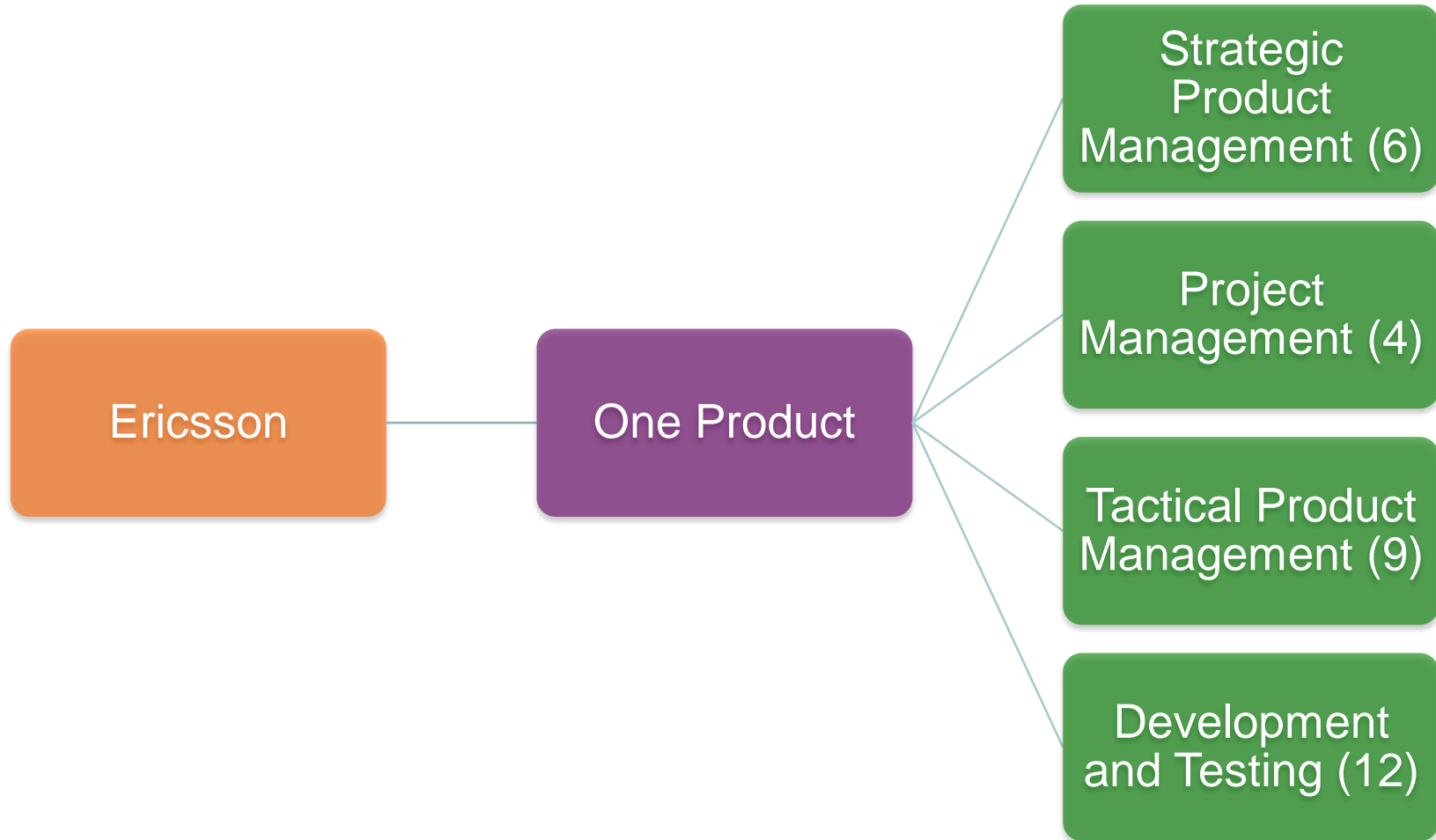
Research Question 1

- Is the method proposed in this paper capable of identifying the degree to which the internal success-critical stakeholder groups are aligned in how they perceive operations today with respect to quality?

Research Question 2

- Is the method proposed in this paper capable of identifying what the different internal success critical stakeholders perceive as the ideal set of qualities on software product qualities in the situation today? And to what degree are the groups aligned?

Case Study



Case Study: Model

- Suitability
- Accuracy
- Interoperability
- Compliance

Features

- Time behaviour
- Cost behaviour

Efficiency

- Stability
- Statistics
- Analysability
- Changeability
- Testability

Maintainability

- Installability
- Replaceability
- Adaptability

Portability

- Maturity
- Recoverability
- Fault tolerance

Reliability

Scalability

- Learnability
- Understandability
- Operability

Usability

- Time
- Cost

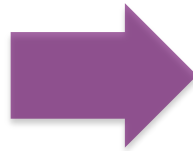
Project Management

Security

Case Study: Questionnaire

Piloted using CV

- Trouble making comparisons between sets of attributes



Updated method to use HCV

- Functional, non-functional, project management

Case Study: Results

Today

	SPM & PM	TPM	R&D
SPM & PM	1.00	0.80	0.90
TPM		1.00	0.86
R&D			1.00

Ideal

	SPM & PM	TPM	R&D
SPM & PM	1.00	0.74	0.71
TPM		1.00	0.65
R&D			1.00

Change

	SPM & PM
All groups	0.82
SPM & PM	0.72
TPM	0.77
R&D	0.62

Results

- Groups highly aligned
 - Want greater focus on individual issues
 - More balanced when considered collectively
- As priorities decreased management ambiguities increased

Case Study: Discussion

- Method deemed successful in its aims
- Groups do not appreciate work involved with achieving some quality goals
 - Even if it is a common goal
- Supported continued improvement
 - Make required investments clearer
 - Reduce management ambiguity

Conclusions

- The method presented was able to successfully meet its objectives
 - HCV is easier for participants
- Companies need to balance priorities through open and transparent dialogue
 - Groups need to know what they want
 - Method provides a first step through the identification of important issues

Future Work

- Continue method to support reconciliation
- Apply to other cases
- Develop understanding of balance between other investment options
- Understand alignment between product strategy and operations



Thank you!

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