

An Overview of the

Requirements Traceability Problem

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Presentation Outline

- Introduction
- Importance of Requirements Traceability
- Causes of RT Problems
- Conclusion

Introduction

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Requirements Traceability (RT)

- „the ability to describe and follow the life of a requirement, in both a forward and backward direction, i.e., from its origins, through its development and specification, to its subsequent deployment and use, and through periods of ongoing refinement and iteration in any of these phases.”

(Gotel Finkenstein 1994)

Benefits of RT

- Increased understanding of design
(Dick 2005)
- Early identified issues lead to better quality
(Huffman et al 2005, p. 31 / Gotel Finkenstein 1994, p. 97,
Dick 2005)
- Economic leverage
(Gotel Finkenstein 1994, p. 97)
- Groundwork for knowledge management
(Jarke 1998, p. 32)

RT Frameworks

- DoD 2167a (superseeded by MIL-STD-498)

4.2.6 Traceability of requirements to design. The contractor shall document the traceability of the requirements allocated from the system specification to each CSCI, its Computer Software Components (CSCs) and Computer Software Units (CSUs), and from the CSU level to the Software Requirements Specifications (SRSs) and Interface Requirements Specification (IRS).

- CMMI-DEV 1.2 (2006)

SP 1.4	Maintain Bidirectional Traceability of Requirements
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Maintain bidirectional traceability among the requirements and work products.

Problems of Requirements Traceability

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Problems of RT Problem

- No Standard for Information
- Problem during the Evolution process
- Heterogeneous Languages and Form for Documentation
- Different Tools

Lack of a common Definition

- **Purpose-driven:** what it should do
- **Solution-driven:** how it should do it
- **Information-driven:** the information to be made traceable
- **Direction-driven:** to emphasise either forwards or backwards direction, or both

Traceability = Bureaucracy?

- Developers disregard documentation
 - Time consuming
 - Insufficient tool support (today)
 - Lower priority task

→ Traceability should come as a side effect of daily work to support organizational knowledge creation (Jarke 1998)

Insufficient pre-RS Traceability

- Requirement producers are not their end users! (Gotel Finkenstein 1994)
 - Problems imposed by producers
 - Low motivation and effort
 - Tacit knowledge → quality and availability
 - Problems imposed by end-users
 - Rely on personal contacts (changes)
 - Needs vary (detail level and quantity of information)

Conclusion

- Traceability follows the life of a requirement
- Traceability creates organizational knowledge and supports product quality
- Must be integrated into daily workflow
- Tools can support integration
- How traceability is implemented is shown by the next group

Questions?

...thanks for your attention!