Part I: Fundamentals

Part II: Requirements Engineering Practices

Part III: Enablers and Stumbling Blocks



14 Requirements tools

What can be supported by a RE tool?

- Elicitation
- Documentation
- Modeling
- Management (Store and retrieve, prioritize, trace,...)
- Validation (simulators, model checkers,...)

Support levels for RE tools

- General purpose
 - Word processors
 - Spreadsheet tools
 - General purpose graphic drawing tools
- Database-level
 - Requirements management tools for organizing, storing, retrieving and tracing requirements
- Language&Method-based
 - Tools supporting specific requirements languages, e.g. drawing state machine diagrams
 - Tools for supporting specific methods, e.g. validation with model-checking

Which RE tool should I use / buy?

- No general recommendation possible
- Depends on what the tool(s) shall support
- An up-to-date list of requirements tools is maintained at the VOLERE website:

http://www.volere.co.uk/tools.htm

We no longer believe in big, unambiguous, and complete requirements specifications as the standard result of good Requirements Engineering.

- Although many standards and textbooks still do
- Modern RE is value-driven: the effort invested into RE is determined by the value that the requirements create
- Depends on domain and project context, driven by various factors, in particular
 - Shared understanding
 - Risk
 - Customer-supplier relationship

16 RE under time pressure

Risk-oriented specification

- The risk determines the needed effort, not the available time frame!
- Don't specify in uniform depth
 - Only the risky stuff in full detail
 - The rest coarsely or not at all
- Employ incremental processes
- Don't strive for perfection;
 good enough suffices



What is indispensable?

- Know and involve the critical stakeholders
- Know the problem
- Identify the key goals
- Define the key terms (of the domain and the system) in a glossary
- Identify and document the system's main functions and use cases
- Identify and document critical quality requirements, constraints and risks
- Identify critical domain assumptions and domain constraints

What makes it harder? (implies higher effort)

- High complexity of the domain
- Team is not familiar with the domain
- O Many stakeholders
- Distributed development and/or stakeholders
- O Long cycle time
- Safety-critical requirements
- High project risks



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Conclusions

References

Requirements Engineering in a nutshell

- Stakeholders are key
- Validate your requirements early and frequently
- Work value-oriented:
 - Cost and benefit of requirements need to be in balance
 - Concentrate on the essential don't just collect tons of detailed requirements
- Work risk-driven: the more risk, the more extensive and precise requirements specifications are necessary
- Intertwining of requirements and design is natural you'll need to live with it

Requirements Engineering in a nutshell – 2

- Situate your system in its context
 - Value is only created when using systems in their real world context – so you need to know this context
 - Elicit and document domain assumptions and constraints
- No discovery: Requirements must be elicited with serious endeavor, they can't be just discovered
- Strive for innovation: just automating what we have today is not enough
- You are not the stakeholders' voice recorder elicit and design requirements that make stakeholders excited

Requirements Engineering in a nutshell – 3

- Control requirements evolution otherwise requirements evolution will control you
- No universal language or method: You'll need to use a variety of practices and languages
- Specifying is not programming: Skip all technical details which are not part of the problem
- Finally: make it fun. Nobody likes boring tasks. Make RE a fascinating expedition into the unknown, to places where the desirable and the doable meet and eventually merge into exciting new opportunities.

Conclusions



Requirements Engineering – doing things right ...

... from the very beginning