EXPERT PANEL:

User-Centric Requirements of Hardware/Software Systems

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A user-centered requirements process bases product requirements on the needs of real users. Those needs can be explored by means of contextual inquiry or other field research methods. User centered requirements differ from typical functional requirements in that they focus on what it is that categories of users will be able to do with the product.

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<tr>
<th>Requirement</th>
<th>Description</th>
<th>Priority</th>
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Types and Merits

• Types of users:
  - SW application: end-users
  - SW library: software developer
  - HW module: software developer
  - HW module: hardware designer
  - ALL: business owner?

• Merits:
  - Explicit attention for user requirements
  - Distinction between user requirements and functional requirements
Questions and Risks

• Questions:
  - Do you need both user requirements and functional requirements ?
  - What about translation from user requirements to functional requirements ?

• Risks:
  - Divert attention from the essential complexity, e.g. specification and design of planes/rockets based on various preferences of pilots/astronauts
  - Impact of *user-centered design* on technical design issues and complexity
End-User Requirements
A trade-off

Presented by Gaetana Sapienza
Panel: “User-Centric Requirements of Hardware/Software Systems”
ICSEA 2012 - Nov 22, Lisbon
An Embedded Systems Products/Product Family Highlighting Few Features

Operational Life Time Up to Several Decades
Communication/System Integration/Security
Quality/Efficiency/Reliability
Highly Competitive
...and more
The End-User Requirements – Focus On
What about the new product/next product generation?

Interviews

End-Users

Outcomes

New Product/Next Product Generation

Req.A ➔ Improvement of existing functionality

Req.B ➔ Extension of the power range

Req.C ➔ New functionality

Req.D ➔ Field-Upgradeable

Req.E ➔ Standard X Certified

Req.F ➔ 30% Cheaper

Simplified Overview - The Ideal Path

 Req.X

 Approv-able ➔ Design-able Implement-able ➔ Test-able ➔ Maintain-able

Life Cycle Management (LCM)
Balancing End-User Requirements With respect to Overall Requirements and Constraints

- Environmental Impact
- Standards
- Legislations
- Backward Compatibility
- Reliability
- Scalability
- Time-To-Market
- Innovation
- Competitiveness
- Project Budget
- Product Margins
- Safety
- Security
- Quality
- Flexibility
- Memory Availability
- Power Consumption
- Time-criticality
- Maintainability
- Upgradeability
- Spare Component
- Component Reusability
- Component 2nd Source
- Shorter HW Component Life Cycle
- Backward/forward traceability
- Deployment
- Platform Independency
- Standard Interfaces
- Competitive
- Reliability
- Time-to-Market
- Quality
- Environmental Impact
- Standards
- Legislations
- Results
- Questions

How to efficiently trade-off End-User Requirements in order to meet the End-User Satisfaction
Power and productivity for a better world™
User-Centric Requirements of Cloud Services

Panel SoftNet 2012
22. November 2012

Gebhart Quality Analysis (QA) 82
Dr. Michael Gebhart

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### Situation Today

#### Usage of Cloud Services

- Companies increasingly use cloud services
  - Cloud service can represent entire business processes
- Gebhart Quality Analysis (QA) 82 focuses on determining the integration efficiency of cloud services into an existing service-oriented architecture
  - Based on the design of service interfaces etc.
- Enables a systematic decision for a certain cloud service
Integration Efficiency as one Major Aspect
Open Questions

- What are other requirements of cloud service users / consumers for a good public cloud service?
- What does the term “Quality” mean for cloud services?
  - Controversial question
- What does it depend on?
- What are the necessary information to determine whether the requirements are fulfilled?
  - What cannot be described by a Service Level Agreement (SLA)?
Gebhart Quality Analysis (QA) 82
http://www.qa82.com
http://www.qa82.de (German)

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*Quality Analysis* in the context of SOA and cloud
*Certification* of high-quality services
*Training* for an engineering methodology based on SoaML
Related Publications

- Gebhart, M., Baumgartner, M., Oehlert, S., Blersch, M., & Abeck, S. (2010). Evaluation of Service Designs based on SoaML. In J. Hall, H. Kaindl, L. Lavazza, G. Buchgeher, & O. Takaki (Eds.), *Proceedings of the Fifth International Conference on Software Engineering Advances (ICSEA) 2010* (pp. 7-13). doi: 10.1109/ICSEA.2010.8