

Requirements for Quality, Quality of Requirements

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Introduction

Requirement

A requirement is an externally observable characteristic of a desired entity.

Alan M. Davis: Just Enough Requirements Management (2005)

Quality

$$\text{quality} = \frac{\text{actual characteristics}}{\text{required characteristics}}$$

Requirements for Quality

a paradox: no requirements \Rightarrow quality = ω

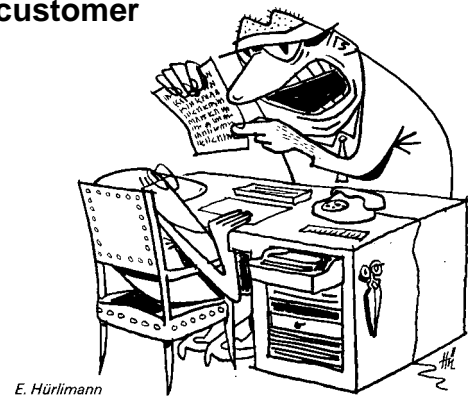
Quality of Requirements

return from infinity

Five myths about software requirements

- I A requirement is a requirement
- II Requirements can be solution independent
- III All requirements shall be known before design starts
- IV Context is something only the testers need
- V Requirements are requirements of the user

**Quality for
the king customer**



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I. A requirement is a requirement (1)

- R1 The user shall be able to turn roaming on or off from his handset.
- R2 The customer shall be able to make phone calls only upon registration and activation by Customer Care
- R3 The software adaptation shall be done by company Adapt Ltd.
- R4 The software supplier shall provide evidence that it's test documentation is compliant to the IEEE Std. 829-1998.

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I. A requirement is a requirement (2)

R1 The user shall be able to turn roaming on or off from his handset.



product

R2 The customer shall be able to make phone calls only upon registration and activation by Customer Care

R3 The software adaptation shall be done by company Adapt Ltd.

R4 The software supplier shall provide evidence that it's test documentation is compliant to the IEEE Std. 829-1998.

I. A requirement is a requirement (3)

R1 The user shall be able to turn roaming on or off from his handset.



product

R2 The customer shall be able to make phone calls only upon registration and activation by Customer Care



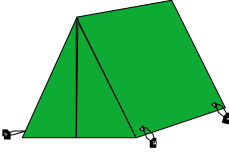


user
process

R3 The software adaptation shall be done by company Adapt Ltd.



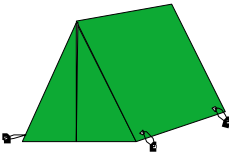
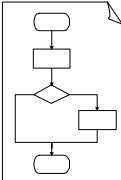
R4 The software supplier shall provide evidence that it's test documentation is compliant to the IEEE Std. 829-1998.

I. A requirement is a requirement (4)

- | | | | |
|----|---|---|--------------|
| R1 | The user shall be able to turn roaming on or off from his handset. |  | product |
| R2 | The customer shall be able to make phone calls only upon registration and activation by Customer Care |  | user process |
| R3 | The software adaptation shall be done by company Adapt Ltd. |  | project |
| R4 | The software supplier shall provide evidence that it's test documentation is compliant to the IEEE Std. 829-1998. | | |

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I. A requirement is a requirement (5)

- | | | | |
|----|---|---|---------------------|
| R1 | The user shall be able to turn roaming on or off from his handset. |  | product |
| R2 | The customer shall be able to make phone calls only upon registration and activation by Customer Care |  | user process |
| R3 | The software adaptation shall be done by company Adapt Ltd. |  | project |
| R4 | The software supplier shall provide evidence that it's test documentation is compliant to the IEEE Std. 829-1998. |  | development process |

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I. A requirement is a requirement (6)

A requirement is always addressed on something,
is always tied to a subject

1. requirements on product and user process
(installation and operation processes)
 - ⇒ requirements specification document
2. the requirements on project and the development process shall not go into requirements specification document
 - they address different audience
 - they are tested by different test methods
 - ⇒ shall go into the project plan

II. Requirements can be solution independent (1)

- R1 Roaming shall be optional.
- R2 Roaming for a phone number shall be possible to turn on / off at any time.
Default setting shall be on.
- R3 Roaming for a phone number shall be possible to turn on / off at any time
- a) by the user from his handset and
 - b) by customer care using CusCare tool.
- R4 Roaming for a phone number shall be possible to turn on / off at any time
- a) by the user from his handset, Roaming entry in the Settings menu and
 - b) by customer care using CusCare tool, Roaming entry in the Customer Profile screen.

II. Requirements can be solution independent (2)

R1	Roaming shall be optional.	business requirement
R2	Roaming for a phone number shall be possible to turn on / off at any time. Default setting shall be on.	system requirements
R3	Roaming for a phone number shall be possible to turn on / off at any time a) by the user from his handset and b) by customer care using CusCare tool.	subsystem handset & CusCare tool requirements
R4	Roaming for a phone number shall be possible to turn on / off at any time a) by the user from his handset, Roaming entry in the Settings menu and b) by customer care using CusCare tool, Roaming entry in the Customer Profile screen.	GUI component requirement for handset & CusCare tool

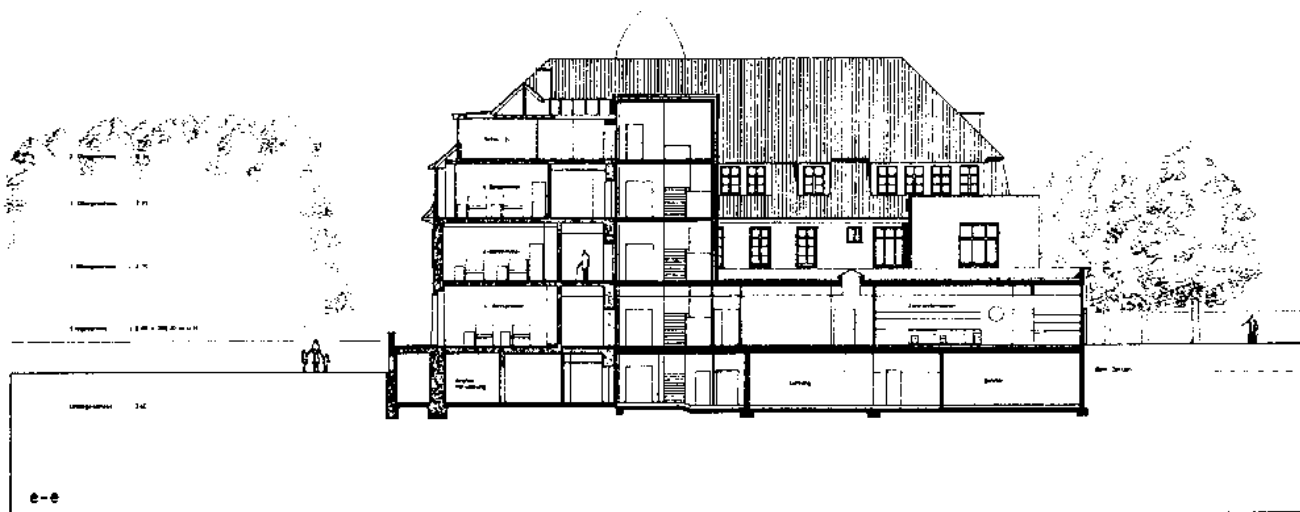
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II. Requirements can be solution independent (3)

- Is R3, is R4 a solution or a requirement?
 - They are both!
At the time the business and the system requirements are defined, they are solutions.
At the time the subsystem is specified, they are requirements (with different level of detail).
- Is R1, is R2 a solution or a requirement
 - Of course they are both!
At the time the business and the system requirements are defined, they are requirements.
But ... they are solutions for the higher-level requirement that asks for the use of a handy also abroad.

A requirement is always tied to a level of abstraction
is always a solution for the higher level of abstraction

III. All requirements shall be known before design starts



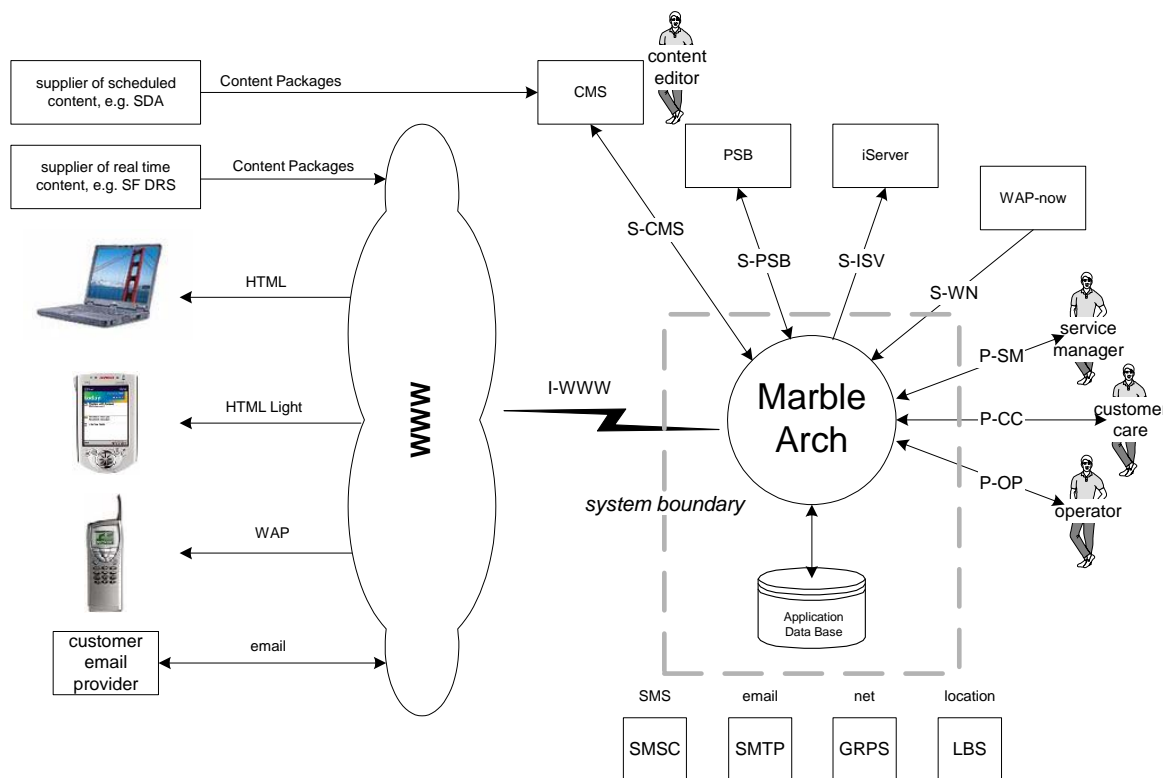
Urs Burkard + Adrian Meyer + Max Steiger Architekten BSA SIA 5400 Baden

Do you need to know at this stage of development where the wall outlets shall be placed?

A requirement is t.b.d. till a certain point in time

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IV. Context is something only the testers need (1)



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IV. Context is something only the testers need (2)

A requirement is always tied to

- an agent interacting with the planned system
- an interface the agent is using to interact
- all other interfaces that can show reaction on the agents intervention
- a goal the agent wants to achieve by the interaction with the system

Sounds similar to the definition of a **context diagram**? Read that:

A context diagram shows everyone who will interact with the system (external agents), what input they will provide, and what output they will receive. It has normally only one process and does not contain any data stores.

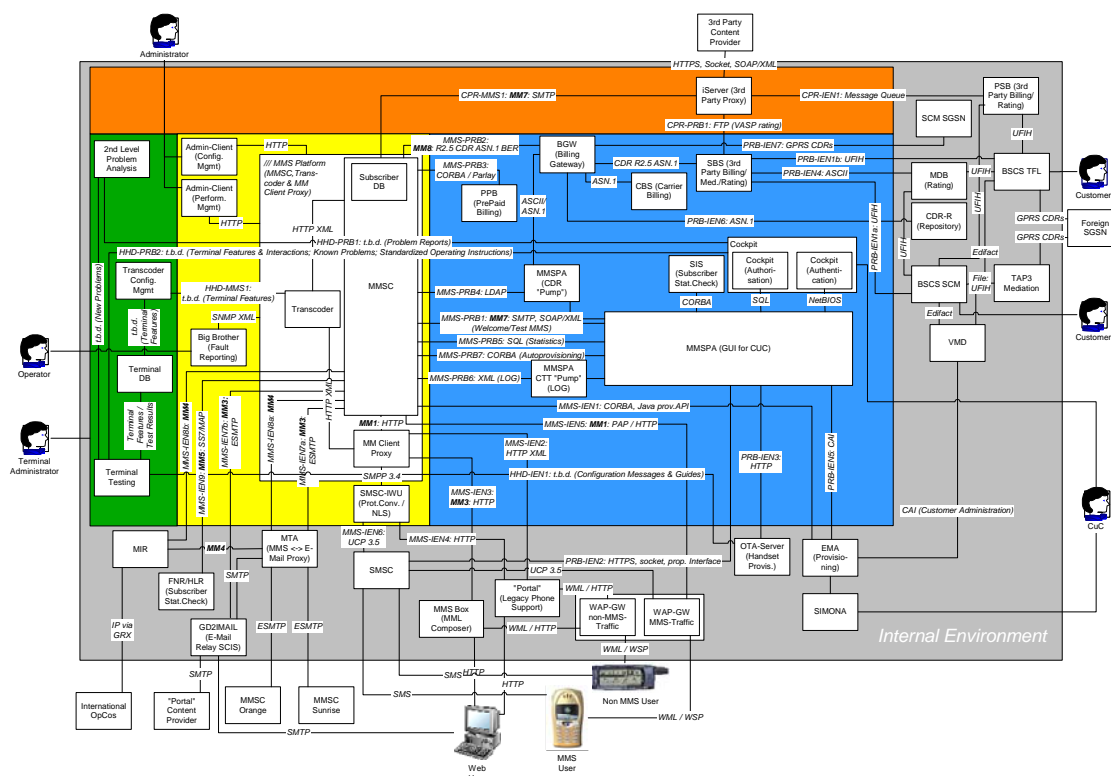
IV. Context is something only the testers need (3)

Without a context diagram there is no way to check anything concerning completeness and consistency of requirements.

If the scope of the project is the modification of an existing solution then it is even more important to identify that part of the existing system that is going to be affected by the project.

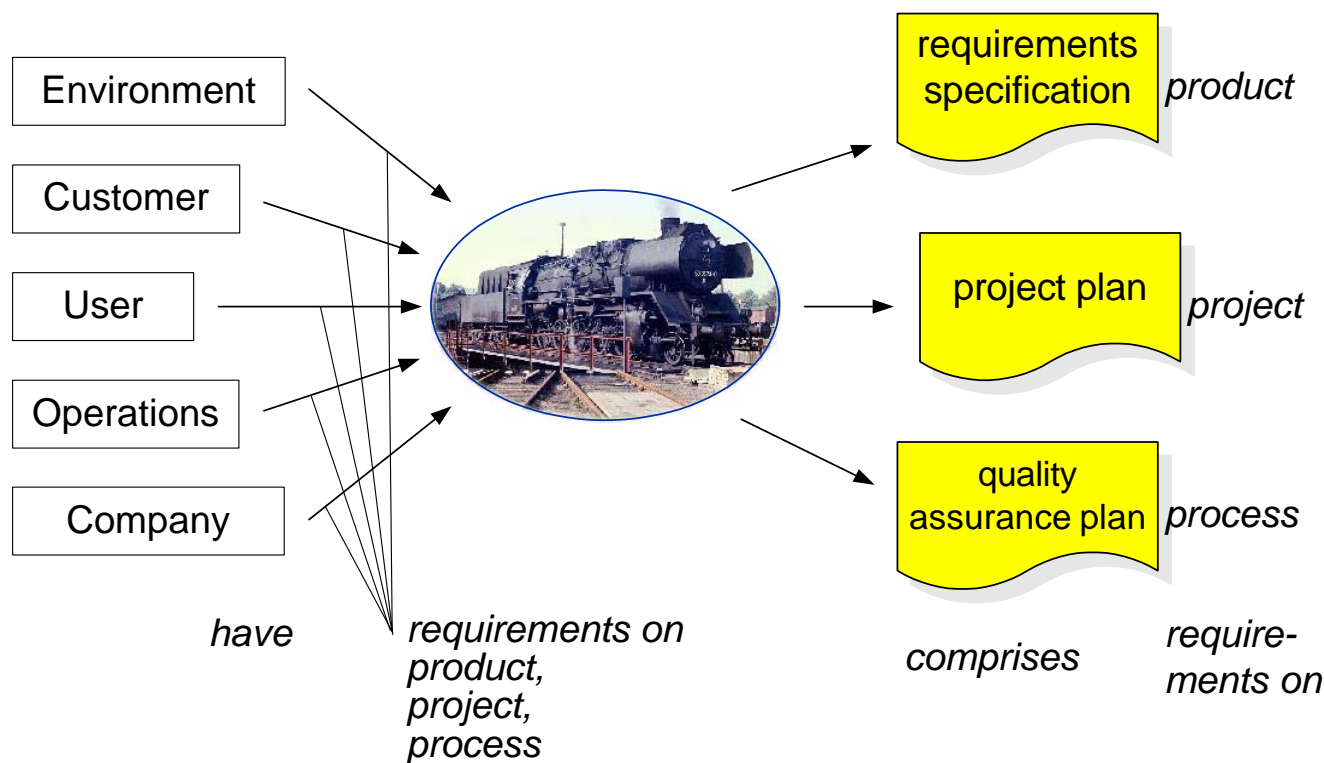
→ In this case the context is not sufficient, the high level architecture is needed.

IV. Context is something only the testers need (4)



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V. Requirements are requirements of the user (1)



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V. Requirements are requirements of the user (2)



York der
Knöfel:
Thoughts
(1996)

Galerie
Wohn-
maschine

now
installed in
Neues
Museum
Nürnberg

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V. Requirements are requirements of the user (3)

A product has many stakeholders, its requirements many sources.
A project has a set of stakeholders.

A creature of type typical user does not exist.

All users speak a different language, have different needs.

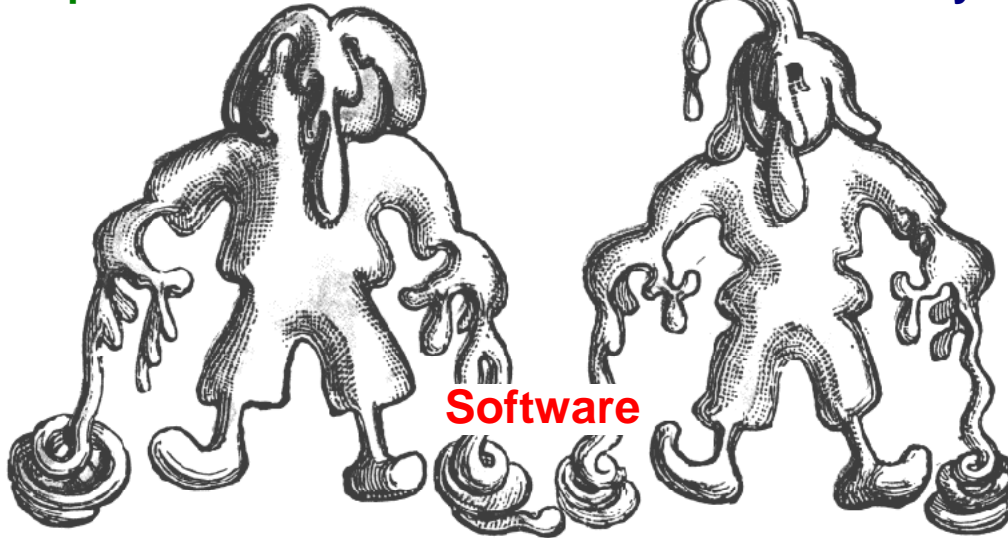
All users will be (more or less) satisfied if the product will support and not hinder their work.

A kind of conclusion ...

requirements and quality ... are Siamese twins

Requirements

Quality



entirely coated with software ... a picture of misery they are