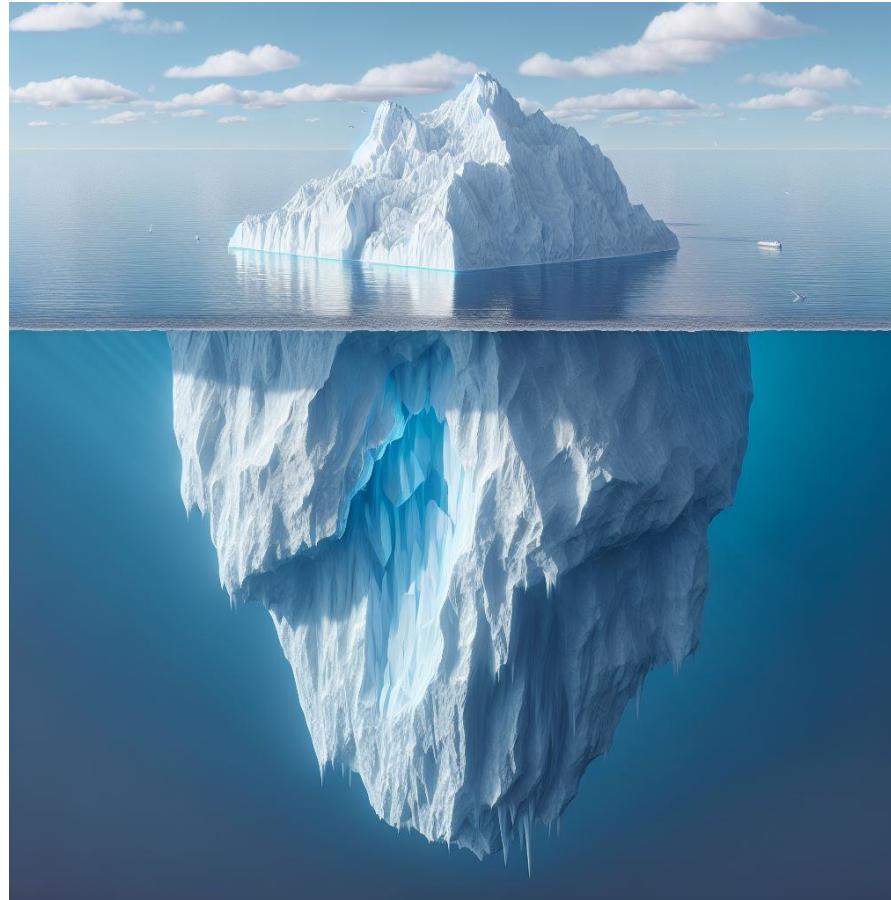


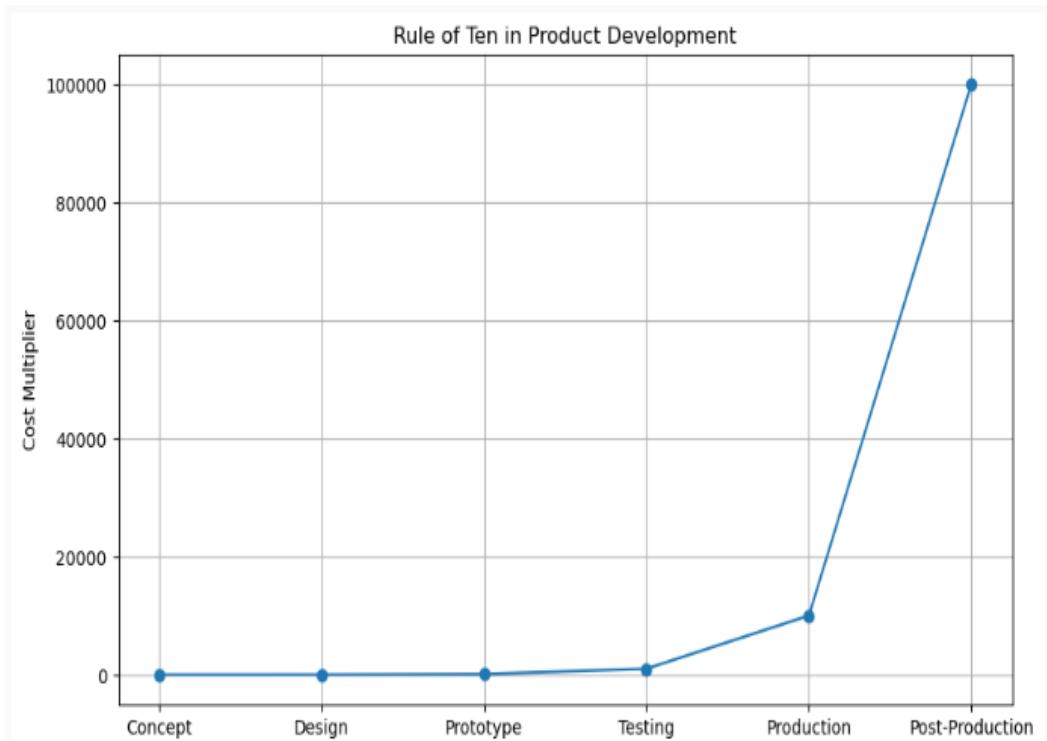
Quality of Requirements

Part I: Overview and focus on the aspect language quality

Know problem: Most requirements are hidden beneath the surface



Troubleshooting Costs

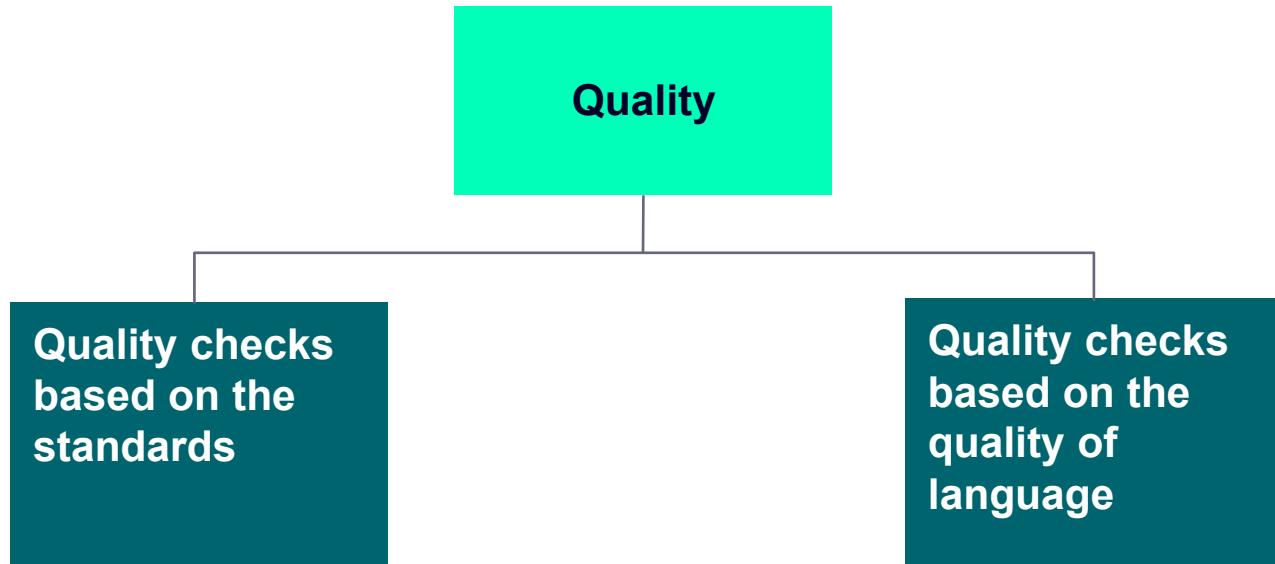


Rule of Ten:

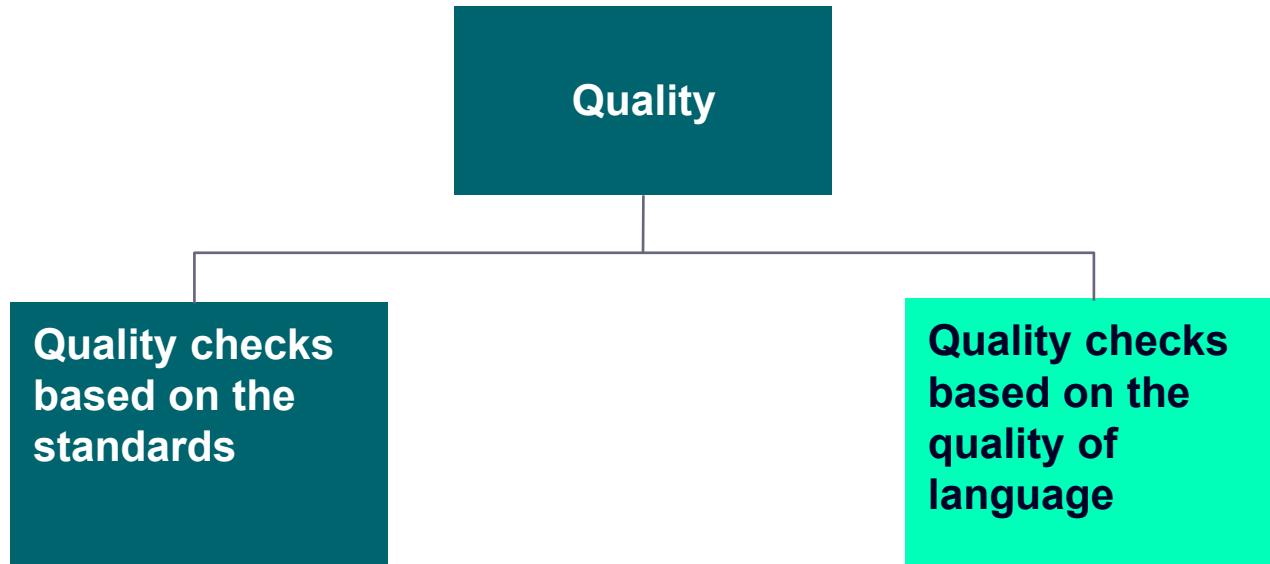
$$C_{fix} = C_{base} \times 10^{n_{phases}}$$

Where n_{phases} is the number of phases between error creation and correction.

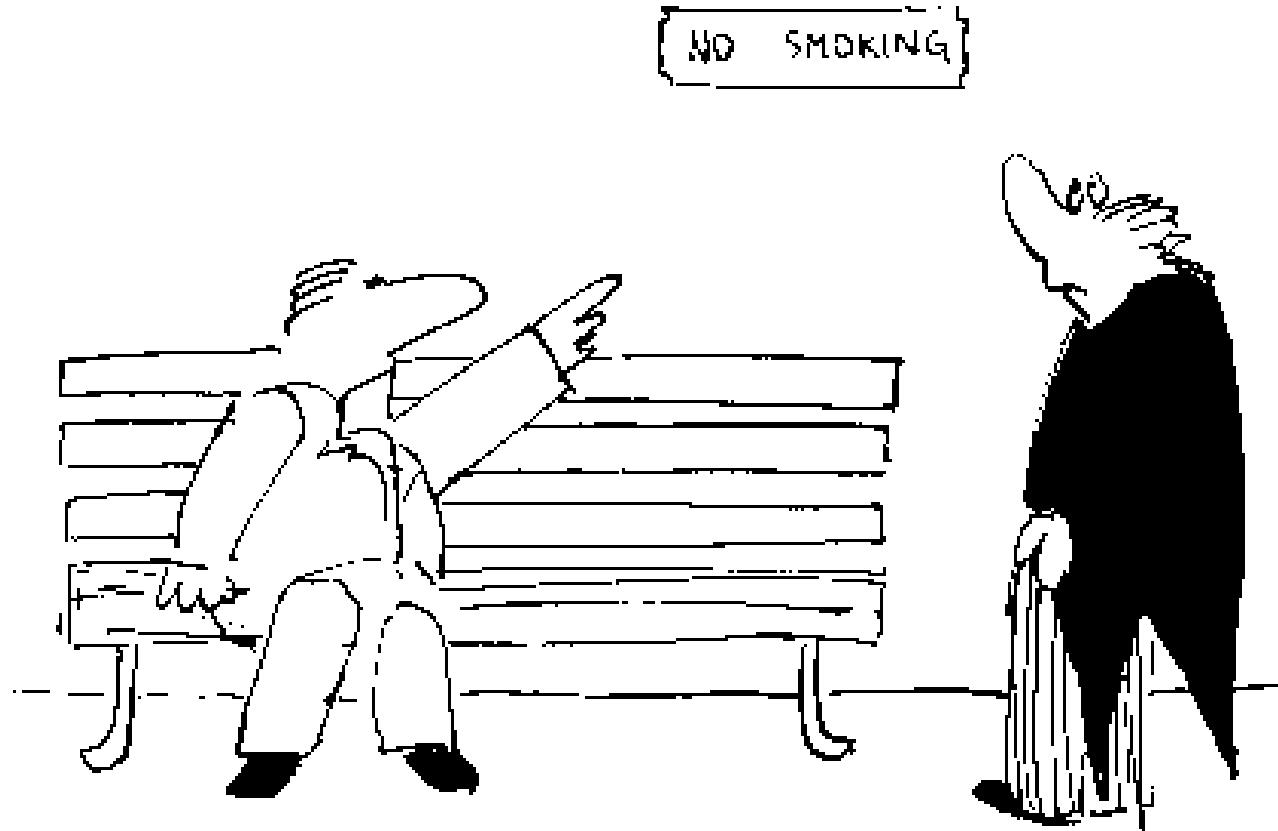
Quality from various angles



Quality from various angles



Really understanding each other is the exception rather than the rule

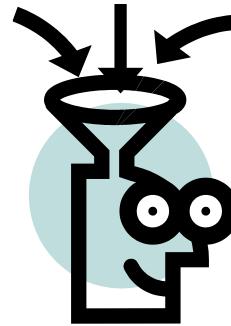


Representation transformations (Darstellungstransformationen)



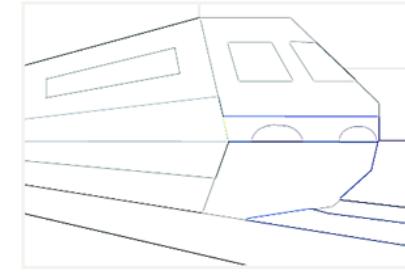
Reality

Perception
(Wahrnehmung)



Personal
Perception

Personal
Knowledge

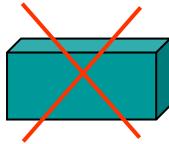


Linguistic expression
of knowledge

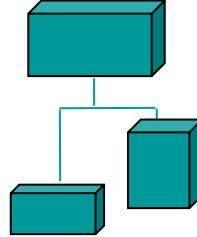
Knowledge presentation
(Wissensdarstellung)

Representation transformations (Darstellungstransformationen)

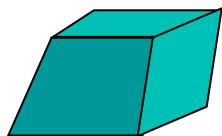
- Deletion



- Generalization



- Distortion (Verzerrung)



see Bandler and Grinder

SIEMENS

1. Unambiguous – avoiding ambiguous terms, and so vague statements

Modal verbs	Universal qualifiers	Filler	Universal quantifiers	Vague place statements	Vague time statements
should	improved	however	absolute	here	circa
could	better	just	usually	there	in the future
might	faster	even	generally	anywhere	soon
may	superior	certainly	basically	nowhere	many times
ought to	robust	surely	Exquisite	ahead	at times
	good	of course	always	behind	meanwhile
	sufficient	but	never		shortly after
	efficiently		none		sometimes
	optimized		all		
	acceptable		normally		
	practicable		ideally		
	user-friendly		fast		

1. Unambiguous – avoiding ambiguous terms, and so vague statements - in German

Verallgemeinerung	Ungenaue Ortsangaben	Ungenaue Zeitangaben	Modalverben	Eigenschaftswörter	Füllwörter
absolut	außen	anfangs	Darf	beste	aber
meistens	Innen	aktuell	Dürfen	besser	halt
Im Allgemeinen	Hier	bisweilen	Kann	manche	doch
Generell	Dort	ca.	Können	Schnell	durchaus
grundsätzlich	Da	damals	könnte	Schlecht	eben
äußerst	Links	währenddessen	Möchte	Gut	denn
außerordentlich	Rechts	demnächst	Mögen	enorm	ehedem
immer	Vorne/vor	bald	Müsste	Schwer	bestimmt
bei weitem	Hinter/Hinter	ab und zu		schön	Sicher
jederzeit	Überall	beinahe		leicht	sicherlich
Besonders	nirgends	danach		langsam	
Nie/stets	Irgendwo	einmal		Groß / klein	hoffentlich
etliche	nirgends	manchmal/häufig		Einfach / schwierig	

2. Clear harmonized sentence structure: User Story Format

How does the user story format look like

As a {ROLE}

I can / want to {ACTIVITY}

so that {BENEFIT / VALUE}

The User Story's goal describes what the user want to achieve.

It is written in user's language and from user's perspective, not from system's perspective

Example:

As the system operator, I can see on the device without any activity why my protective device has tripped.

Why does this format appear?

- Focus on customer value
- Enhance communication between PRM and R&D
- Enable quick feedback cycles
- Enables value-driven development

Benefits in Agile Developments

- Better prioritization possible
- Easier effort estimation
- Clear Definition of Done
- Improved iteration planning

Hints for usage of the Role-Activity-Benefit-Format

Take it simply as starter sentence of your requirement.

Write it as if the system already existed.
Present tense

You can reuse the format for test cases

In case of a condition, put it at the beginning. When ...

User Story Format

If there is not enough space for that long sentence, create a title like <Verb as noun + goal> and the whole sentence on top of the description.

Example: Creating new users

This User Story Format can be used for all level of requirements

3. Defined Terms

- One term = One meaning
- Clear definitions
- Elimination of synonyms

- ↓ Reduced Misunderstandings
- ↑ Communication Efficiency
- ↑ Project Clarity
- ↑ Documentation Quality

The requirements specification looks as if it had been written by one author.

A Glossary can be helpful.

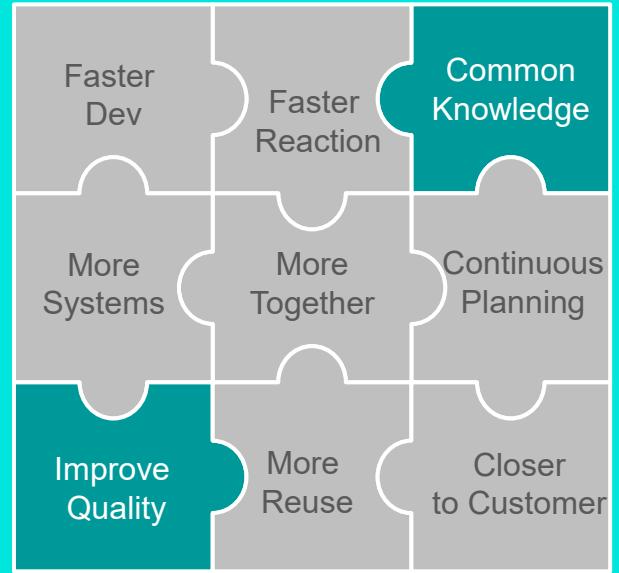
4. Other rules

- Avoid passive voice
- Double check if plural is needed
- Avoid “Not”
- “And” and “Or” can be unclear
- Avoid “etc.”
- Avoid “I”

Ambiguity_{Terms} → 0

Short Checklist – Part I

- Pattern used: As a {ROLE}, I can
{ACTIVITY}, so that {BENEFIT / VALUE}
- Present Tense used
- The sentence is simple
- Terms are defined
- No vague qualifiers or quantifiers



Quality of Requirements

Part I: Overview and focus on the aspect language quality

Q&A