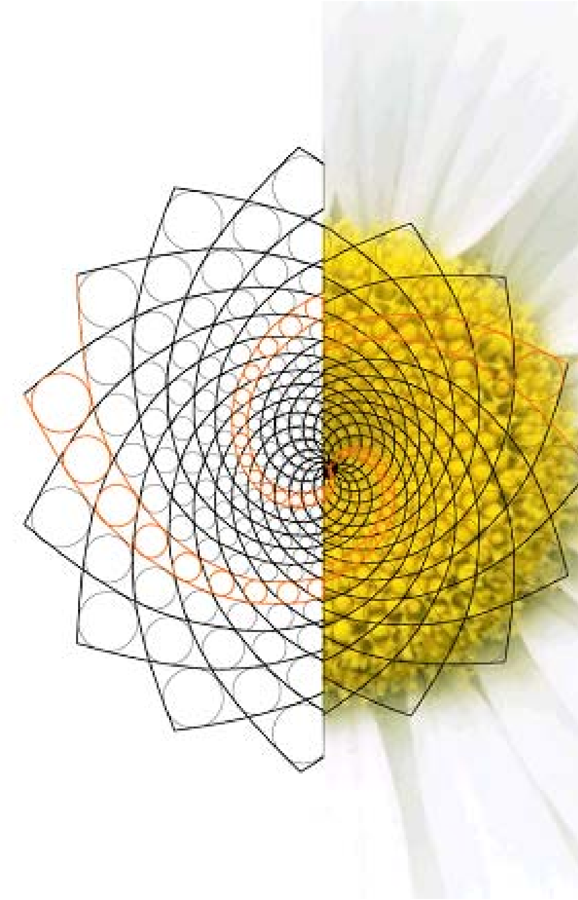
Clairvoyance for connoisseurs

Identifying your client's needs and documenting the same

Contents

- > **Who I am**
- > Remember: Requirements are Necessary
- > The Magic of Clairvoyance
- > The Architects' Contribution to a Better Specification



The Speaker

Chris Rupp:

> CEO of SOPHIST Group

> Trainer, consultant and author

> Requirements Engineer

> Coaches, trains and assists well-known companies

> Loves to travel (especially to far away places), to drink red wine, to snowboard, to kiteboard, … there’s just so much to do and so little time

> First time as a speaker at the JAOO

See www.sophistgroup.com

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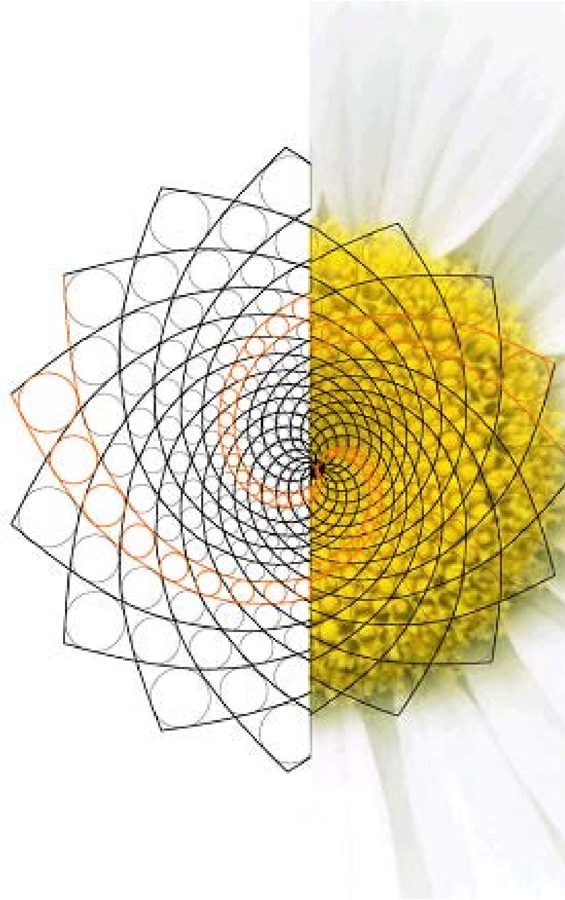
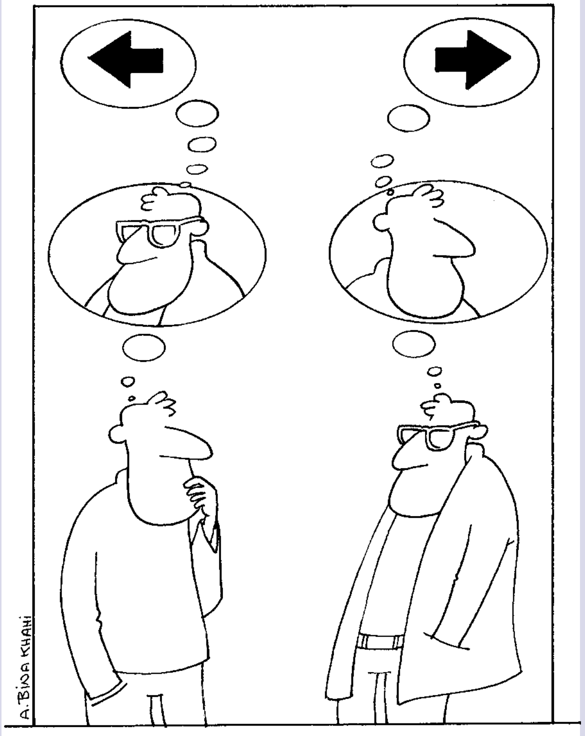


Creating premium specifications ...

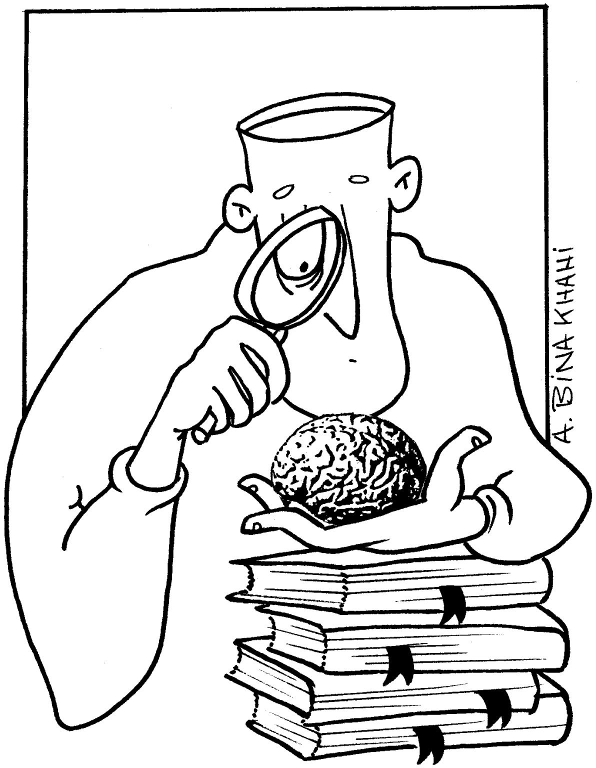


- Requirements are necessary …
- Up to now: requirements engineering is the analysts business
- BUT:
  - I will show you that your assistance is needed

… your collaboration is required!

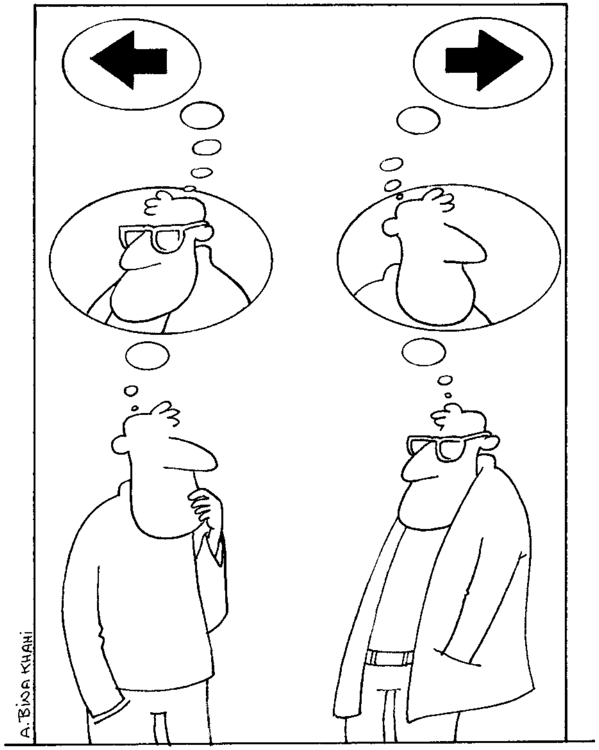
Prize question: „What is the very first step to be taken when drawing up an architecture“?

Answer: Double-check the specification!



Why you should do so?

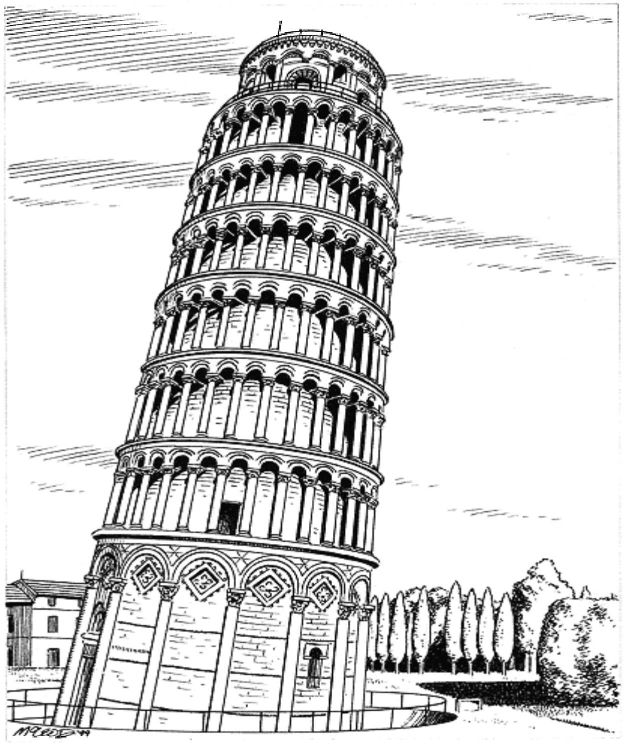
- Simple: in the end, it’ll be you taking the can for any defects.
- You can safeguard against changes to the specification with legal means.
- But: If “misunderstandings” occur and “implicit” requirements are called upon, which you “apparently” failed to recognize – it’s usually you, as the contractor, that gets the short end of the stick.



Summary

Can you tell the difference?

- Create a sturdy foundation for your software project – else...



- Describe this foundation using excellent requirements

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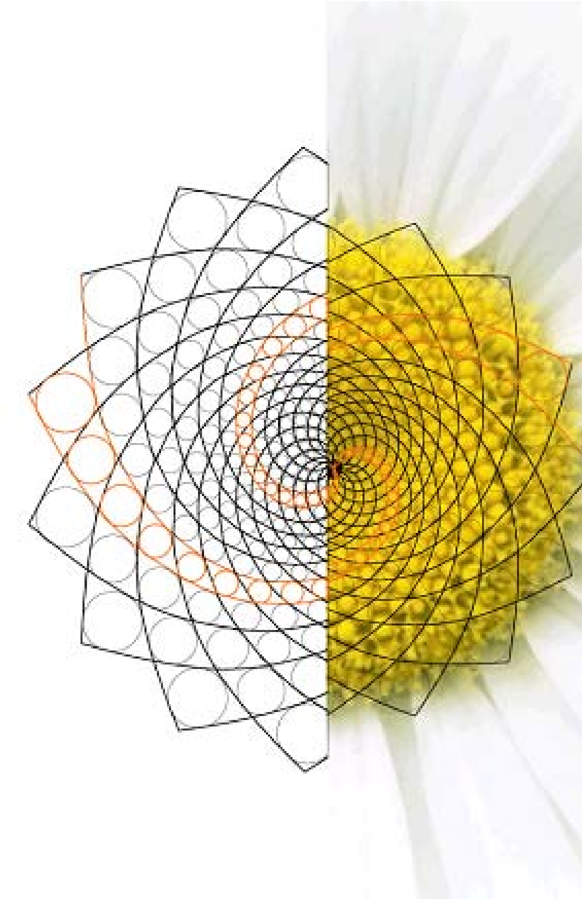


Humans and mistakes?

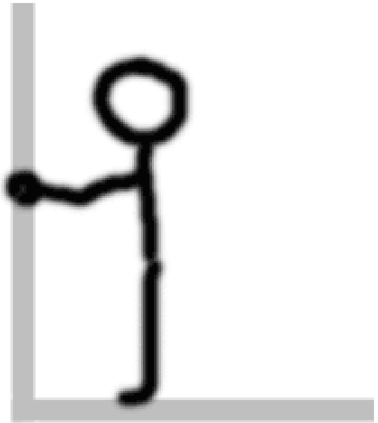
Have you ever made a stupid mistake?

Welcome in the real world!

Have you ever made a stupid mistake a hundred times over?

Welcome in software development!

Tom DeMarco:
Why is software so expensive?

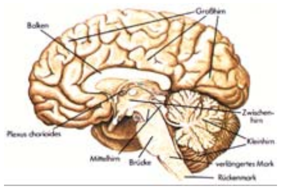


The only thing we know for sure is ...

- ... that stakeholders never deliver the requirements on a silver platter ...
- ... which means that we have elicit requirements.

Knowledge is multilayered

Conscious knowledge is everything we are in the know about and which's meaning and importance is clear to us.



Unconscious knowledge is that which we do not realize at the moment, but which will influence our actions and may potentially be brought to our awareness.

Subconscious knowledge encompasses those desires which we are not aware of until an external influence acts on them.

How can we get access to all layers?

Knowledge is multilayered

Enthusiastic features

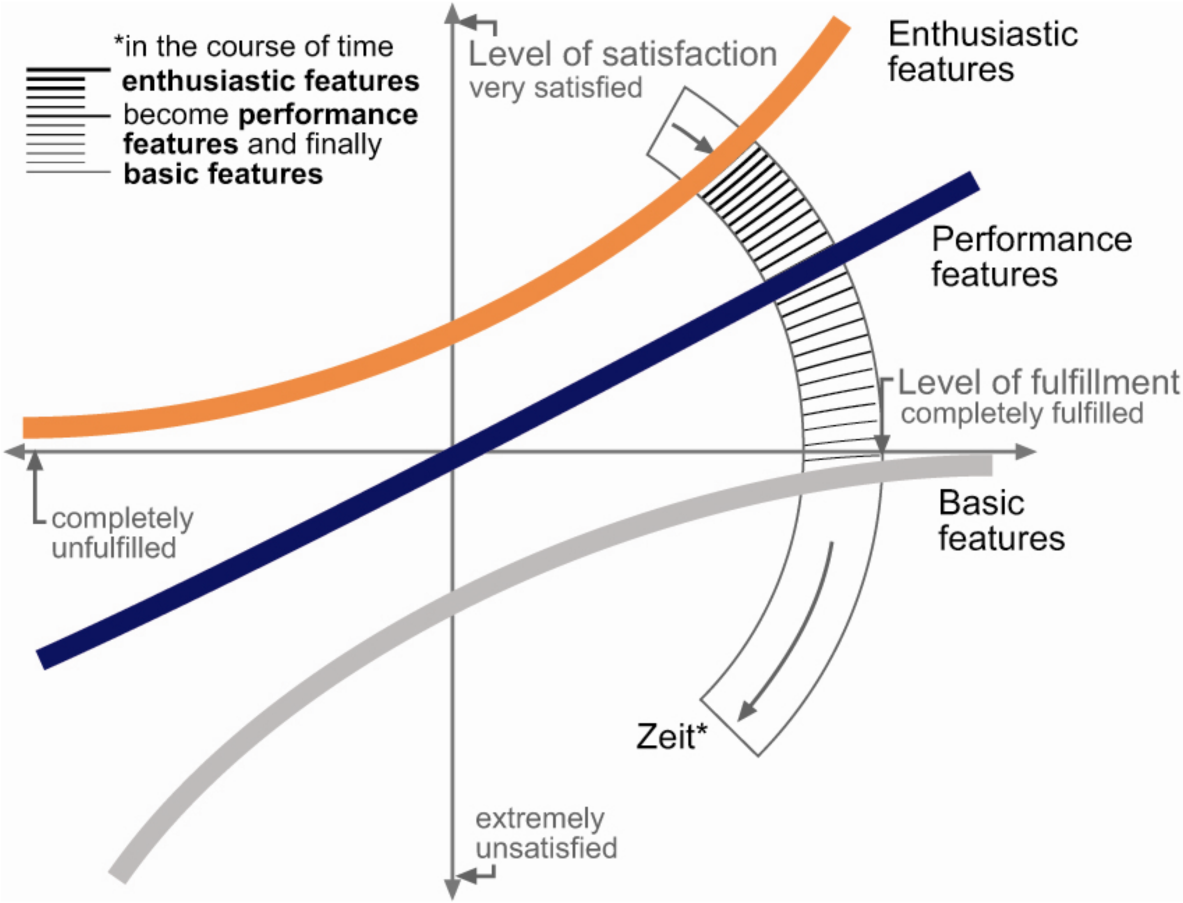
Subconscious desires fulfilled, useful and astonishing surprises. Will increase customer satisfaction overproportionally

Performance features

Deliberately ordered extras will lead to customer satisfaction if fulfilled, dissatisfaction will ensue if unfulfilled

Basic features

Are expected. Absence will lead to massive dissatisfaction



Why document requirements?

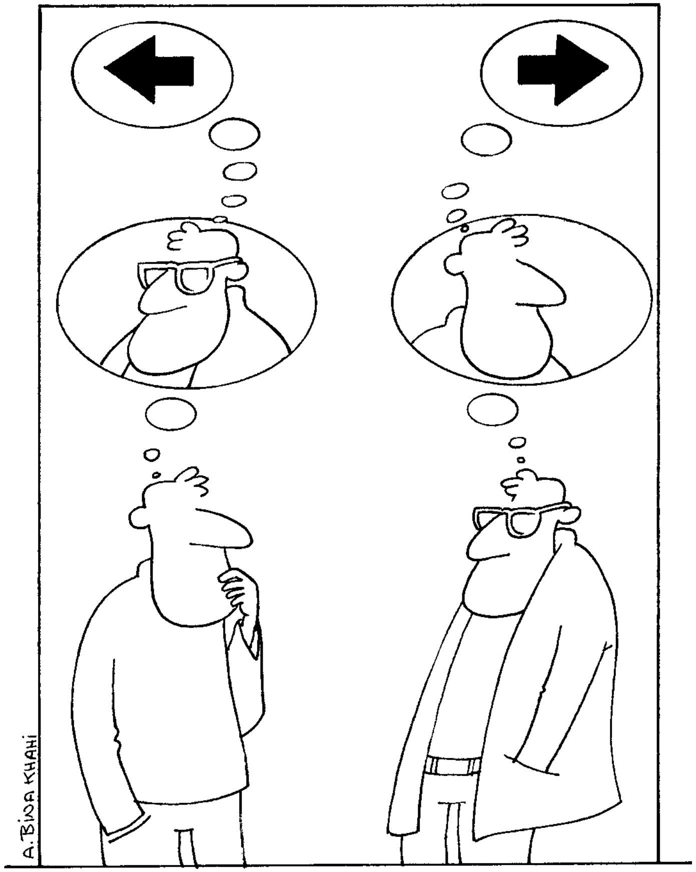
Words Are Meaningless

Telepathy is not an option (regrettably)

Words on their own are meaningless

Perfect communication is unattainable!

Successful communication depends on a common model of reference!

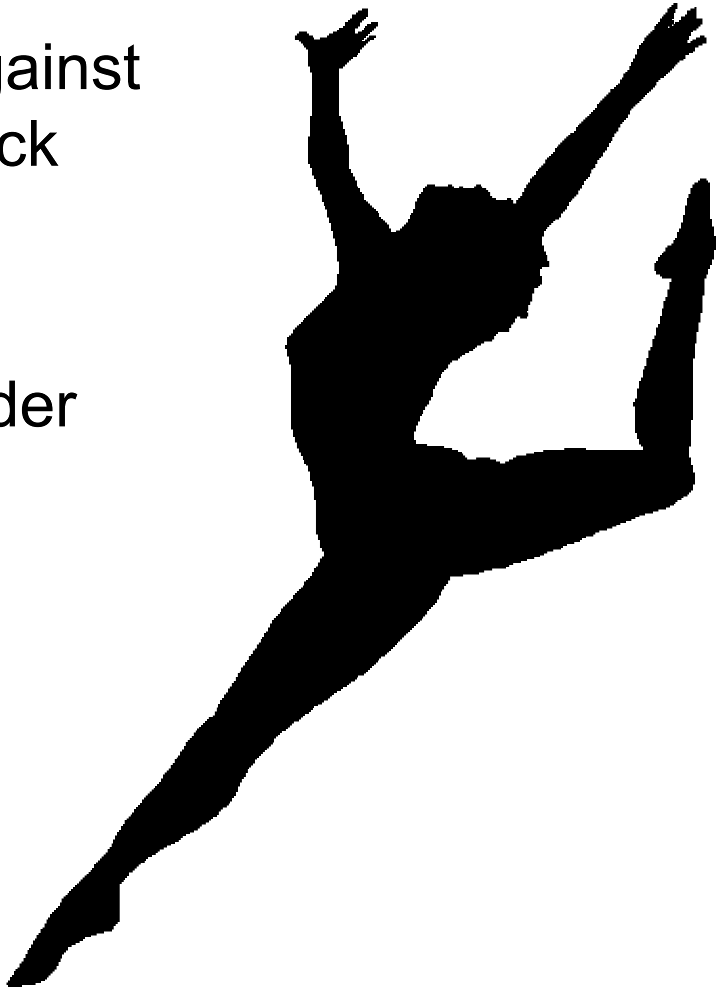


Some gymnastics

- Now it's time to do something against that gradual stiffening of your neck muscles

- Put your head on your left shoulder ...

- and now ... don´t be scared ...



--	unsuited
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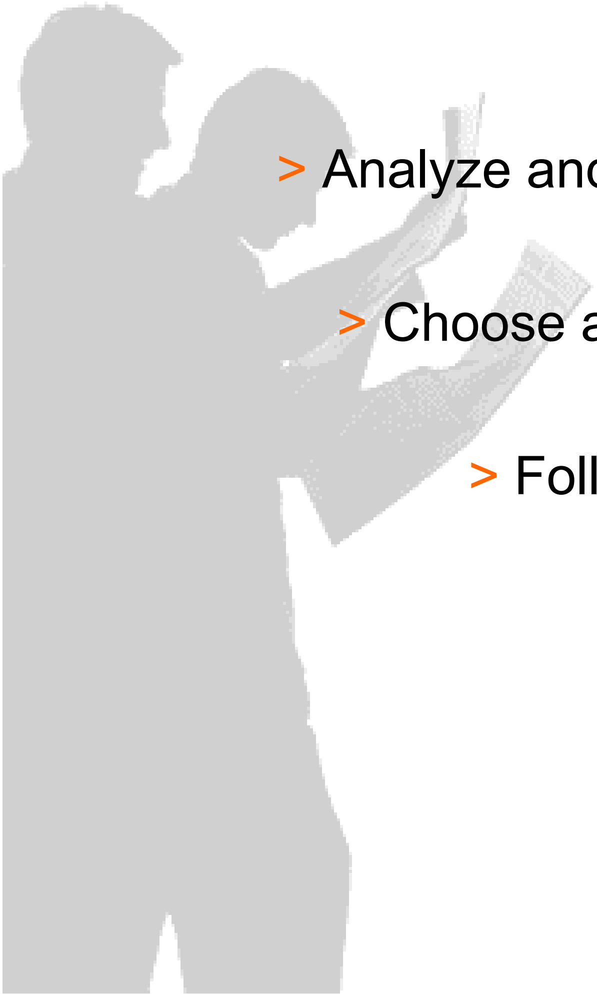
	brainstorming	paradoxical brainstorming	6-3-5 method	six thinking hats	Walt Disney method	bionics / bisociation	field study	apprenticing	questionnaire	Osborn checklist	interview	have the reqs. denoted	on-site customer	system archeology	reuse	NLP	workshop	mind maps	snowcards	CRC cards	audio recording	video recording	use cases	gisting	try to buest-guess reqs.
The human factor																									
not motivated	-	--	--	--	--	--	+	-	+	-	+	--	--	o	o	o	+	-	+	o	o	+	o	o	++
communication skills lacking	-	-	-	-	o	o	-	++	o	-	-	--	-	o	o	++	-	o	-	-	o	o	+	o	+
implicit knowledge	+	++	++	+	+	+	++	++	--	+	o	--	+	o	o	++	o	+	o	o	o	o	o	o	++
little capacity for abstract thought	-	--	-	-	-	--	++	++	+	-	+	-	-	o	o	+	o	-	-	o	o	o	-	--	+
stakeholder opinions diverge	-	+	-	-	-	o	-	-	++	+	o	-	--	o	o	+	+	-	+	+	o	o	+	++	o
group dynamics disturbed	--	--	--	o	--	o	--	++	o	+	o	+	+	o	o	-	--	-	o	-	--	--	o	o	o
Organizational constraints																									
new system	++	+	++	++	++	+	o	o	+	+	+	+	+	--	o	o	+	++	++	++	o	o	o	+	+
adjustment of a legacy system	o	+	o	o	o	o	+	+	+	++	+	+	+	++	o	o	+	o	+	+	o	o	o	o	+
complex market situation	++	+	+	++	++	+	+	+	+	+	-	--	+	--	--	++	-	+	o	+	-	-	+	++	+
single development	o	o	o	o	o	o	+	+	+	+	+	++	++	+	o	o	+	o	o	+	o	o	o	o	+
product development	++	+	++	++	++	+	-	--	+	+	-	-	--	+	o	o	o	++	-	o	-	-	o	o	+
tight budget	o	o	-	o	o	--	-	--	+	-	+	+	-	--	++	+	o	o	o	o	++	-	o	o	++
stakeholders spatially distributed	--	--	--	-	-	-	o	o	+	o	-	++	-	o	o	o	--	-	--	--	o	o	o	o	o
stakeholders rarely available	-	-	-	-	-	-	++	--	+	-	-	--	--	o	++	o	--	-	--	--	++	++	o	o	--
high number of stakeholders	-	-	-	o	o	-	-	--	+	-	--	--	--	o	o	o	--	o	--	--	-	-	+	+	o
Kind of constraint																									
criticality high	o	o	+	+	+	-	+	--	+	+	+	+	++	++	-	++	+	o	+	+	++	+	o	+	-
large system / scope	o	o	o	o	o	o	++	+	--	--	+	+	+	+	++	o	+	o	+	+	o	o	++	++	+
complex processes	+	-	o	+	+	-	--	--	--	+	+	+	+	+	+	o	+	++	o	o	o	o	+	o	o
observability not given	+	o	o	+	o	++	--	+	+	+	+	+	+	+	+	o	+	+	o	o	o	--	o	+	o
non functional requirements	-	-	+	+	o	+	-	+	--	o	-	-	-	+	+	o	-	o	o	+	o	+	o	o	o
unknown domain	o	o	+	o	-	-	+	++	--	o	+	++	+	++	--	o	+	o	o	o	o	o	+	o	--
abstract requirements	+	+	+	+	+	+	--	-	++	++	++	+	+	-	o	+	+	+	++	++	o	o	++	++	-
very detailed requirements	-	-	-	-	-	-	+	++	o	o	++	+	++	++	++	++	o	-	-	-	+	+	-	o	+

Appropriately ascertaining knowledge...



> Analyze and assess risks and chances

> Choose appropriate techniques for elicitation

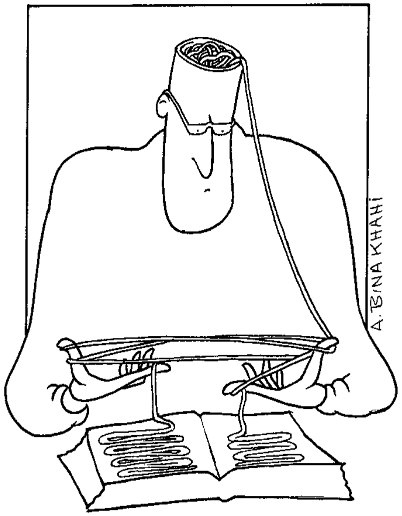
> Follow a human-centered approach

> Be proficient in your elicitation techniques and vary them

Psychotherapy for requirements

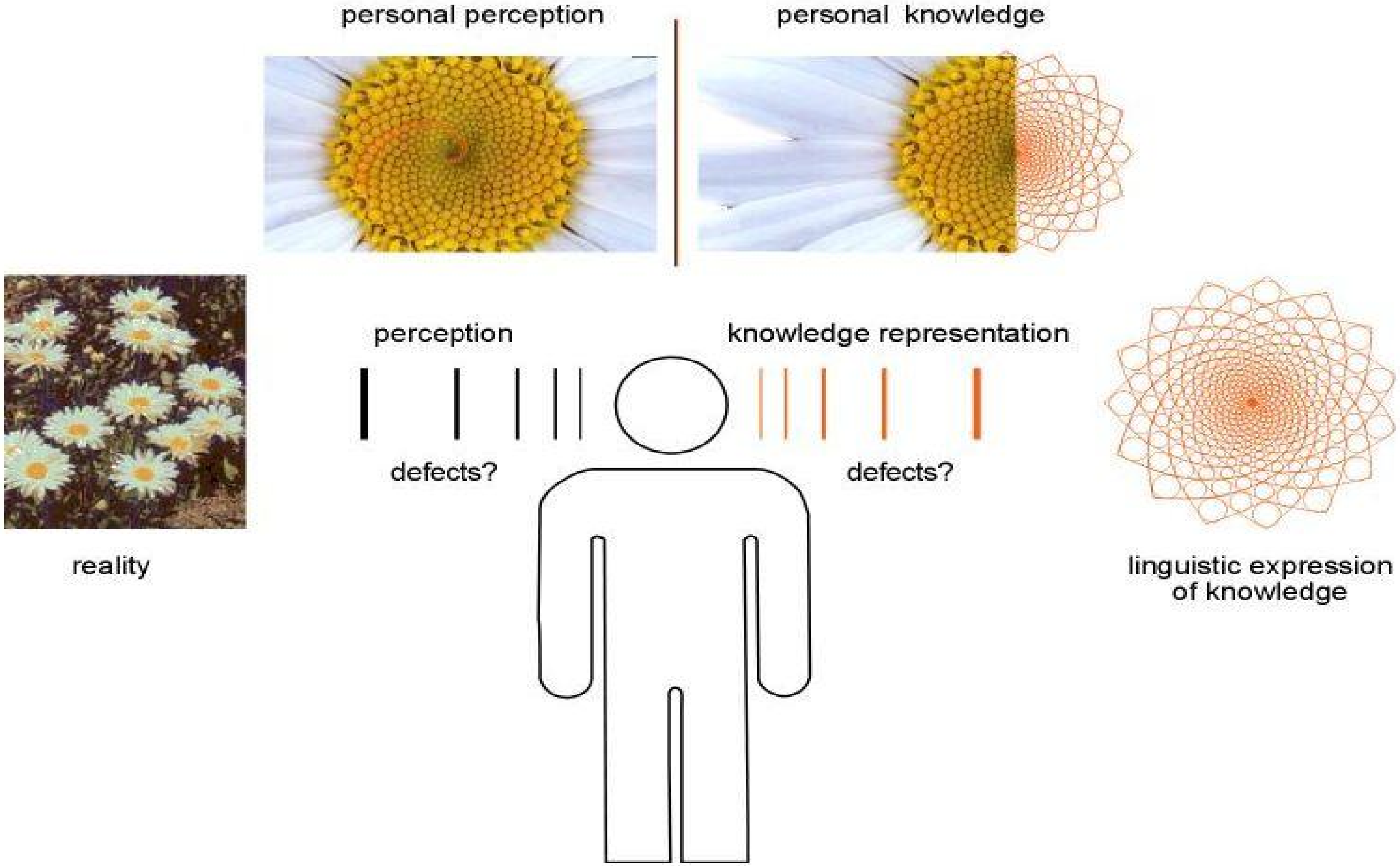
The limits of my language
are the limits of my mind.

Ludwig Wittgenstein



Language and Communication

Natural language as a means of representation



personal perception

personal knowledge

reality

perception

defects?

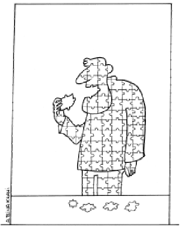
knowledge representation

defects?

linguistic expression of knowledge

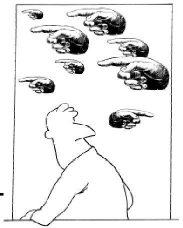
Transformational effects

Linguistic indicators



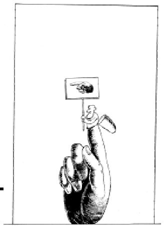
Deletion

- incompletely specified verbs
- incomplete comparisons
- modal operators of possibility
- modal operators of potential
- implicit assumptions



Generalization

- universal quantifiers
- incompletely specified conditions and constraints
- Substantives without points of reference

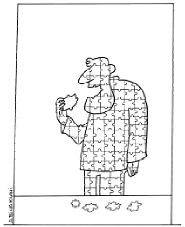


Distortion

- nominalizations
- empty verb constructions

Deletion

Definition

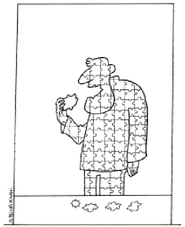


> **Deletion is a process by which we selectively pay attention to certain dimension of our experience and exclude others.** (Bandler/Grinder)

The ability to exclude or to filter out all other sound in a room full of people talking in order to listen to one particular person’s voice.

Deletion

Incompletely specified verbs (II)

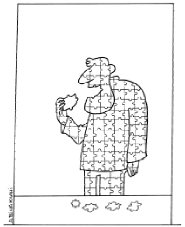


> **“Modifications shall be documented.”**
  - *To document:*
    - Who documents?
    - What is being documented?
    - According to which rules does the denotation take place?
    - When is the documentation being done?
    - How should the documentation be done?

> **Hints:**
  - Use the active tense
  - Ask the “w-questions”

Deletion

Incompletely specified verbs (I)



> **Basic structure**

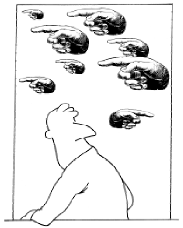
- Some verbs implicate two or more substantive arguments (ling.)

> **Linguistic examples**

- *To test:* Who tests? What is tested? How (during which procedure)? Where? When?
- *To draft:* Who? What? Where? In which way? When?
- *To deliver:* Who? What? To whom? When?

Generalization

Definition



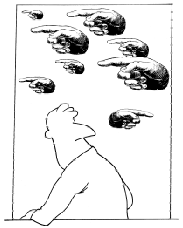
> **Generalization is the process by which elements or pieces of a person's model become detached from their original experience and come to represent the entire category of which the experience is an example.** (Bandler/Grinder)

A child burns its hand on a hot stovetop.

The child should establish the correct generalization:
It hurts to touch hot stoves!

Generalization

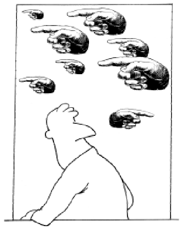
Universal quantifiers (I)



- **Basic structure**
  - A number of objects is grouped
- **Linguistic examples**
  - never, ever, not, each, always, ...
- **Really in all/every instance(s)? Really always/never? Are there no exceptions?**

Generalization

Universal quantifiers (II)



> „Every message shall be labeled with a time-stamp for logging purposes.“

- Really every message?

> „The system shall enable the user initiated back-up of recorded radar data on tape.“

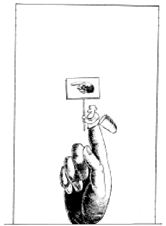
- All users?
- All of the recorded radar data?
- Always?

> **Hints:**

- Challenge every universal quantifier
- Determine and challenge implicit universal quantifiers

Distortion

Definition



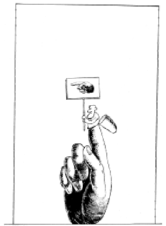
> **Distortion is the process which allows us to make shifts in our experience of sensory data.** (Bandler/Grinder)

Every individual uses his imagination to prepare for experiences which will become real as envisioned or nearly so.

For example: People will distort present reality when rehearsing a speech which they will later present.

Distortion

Nominalization (II)



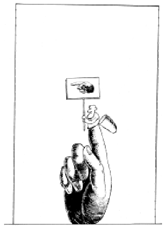
- „The acceptance of the component ...“
  - Who is accepting? When? What? Subject to which rules?

- „The implementation of the module ...“
  - Who is implementing? When is it due? What? In which programming language? Subject to which rules (= Code guideline)

- **Hints:**
  - Trust your intuitions and your feeling of language
  - Determine a similar but more fitting verb
  - Run a test by substituting the term into the phrase “a continuous ...“
  - Real nouns will not fit this phrase

Distortion

Nominalization (I)

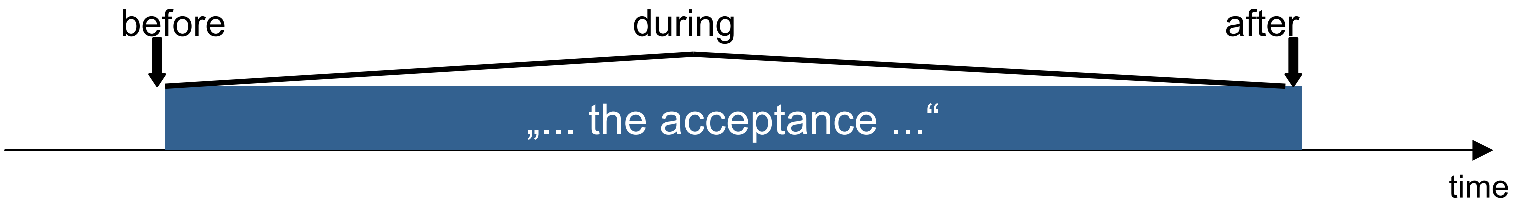


> Basic structure

- A verb or a predicate (ling.) is transformed into a term of incidence (noun)
- Thus what used to be a process becomes an incident and relevant information is lost in the process
- It is possible that due to this the meaning of the proposition will change

> Linguistic examples

- The integration, the examination, the acceptance, the delivery, the indication, the user guidance, the affirmation, ...



before

during

after

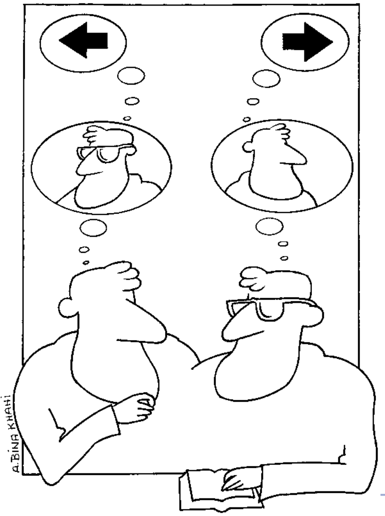
„... the acceptance ...“

time

Experiences made with the SOPHIST-Rulebook

- The rulebook makes it possible to achieve apparently conflicting goals (formality and understandability)
- It is a tool both easy to handle and effective
- The rulebook may be applied to requirements, those parts of OO-diagrams detailed in natural language, documentation, etc …

Get to the point in and with each statement



--	unsuited
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	brainstorming	paradoxical brainstorming	6-3-5 method	six thinking hats	Walt Disney method	bionics / bisociation	field study	apprenticing	questionnaire	Osborn checklist	interview	have the reqs. denoted	on-site customer	system archeology	reuse	NLP	workshop	mind maps	snowcards	CRC cards	audio recording	video recording	use cases	gisting	try to buest-guess reqs.
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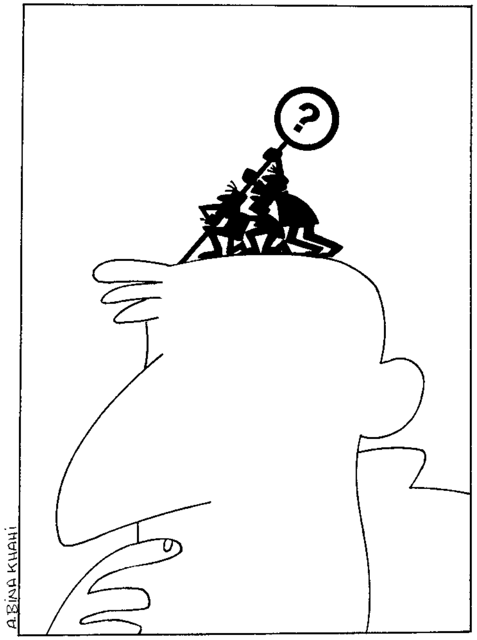
implicit knowledge	+	++	++	+	+	+	++	++	--	+	o	--	+	o	o	++	o	+	o	o	o	o	o	o	++
little capacity for abstract thought	-	--	-	-	-	--	++	++	+	-	+	-	-	o	o	+	o	-	-	o	o	o	-	--	+
stakeholder opinions diverge	-	+	-	-	-	o	-	-	++	+	o	-	--	o	o	+	+	-	+	+	o	o	+	++	o
group dynamics disturbed	--	--	--	o	--	o	--	++	o	+	o	+	+	o	o	-	--	-	o	-	--	--	o	o	o
Organizational constraints																									
new system	++	+	++	++	++	+	o	o	+	+	+	+	+	--	o	o	+	++	++	++	o	o	o	+	+
adjustment of a legacy system	o	+	o	o	o	o	+	+	+	++	+	+	+	++	o	o	+	o	+	+	o	o	o	o	+
complex market situation	++	+	+	++	++	+	+	+	+	+	-	--	+	--	--	++	-	+	o	+	-	-	+	++	+
single development	o	o	o	o	o	o	+	+	+	+	+	++	++	+	o	o	+	o	o	+	o	o	o	o	+
product development	++	+	++	++	++	+	-	--	+	+	-	-	--	+	o	o	o	++	-	o	-	-	o	o	+
tight budget	o	o	-	o	o	--	-	--	+	-	+	+	-	--	++	+	o	o	o	o	++	-	o	o	++
stakeholders spatially distributed	--	--	--	-	-	-	o	o	+	o	-	++	-	o	o	o	--	-	--	--	o	o	o	o	o
stakeholders rarely available	-	-	-	-	-	-	++	--	+	-	-	--	--	o	++	o	--	-	--	--	++	++	o	o	--
high number of stakeholders	-	-	-	o	o	-	-	--	+	-	--	--	--	o	o	o	--	o	--	--	-	-	+	+	o
Kind of constraint																									
criticality high	o	o	+	+	+	-	+	--	+	+	+	+	++	++	-	++	+	o	+	+	++	+	o	+	-
large system / scope	o	o	o	o	o	o	++	+	--	--	+	+	+	+	++	o	+	o	+	+	o	o	++	++	+
complex processes	+	-	o	+	+	-	--	--	--	+	+	+	+	+	+	o	+	++	o	o	o	o	+	o	o
observability not given	+	o	o	+	o	++	--	+	+	+	+	+	+	+	+	o	+	+	o	o	o	--	o	+	o
non functional requirements	-	-	+	+	o	+	-	+	--	o	-	-	-	+	+	o	-	o	o	+	o	+	o	o	o
unknown domain	o	o	+	o	-	-	+	++	--	o	+	++	+	++	--	o	+	o	o	o	o	o	+	o	--
abstract requirements	+	+	+	+	+	+	--	-	++	++	++	+	+	-	o	+	+	+	++	++	o	o	++	++	-
very detailed requirements	-	-	-	-	-	-	+	++	o	o	++	+	++	++	++	++	o	-	-	-	+	+	-	o	+

an experiment …

Multitasking isn't alien to you, is it?

In our day and age puzzles are three-dimensional – so is ours. Therefore you've got to piece surfaces together …



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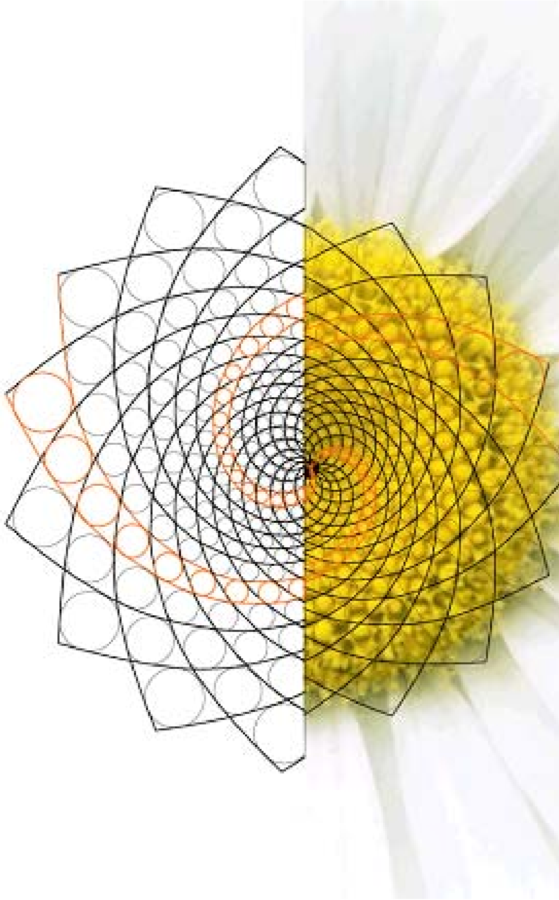
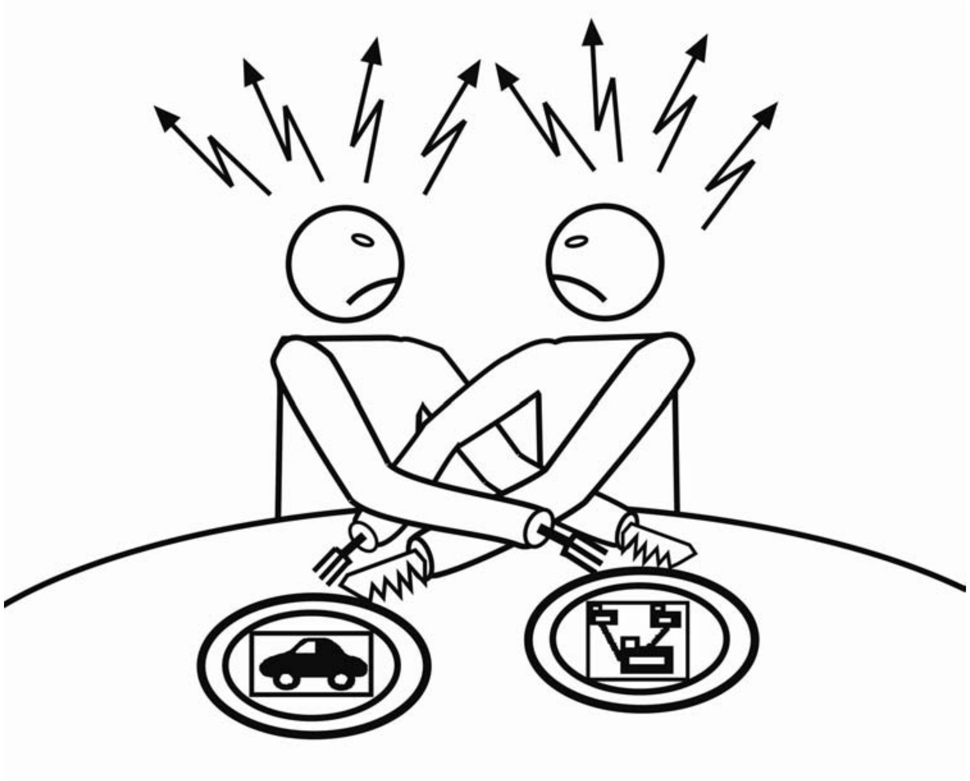
- Who I am
- Remember: Requirements are Necessary
- The Magic of Clairvoyance
- **The Architects' Contribution to a Better Specification**



Double-checking the specification

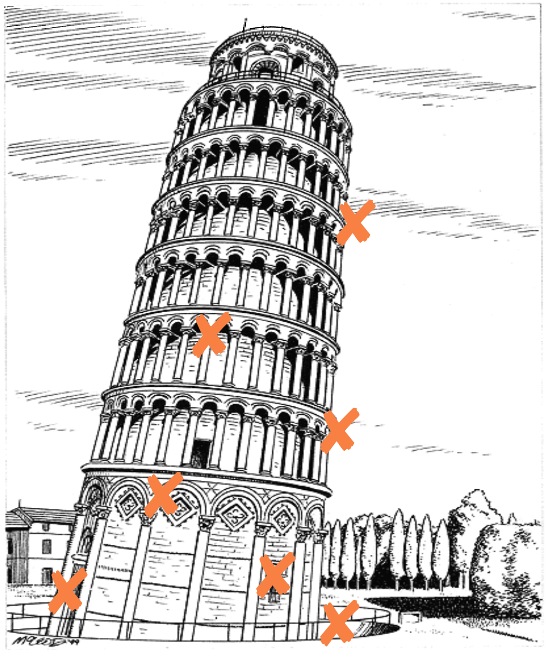
What you, as an architect, SHOULDN'T do

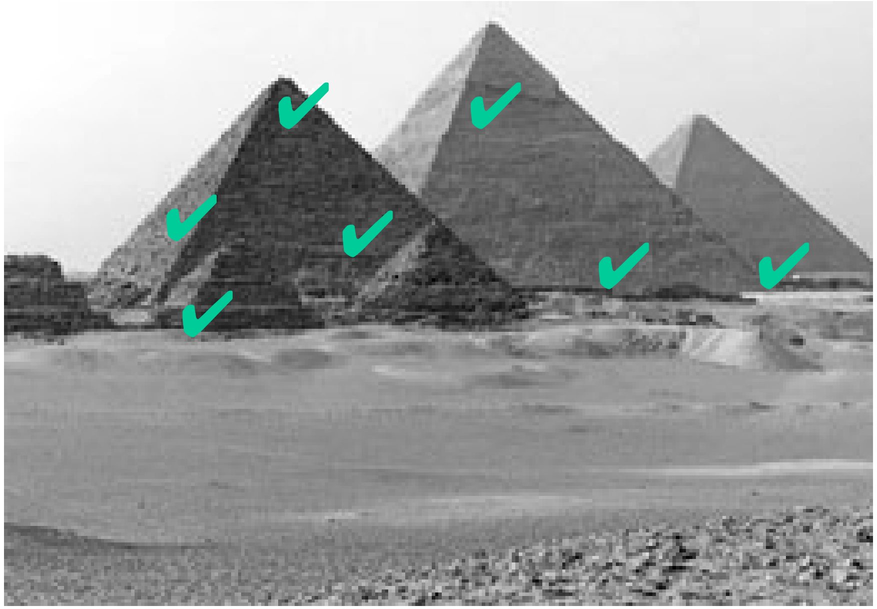


Don’t question the business processes of your client or, even worse, try to improve them.

Double-checking the specification

What you, as an architect, SHOULD do





Check those aspects of the specification about which you can make well-founded and sound statements.

Checking the specification from the architects point of view

> Some aspects which you can assess:
  - Unambiguousness
  - Completeness
  - Feasibility
  - Consistency
  - Testability
  - Appropriateness
  - Neutrality of the solutions put forward

Checking the specification from the architects point of view

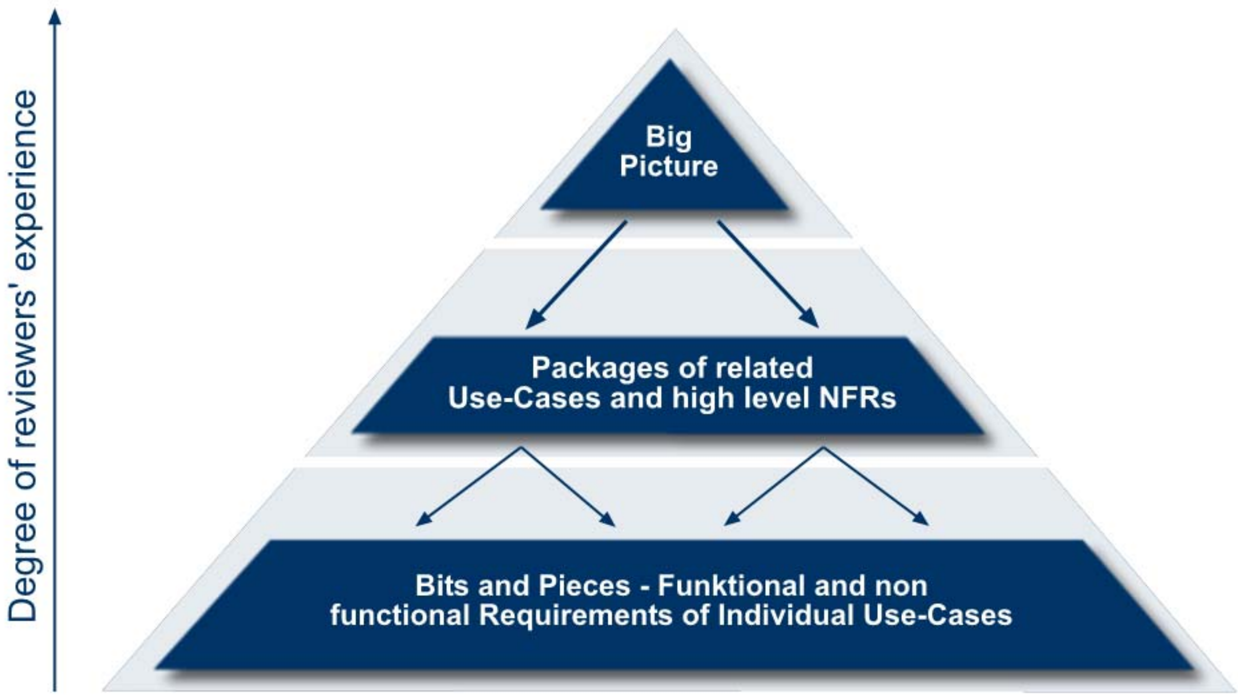
- **Approach:**
  Formally review the specification as a group (if possible, include a representative of the analysts)

- **Goal:**
  Don’t try to correct defects right away – just mark them up!

- **Subsequently:**
  Carry the defects you found back to the analysts and evaluate them together.

Handling bulky specifications
Divide and Conquer

What if the specification is huge and the time to check it is really short?


Degree of reviewers' experience
Big Picture
Packages of related Use-Cases and high level NFRs
Bits and Pieces - Funktional and non functional Requirements of Individual Use-Cases

Split it up and review the document in teams. The more experienced ones should go for the big picture and the others assess the details

Architects are not analysts ...

... but architects can help improve the level of quality of a specification

- Don’t keep those conclusions made during the review to yourself!
- Carry the defects back to the analysts!
- Point out alternatives and their consequences!
- Decide – jointly with the analysts – when to remedy which defects!

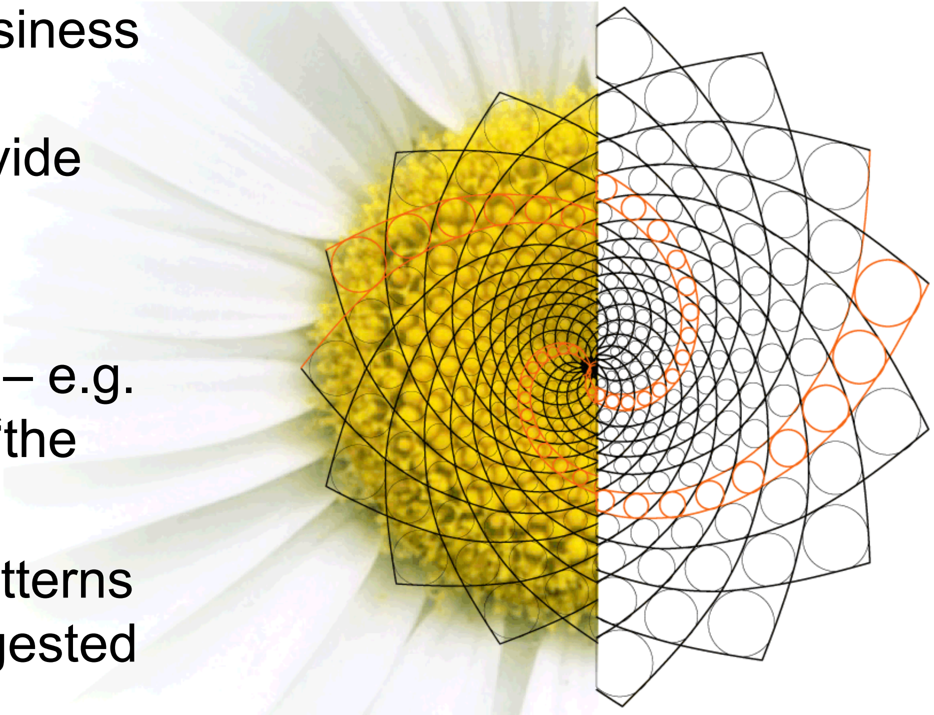
Are we done yet?

Not quite...

... your expertise is in further demand: during change management!
Do as you did with the requirements – double check those changes

Care for more?

Contact us by leaving your business card with me, or mail us at info@sophist.de and we’ll provide you with:



- two excerpts from my books – e.g. “the SOPHIST-rulebook” and “the requirements template”
- a listing of the destructive patterns we’ve identified including suggested resolutions
- a pdf version of the presentation
- access to our download area

We know about perfect requirements!

Visit us at www.SOPHIST.de

Any Questions?

I'll be more than glad to try and answer your questions!