

*How testers kan improve the quality of requirements  
door Jan Jaap Cannegieter & Johan Zandhuis*

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**11 maart 2010**

voordracht georganiseerd door het



**TECHNOLOGISCH INSTITUUT**  
*Discussiegroep Software Testing*

met de steun van



systematically delivering success



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Ingenieurshuis - K VIV, Antwerpen



**How testers can improve the quality of requirements**

TI-KVIV Software Testing Discussiongroup  
March 11th, 2010

**sysQa**

The slide features a yellow background with a central gear-like graphic and binary code (0s and 1s) scattered throughout. The sysQa logo is in the bottom left corner.



**Services of SYSQA**

- Quality Assurance in projects
  - Requirements
  - Reviews and inspections
  - Structured testing
- Quality Assurance in organisations
  - Quick scans and audits
  - Process improvement
  - Training and coaching
- Quality Assurance in outsourcing
  - Outsourcing of testing
  - Outsourcing of Quality Control
  - Governance of outsourcing

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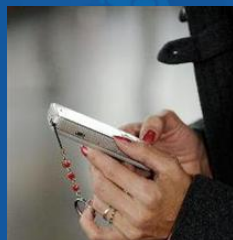
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The slide has a blue background with a central gear-like graphic. The sysQa logo is in the bottom left, and the tagline and page number are in the bottom right.

## Goals of this presentation

- Understanding what requirements are
- Understanding how requirements are developed
- Understanding the possibilities testers have to influence the quality of requirements
- A possible new role for testers?

## Bad requirements are everywhere



And then the requirements are good...

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What is a requirement?

Not a solution!

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## What is a requirement

- A stakeholder's need
- A stakeholder's goal
- A condition of a product
- A property of a product
- A constraint on the product

*A stakeholder's need or goal or a demand, wish or limitation the system needs to meet in order to fulfill that need or demand*

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## Problem in requirements development: language

A dog

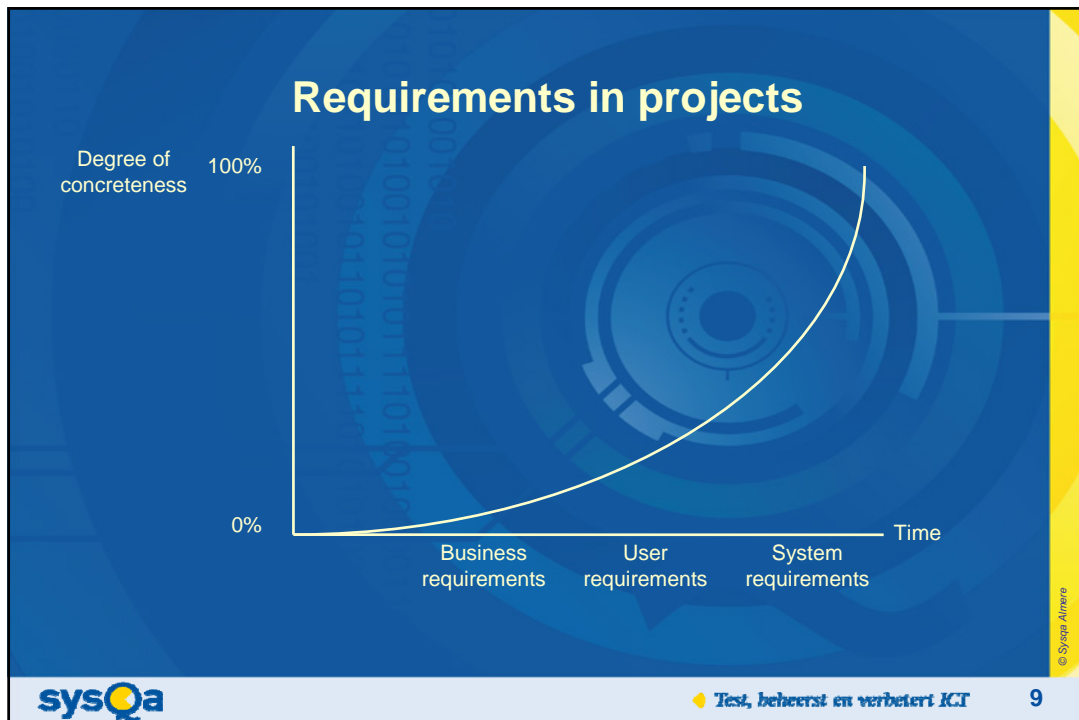


An Italian car



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## Example: business requirement

**Business goal:** The brick-and-mortar bookstore wants to lose fewer sales to online bookstores

**Business requirement:** A visitor to a brick-and-mortar bookstore must be able to order a book that's out of stock immediately in the store, after which it will be delivered to the customer's home.

**Rationale:** If this is not possible that same customer will order that book online that evening.

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## Example: use case

1. The bookseller notices that a particular book which a customer in the store wants to buy is out of stock and offers to have it delivered to the customer's home.
2. The customer agrees to this and pays for the book.
3. The bookseller enters the ISBN number of the book and the customer's details in the system.
4. The book distributor ships the book directly to the customer on behalf of the bookseller.

## Example: system requirements

The bookseller enters the customer's name and address when ordering a book in the 'Home delivery service'.

Rationale: These are the minimum required data in order to be able to successfully complete the delivery.

The system prints the name and address of the bookseller where the book was ordered on the packing list.

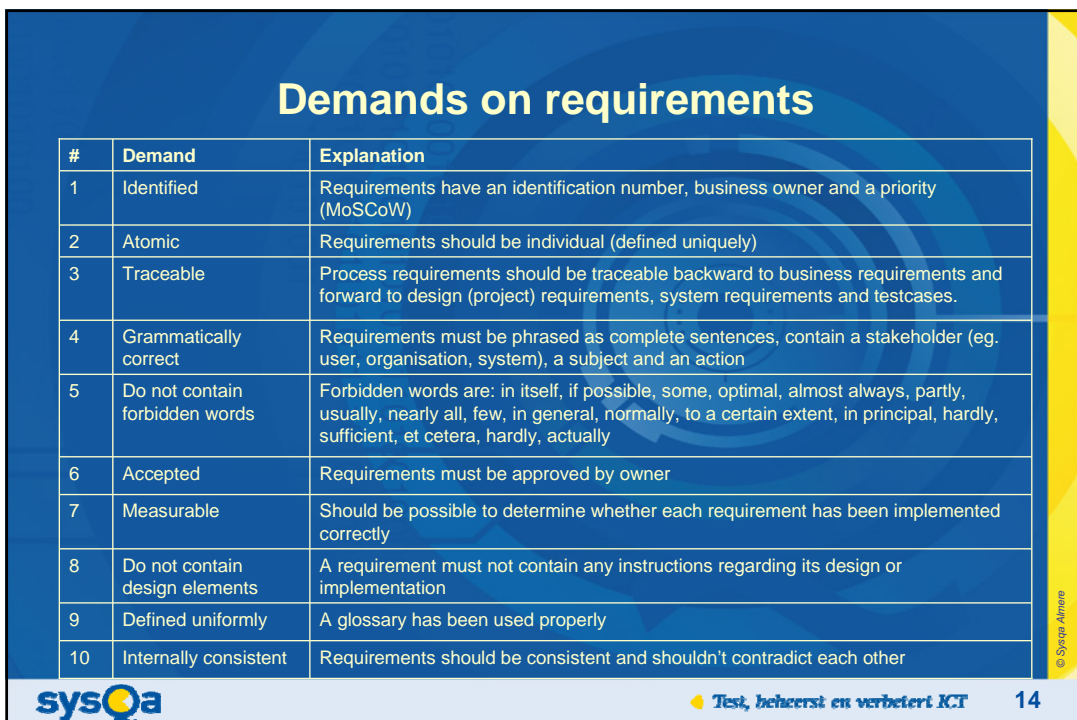
Rationale: If something goes wrong with the order the customer knows where to indicate this.



What are demands on good requirements?

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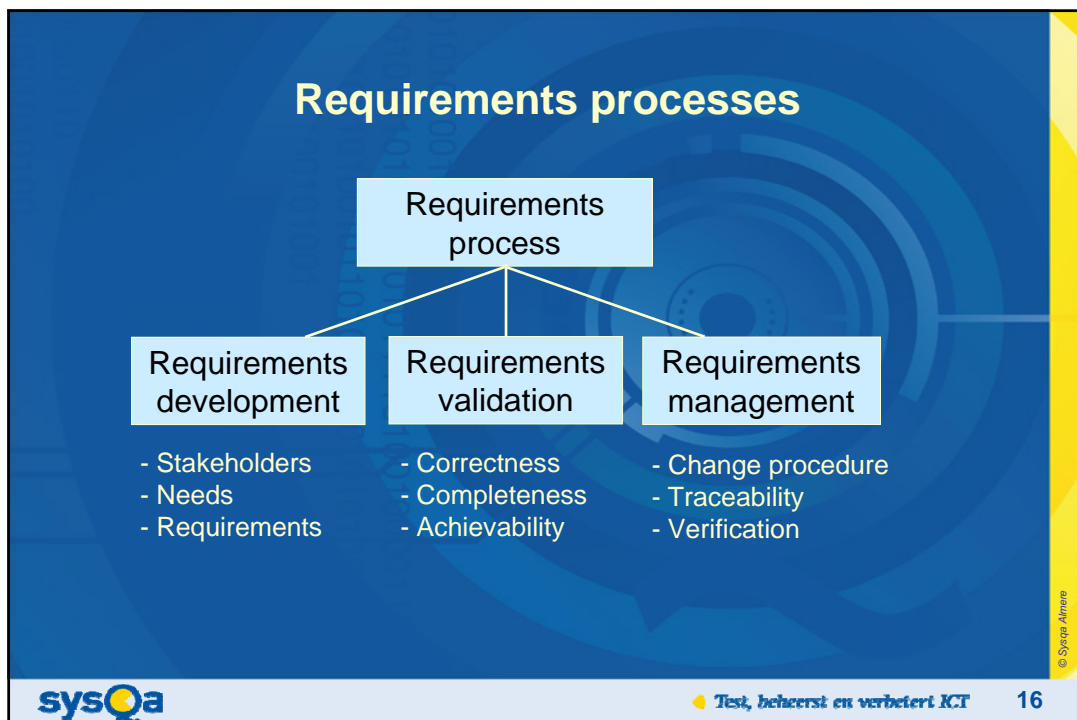


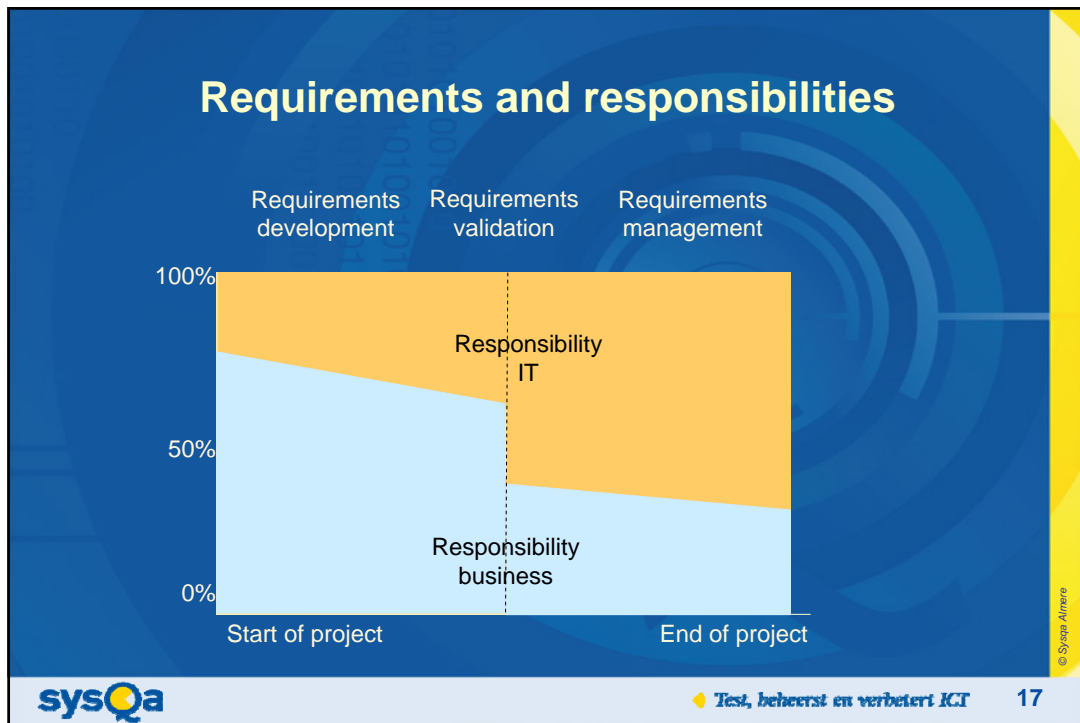
### Demands on requirements

#	Demand	Explanation
1	Identified	Requirements have an identification number, business owner and a priority (MoSCoW)
2	Atomic	Requirements should be individual (defined uniquely)
3	Traceable	Process requirements should be traceable backward to business requirements and forward to design (project) requirements, system requirements and testcases.
4	Grammatically correct	Requirements must be phrased as complete sentences, contain a stakeholder (eg. user, organisation, system), a subject and an action
5	Do not contain forbidden words	Forbidden words are: in itself, if possible, some, optimal, almost always, partly, usually, nearly all, few, in general, normally, to a certain extent, in principal, hardly, sufficient, et cetera, hardly, actually
6	Accepted	Requirements must be approved by owner
7	Measurable	Should be possible to determine whether each requirement has been implemented correctly
8	Do not contain design elements	A requirement must not contain any instructions regarding its design or implementation
9	Defined uniformly	A glossary has been used properly
10	Internally consistent	Requirements should be consistent and shouldn't contradict each other

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**That's great, all that theory. But what can I do as a tester to ensure the quality of the requirements?**

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### As a tester where can I do anything in the process?

```
graph TD; RP[Requirements process] --> RD[Requirements development]; RP --> RV[Requirements validation]; RP --> RM[Requirements management]; RD --- RD_L["- Stakeholders<br>- Needs<br>- Demands"]; RV --- RV_L["- Correctness<br>- Completeness<br>- Achievability"]; RM --- RM_L["- Change procedure<br>- Traceability<br>- Verification"]
```

**Requirements process**

- Requirements development**
  - Stakeholders
  - Needs
  - Demands
- Requirements validation**
  - Correctness
  - Completeness
  - Achievability
- Requirements management**
  - Change procedure
  - Traceability
  - Verification

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### As a tester where can I do anything in the process?

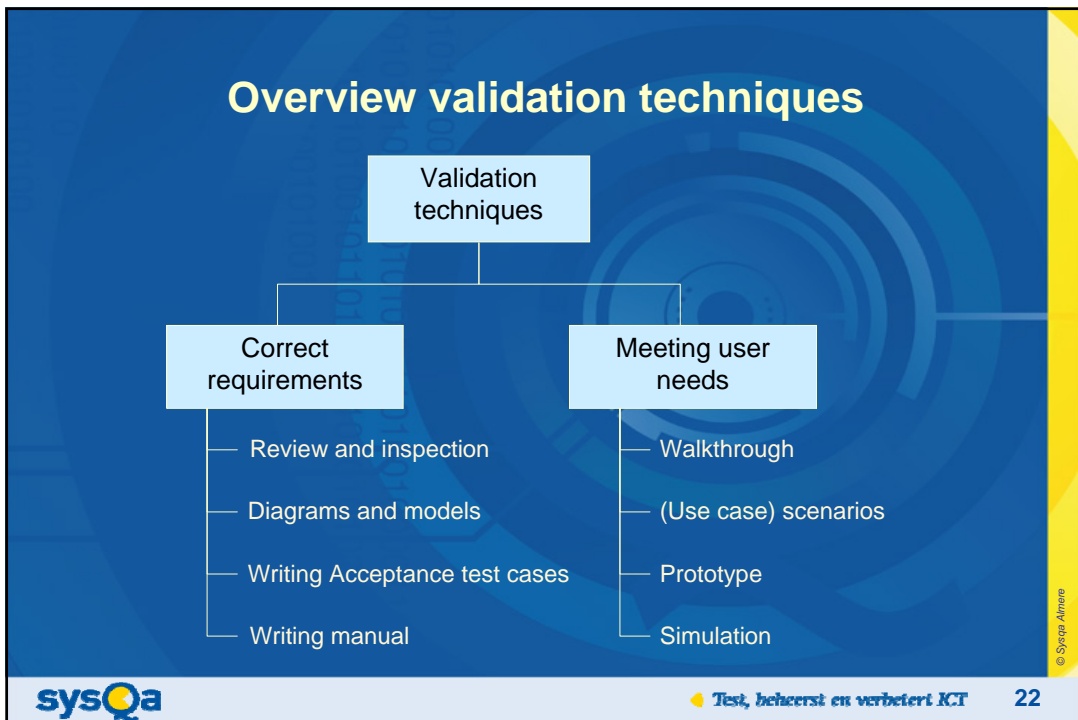
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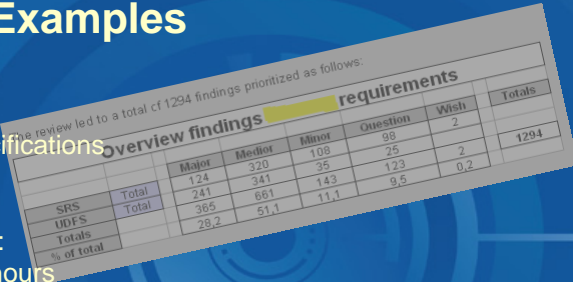
## Examples

**Anonymous corporation**

- 800 pages requirements specifications
- 1294 defects
- 365 major defects
- Estimated savings on rework: 11.700 hours


**Project for governmental organisation**

- 20 requirements documents including 16 use cases
- 142 defects
- 83 majors
- Estimated savings on rework : 2.600 hours




The review led to a total of 1294 findings prioritized as follows:

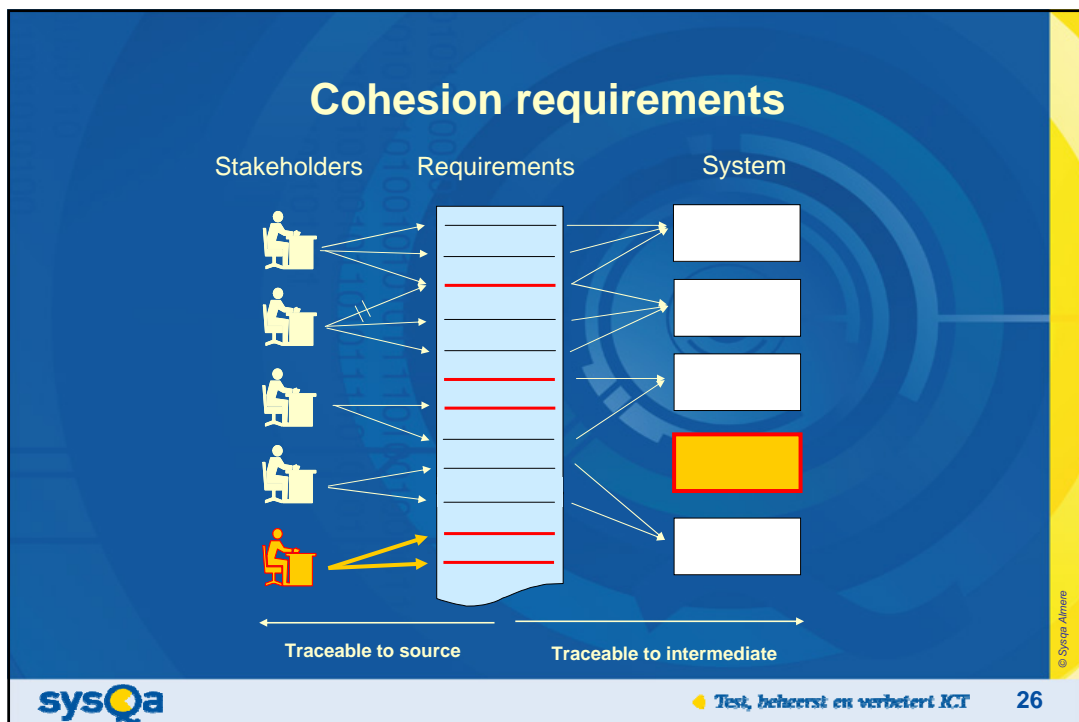
		requirements				Totals
		Major	Medior	Minor	Question	Wish
SRS	Total	124	320	108	98	
UDFS	Total	241	341	35	25	2
Totals		365	661	143	123	2
% of total		28,2	51,1	11,1	9,5	0,2

Total Defects	142
Major defects	83
Medium defects	55
Minor defects	4
Suggestion	7
Discussion Point	21
Question	48

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## Techniques for verification

- Management review
- Technical review
- Inspection
- Walkthrough
- Audit

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**CORVETTE** Zoom Out **CORDARES**  
Corvette: Cordares IT Verkeersbureau cordares

### Reviews in projecten, wat levert het op?

- De afgelopen 5 maanden zijn er 340 reviews uitgevoerd bij de realisatie van onze tussenproducten. Uit de rapportages en het Review Coördinatoren Overleg (RCO) blijkt dat we reviews inmiddels bij veel projecten toepassen als standaard onderdeel van het ontwikkelproces;
- Bij onze IT professionals is het reviewproces goed bekend en is de wil om het toe te passen zeer groot;
- Reviews lonen, ook in cijfers: reviews over de afgelopen vijf maanden leveren een Return On Investment (ROI) van 7, dus 1 uur reviews = 7 uur besparing!
- Totale opbrengst van het reviewproces op jaarbasis komt daarmee op:

## € 760.000,=

**Wat merk jij ervan:**

- Kennis delen door met elkaar bevindingen te bespreken;
- Een pro-actieve opstelling van maatregelen om de kwaliteit van onze processen en producten *continu* te blijven verbeteren;
- Samen werken aan een beter eindproduct en een grotere klanttevredenheid.

**Wat zijn de vervolgtacties:**

- Verbreding en verdieping in de toepasbaarheid;
- Nader inzoomen op de effectiviteit;
- Scope meer richten op projecten i.p.v. op Competence Centers.

**Verdere informatie:**  
Zie de Startpagina Process Reviews  
(<http://appapplicaties.startpagina/pagina.asp?ID=122>) of kom eens langs bij Wim de Groot en Olaf Aosterbosch(472A)

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**So: read books... (or take a course)**



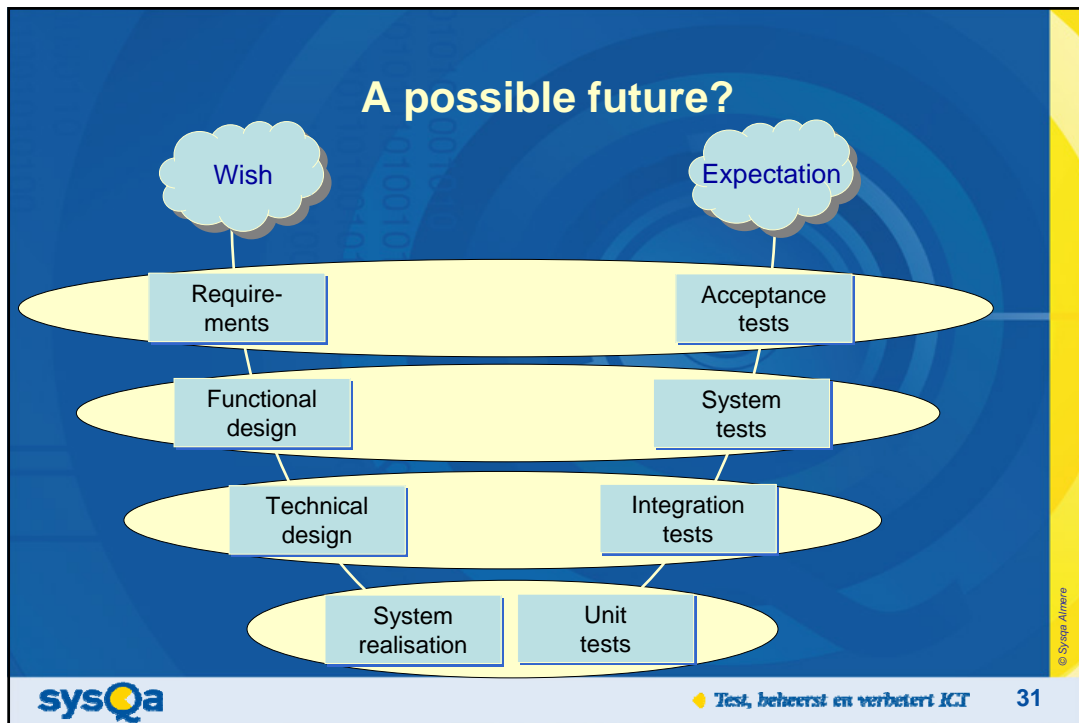
**Succes met de requirements!**  
Ontwikkeling, validatie en beheer van requirements voor informatiesystemen  
Met voorwoord van Tom Gilb

**Reviews in de praktijk**  
Testen aan de voorkant  
Met voorwoord van Tom Gilb

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**A possible different role for testers?**

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- ## How do you convince your projectmanager?
- Increase quality ✗
  - Save time ✓
  - Certainty ✗
  - Continuity ✗
  - Save money ✓
  - Ease / comfort ✗
  - Safety ✗
  - Status ✓
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# The cost of poor quality

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## Example avoidable costs of failure


Phase	# defects	Factor	Pot. Saving
Requirements	6	32	192 hours
Functional design	5	16	80 hours
Technical design	-	8	
Development	7	4	28
Development test	-	2	
Total	18		300

At € 80,= /hr, the avoidable costs of failure amount to € 24.000,-  
N.B. In reality we find 50% of the defects during reviews and inspections, so in reality we save € 12.000,-.

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### What the real life experts think



A cartoon set in an 'Informatie' (Information) service window. A woman behind the counter looks at a computer. Two men are standing outside. The man on the left, wearing a blue cap and a brown jacket, says 'WEET IK VEEL.' (I know a lot). The man on the right, wearing a red cap and a grey jacket, says 'GEWOON, INFORMATIE.' (Just, information.). The cartoon is signed 'RGvT' in the bottom right corner.

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# Questions

The sheets can be found at [www.sysqa.nl](http://www.sysqa.nl), under "publicaties"

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**Technologisch Instituut VZW**

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