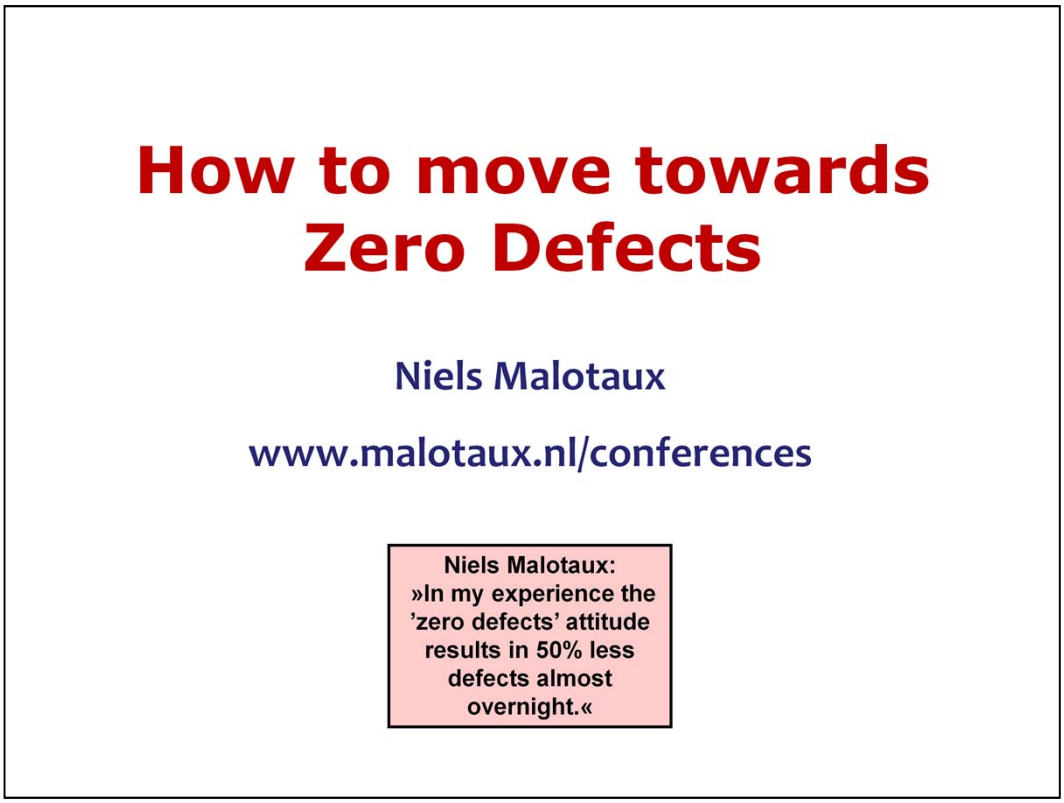


A colleague found this remark in one of my tutorials: "In my experience the 'zero defects' attitude results in 50% less defects almost overnight" and asked me to explain this to a project team he was coaching. I thought that my experience with Zero Defects might be interesting for more people than just this project team.

Niels Malotaux

- Independent Project and Organizational Coach
- Expert in helping optimizing performance

- Helping projects and organizations very quickly to become
  - More effective – doing the right things better
  - More efficient – doing the right things better in less time
  - Predictable – delivering as predicted
- Getting projects on track

Result Management

Niels Malotaux

Graduated **Electronics** at Delft University of Technology in **1974**

Army service at the Dutch Laboratory for Electronic Developments for the Armed Forces, designing computer systems

Philips Electronics – Application support for microcomputer systems design (1976-1980)

Malotaux - Electronic Systems Design - : developing electronic systems for clients products (1980-1998)

Now: **N R Malotaux - Consultancy:** coaching projects to deliver successfully and much faster (1998-)

Do we deliver Zero Defect products ?

- How many defects are acceptable ?
- Do the requirements specify a certain number of defects ?
- Do you check that the required number has been produced ?

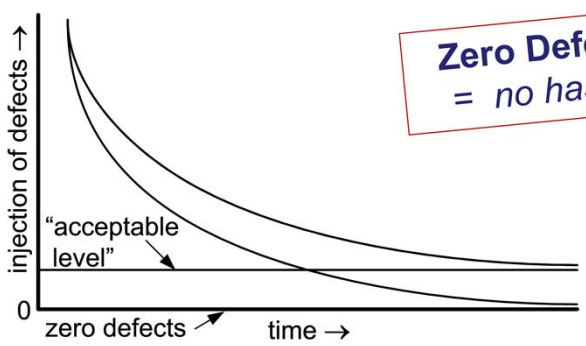
In your projects

- How much time is spent putting defects in ?
- How much time is spent trying to find and fix them ?
- Do you sometimes get repeated issues ?
- How much time is spent on defect prevention ?

As many people think that even talking about ZD is useless, I'd like first to discuss some questions with the audience.

What is Zero Defects

- Zero Defects is an *asymptote*



Zero Defects
= *no hassle*

- When Philip Crosby started with Zero Defects in 1961, errors dropped by 40% almost immediately
- AQL > Zero means that the organization has settled on a level of incompetence
- Causing a hassle other people have to live with

When I actively started using the Zero Defects (ZD) concept in software projects, defects made decreased by at least 50% almost immediately. It took about 2 weeks before the developers understood that I was dead serious about it. Then the testers came to me saying: “Niels, something weird is going on: we don’t find issues anymore! It simply works!” I said: “Isn't that exactly what we want to see? Now testing is becoming a real challenge, namely proving that there are no errors.”

So, even if you don’t believe that this can be true, if two people (Crosby and me) did it and showed a huge decrease of errors *made*, only by adopting the attitude, isn’t it at least worth a try, especially if you realize that about half of most projects is spent on finding and fixing defects. That’s a huge budget. Any savings on that is probably well worth trying.
"No Hassle" proved to be easier to use than ZD: Don't cause a hassle. No hassle to yourself, to your peers, to your organization, to your customers.

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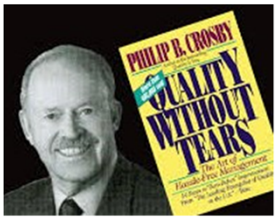
Crosby (1926-2001) - Absolutes of Quality



- Conformance to requirements
- Obtained through prevention
- Performance standard is zero defects
- Measured by the price of non-conformance

Philip Crosby, 1970

- The purpose is customer success
  (not customer satisfaction)

Added by Philip Crosby Associates, 2004

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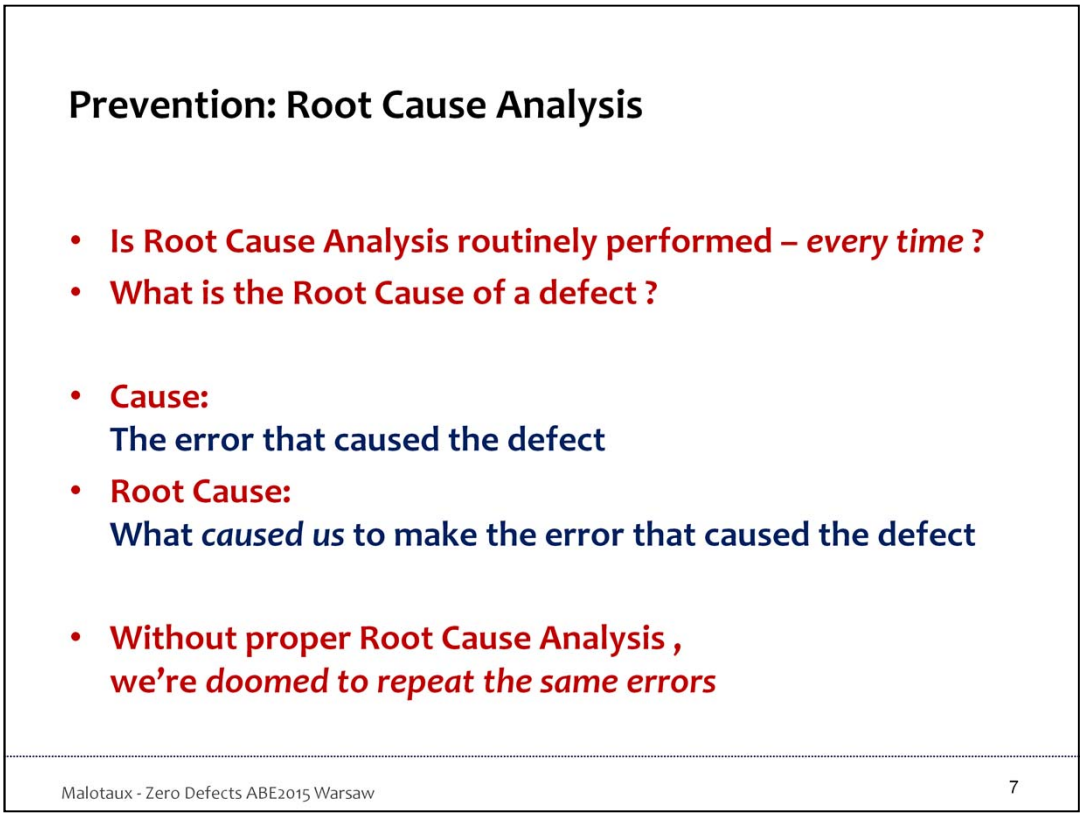
Philip Crosby defined the four 'Absolutes of Quality'. When I started as a coach in a company recently, I gave his book "Quality without tears" to the CEO for homework: "Next week I'll check that you read it!". He did and it immediately had an impact on his behaviour. He delayed a major release to first get rid of the hassles that we were going to deliver to the costumers. He also calculated the 'Price of Non-Conformance' (PONC), to be at least a quarter of a million Euro in the past year.
Phil Crosby's organization later added a 5th Absolute: Customer Success. I agree completely. But I don't agree with them adding "… not customer satisfaction". After all, the customer should be successful, but satisfied as well, as we'll see on the next slide.

This is to me the top-level requirement for any project or any work we do.

- The customer is the entity that orders and pays. The customer, however, in many cases doesn't use the result of our project himself. He gets the benefit through the users of the result.
- What the customer says he wants is usually not what he really needs
- The time he needs it may be earlier or later than he says
- If the customer isn't satisfied, he doesn't want to pay
- If the customer isn't successful with what we deliver, he cannot pay
- If he's not more successful, why would he pay?
- What the customer wants, he cannot afford. If we try to satisfy all customer's wishes, we'll probably fail from the beginning. We can do great things, given unlimited time and money. But neither the customer nor we have unlimited time and money. Therefore: The requirements are what the Stakeholders require, but for a project: the requirements are what the project is planning to satisfy.
- The customer is king, but we aren't slaves. Both sides should benefit and be happy with the result.
- We will get the best result in the shortest possible time, but not shorter than possible. The impossible takes too much time.



Years ago I suggested to add a box for the 'Root Cause' and for the 'Root Cause Suggested Solution' in a bug-tracking system. When I later checked how people were using this, I found that in the Root Cause box they documented the cause of the bug and in the Root Cause Suggested Solution box the suggestion how to repair the bug.

Apparently, they didn't see the difference between 'Cause' and 'Root Cause':
•The Cause of a defect is the error that caused the defect
•The Root Cause is what caused ***us*** to make the error that caused the defect

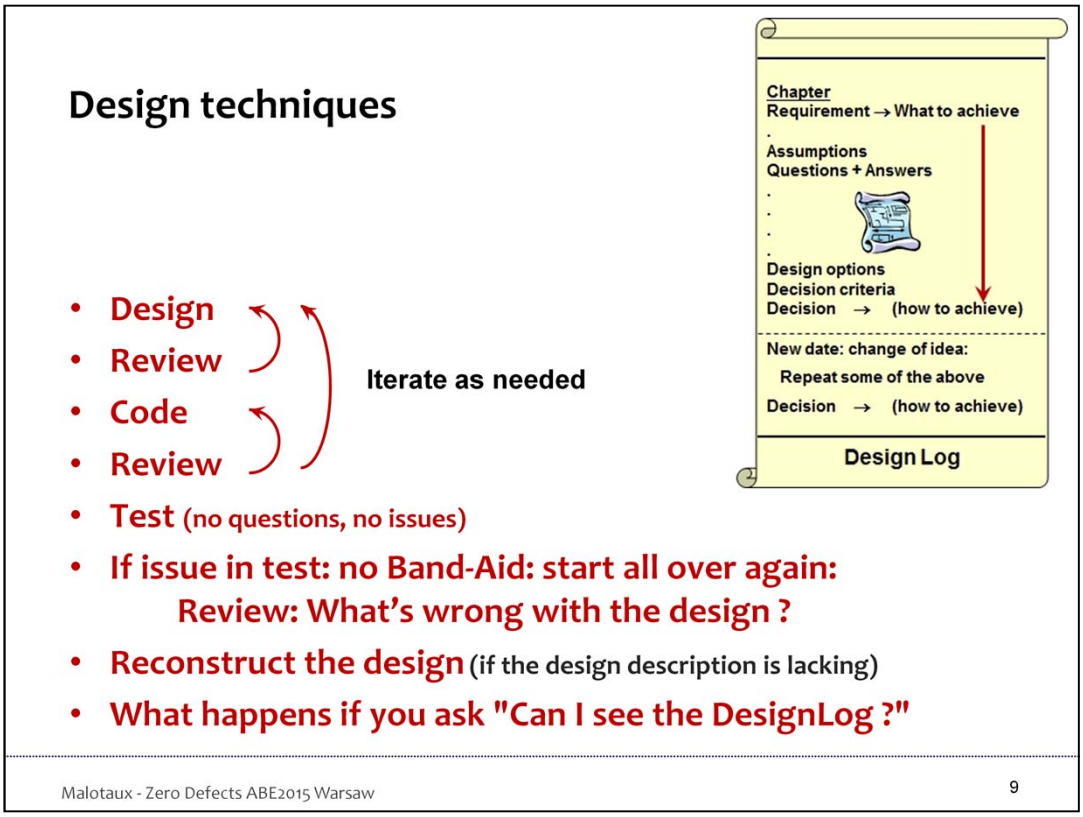
In another project I asked the project manager what they do with the results of the code reviews. "People repair the bugs" he said. I asked: "Don't you do Root Cause Analysis, in order to learn how to prevent this type of error from now on?" The response was: "On every issue we found??? We have no time for that!"

Apparently they have no time to learn to prevent, and rather spend a lot of time to find and fix(?). No wonder that projects take more time than they hoped for.

Some Examples

We're not perfect,
but the customer shouldn't find out

Let's discuss some examples of techniques that helped me and others to move towards Zero Defect deliveries.



There are many techniques known to approach ZD faster. One of them is what I call the DesignLog.

When I started my career at Philips Electronics in 1976 (at the same time Philips started to sell its first microprocessor), we got a notebook to note our thoughts, experiments and findings chronologically. It was difficult, however, to retrieve an idea I had several weeks before, because it was buried in many pages of hardly readable handwriting.

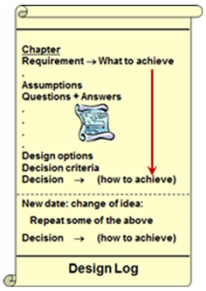
Nowadays we can use a word processor, add pictures, organize by subject rather than chronologically, and search through the text. We log our thoughts in chapters, which start with what we have to achieve (requirement), end with how we think we will achieve it (implementation specification), with in between the reasoning, assumptions, questions and answers, possible solutions, decision criteria and the selected solution (design).

If I see design documentation, this often only shows what people decided to do, rather than also recording why and how they arrived at this decision.

The DesignLog should be reviewed to find possible issues before we start the implementation. Because the choices and design are well documented, in the maintenance phase (often a the largest portion of the cost of deployment of software!) minimum time is lost. One of the requirements for the DesignLog is: "If someone has to change something in the software one year later, he should be up and running within one or at most two days."

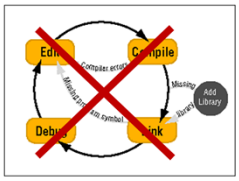
When QA asks development to review the DesignLog, if there is one they can review and also use this information to define and optimize their test-cases. If there is none, this is a good time to introduce the concept. See next slide.

In the pub



James:

Niels, this is Louise
Louise, this is Niels, who taught me about DesignLogging
Tell what happened



Louise:

- *We had only 7 days to finish some software*
- *We were working hard, coding, testing, coding, testing*
- *James said we should stop coding and go back to the design*
- *"We don't have time !" - "We've only 7 days !"*
- *James insisted*
- *We designed, found the problem, corrected it, cleaned up the mess*
- *Done in less than 7 days*
- *Thank you!*

This happened just a few months ago. It's always nice to experience that the techniques that worked for me and for many others in the past, still work today. Many old techniques never get out of date.

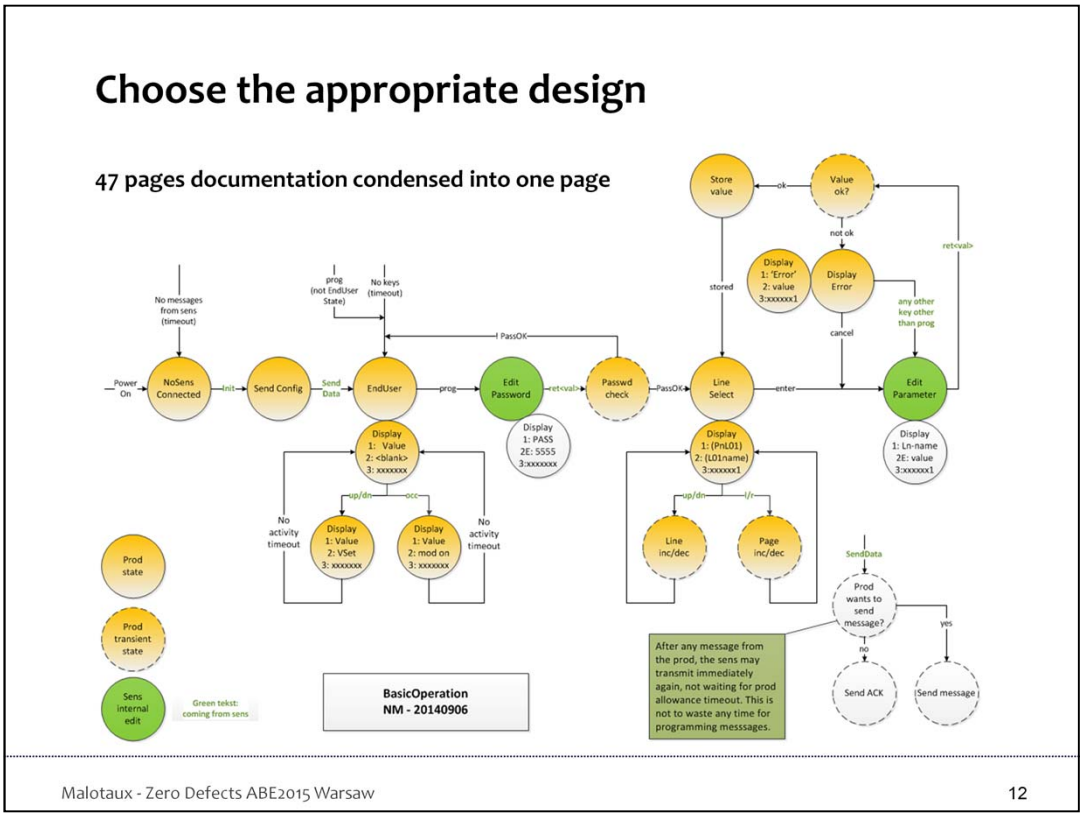
We see, however, that it's not so easy to convince people to do something that seems counter-intuitive: going back to the design rather than grinding on in code and leaving a lot of dangerous scars in the process.

Delivering quality often needs counter-intuitive measures.

What James told me recently

- **Actually, two features were delivered and deployed**
  - One that was design and code reviewed had no issues after deployment
  - Other one, was the source of quite a few defects.
- **Furthermore, the final review of the design caused a complete redesign, which was then implemented**
- **In summary, this success has proved instrumental in buy-in for DesignLogs which are now embedded in the development process**

When having asked James whether my version of the story was correct, he gave me some more details, which made the case even more compelling.



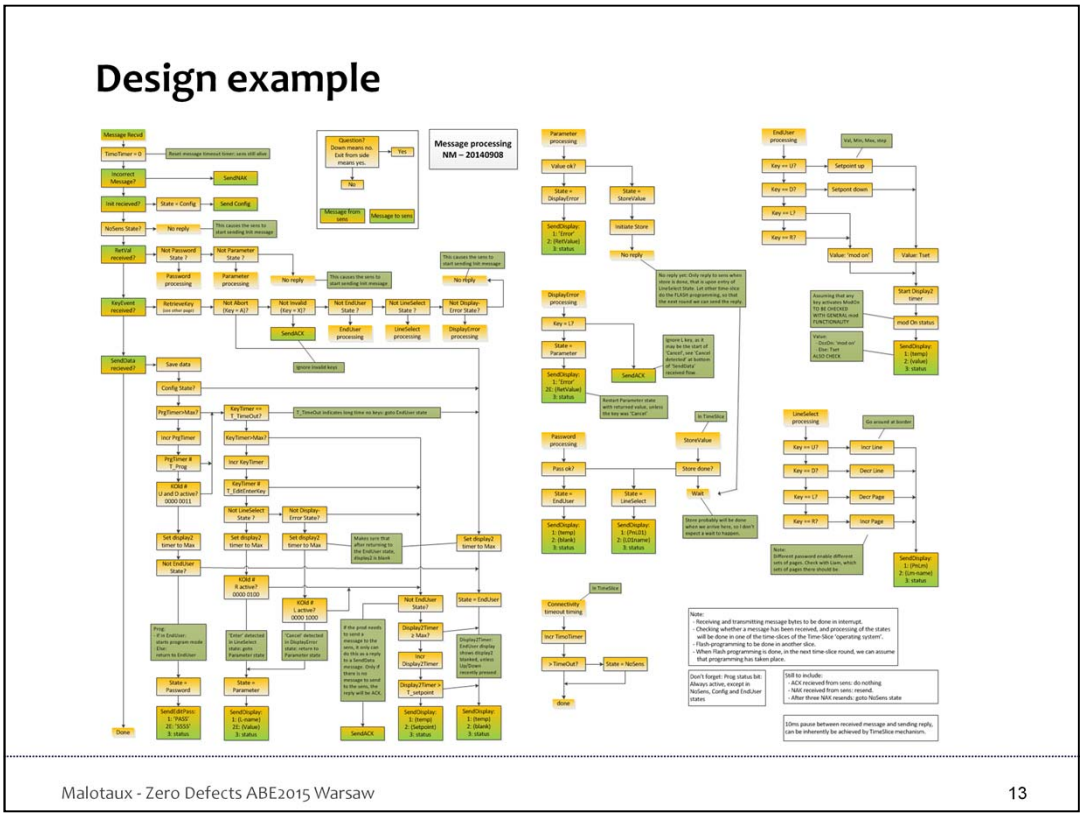
If I see documentation at all, it is usually just text. Sometimes a lot of text. One of my mantra's is: "Where are the pictures?"

This and the next slide are an example of some design I made recently (anonymised). You don't have to check the text and what it actually does. It's just to show some examples of concisely documenting functionality in a way most people, with a bit of understanding, can follow immediately.

This slide shows a design of the communication between some controller and a remote user interface. It was documented in a 47 page document by an 'architect'. 47 pages of interface description is almost impossible to oversee by humans, hence it contained a lot of inconsistencies and the people who had to implement it actually ignored it.

Once I made this one page overview, we could discuss, ease out the inconsistencies, make decisions, agree, and everyone knew exactly what to do. Conclusion: just documenting isn't enough. We have to learn how to document for usefulness.

QA can ask a developer to explain how the interface should work. If the developer only shows code to review, we know we have a problem. If the QA person doesn't understand the explanation, the explanation apparently isn't clear enough, which is a big risk for the quality of the result. If it's only text, it won't work either.

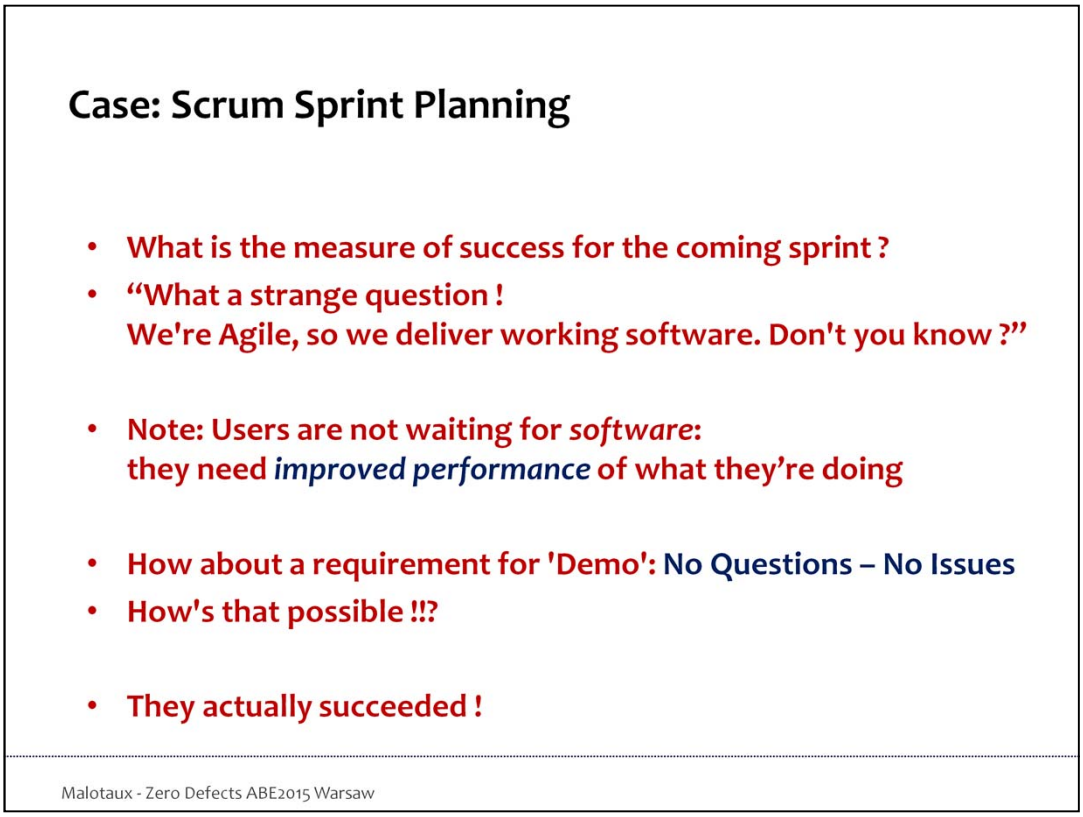


This is how I implemented the communication design based on my discussions with the suppliers of the remote user interface. The design was made to be reviewed and then it could readily be implemented based on this design. If I see how much I moved and reshuffled before I was content that this was right, I cannot imagine how this could be done properly in code without having this design. Like in the Cleanroom Approach to Software Development I designed down to a level of some 3 lines of code per design element. Sorry, I have no time now to go into detail, but the Cleanroom Approach routinely delivered an order of magnitude less defects in shorter time. Making changes in the code is not allowed before we have updated the design. The code should always be derived from the current design. Reviews of code should always check that the code does what the design says

These were just examples. The challenge is every time again to find the right representation that is easiest to comprehend

Of course the projects the audience is working in usually do these things properly. But I still see too often that the 'design' is only in the mind of the developer who writes the code, or just a rough sketch, with devastating effects in software quality and delivery time.

If as a QA person you encounter these effects, think what you should do about it.



I came in an project of some 70 people, with 3 Scrum teams of some 12 people each. We know 12 is too many, but that's another story.

At a Sprint Planning meeting I asked one of the teams: "What would be the measure of success for this Sprint?"

They looked at me: "What a strange question. We're Agile, so we deliver working software. Don't you know?"

I asked: "Shouldn't we have a measure of success, to know that we really did a good job?" and suggested: "No questions, No Issues". That's easy to measure: one question or one issue and we know we failed. No question and no issue and we know we were successful.

Their first reaction was: That's impossible! Surely there will be some questions when we deliver and there are always some issues.

I suggested: "You find out how to do it. It's just a simple requirement: "No questions, No Issues".

Interestingly, they immediately started thinking how they could deliver according to this requirement.

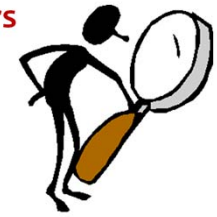
For example, someone thought: "Ah. Perhaps halfway the Sprint we ask someone to check it out and to see whether he would have any questions?" I said: "You're on the right track. Just find out how to do it. The requirement is simple."

Actually, I didn't expect them to be successful in this first Sprint, perhaps after a few. Surprisingly, they were successful. I'll tell how.

If we deliver

- Give the delivery to the stakeholders
- Keep your hands handcuffed on your back
- Keep your mouth shut
- and o-b-s-e-r-v-e what happens
- Seeing what the stakeholders actually do provides so much better feedback
- Then we can 'talk business' with the stakeholders

- Is this what you do ?



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Scrum demos usually only demo.

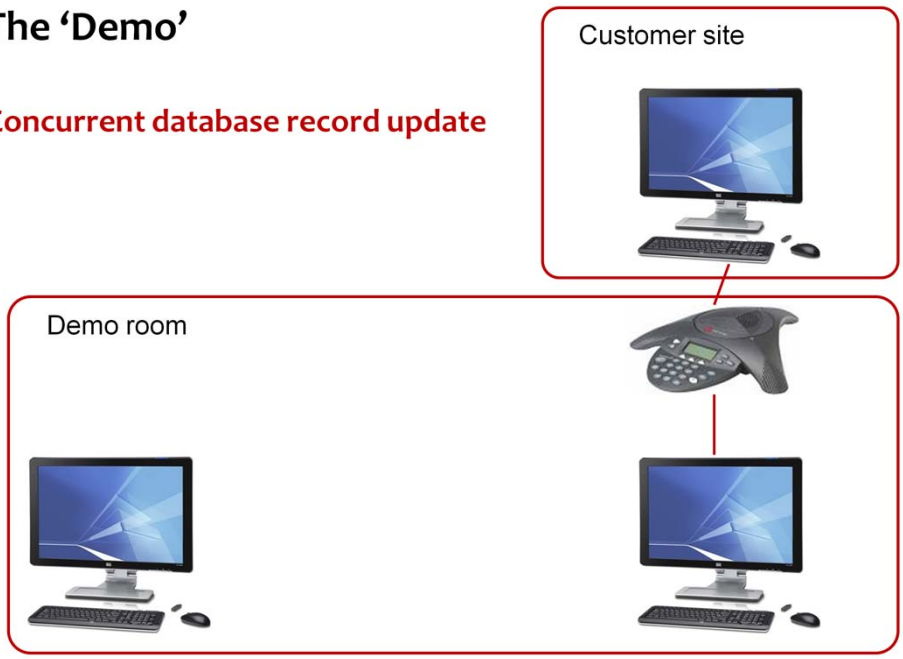
How about using the advice as shown here.

Is this what you do?

If not, why not?

The 'Demo'

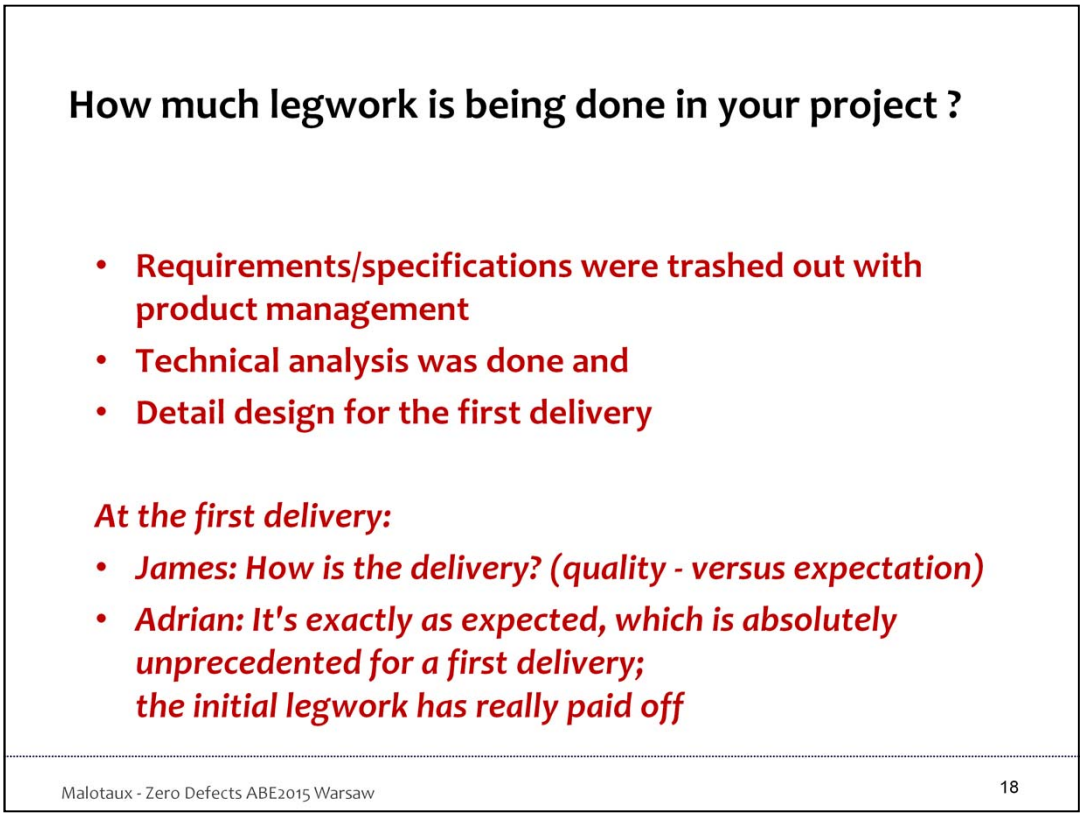
Concurrent database record update



Delivery Strategy Suggestions (Requirements)

- What we deliver will be used by the appropriate users immediately, within one week not making them less efficient than before
- If a delivery isn't used immediately, we analyse and close the gap so that it will start being used (otherwise we don't get feedback)
- The proof of the pudding is when it's eaten and found tasty, by them, not by us
- The users determine success and whether they want to pay
  (we don't have to tell them this, but it should be our attitude)

This is my suggestion I gave the architect and the project manager to consider as Delivery Strategy.



This case was an organization with extraordinary bright people. In many projects we have to explain things over and over again, but in this project people needed only half a word to understand and do things better.
James (their new QA person) told me this story. He asked them to prepare well, design properly, and then do the coding. The result: "*It's exactly as expected, which is absolutely unprecedented for a first delivery.*"

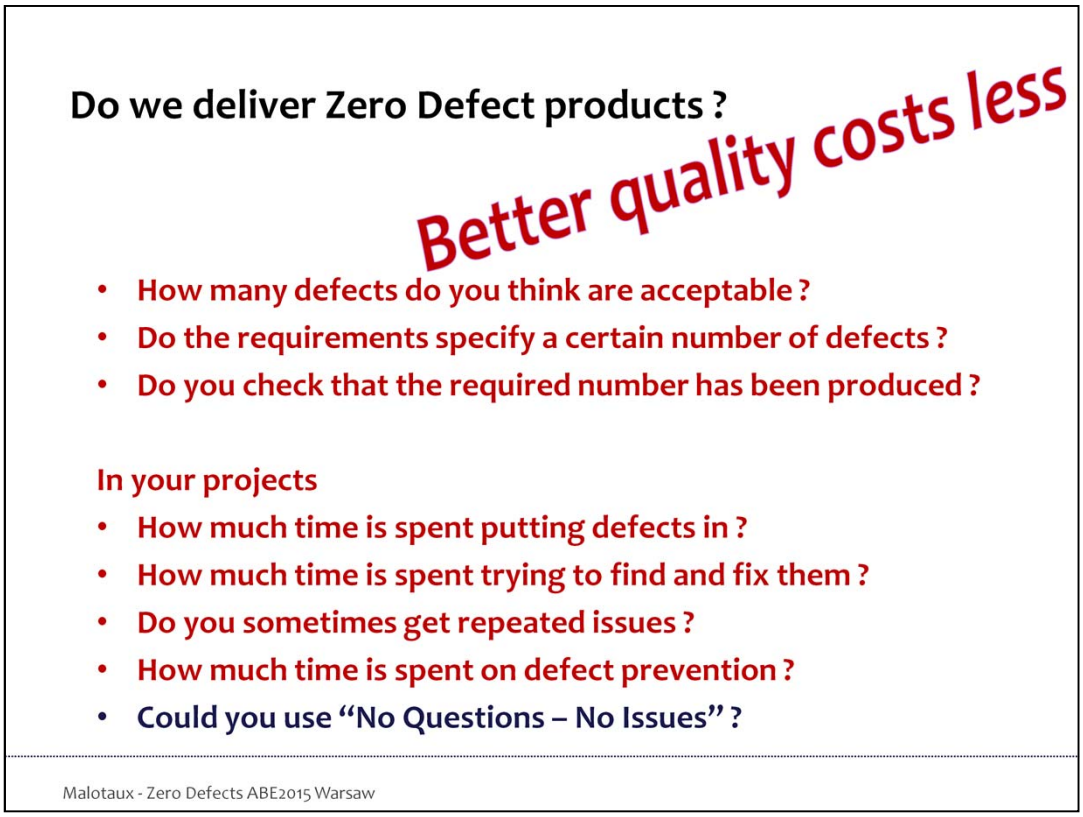
He suggested it, they did it, and it worked. It's great for a QA person to work in such a fertile environment!

Some techniques shown

- Design
- Drawings
- DesignLog
- Review
- No Questions – No Issues

Zero Defects attitude makes an immediate difference

To summarize some of the techniques for ZD. A Zero Defects attitude makes an immediate difference.



What will you do next?

Approaching Zero Defects Is Absolutely Possible

If in doubt, let's talk about it

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If in doubt, let’s discuss.

To you it may be theory.

To me it’s reality.