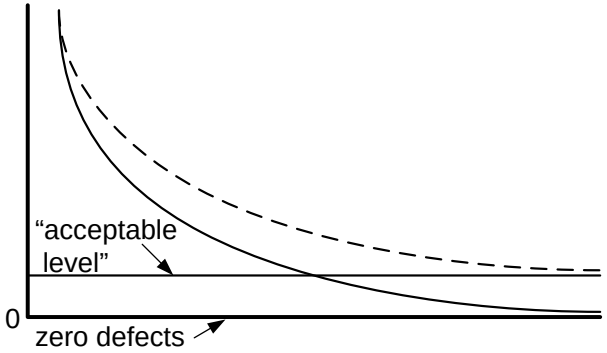


Examples how to move towards Zero Defects

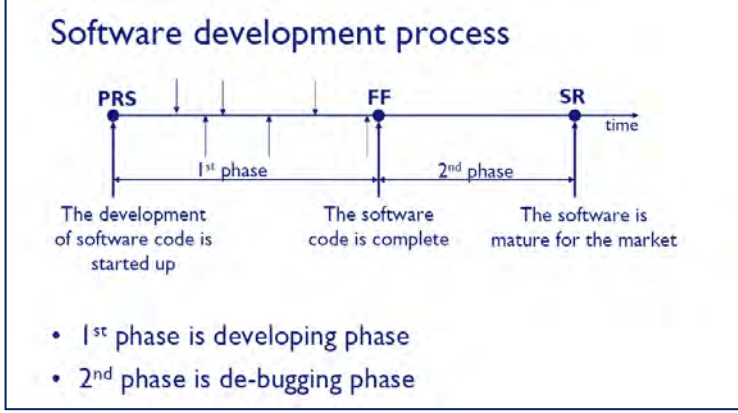
Niels Malotaux:
"In my experience the 'zero defects' attitude results in 50% less defects almost overnight."

Niels Malotaux

niels@malotaux.nl

www.malotaux.nl/conferences
(look for video with the title)

Do we deliver Zero Defect software ?



- 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 ?

Better quality costs less

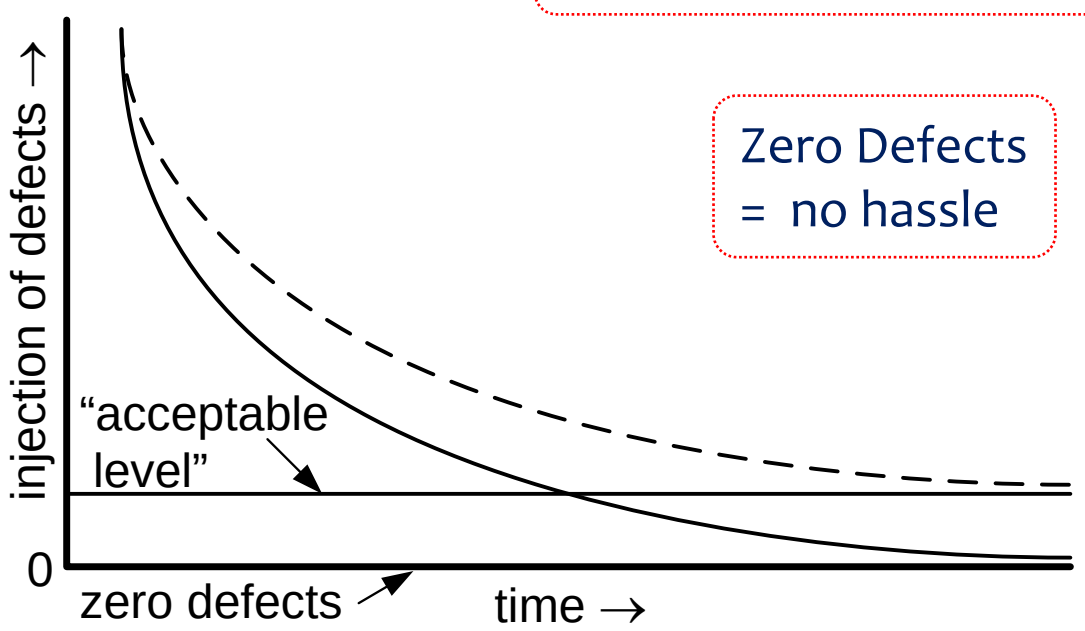
What is a defect ?

A defect is the cause of a problem
experienced by any of the stakeholders
while relying on our results

What is Zero Defects

- We aren't perfect,
  but the customer shouldn't find out
- What we deliver *simply works*
- Know what *simply works* means *!*

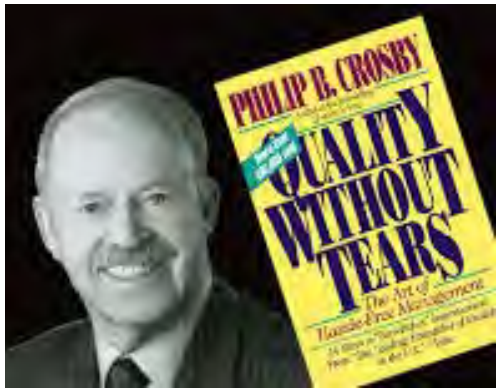
- Zero Defects is an *asymptote*



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

Crosby (1926-2001) - Absolutes of Quality



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

Philip Crosby, 1970

Ultimate Goal of a What We Do

Quality on Time

Delivering the Right Result at the Right Time,
wasting as little time as possible (= efficiently)

Providing the customer with

- what he needs
- at the time he needs it
- to be satisfied
- to be more successful than he was without it

Constrained by (win - win)

- what the customer can afford
- what we mutually beneficially and satisfactorily can deliver
- in a reasonable period of time

Prevention: Root Cause Analysis

- Is Root Cause Analysis routinely performed – *every time* ?
- What is the Root Cause of a defect ?

- Cause:
  The error that caused the defect
- Root Cause:
  What *caused us* to make the error that caused the defect

- Without proper Root Cause Analysis ,
  we're *doomed to repeat the same errors*

We're QA: What has this to do with us ?

- What is the goal of QA in a software development project ?
- Who is our customer ?

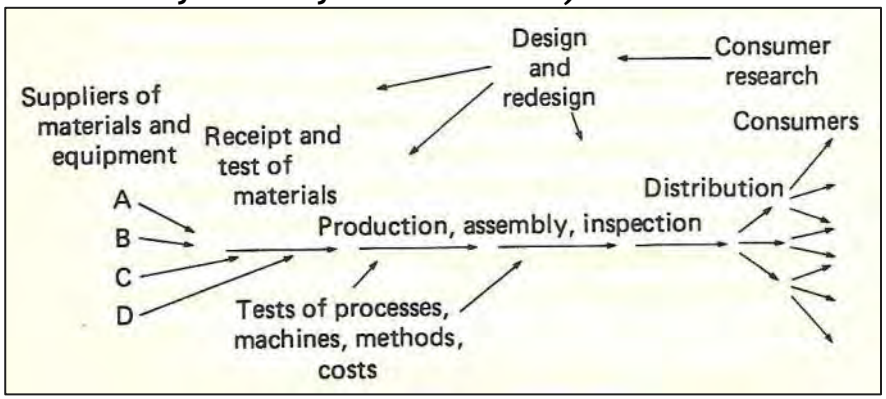
Who is the (main) customer of Testing and QA ?

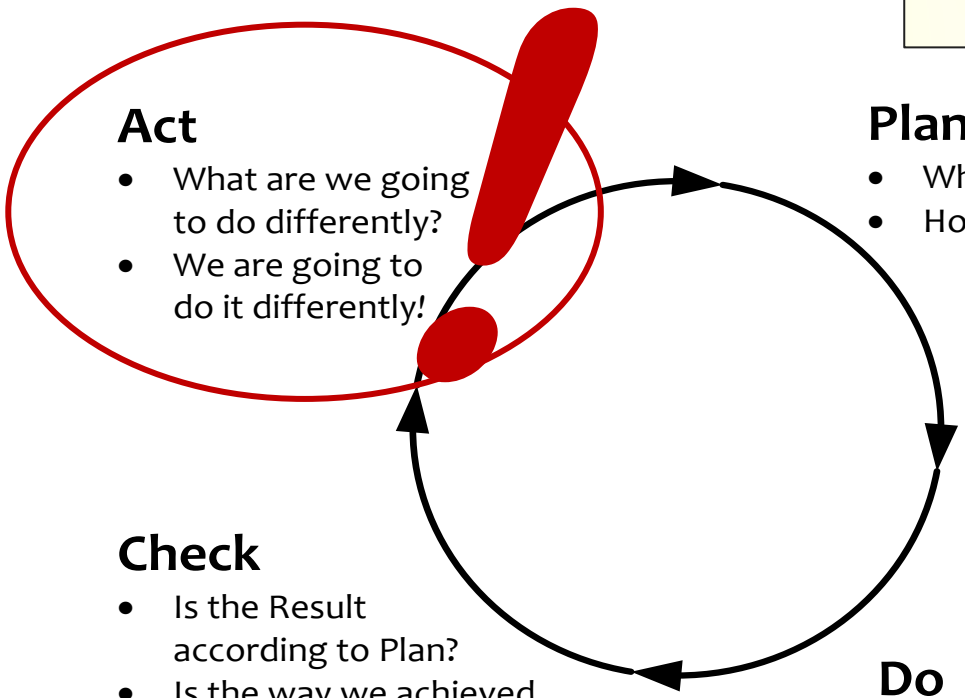
Deming
(1900-1993)

- Deming:
  - Quality comes not from testing, but from *improvement of the development process*
  - Testing does *not* improve quality, nor guarantee quality
  - It's too late
  - The quality, good or bad, is already in the product
  - You cannot test quality into a product
- Who is the main customer of Testing and QA ?
- What do we have to deliver to these customers ?
  What are they *waiting for* ?
- Testers and QA are *consultants* to development

The essential ingredient: the PDCA Cycle

(Shewhart Cycle - Deming Cycle - Plan-Do-Study-Act Cycle - Kaizen)





Act

- What are we going to do differently?
- We are going to do it differently!

Plan

- What to achieve
- How to achieve it

Check

- Is the Result according to Plan?
- Is the way we achieved the Result according to Plan?

Do

Carry out the Plan

Deming

Some Examples

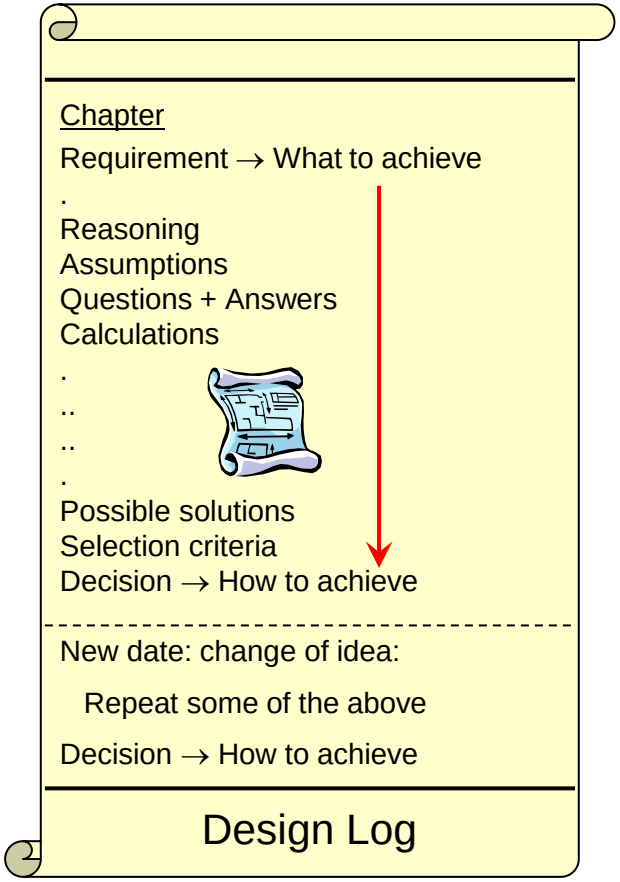
We’re not perfect,
but the customer shouldn’t find out

Design techniques

Cleanroom

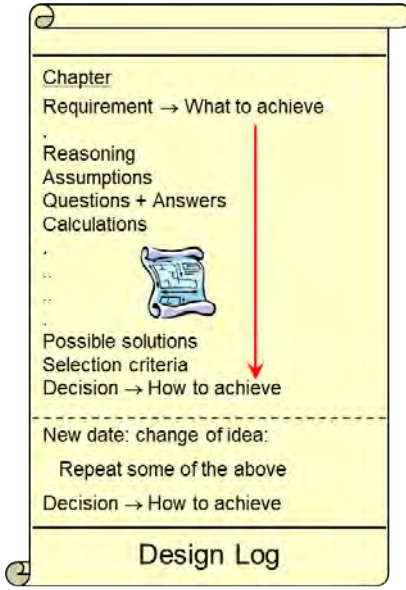
- Design
- Review
- Code
- Review

Iterate as needed



- Test (no questions, no issues)
- If issue in test: no Band-Aid: start all over again:
  Review: What's wrong with the design ?
- Reconstruct the design (if the design description is lacking)
- What happens if you ask "Can I see the DesignLog ?"

In the pub

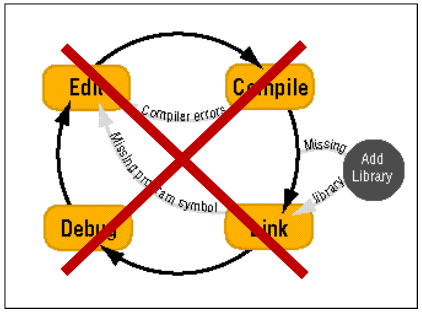


James:

Niels, this is Louise

Louise, this is Niels, who taught me about DesignLogging

Tell what happened



Louise:

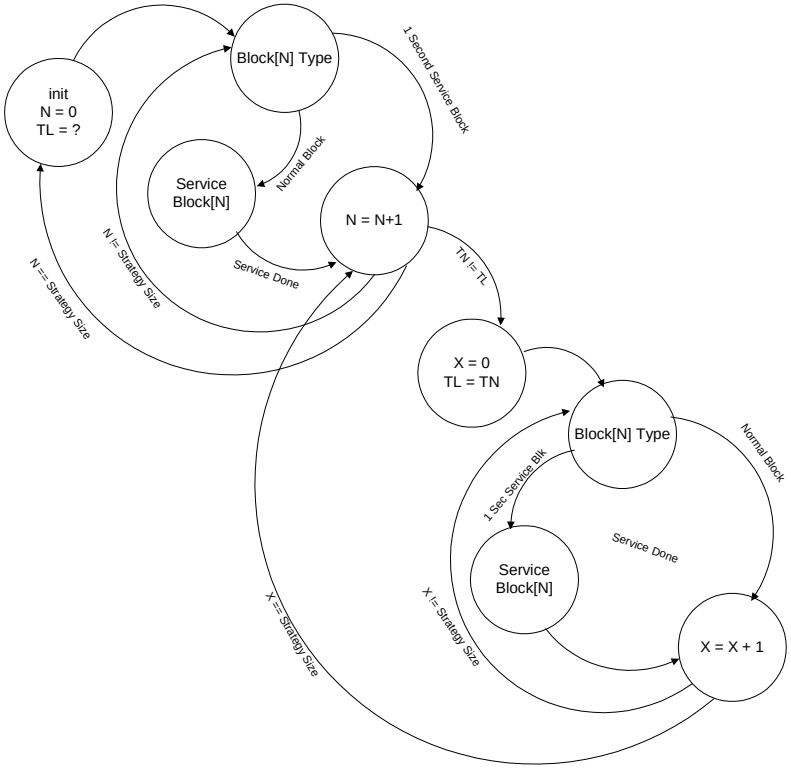
- *We had only 7 days to finish some software*
- *We were working hard, coding, testing, coding, testing*
- *James said we should stop coding and go back to the design*
- *"We don't have time !" - "We've only 7 days !"*
- *James insisted*
- *We designed, found the problem, corrected it, cleaned up the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

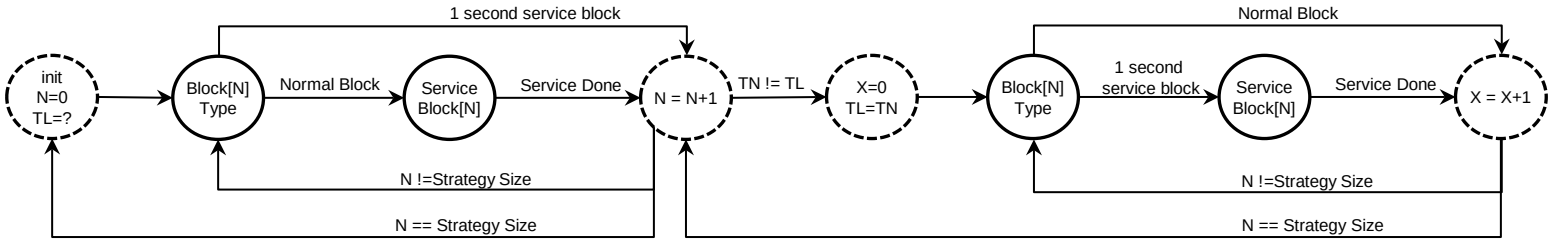
What James told me afterwards

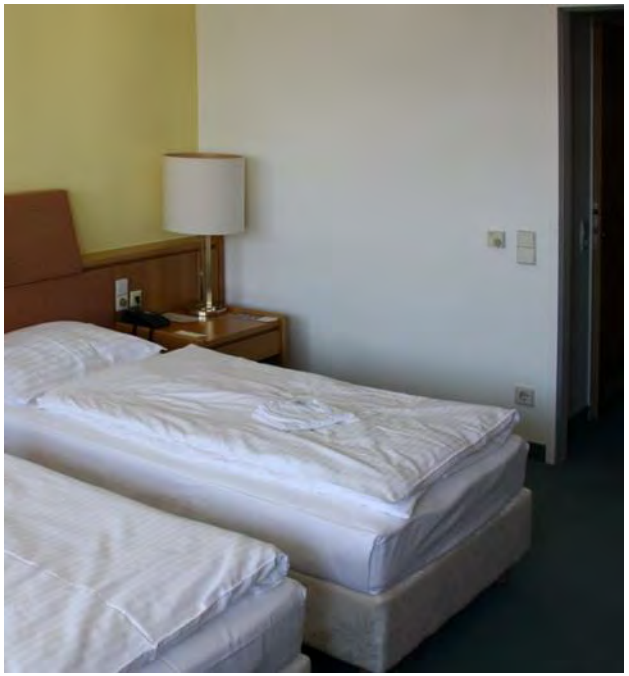
- I gave the design to two colleagues for review
- Louise corrected some minor issues
- It went into a ‘final’ review, with another colleague
- Based in his expertise, *the solution was completely reworked*
- Actually, two features were delivered and deployed
  - One that was design and code reviewed had no issues after deployment
  - Other one, was the source of quite some defects
- In summary, this success has proved instrumental in buy-in for DesignLogs which are now embedded in the development process

There are many ways to represent a design

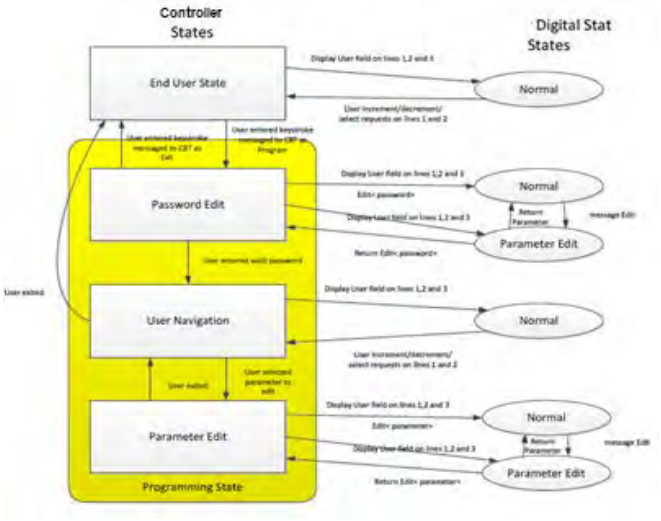
- Only few are useful
- Don't waste reviewer's time

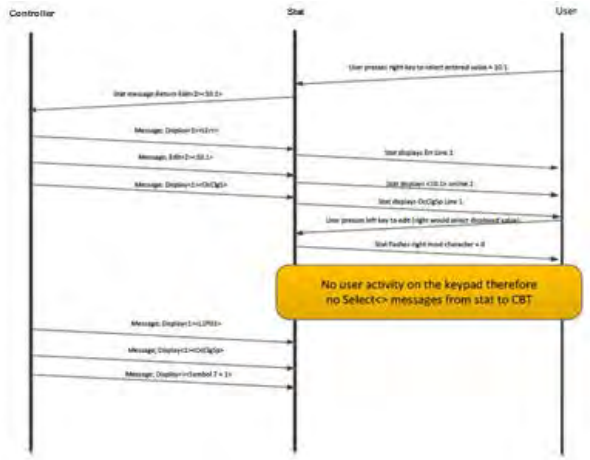






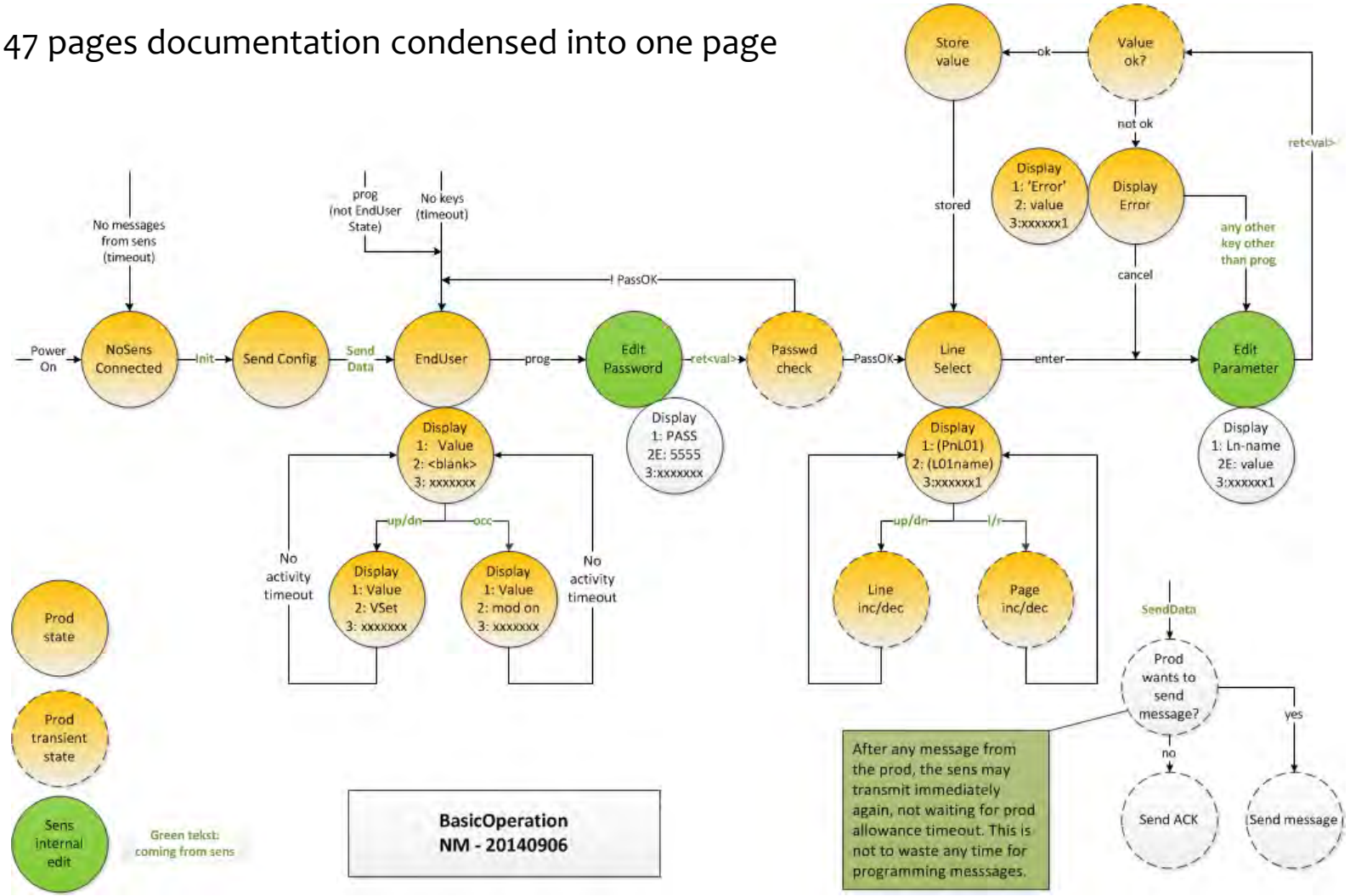
Useful design ?



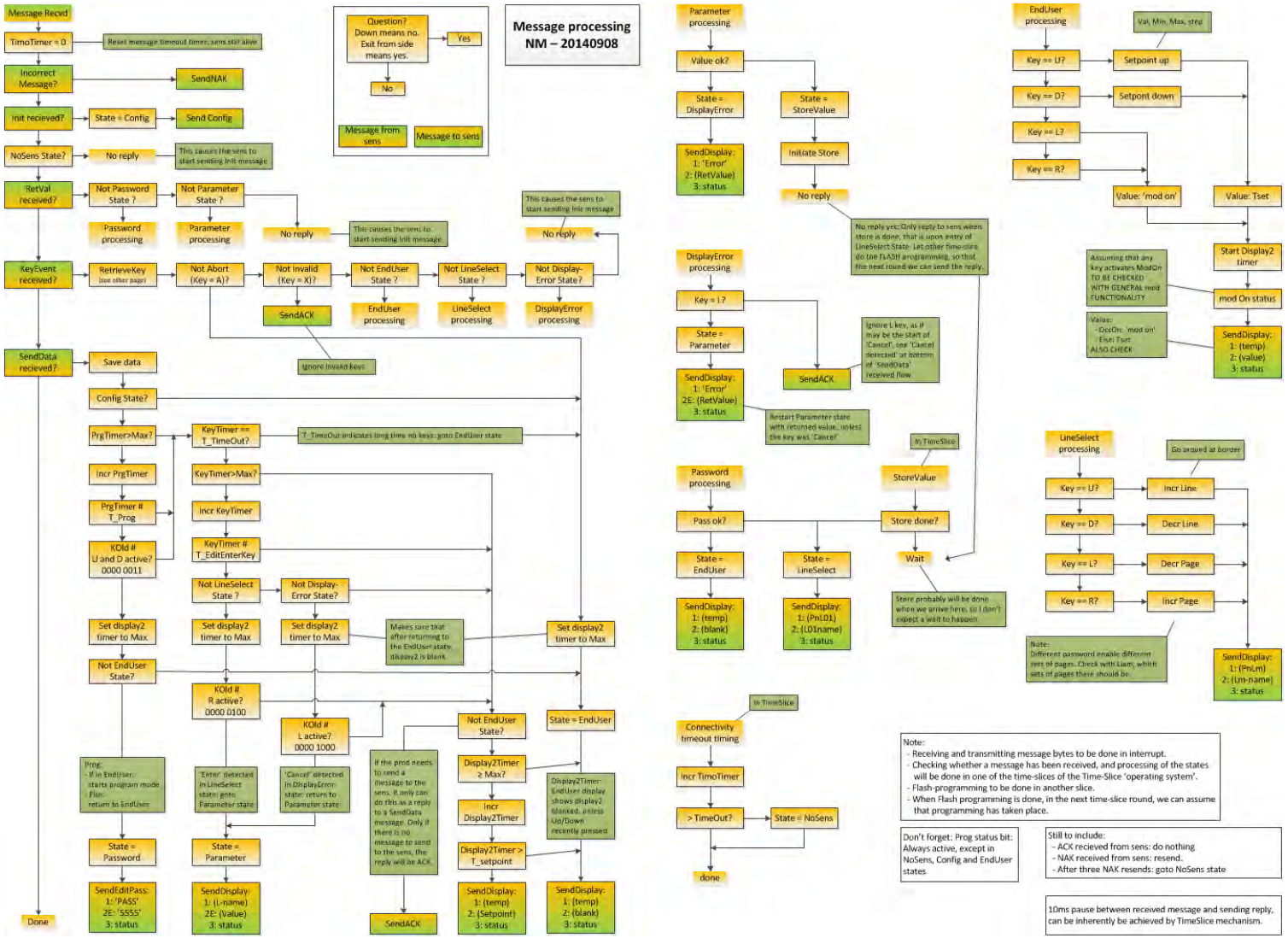


Choose the appropriate design

47 pages documentation condensed into one page



Design example

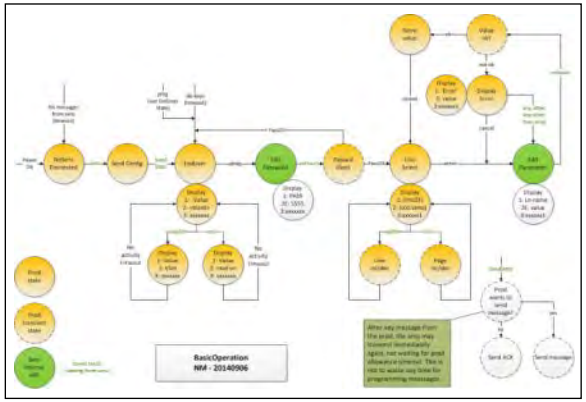


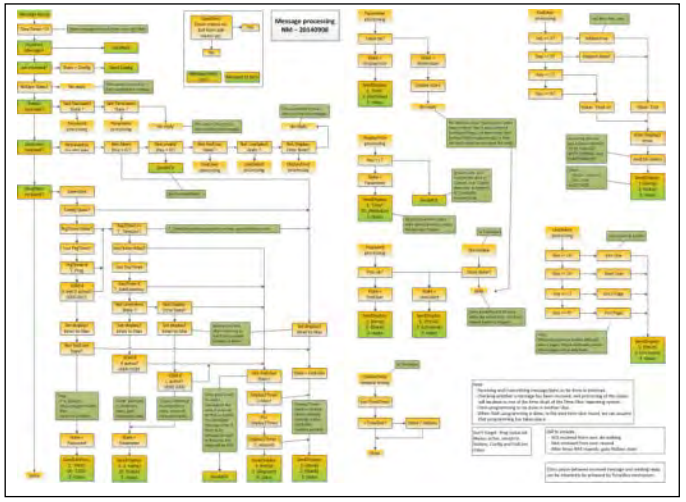
What is better than reviewing code ?

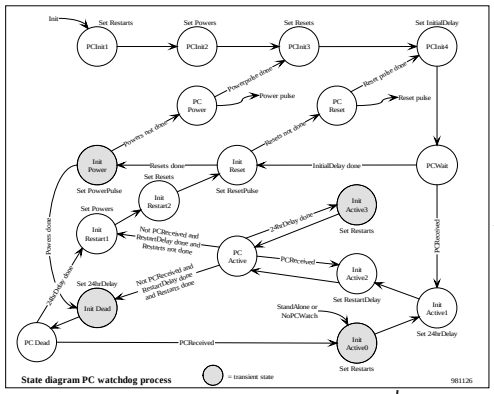
```
hc keybind $Mod-P pseudotile toggle
hc $contract

  # some keybindings like to change on different hooks.
herbstclient -i|
while read line;do
  case $line in
    # remove the gap
    nogap ) herbstclient chain , set frame_gap -1 , \
      set window_gap ${window_gap--1} , keybind $Mod-D emit_hook "
      set frame_border_width ${frame_border_width-1} ,\
      pad 0 $pad ,\
      pad 1 $pad ,,
    # add the gap
    gap* ) gap=${line/gap /};aPad=( $pad )
      for (( i=0; i < ${#aPad[@]}; i++));do
        aPad[$i]=$(( ${aPad[$i]} + $gap - 1))
      done
      herbstclient chain , \
      set frame_gap "-$gap" ,\
      set window_gap $gap , set frame_border_width 0 ,\
      pad 0 ${aPad[0]} ,\
      pad 1 ${aPad[0]} ,\
      keybind $Mod-D emit_hook nogap ,,
    expand) herbstclient $expand ,,
    contract) herbstclient $contract,,
  esac
done&

# switch to different layouts directly
hc keybind $Mod-Alt-v set_layout vertical
```

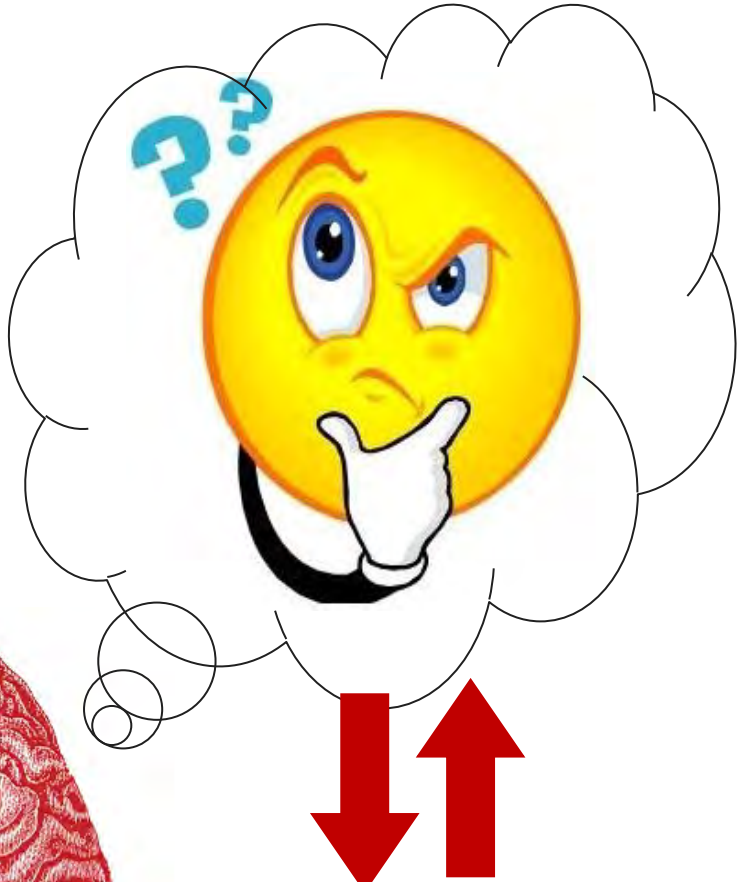
- Do you ever review software ?
- What do you review ?

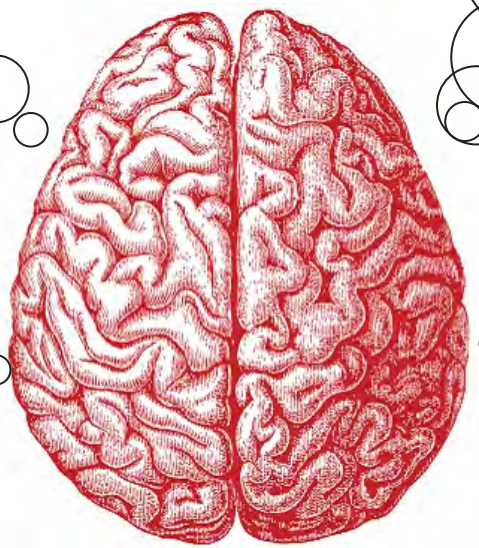
- What is better than reviewing code ?
  - May I review the design first ?

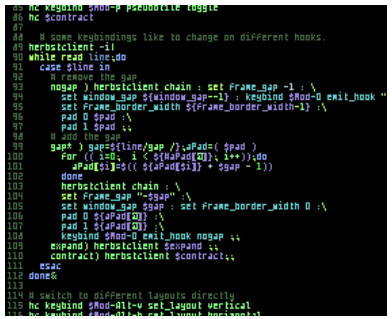


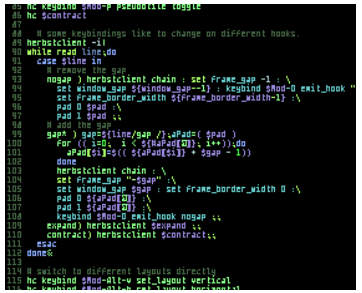


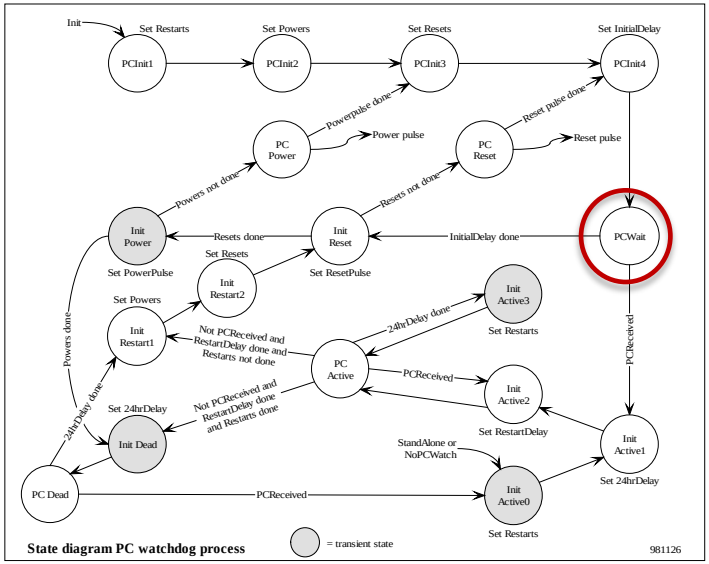

Init
Set Restarts
Set Powers
Set Resets
Set InitialDelay
PCInit1
PCInit2
PCInit3
PCInit4
PC Power
Power pulse
PC Reset
Reset pulse
Init Power
Init Reset
PCWait
Set PowerPulse
Set ResetPulse
Init Restart2
Init Restart1
Init Active3
Set Restarts
PC Active
PCReceived
Init Active2
Set RestartDelay
Set 24hrDelay
Init Dead
Init Active1
PC Dead
Init Active0
State diagram PC watchdog process
= transient state
981126

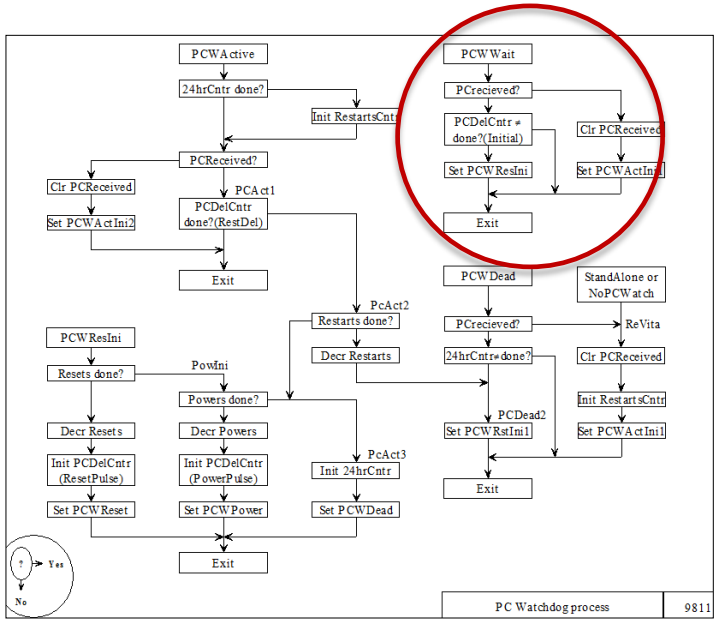













```
        MovLW   WaitPC          ; Select next phase
;       MovWF   PCPhase         ; (See EndPCX)
        Goto    EndPCX          ; Exit PC
;
;*****************************************************************
; Phase Restart init1 PCW
;
PCRIn1  Call    EEtoPCP         ; Init powers counter
        MovLW   RIn2PC          ; Select next phase
;       MovWF   PCPhase         ; (See EndPCX)
        Goto    EndPCX          ; Exit PC
;
;*****************************************************************
; Phase Restart init2 PCW
;
PCRIn2  Call    EEtoPCR         ; Init resets counter
        MovLW   ReInPC          ; Select next phase
;       MovWF   PCPhase         ; (See EndPCX)
        Goto    EndPCX          ; Exit PC
;
;*****************************************************************
; Phase Active init 1 PCW
;
PCAIn1  Call    Pre24h          ; Init 24h counter
        MovLW   AIn2PC          ; Select next phase
;       MovWF   PCPhase         ; (See EndPCX)
        Goto    EndPCX          ; Exit PC
;
;*****************************************************************
; Phase Wait PCW
;
PCWait  BTFSS   PCStat,PCRecvd  ; PC received?
        Goto    PCWait1         ; Branch if not
        BCF     PCStat,PCRecvd  ; Acknowledge PC received
        MovLW   AIn1PC          ; Select next phase
;       MovWF   PCPhase         ; (See EndPCX)
        Goto    EndPCX          ; Exit PC
;
PCWait1 MovF    PCDCntr,f       ; Check delay counter (initial delay)
        SkpZ                    ; Skip if counter done (=zero)
        Goto    EndPC           ; Exit PC if not yet done
;
        MovLW   ReInPC          ; Select next phase
        MovWF   PCPhase         ; (See EndPCX)
        Goto    EndPCX          ; Exit PC
;
;*****************************************************************
; Phase Reset PCW
;
PCRes   BSF     PCStat,ResPls   ; Reset pulse on
        MovF    PCDCntr,f       ; Check delay counter (reset pulse)
        SkpZ                    ; Skip if counter done (=zero)
        Goto    EndPC           ; Exit PC if not yet done
;
        BCF     PCStat,ResPls   ; Reset pulse off
        MovLW   Ini4PC          ; Select next phase
;       MovWF   PCPhase         ; (See EndPCX)
        Goto    EndPCX          ; Exit PC
;
;*****************************************************************
; Phase Power PCW
```

Case: Scrum Sprint Planning

- What is the measure of success for the coming sprint ?
- “What a strange question !
  We're Agile, so we deliver working software. Don't you know ?”

- Note: Users are not waiting for *software*:
  they just need *improved performance* of what they’re doing

- How about a requirement for 'Demo': No Questions – No Issues
- How's that possible !!?

- They actually succeeded !

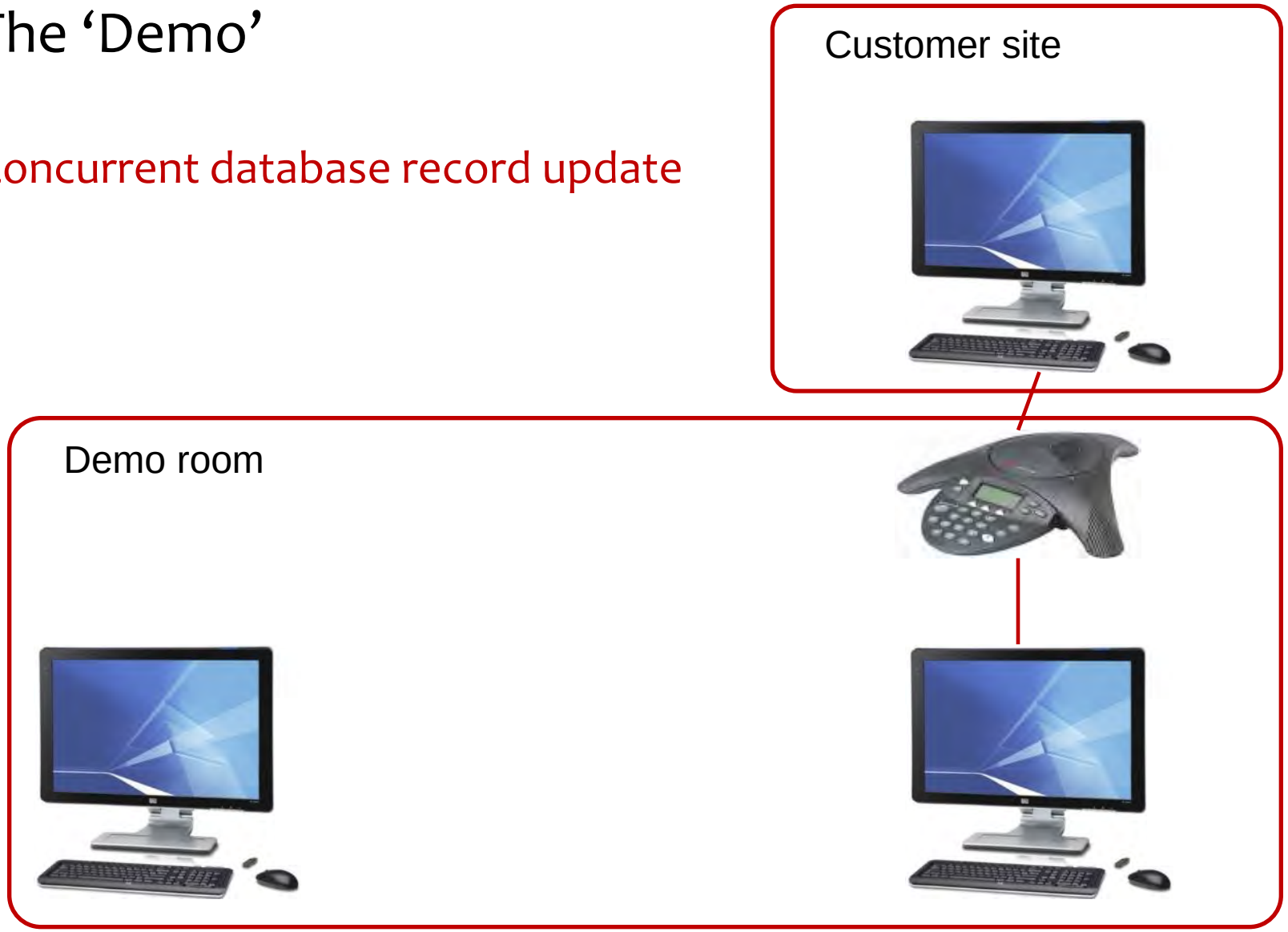
Demo ??

- Give the delivery to the stakeholders
- Zip your mouth
- Keep your hands handcuffed on your back
- and o-b-s-e-r-v-e what happens
- Seeing what the stakeholders actually do provides real feedback
- Then we can ‘talk business’ with the stakeholders

- Is this what you do ?

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, but it should be our attitude)

Case: How much legwork is being done in your project ?

- Requirements/specifications were trashed out with product management
- Technical analysis was done and
- Detail design for the first delivery

At the first delivery:

- James: *How is the delivery? (quality versus expectation)*
- Adrian: *It's exactly as expected,*
  which is absolutely unprecedented for a first delivery;
  the initial legwork has really paid off

Some techniques shown

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

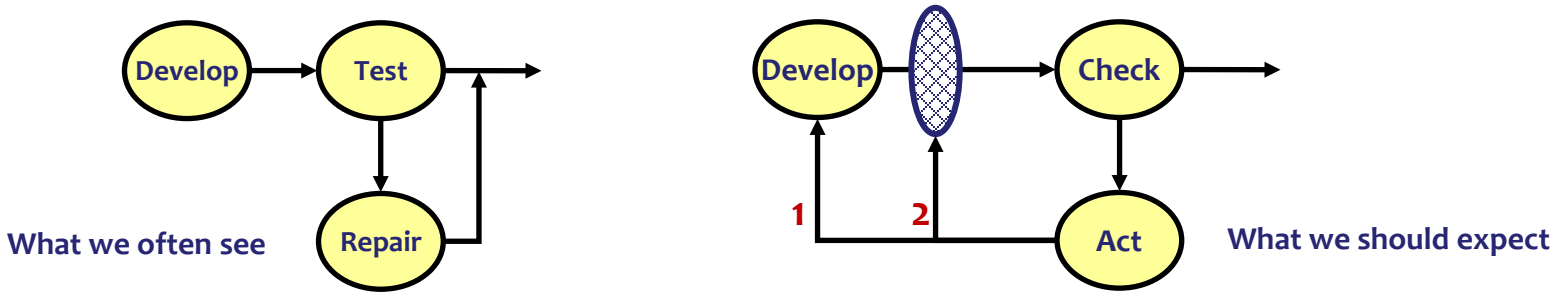
A Zero Defects attitude makes an immediate difference

Basic approach

- Design the requirement
- Review
- Design implementation
- Review
- Implement (code ?)
- Review
- Test doesn't find issues (because they're not there)

What's in it for QA ?

- Did we see much testing in the previous ?
- Testing shouldn't find anything (because there should be no issues)
- Did you ever find similar issues as you found before?
  - First time: Developers 'fault'
  - Second time: Testers 'fault'



- QA to help developers to produce less and less defects

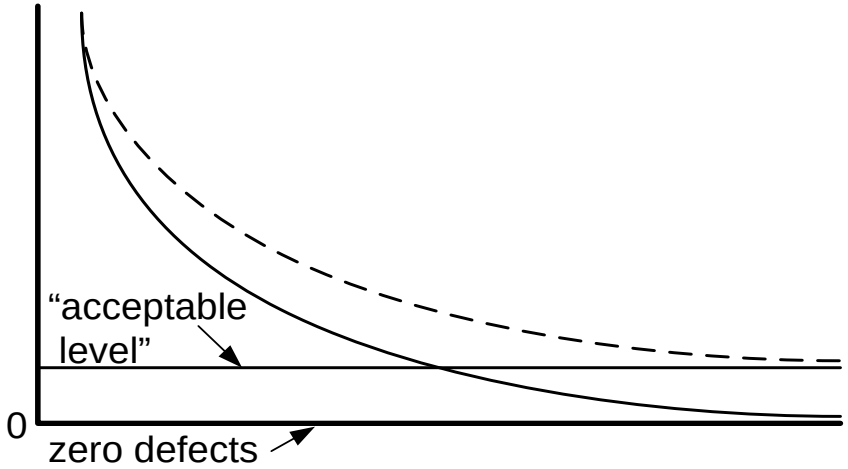
Do we deliver Zero Defect products ?

- How many defects do you think 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 ?
- Could you use “No Questions – No Issues” ?

Better quality costs less



Approaching Zero Defects is Absolutely Possible

If in doubt, let's talk about it

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