Inspection

used in various ways

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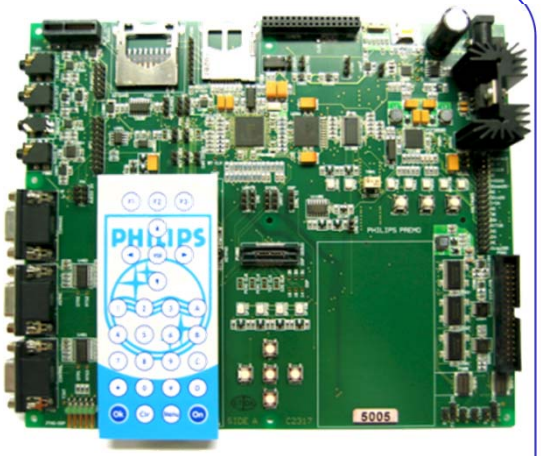


Project Coach

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 back on track

Result Management

Lean Quality Assurance

- What is Lean ?
- What is Quality ?
- How do you get Quality ?
- What is the required Quality level ?
- How do you measure Quality ?
- How to assure Quality ?

- **Which process is causing these defects**
- **How can we change the process not to produce defects**
- **What could we do to make certain that what we do 'simply works'**
- **If what we deliver doesn't even simply work, we miss the opportunity to see what they really needed**

Philip Crosby

[Quality is Still Free]

- Conventional wisdom says that error is inevitable
- As long as the performance standard requires it, then this self-fulfilling prophecy will come true
- Most people will say: People are humans and humans make mistakes
- And people do make mistakes, particularly those who do not become upset when they happen
- Do people have a built-in defect ratio ?
- Mistakes are caused by two factors: lack of knowledge and lack of attention
- Lack of attention is an attitude problem

Crosby: 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

- The purpose is customer success (not customer satisfaction)

Added by Philip Crosby Associates, 2004

Conformance to requirements

- We meet the agreed requirements

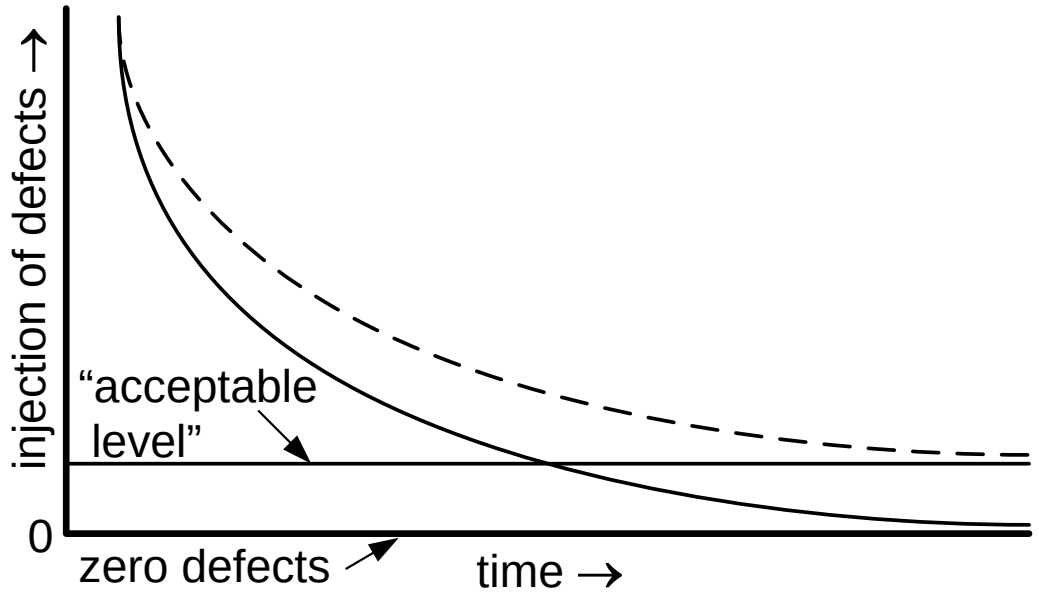
or

- Have the requirements changed to what we and the customer really need
- We create requirements with care and we meet them with care
- Does you management take quality seriously ?

Phil Crosby

Is Zero Defects possible?

- **Zero Defects is an asymptote**



- **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**

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

- **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* ?

Testing and QA shouldn't delay the delivery

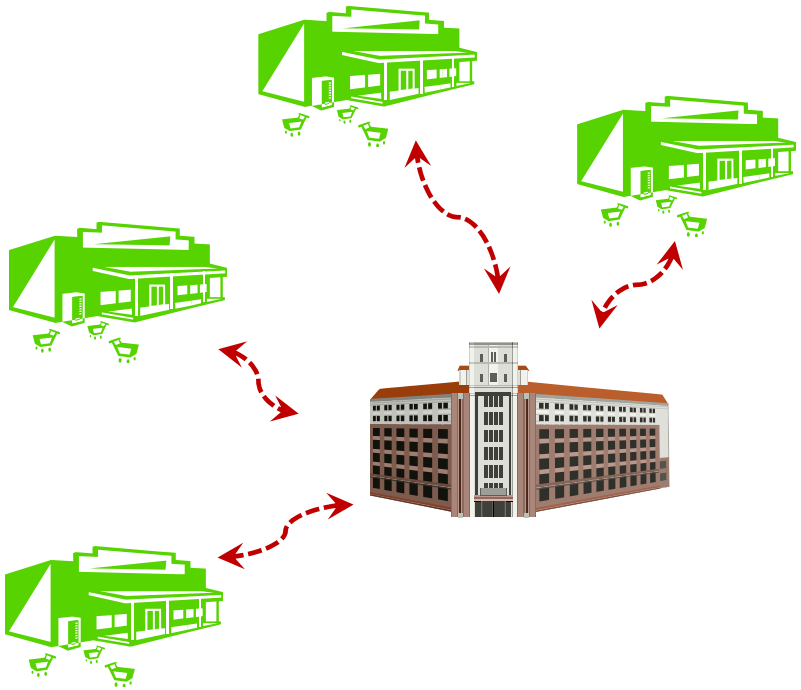
- Being done as soon as the development is done
- Well, almost

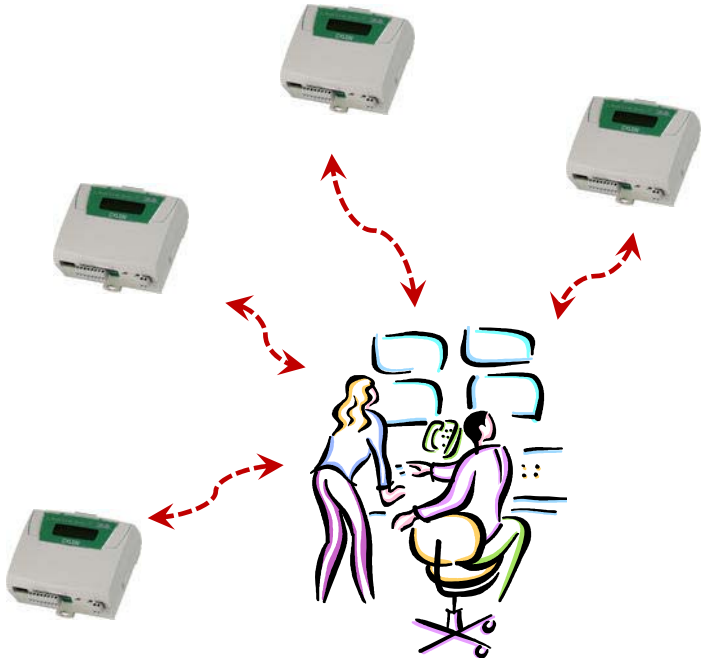
- Lean QA helps you to achieve this

Case: Can you teach Inspections ?

- Short intro
- Let's do it: baseline
  - Take a document
  - Reproduce one page
  - Do review
  - No issues
- One rule ('source')
  - Many issues

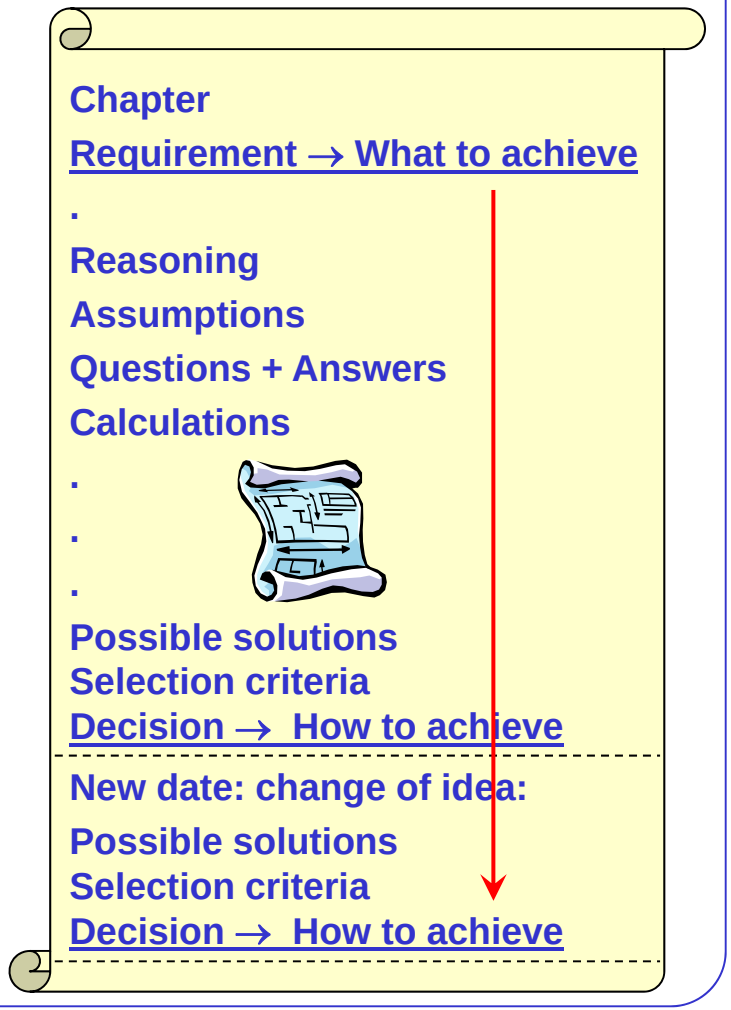
Datalog function improvement





DesignLog

- In computer, not loose notes, not in e-mails, not handwritten
  - Text
  - Drawings!
  - Chapter per subject
  - Initially free-format
  - For all to see
- All concepts contemplated
  - Requirement
  - Reasoning
  - Assumptions
  - Questions
  - Calculations
  - Possible solutions
  - Selection criteria
  - Choices:
    - If rejected: why?
    - If chosen: why?
- Implementation specification



Results

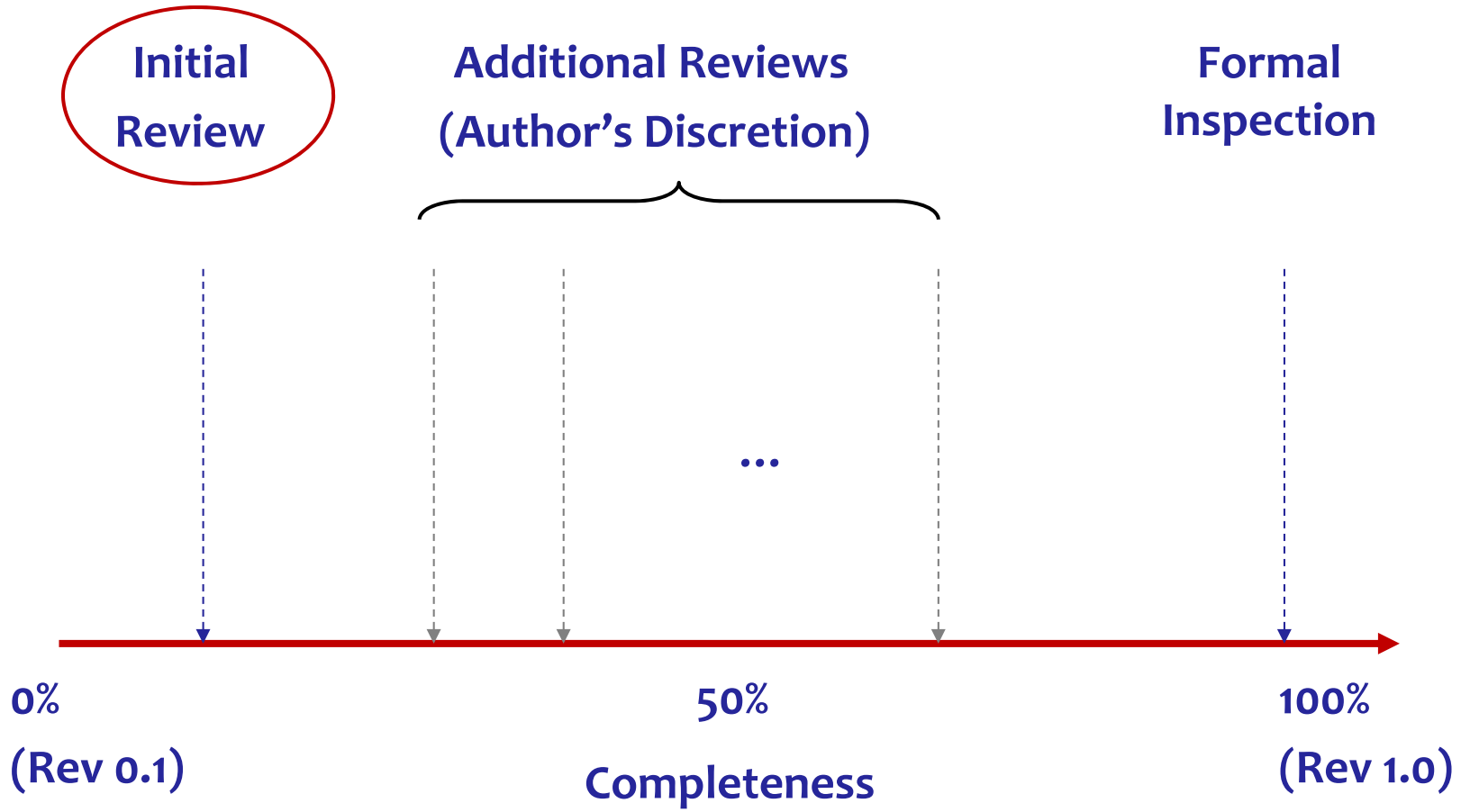
- No code until design-log reviewed
- You're delaying my project !
- Example
- Solution
- Thanks, you saved my project
- Now we can review to check the design before implementation
- Did I do the same ?
- Telling people to change: resistance
- How to let people change themselves …

Case: City of Amsterdam

- Can you teach Inspections ?
- You'll ditch the document after the course
- Ha ha
- Of course they did

Early Inspection

Prevention costs less than Repair



Case: Early Inspection on Requirements

Large e-business application with 8 requirements authors

- Each sent the first 8-10 requirements of estimated 100 requirements per author
  (table format, about 2 requirements per page including all data)
- Initial reviews completed within a few hours of submission
- Authors integrated the suggestions and corrections, then continued to work
- Some authors chose additional reviews others did not
- Inspection performed on document to assess final quality level

Results

Average major defects per requirement in initial review	8
Average major defects per requirement in final document	3

Time investment: 26 hr

- 12 hours in initial review (1.5 hrs per author)
- About 8 hours in additional reviews
- 6 hours in final inspection (2 hrs, 2 checkers, plus prep and debrief)

Major defects prevented: 5 per requirement in ~750 total

Saved 5 x 750 x 10 hr = 37500 hr / 3 = 12500 x $50 = $625000

Early Inspection

Prevention costs less than Repair

Not only for Developers

Testers can use this technique as well !

ES

Case: Test Cases

A tester's improvement writing successive test plans

- Early Inspection used on an existing project to improve test plan quality
- Test plan nearly "complete", so we simulated Early Inspection
- First round: inspected 6 randomly-selected test cases
- Author notes systematic defects in the results, reworks the document accordingly (~32 hrs)
- Second round: inspected 6 more test cases: quality vastly improved
- Test plan exits the process and goes into production
- The author goes on to write another test plan

Results

First round	6 major defects per test case
Second round	0.5 major defects per test case

- Time investment: 2 hours in initial review, 36 hours total in final formal inspection, excluding rework
  (2 inspections, 4 hrs each, 4 checkers, plus preparation and debrief)
- Historically about 25% of all defects found by testing were closed as "functions as designed", still 2-4 hrs spent on each to find out
- This test plan yielded over 1100 software defects with only 1 defect (0.1 %) closed as "functions as designed"
- Time saved on the project: 500 - 1000 hrs (25% x 1100 x 2-4 hrs)

Defect Prevention in action: First inspection of this tester's next test plan: 0.2 major defects per test case

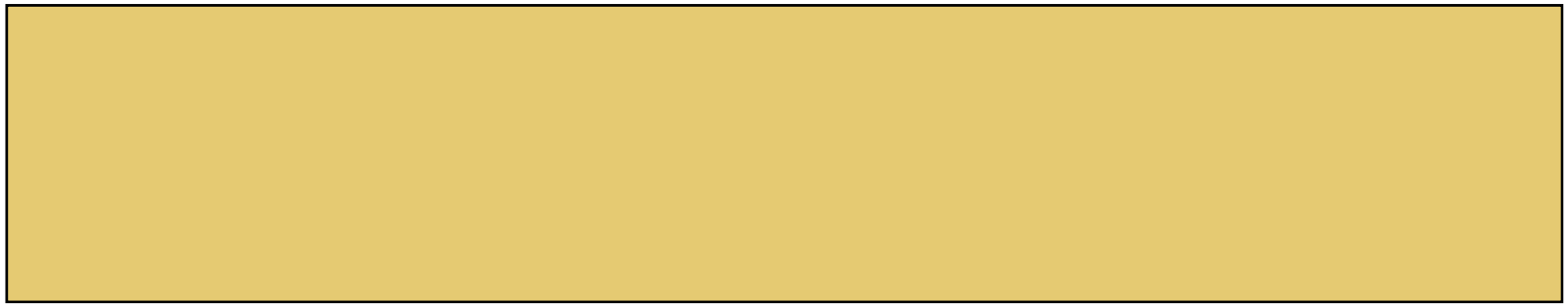
Optimum Checking Rate

- The most effective individual speed for 'checking a document against all related documents' in page/hr
- Not 'reading' speed, but rather correlation speed
- Failure to use it, gives 'bad estimate' for 'Remaining defects'

- 100~250 SLoC per hour
- 1 page of 300 words per hour ("logical page")

Here's a document: review it

Ref. Dorothy Graham



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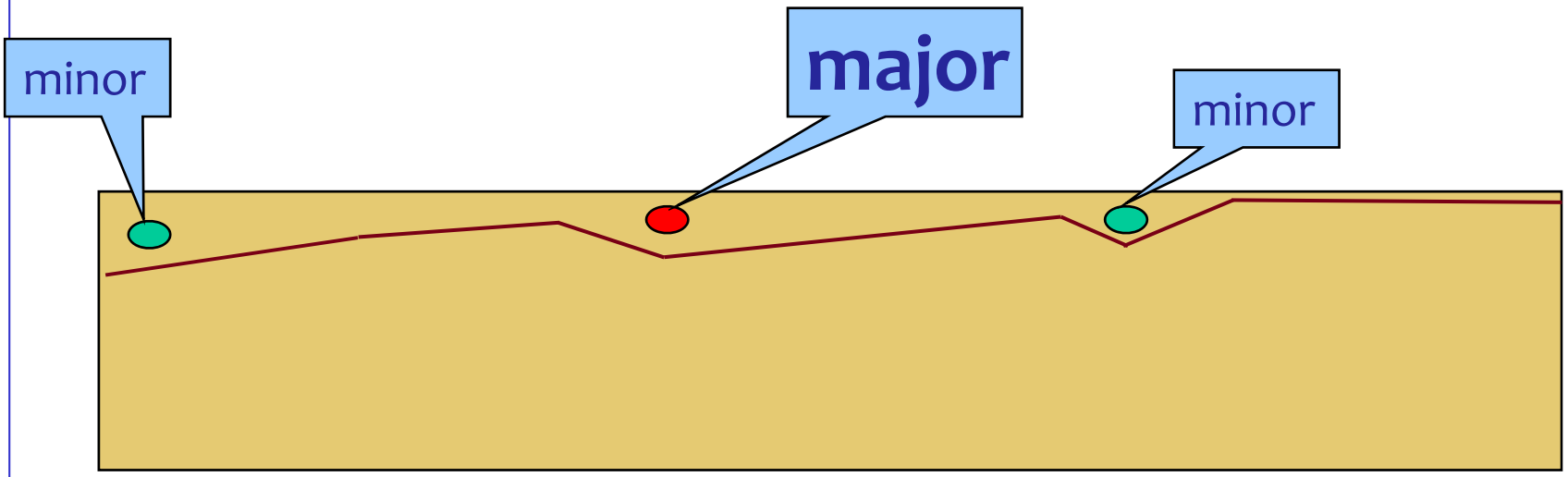
Typical Review



- **Find some defects, one Major**
- **Fix them**
- **Consider the document now corrected and OK …**

Taking a sample

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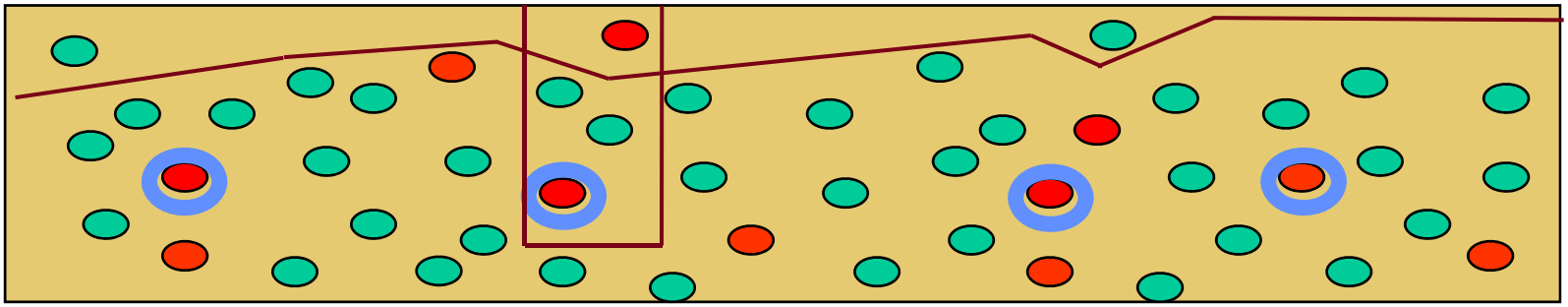

- **Inspection can find deep-seated defects**
- **All of that type can be corrected**
- **Needs optimum checking rate**

- **In the above case we are clearly taking a sample**
- **In the "shallow" case we were also taking a sample, however, *we didn't feel it !***

Ultimate Goal of a What We Do

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

Quality on Time

- **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

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