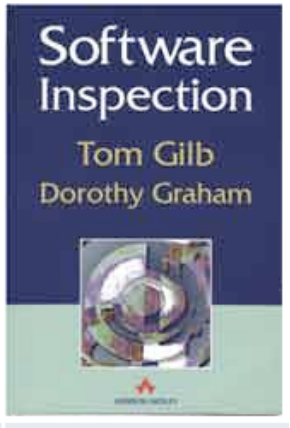


Workshop:

"Requirements for Testers"

BCS SIGIST Conference - 'Motivating Testers' – Thursday 10th December 2010
London

14.15 – 15.45 (1.5 hours)

Tom Gilb

(TOM@GILB.COM, WWW.GILB.COM)

These slides can be downloaded from

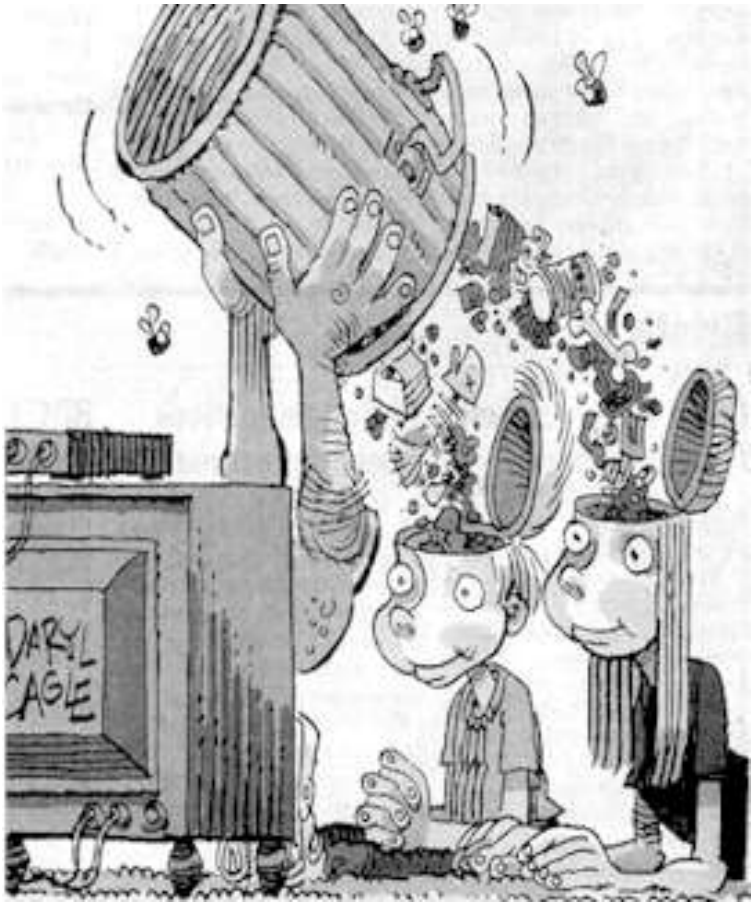
<to be inserted>

Or Easier to remember

Gilb.com, Downloads, Gilb Library

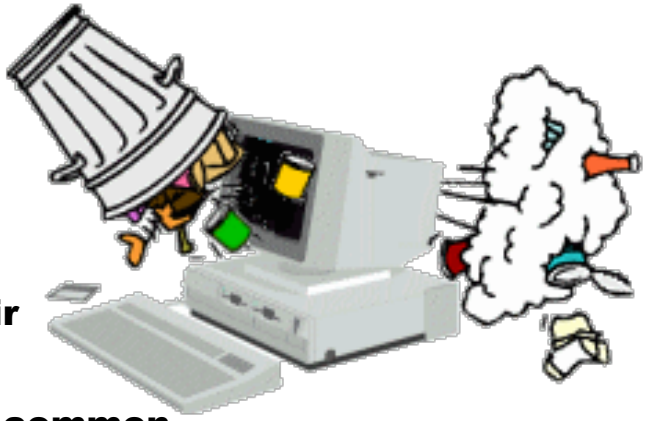
Basic Standards for Testable Requirements !

- The Testers Dilemma: **Garbage In**
  - –But we cannot allow it to produce Garbage Tests
- The notion of **standards** for requirements →



The Test Planning Dilemma

- **Delivery to specified requirements must be tested**
- **Interpretation of the requirement must be correct (as intended, and same as developer)**
- **Most people write requirements with 50-250 unclear words per 300 words of text!**
- **There are no requirements standards applied most places**
- **There is no 'enforcement' of requirements standards most places**
- **Result: testers inevitably get extremely bad requirements to develop tests from**
  - **So do developers!**
- **Who is responsible?**
  - **IT Management –**
  - **But, Test Management must make sure they take their responsibility**
  - **Maybe in an alliance with development management: common interest?**



Abstract, Summary

Ten principles for testable requirements

- Some basic requirements specification standards to make requirements testable
- defined ‘rules’ to teach and measure requirements
- numeric exit and entry levels as a quality level
- well defined concepts – like ‘requirement’
- two levels of quality: clear and relevant
- templates to guide requirements specs

Ten Principles for Testable Requirements:

- **Based on use of 'Planguage'; a requirements specification language.**

See Gilb.com for 2 chapters

Kai Gilb

http://www.gilb.com/tiki-download_file.php?fileId=27

FREE DOWNLOAD KAI'S EVO BOOK

Principle 1.

- **The requirements must themselves be**
  - **–clear,**
  - **–complete,**
  - **–and consistent**

?

- **When are requirements ‘clear enough’ for a tester?**
- **How can a tester decide if requirements are ‘complete’?**
- **What is the distinction between a ‘design’ and a ‘requirement’?**

Basic 'Rules' for Requirements

- 1. **Unambiguous** to intended Readership
- 2. **Clear** enough to ***test***.
- 3. **No** unintentional **Design**
- **4. Consistent, with itself and all related documentation.**

These are "Clarity" Rules: later, 'relevance' rules need application

Requirement Defect Rates Improvement in 6 months in Financial Business, London, Gilb Client Using Spec Quality Control /Extreme Inspection + Planguage Requirements

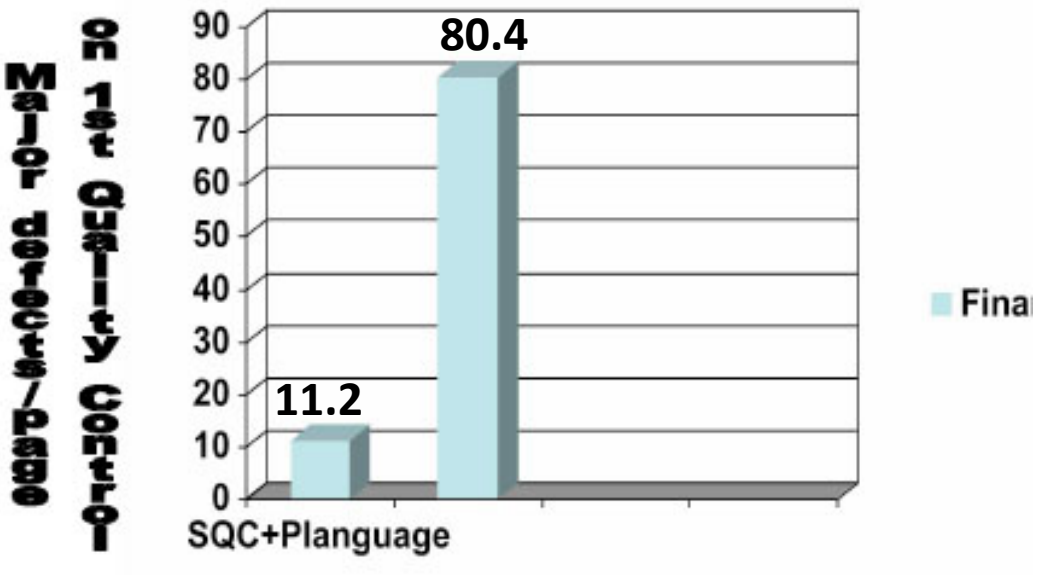
Across 18 DV (DeVelopment) Projects using the new requirements method, the average major defect rate on first inspection is 11.2 per logical page.

4 of the 18 DV projects were re-inspected after failing to meet the Exit Criteria of 10 major defects per page.

A sample of 6 DV projects with requirements in the 'old' format were tested against the rules set of:

1. **The requirement is uniquely identifiable**
2. **All stakeholders are identified.**
3. **The content of the requirement is 'clear and unambiguous'**
4. **A practical test can be applied to validate it's delivery.**

The average major defect rate in this sample was 80.4 per logical page.



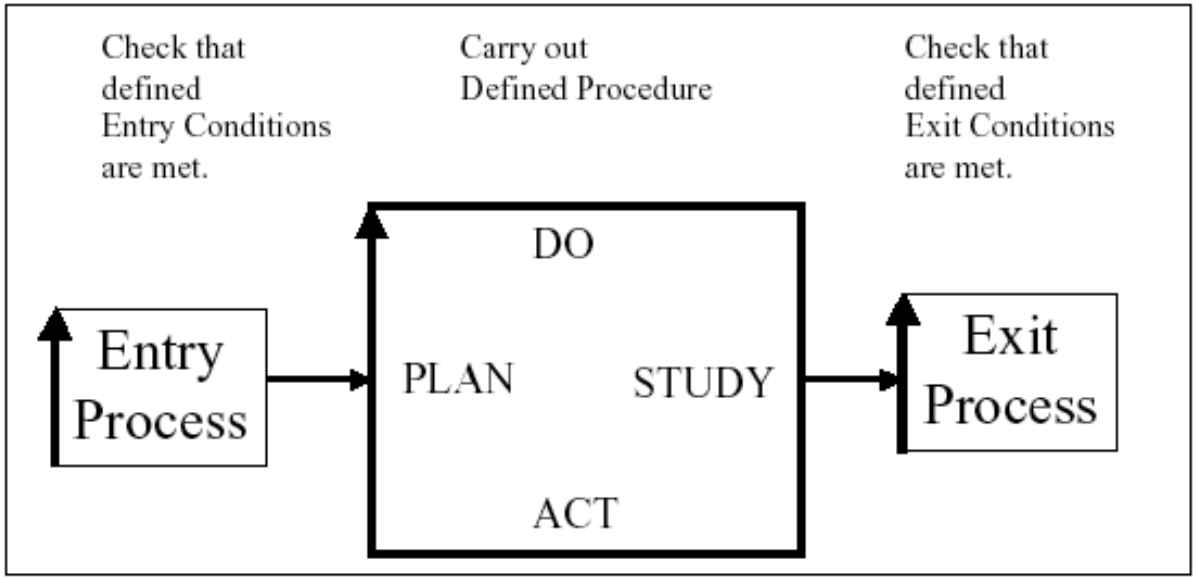
Principle 2.

- **The requirements must follow our current standards, *measurably***

?

- **How can we measure if a requirement standard is followed?**
- **What % conformance to our standards is ‘enough’?**

You should have NUMERIC exit and entry quality levels from both test processes and related development processes



- **Entry and Exit Condition example:**
- **Maximum estimated 1.0 Major defects per logical page remaining.**
- **This was the MOST important lesson IBM learned about software processes (source Ron Radice, co-inventor Inspections, Inventor of CMM)**
- **No 'Garbage In' to Test Planning!**

The downstream alternative cost of quality at a UK Defence Electronics Factory. 9 to 1 more

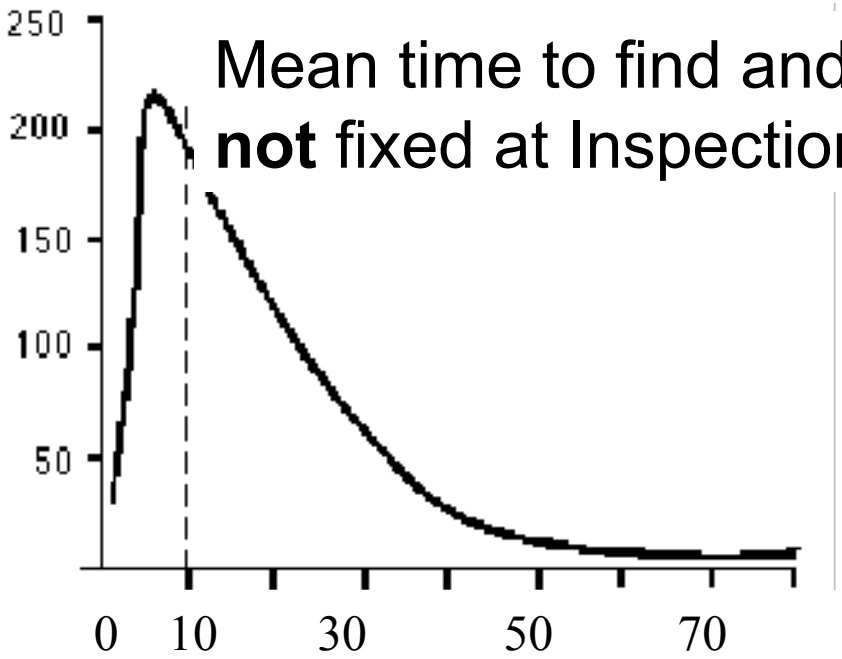
(all types of documents for electronics).

Number of defects of the 1,000 sampled Majors ------>

That we

manually estimated

downstream costs to fix

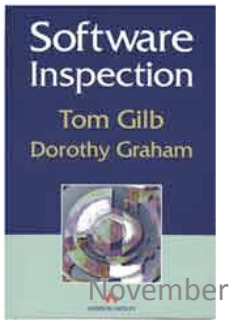


Mean time to find and correct a Major if **not** fixed at Inspection was **9.3** Hours.

It cost about **1** hour to find and fix a Major **at** time of Inspection

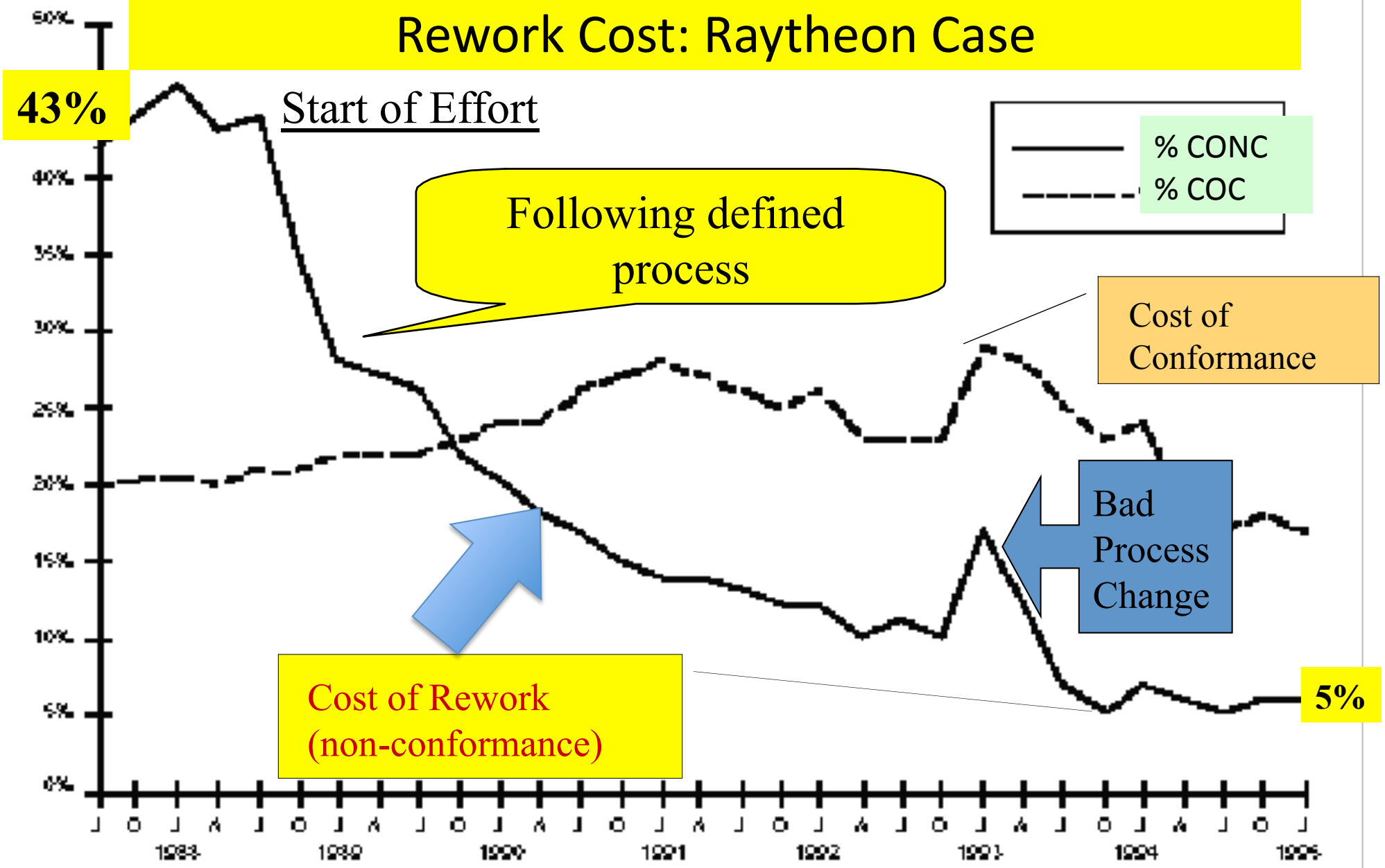
Estimated hours to find and correct later in test, or in field

Trevor Reeve



Source: Trevor Reeve, Case Study Chapter in "Software Inspection", Gilb client. Philips MEL became "Thorn EMI", then Racal. Crawley UK. 1999 Raytheon

Rework Cost: Raytheon Case



http://www.sei.cmu.edu/pub/documents/95.reports/pdf/tr017.95.pdf

End 1988

Raytheon

End 1994

Figure 8: Cost of Quality Versus Time

‘Avoidable’ Costs of Non-conformance Items

Raytheon

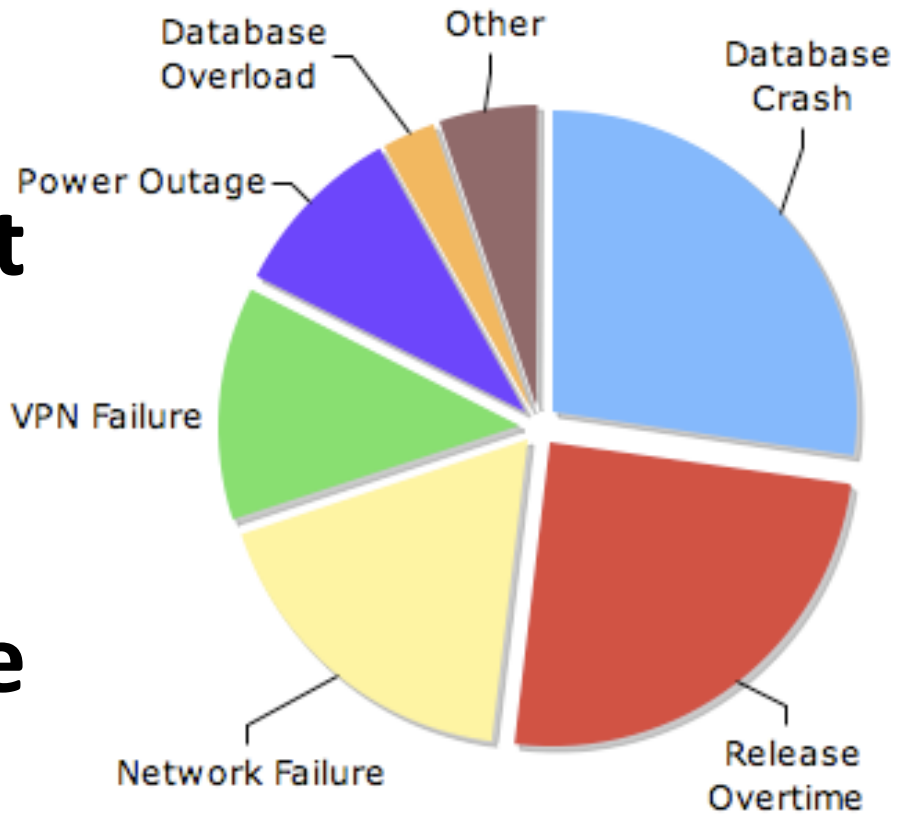
- Re-reviews
- Re-tests
- Fixing Defects (code, documentation)
- Reworking any document.
- Engineering Changes
- Lab Equipment Costs of Retests

- Updating Source Code
- Patches to Internal Code
- Patches to Delivered Code
- External Failures
- from Philip Crosby’s Model according to Raytheon95 Fig. 7

Source: Raytheon Report 1995
http://www.sei.cmu.edu/pub/documents/95.reports/pdf/tr017.95.pdf

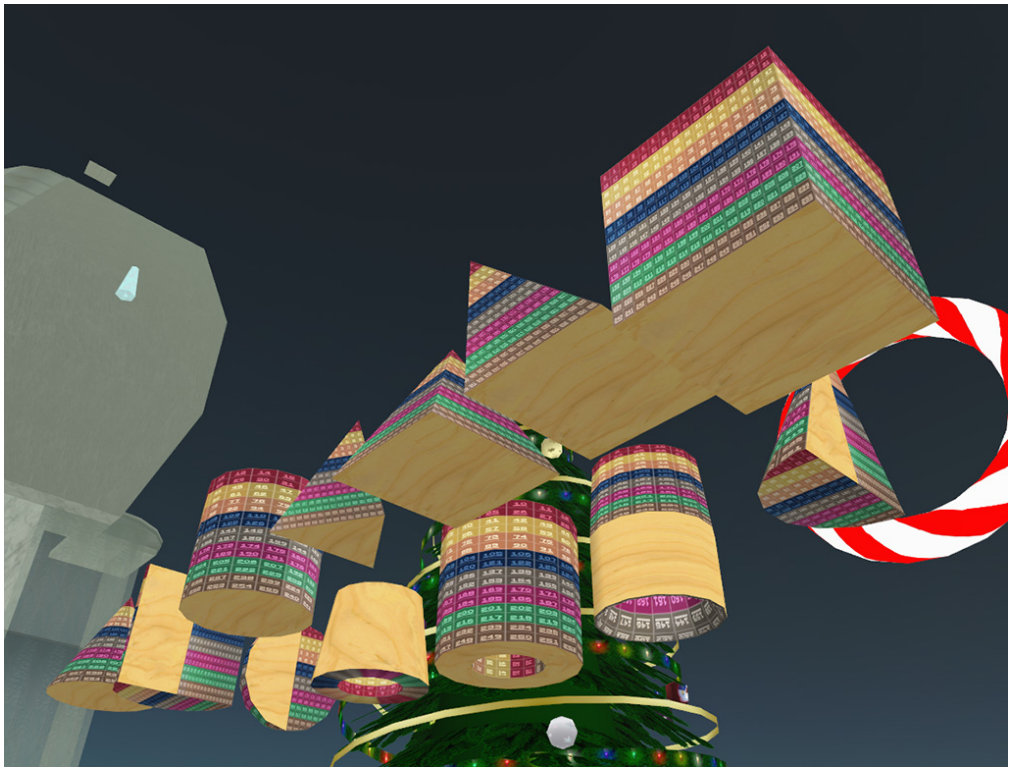
Principle 3.

- **Performance, including quality requirements must be specified quantitatively.**
- **A ‘Scale’ and a future point on the scale must be defined.**



?

- **How can a quality be ‘quantified’?**
  - **Try to quantify ‘usability’**



A 'Bad' Requirement
"Rock solid robustness"

- *While **robustness** is an **essential** HORROR requirement in all its uses, it is especially critical in MINING applications where the much longer job durations afford software defects (e.g. memory leaks) a greatly expanded opportunity to surface.*
- In this regard,
- HORROR will provide the following features or attributes:
  - ***Minimal down-time***
- A critical HORROR objective is to have **minimal downtime** *due to* **software failures**.
- This objective includes:
  - **Mean time between forced restarts > 14 days**
- HORROR's goal for mean time between forced restarts **is greater than 14 days**.
- *Comment: This figure does not include restarts caused by hardware problems, e.g. poorly seated cards or communication hardware that locks up the system. MTBF for these items falls under the domain of the hardware groups.*
  - **Restore system state < 10 minutes**
- Log scripts and test scripts, subsystem tests
  - ***Built-in testability***
- HORROR will provide the following features and attributes to facilitate testing.
  - **Tool simulators**

- *GILB COMMENT:*
  - *For once a reasonable attempt was made to quantify the meaning of the requirement!*
  - *But is could be done much better*
  -
  - *As usual the **set of designs** to **meet the requirement** do not belong here.*
  - *And none of the designs make any **assertion** about how well (to what degree) they will meet the defined numeric requirements.*
  - *And as usual another guarantee of eternal costs in pursuit of a poorly defined requirement is most of the content.*

Real case of requirement for project costing over $100,000,000 without delivering testable results

Better Testable Definition of the Requirement:

<u>Rock Solid Robustness</u>:

Type: *Complex* Product Quality Requirement.

Includes: { Software Downtime, Restore Speed, Testability, Fault Prevention Capability, Fault Isolation Capability, Fault Analysis Capability, Hardware Debugging Capability}.

Defining One Component Clearly:

Software Downtime:
Type: Software Quality Requirement.
Ambition: *to have minimal downtime due to software failures <- HFA 6.1*
***Issue**: does this not imply that there is a system wide downtime requirement?*

Scale: <mean time between forced restarts for defined [Activity], for a defined [Intensity].>

Fail [Any Release or Evo Step, Activity = Recompute, Intensity = Peak Level] **14 days** <- HFA 6.1.1

Goal [By 2008?, Activity = Data Acquisition, Intensity = Lowest level] **: 300 days** ??
Stretch: **600 days**

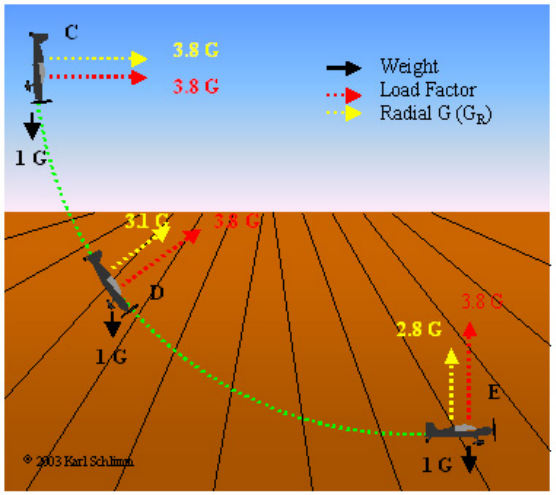
Defining a Second Component Clearly:

Restore Speed:

Type: Software Quality Requirement.

Ambition: Should an error occur (or the user otherwise desire to do so), Horizon shall be able to restore the system to a previously saved state in less than 10 minutes. <-6.1.2 HFA.

Scale: Duration from Initiation of Restore to Complete and verified state of a defined [Previous: Default = Immediately Previous]] saved state.



Initiation: defined as {Operator Initiation, System Initiation, ?}. Default = Any.

Goal [Initial and all subsequent released and Evo steps] 1 minute?

Fail [Initial and all subsequent released and Evo steps] 10 minutes. <- 6.1.2 HFA

Catastrophe: 100 minutes.

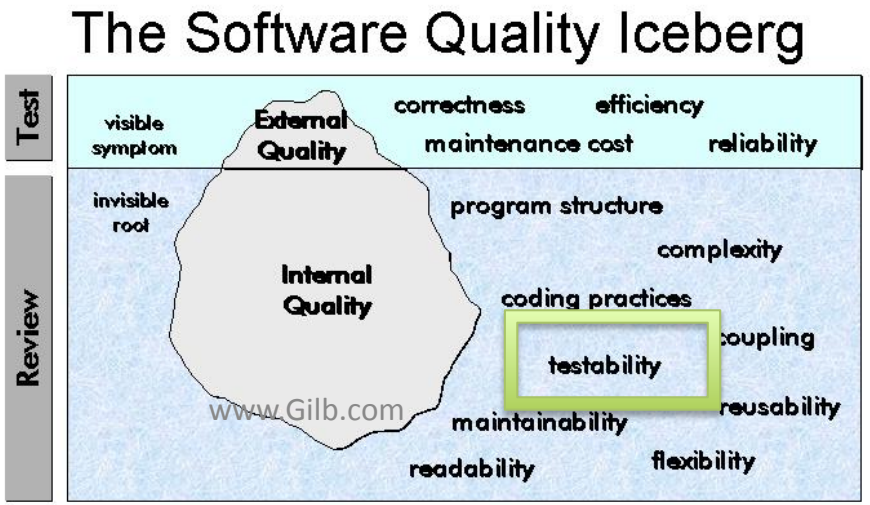
Defining a Third Component Clearly:

Testability:
Type: Software Quality Requireme
Version: 20 Oct 2006-10-20
Status: Demo draft,
Stakeholder: {Operator, Tester}.
Ambition: Rapid-duration automatic testing of <critical complex tests>, with extreme operator setup and initiation.

Scale: the duration of a defined [Volume] of testing, or a defined [Type], by a defined [Skill Level] of system operator, under defined [Operating Conditions].

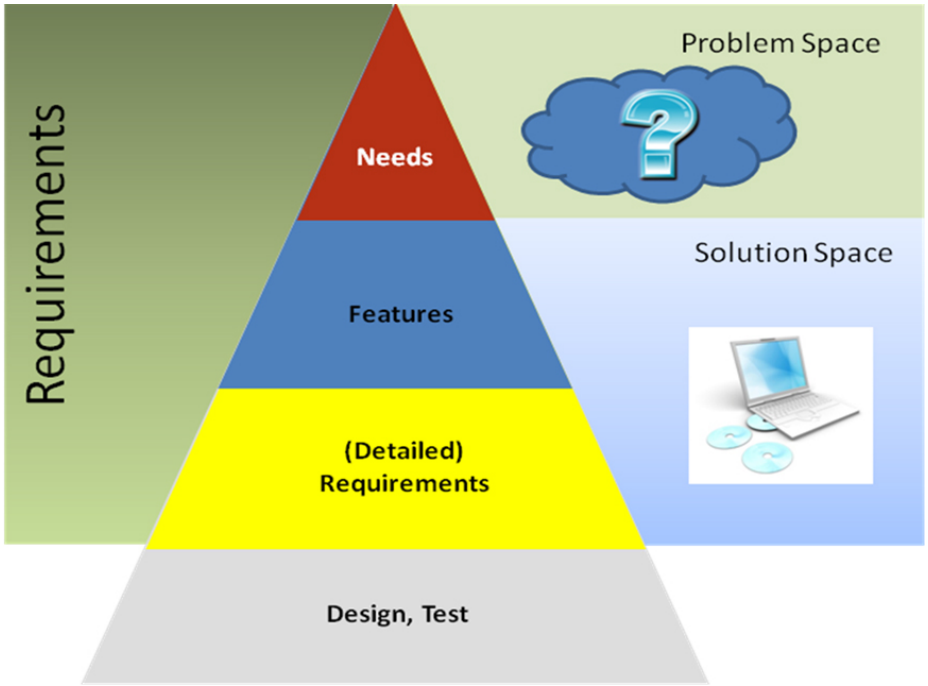
Goal [All Customer Use, Volume = 1,000,000 data items, Type = WireXXXX Vs DXX, Skill = First Time Novice, Operating Conditions = Field, {Sea Or Desert}. **<10 mins.**

Design Hypothesis: *Tool Simulators, Reverse Cracking Tool, Generation of simulated telemetry frames entirely in software, Application specific sophistication, for drilling – recorded mode simulation by playing back the dump file, Application test harness console <-6.2.1 HFA*



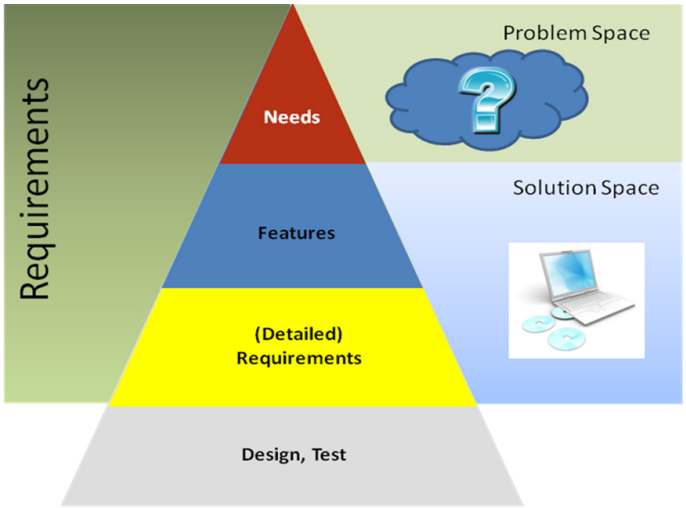
Principle 4.

- Requirements must be correctly "Typed"
  - (Function, Quality, Constraint etc.)



?

- **List all types of requirements**
  - **you can imagine**



Requirement Types

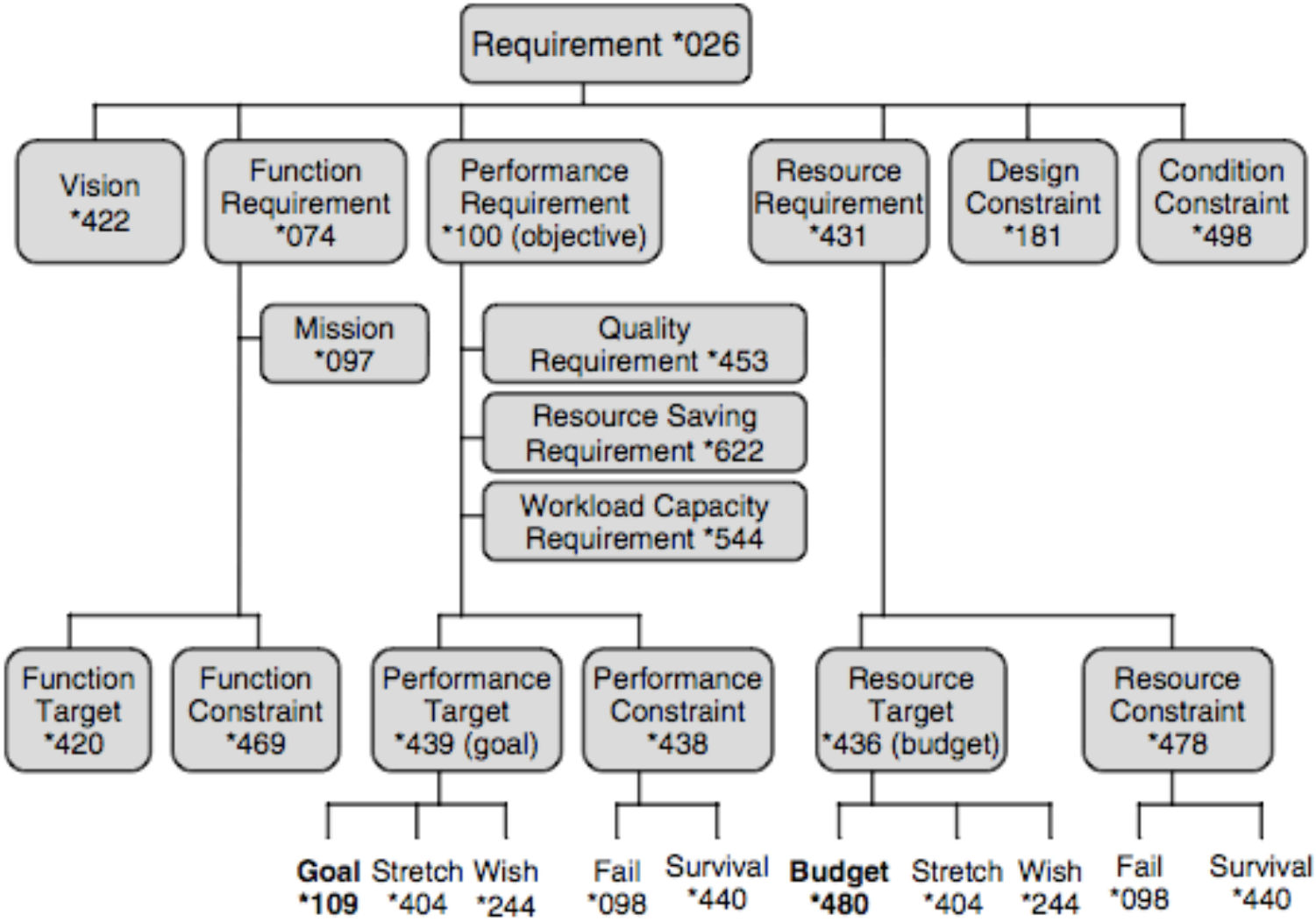


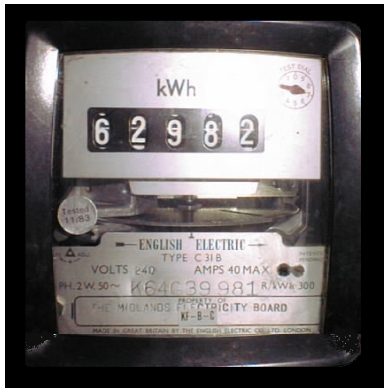
Figure G20
Requirement Concepts.

Type determines Test

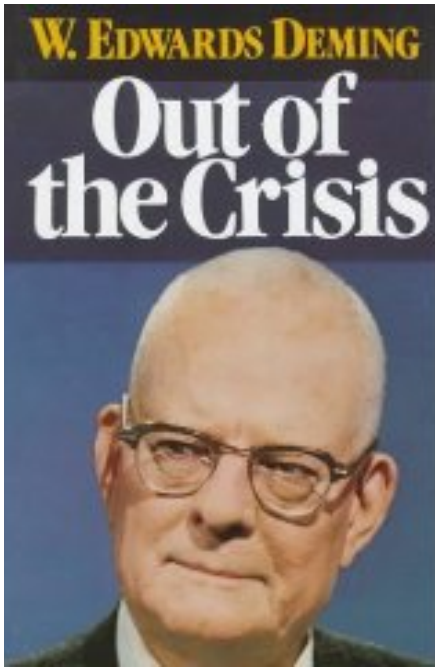
- **Type: Function Requirement.**
  - **Test for presence**
- **Type: Quality or Performance Requirement**
  - **Test along the scale using a defined 'Meter' (test process)**
- **Test: Constraint**
  - **Test to see if the defined constraint (example Legal) is violated or not**

"Horses for Courses"

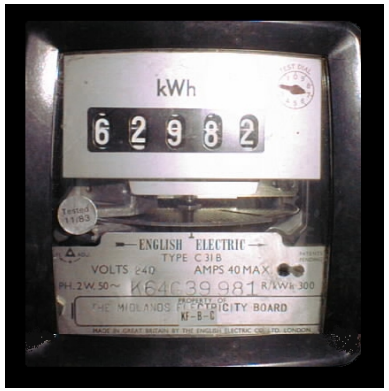
Meter Concept *093



- **A ‘Meter’ parameter is used to**
  - **identify, or specify,**
  - **the definition of a practical measuring device, process, or test**
  - **that has been selected for use in measuring a numeric value (level) on a defined Scale.**
- *“there is nothing more important for the transaction of business than use of operational definitions.” (W. Edwards Deming, Out of the Crisis (Deming 1986))*



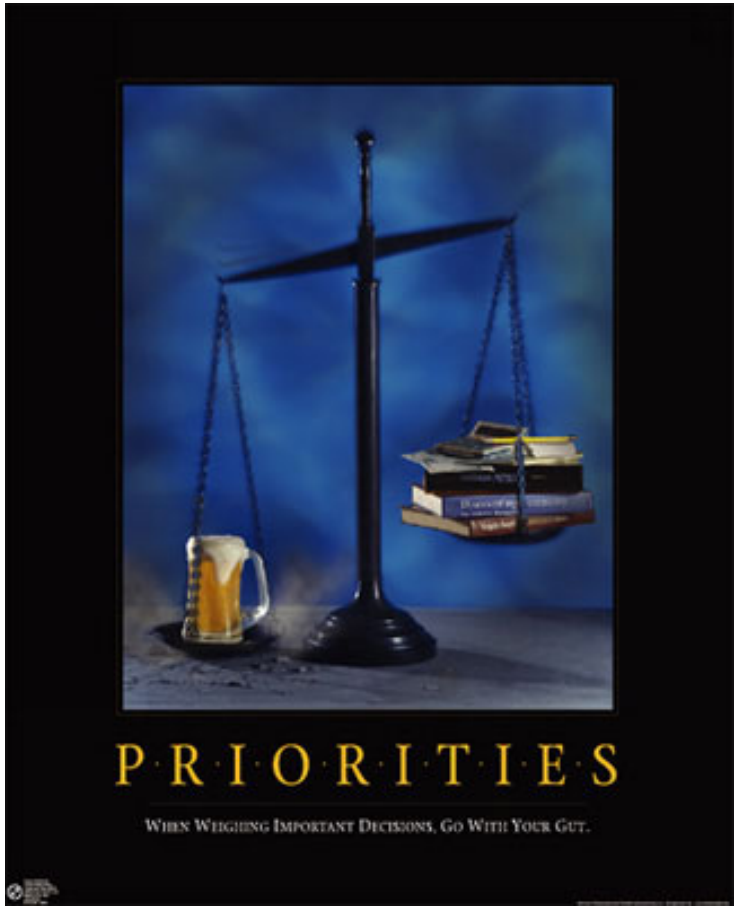
Example of ‘Meter’ Use



- **Satisfaction:**
- **Scale: Percentage of <satisfied> Customers.**
  - **Meter [New Product, After Launch]: On-site survey after 30 days use for all Customers.**
- **Past [This Year, USA]: 30%.**
  - **Meter [Past]: Sample of 306 out of 1,000+ Customers.**
- **Record [Last Year, Europe]: 44%.**
  - **Meter [Record]: 100% of Customers. Goal [After Launch]: 99% <- Marketing Director**

Principle 5.

- **The requirement level *priorities* must be specified**
  - **(Survival, Fail, Goal, Stretch)**



?

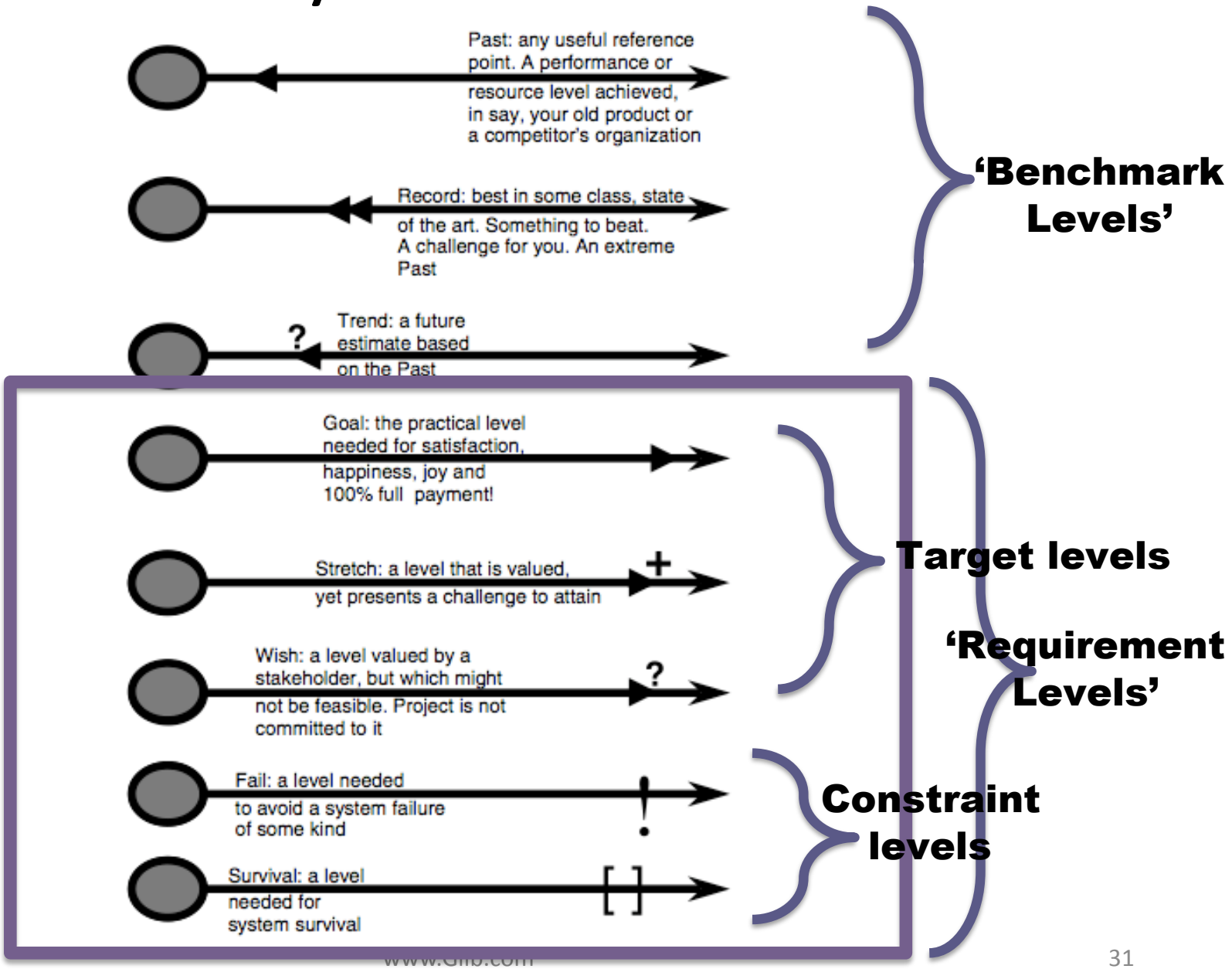
- **Name at least 5 ways to ‘prioritize’ requirements**
- **What is the smartest way to prioritize requirements?**

Mortgage Priority List

When looking to get a mortgage you may want to think about:

- Solicitor's fees
- Stamp duty
- Mortgage
- Maintenance
- Home insurance
- Mortgage protection insurance
- Furnishing
- Survey
- Moving costs
- Utility bills (gas & electric)
- Personal (magazines, CDs, coffee)
- Entertainment/going out
- Moving costs
- New furniture
- Decoration
- New appliances
- Childcare
- Groceries
- Clothes
- Mobile phone
- Insurance(s)
- Public transport
- Water rates
- Petrol/car expenses
- Savings
- Council tax
- Internet/Phone/TV

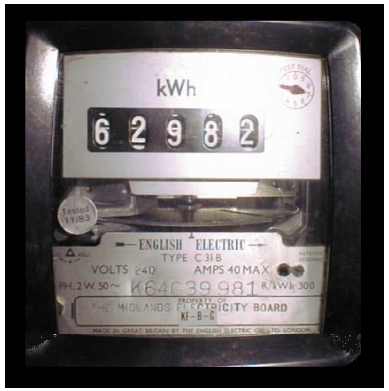
Levels of System Performance



Priority

1. **Survival**
2. **Fail/ Tolerable**
3. **Goal**
4. **Stretch**
5. **Wish**
6. **Ideal**

Principle 6.

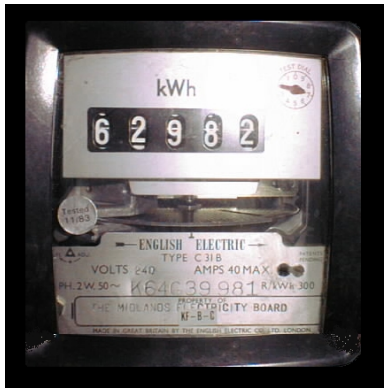


- One or more high level ‘Meter’ specifications should have been agreed
- and integrated into the specification initially.

?

- **What is the difference between**
  - **A scale of measure, and**
  - **A way to measure where we are on that scale?**

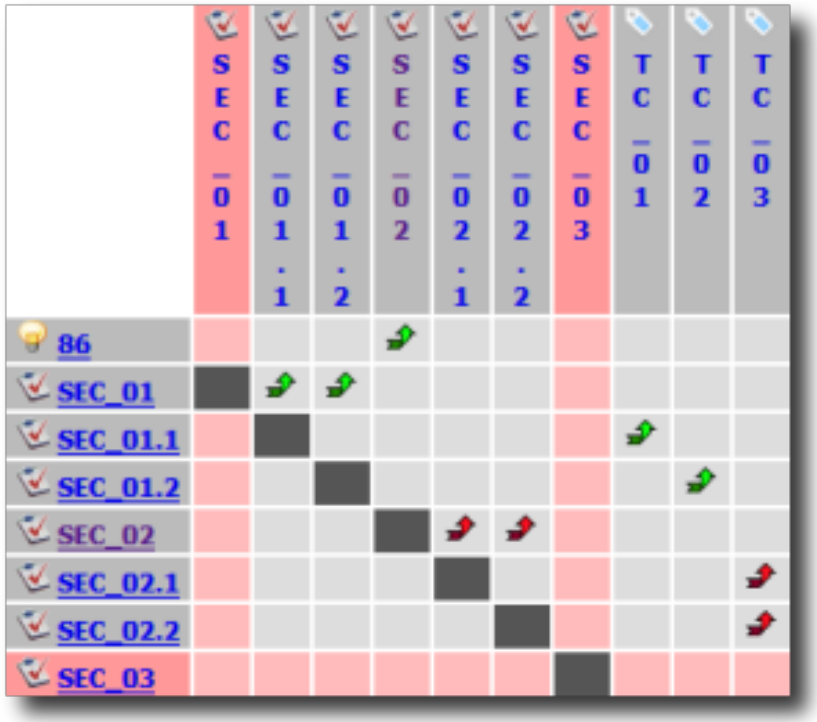
‘Meter’ Specifications



- **<u>Task Productivity</u>:**
- **Type: System Level Critical Quality Requirement**
- **Scale: Average Time to Correctly Complete defined [Task] using defined [Employee] under defined [Circumstances]**
- **Meter:**
  - **Over 100 random representative instances of Tasks will be tested**
  - **for all defined Employee Types**
  - **under all defined Circumstances.**

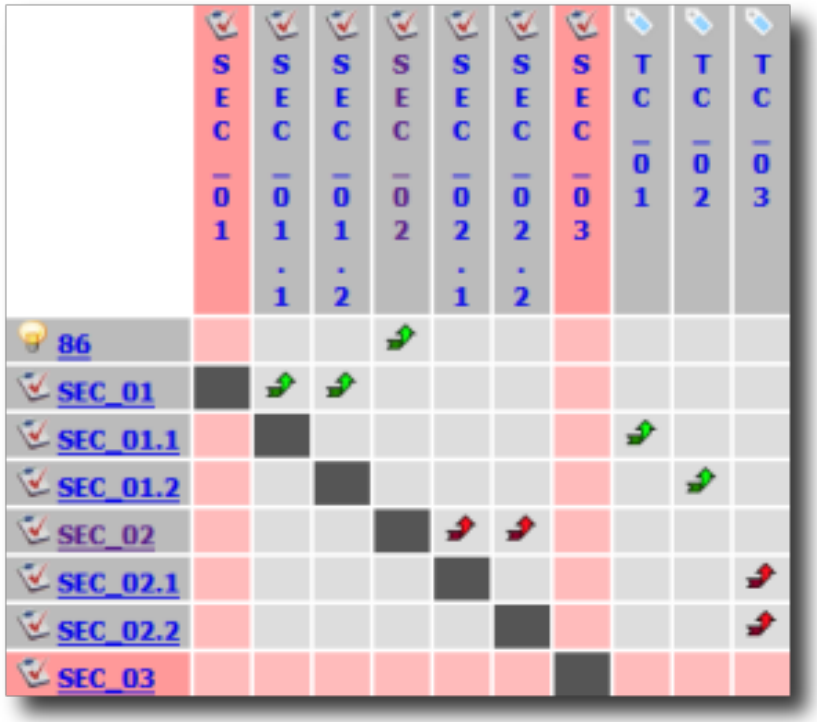
Principle 7.

- **Pointers**
  - to corresponding Test Plans, Test Scripts, Test Results, and Test Responsible people
  - should be integrated into the requirement specification itself
  - by the test planners.



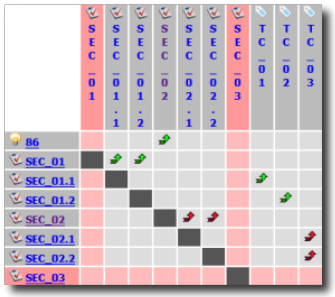
?

- Name ways to *document and quality control* the relationship between a **requirement** and **test cases**
- What is the best practice here?
- What **practices** have you seen that are **dangerous** regarding the **test case: requirement** relationship



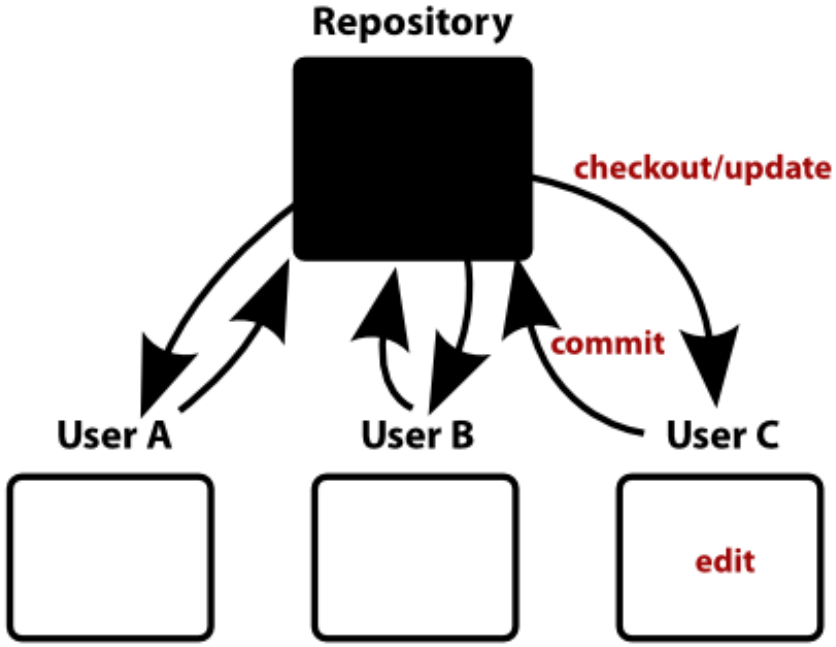
Adding Information to the 'Meter'

- Task Productivity:
- Type: System Level Critical Quality Requirement
- Version: 10 September 2008: 15:14 <- TsG
- Scale: Average Time to Correctly Complete defined [Task] using defined [Employee] under defined [Circumstances]
- Meter: Over 100 random representative instances of Tasks will be tested for all Employee Types under all defined Circumstances.
  - Approved: User Committee, 10 Sept. 2008
  - **Test Plan: <not made yet, Task Productivity.Test Plan>.**
  - **Scripts: <Task Productivity.Scripts>**
  - **Test Results: <Task Productivity.Outputs>**
  - **Test Responsible: Project Test Planner (TG).**
  - **First Test: <scheduled 1 Oct 2008>.**
  - **Last Test: <none>.**



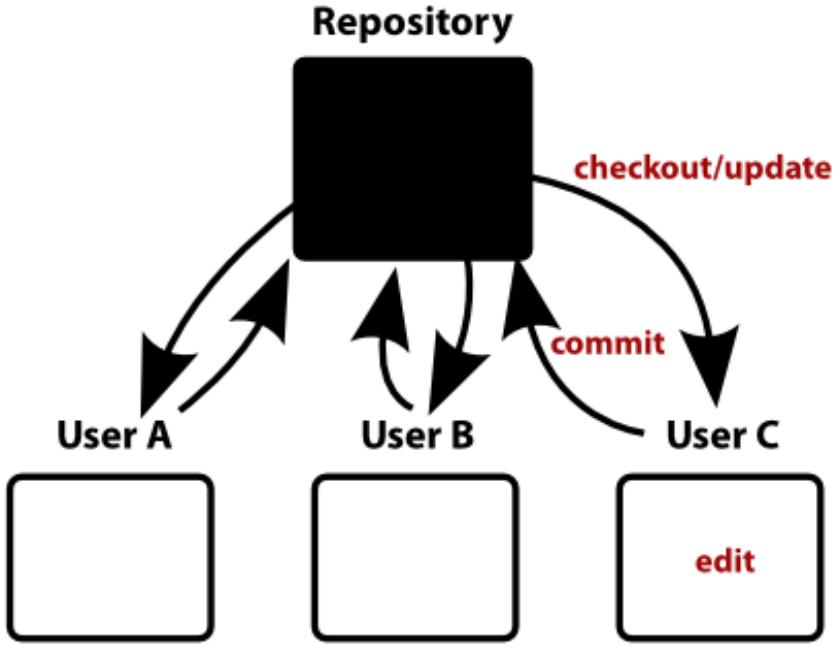
Principle 8.

- Version Control
  - each *requirement* change must be sent to responsible test planners
    - (automatically)



?

- **Name problems you have seen**
  - **because the requirements**
  - **and their changes**
  - **were not up to date for you as a tester?**



Making ***Test*** Aware of Requirement Changes in Real Time

Requirement Change Inspection:

Are all related instances (like Test) formally notified of the change?

Change Notification Recorded

Task Productivity:

***Type*: System Level Critical Quality Requirement**

***Version* : 11 September 2008: 15:00 <- TsG**

***Scale* : Average Time to Correctly Complete defined [Task] using defined [Employee] under defined [Circumstances]**

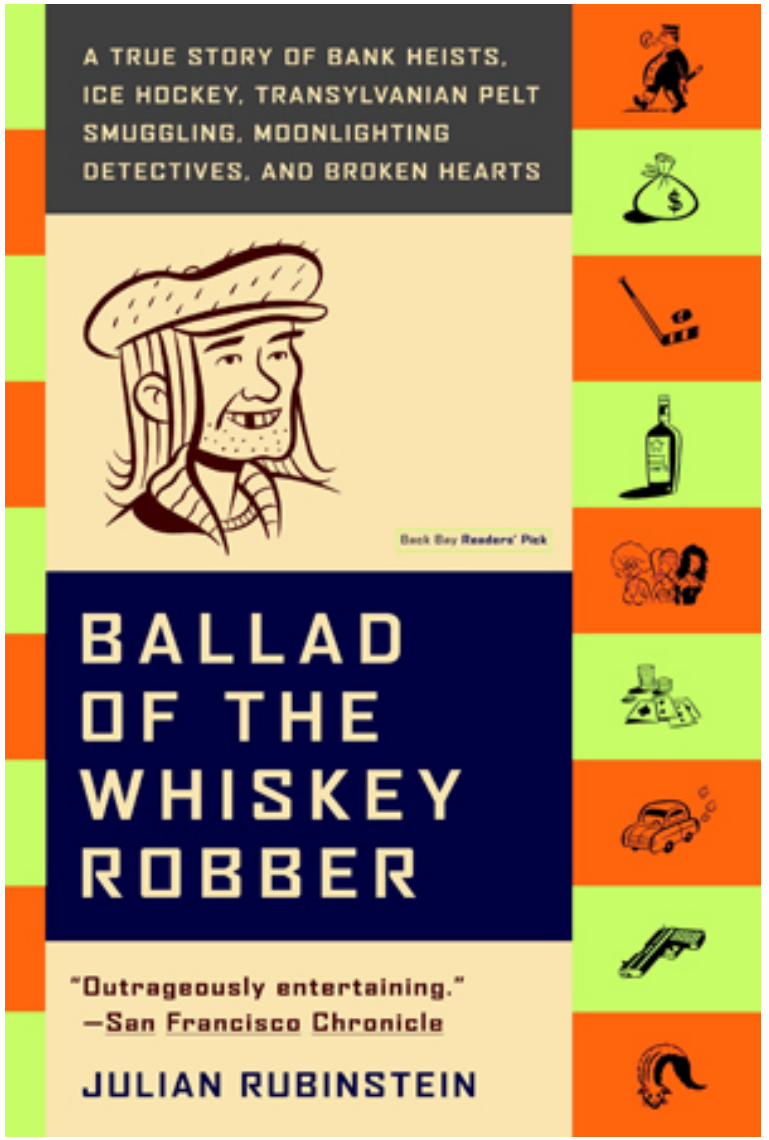
***Meter* : Over 1,000 random representative instances of Tasks will be tested for all Employee Types under all defined Circumstances.**

***Test Responsible* : Project Test Planner (TG).**

***Changes Emailed* : 1 September 2008: 16:00**

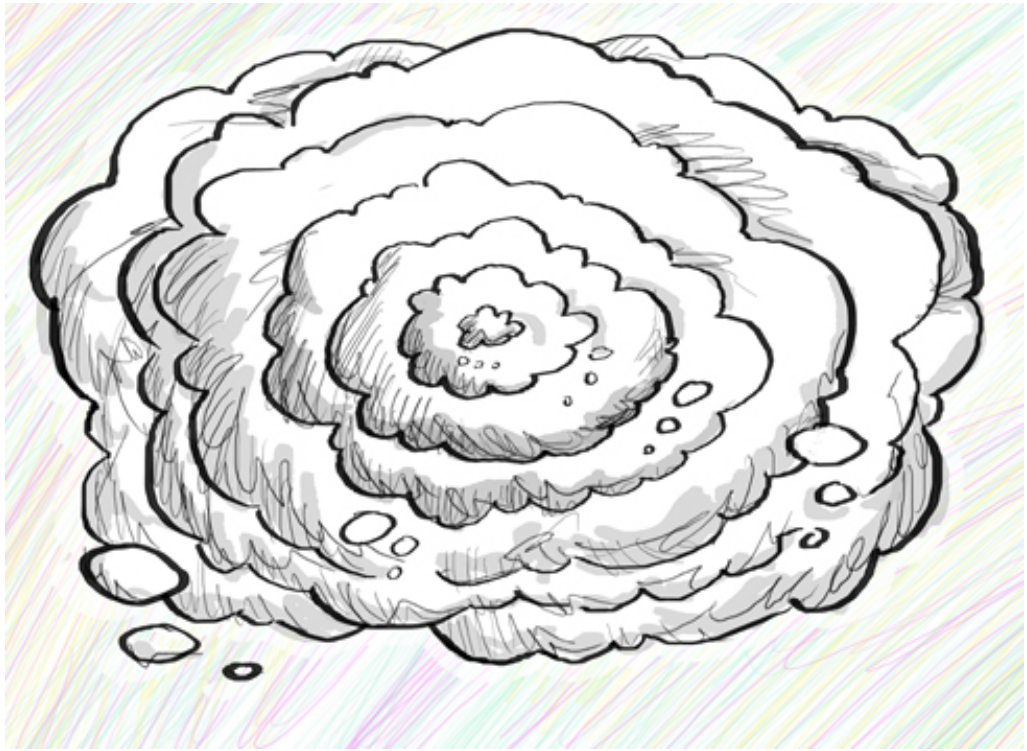
Principle 9.

- The Total set of conditions for a requirement
- will be specified in one or more [Qualifier] statements.



?

- **List examples where you have seen a requirement misunderstood?**
- **Why was it misunderstood?**



[Conditions] – ? cases to test

Task Productivity:

Type: System Level Critical Quality Requirement

Version: 11 September 2008: 15:00 <- TsG

Scale: Average Time to Correctly Complete defined [Task] using defined [Employee] under defined [Circumstances].

Goal [Task = Initiate, Employee = Any, Circumstances = Stressful] 10 minutes.

Goal [Task = Initiate, Employee = New Hire, Circumstances = Training] 20 minutes.

Stretch Goal [Task = Initiate, Employee = New Hire, Circumstances = Training] 15 minutes.

Task: {Initiate, Process, Complete, Correct}.

Employee: {New Hire, Average, Expert, Manager, Any, All}.

Circumstances: {Training, Stressful, Any, All, Normal}.

Test All combinations

Principle 10.

- The *Priority Information* about a requirement
  - will be suitable
  - to help test planners understand
  - the priority of
    - test quality
    - and timeliness.

?

- **On what basis should we decide ‘how well’ to test?**
- **To what degree is this ‘test quality’ information available and correct in your work?**

Understanding Test Timeliness

- **Task Productivity:**
- **Type: System Level Critical Quality Requirement**
- **Version: 11 September 2008: 15:00 <- TsG**
- **Scale: Average Time to Correctly Complete defined [Task] using defined [Employee] under defined [Circumstances].**
- **Goal [Task = Initiate, Employee = Any, Circumstances = Stressful, Deadline = June 2009] 10 minutes.**
- **Goal [Task = Initiate, Employee = New Hire, Circumstances = Training, Deadline = December 2009] 20 minutes.**

Understanding Test *Quality*

- Task Productivity:
- Type: System Level Critical Quality Requirement
- Version: 11 September 2008: 15:00 <- TsG
- Scale: Average Time to Correctly Complete defined [Task] using defined [Employee] under defined [Circumstances].
- **Meter: Over 1,000 Representative instances of Tasks will be tested for all Employee Types under all defined Circumstances.**
  - **Representative: by Frequency of tasks, and % of Employee, and proportion times of Circumstances**

?

- **Do testers have any ‘inalienable rights’ regarding inputs to their work?**
- **(or are they in fact just expected to put up with whatever practices are current)**
- **What do you feel you can , should, will, ‘complain’ about?**
  - **What are the consequences of your complaints being disregarded?**

Testers Bill of Rights: ©Tom Gilb

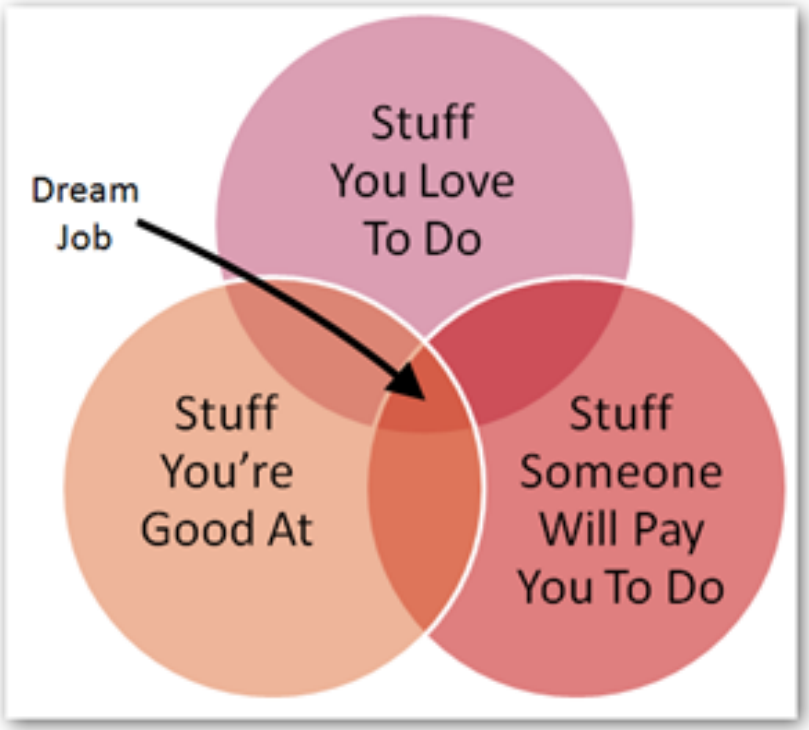
1. Testers have the right to sample their process inputs, and reject poor quality work (no entry).
2. Testers have the right to unambiguous and clear requirements.
3. Testers have the right to test evolutionarily; early as the system increments.
4. Testers have the right to integrate their test specifications into the other technical specifications.
5. Testers have the right to be a party to setting the quality levels they will test to.
6. Testers have the right to adequate resources to do their job professionally.
7. Testers have the right to an even workload, and to have a life.
8. Testers have the right to specify the consequences of products that they have not been allowed to test properly.
9. Testers have the right to review any specifications that might impact their work.
10. Testers have the right to focus on testing of agreed quality products, and to send poor work back to the source.

Why should testers have *any* rights?

- **Main Argument:**
  - **Because it will reduce total costs, time and increase quality at the same time.**
- **Real Reason (hidden agenda):**
  - **To make other project members do their *own work* properly, in the *first* place.**
- **Altruistic Reason:**
  - **to make their workday more meaningful,**
  - **and to show them some due respect.**

What are testers going to *do* with their 'rights'?

- **Use them to negotiate service agreements with the rest of the project**
- **Use them to train testers in rational expectations**
- **Use them to set their own test process entry and exit standards**
- **Use them to enhance their own defined processes**
- **Use them as a starting argument;**
  - **when they are 'mistreated' by other project members**



Part 2:

- **Quality Control:**
  - **How should we organise quality control inspections**
  - **of requirements** and **test planning**
  - **so as to drive people to better practices,**
  - **and to avoid *wasting time* on bad inputs?**

The direct answer?

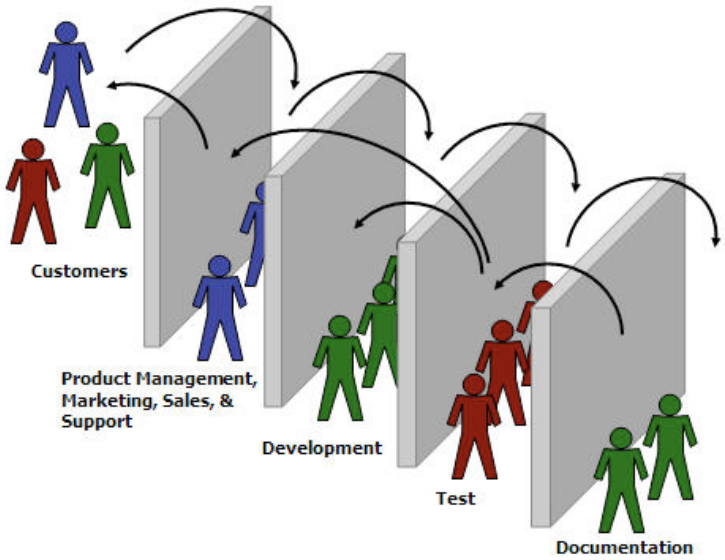
- we should organise quality control inspections
- of requirements and test planning
- according to the following management policy.

?

- **What should the main ideas**
  - **in a requirements ‘quality control’ policy**
  - **be?**

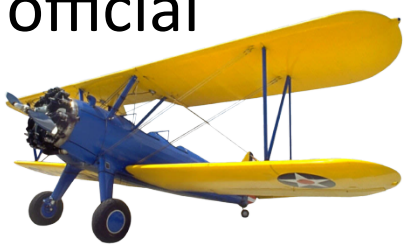
Test QC Policy for Test Inputs and Outputs

- All test process inputs (like requirements), and all test process human outputs (like test scripts, test plans, and test strategies) will be subject to strict, numeric Entry and Exit control.
- The primary numeric Entry/Exit Condition will be based on the specifications' degree-of-conformance to agreed standards.
  - As measured by Inspections, and consequent Major Defect Density Remaining Calculations
  - The Generic Acceptable level of major defects is maximum estimated 1.0 Majors/Logical Page (300 words)
- We will demand such a standard from our input suppliers, and we will demand that standard from ourselves.

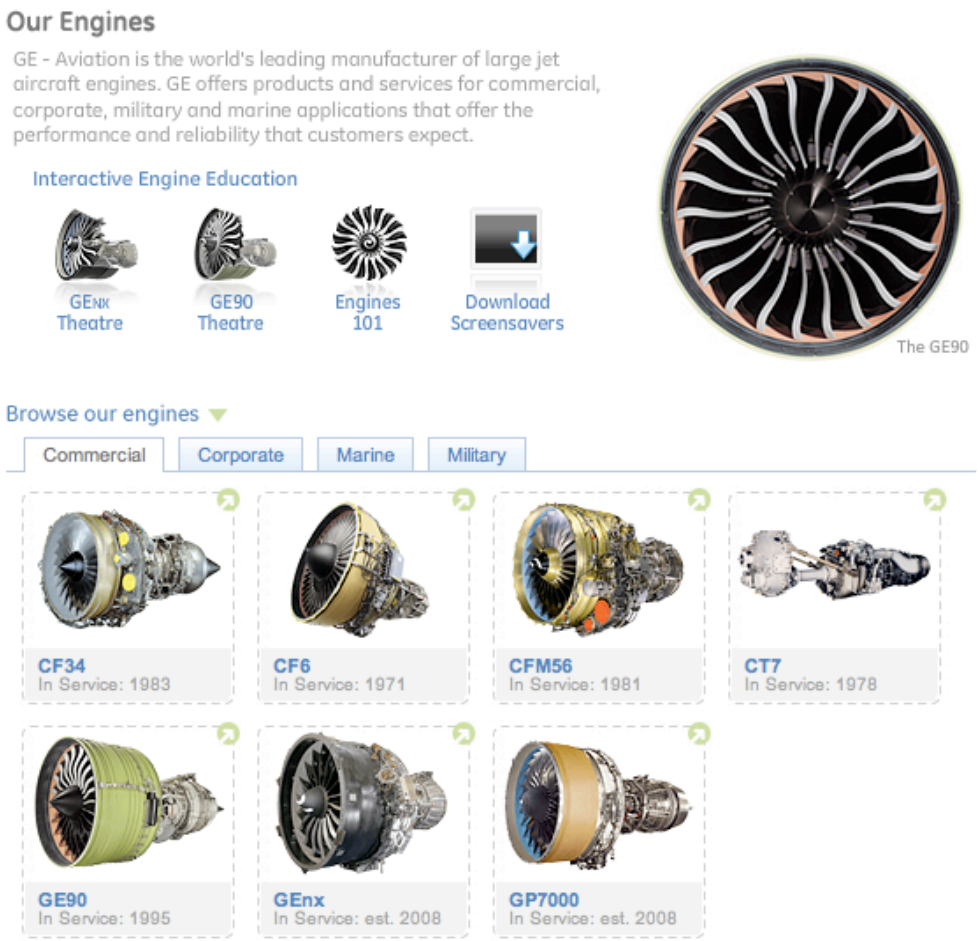


The 30 minute agile review for requirements: how to measure defect density of requirements !

- How to measure requirement quality levels
  - Cheaply (15-60 minutes, 2 to 4 reviewers)
  - Reliably (accurately enough to sort out unacceptable work)
  - An 'Agile form of Inspections
- The requirement specification QC (Quality Control)
  - In simple terms, SQC measures the density of serious malpractice (Major defects) in relation to official written rules for good practice



Here is a real case example of such a **static test**, of a requirement specification



Case:
Real Agile Spec QC

- of System Requirements Specification (SRS)

of 82 pages for a major US corporation.

Framework

- Demonstration of power of Agile Inspection
  - 8 Managers
  - 2 hours
  - 4 real requirements specifications offered ,
    - One 82 page ‘System Requirements Specification’ actually used

We Introduced best-practice Rules for Requirements

- 1. **Unambiguous** to intended Readership
- 2. **Clear** enough to test.
- 3. **No** unintentional **Design**

We explained the definition of Spec Defect (1)

- A '**Specification Defect'** is a ***violation of a Specification Rule***
  - *–(violation of a 'standard')*
  - *– Note: If there are 10 ambiguous terms in a single requirement*
    - *then there are 10 defects!*

We further explained the definition of Spec Defect (2)

- **A 'Specification Defect' is a *also a 'Potential Defect'***

  - ***In the next level of specification***
    - ***Like in Design, test plans, code or test scripts.***
  - ***With about 1/3 chance (potential) of becoming a downstream real defect.***
  - ***In 'code' we call this a 'bug' (a potential malfunction).***
  - ***If we discover the bug in test or operation we call it a 'malfunction'***

The definition of Major defect

- **Major:**
  - **a Defect that *potentially***

costs more

– to find and fix

– later in the development process

– than it would cost *now*.

– We need to get rid of it NOW!

?

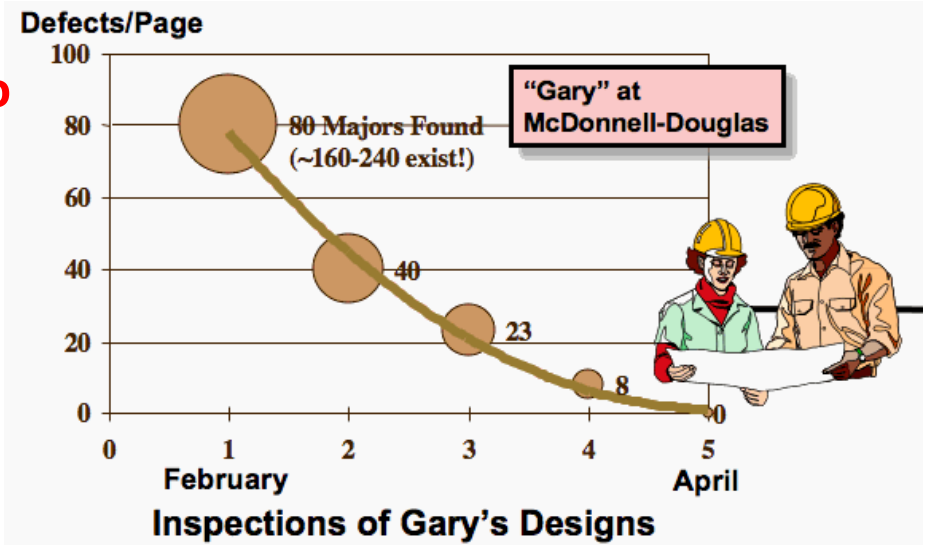
- How many Major defects /page in requirements
  - do you ,
  - should you,
    - allow into the test process

I got 'agreement' with Management on the Exit level

- **Exit Conditions:** (when Requirements can go forward to Design, Test, etc. with little risk)
  - ***Maximum* 1 Major Defect per (Logical) Page, estimated, remaining**
  - **Logical Page** = **300** Non-commentary words.

The notion of numeric exit: When are requirements 'good enough' to build tests on ?

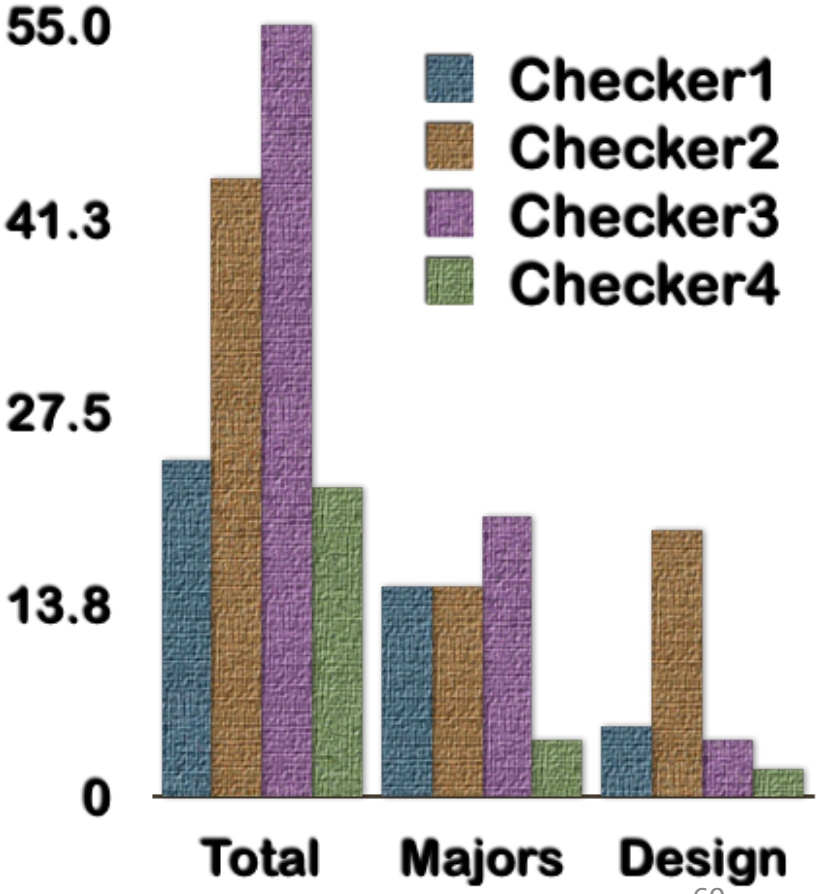
- **A major defect in requirements has 33% chance of causing a bug or worse (a bad test!).**
- **Most IT shops are 'uncontrolled': have no standards enforced, no QC of requirements**
- **They have about 100 ±50 major defects per page**
  - **33 ± 10 potential bugs per page**
- **This is deemed completely unacceptable by most managements, and is unacceptable in relation to cost and quality considerations.**
- **This (max. 1 major/page) should be your requirements process exit standard, and also your test planning *entry* standard**



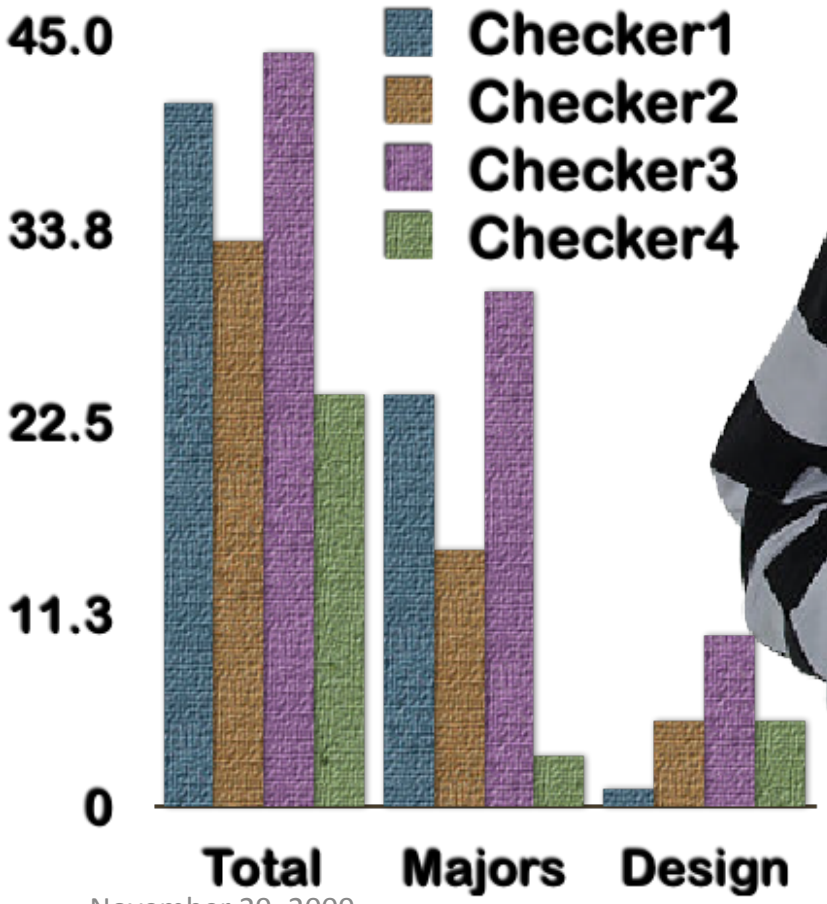
The assigned checking process

- **You have up to 30 minutes**
  - **check 1 *sample* requirements page (from an 82 page document)**
- **Count all *potential* Rule Violations**
  - **= Defects**
- ***Classify* Defects as Major or minor**

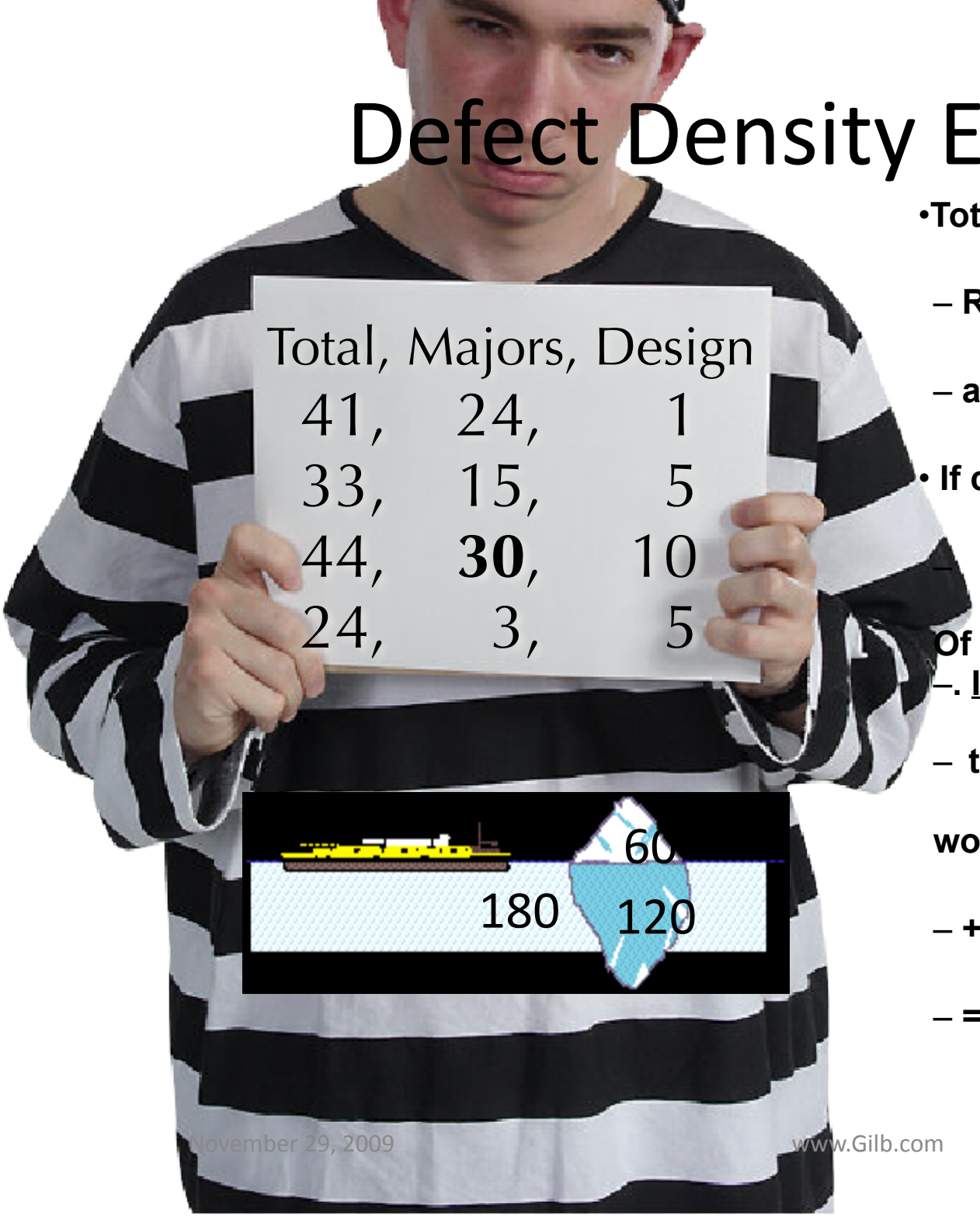
Report
Page 81



Report
Page 82



Defect Density Estimation



- **Total for group (page 82)**
  - **Rough Est. 30 x 2 = 60 Majors**
  - **assume 60 ±10 are unique.**
- **If checking is 33.33% effective,**
  - **total in page = 3 x 60 = about 180±30**
  - **Of which 2/3 (or 120) were <u>not yet</u> found.**
  - **. <u>If</u> we fix all we found (60),**
  - **then the estimated remainder of Majors would be 120 (not found)**
  - **+10 "not fixed correctly"**
  - **= 130 Majors remaining.**

Conclusions

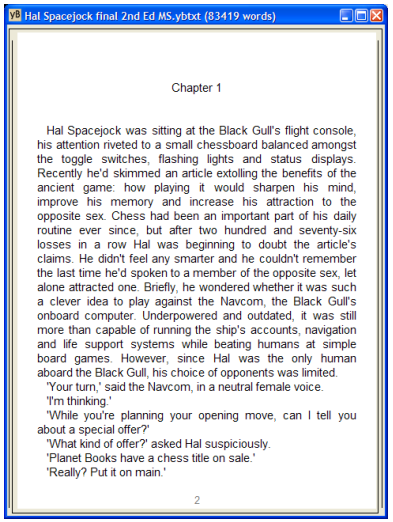
- **Human *defect removal* by Inspections/reviews/SQC is**
  - **a hopeless cause: not worth it.**
- **Spec QC *can* be used, in spite of imperfect effectiveness,**
  - **to '*accurately enough' estimate* 'major-defect-level' density.**
- **EXPERIENCE AND CONSEQUENCES:**
- **This measurement can be used to motivate engineers to**
  - **dramatically (100x! Over about 7 learning cycles)**
    - **reduce their defect insertion (rule violation)**

– **to a *practical* exit level**

» **(like *less than* 1.0 Majors/page)**

Extrapolation to Whole Document

- **Average: 150 Majors/page**

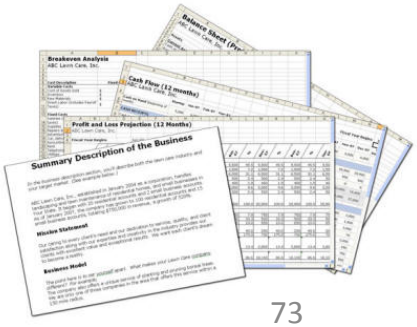


- Page 81: 120 majors/page

- Page 82: 180 Majors/page

- **Total in whole document:**

– 12,300 Majors



- 150 Majors/page x 82 pages.

Estimated Project Loss

- If a Major has
  - 1/3 chance of causing loss
- And each loss caused by a Major is
  - avg. 10 hours
  - then total project Rework cost is
  - about *41,000 hours loss.*
- (This project <u>was</u> over a year late)
  - 1 year = 2,000 hours x 10 people

Agile Spec QC Procedure

P1: Identify Checkers: Two people, maybe more, should be identified to carry out the checking.

P2: Select Rules: The group identifies about three rules to use for checking the specification. (My favorites are clarity ('clear enough to test'), unambiguous ('to the intended readership') and completeness ('compared to sources'). For requirements, I also use 'no optional design'.)

P3: Choose Sample(s): The group then selects sample(s) of about one 'logical' page in length (300 non-commentary words). Choosing such a page at random can add *credibility* – so long as it is *representative* of the content that is subject to quality control. The group should decide whether all the checkers should use the same sample, or whether *different* samples are more appropriate.

P4: Instruct Checkers: The SQC team leader briefly instructs the checkers about the rules, the checking time, and how to document any defects, and then determine if they are *major* defects (majors).

P5: Check Sample: The checkers use between 10 and 30 minutes to check their sample against the selected rules. Each checker should 'mark up' their copy of the document as they check (underlining issues, and classifying them as 'major' or not). At the end of checking, each checker should count the number of 'possible majors' (spec defects, rule violations) they have found in their page.

P6: Report Results: The checkers each report to the group their number of 'possible majors.' Each checker determines their number of majors, and reports it.

P7: Analyze Results: The SQC team leader extrapolates from the findings the number of majors in a single page (about 6 times** the most majors found by a single person, or alternatively 3 times the unique majors found by a 2 to 4 person team). This gives the major-defect density estimate. If using more than one sample, you should average the densities found by the group in different pages. The SQC team leader then multiplies the 'average major defects per page density' by the 'total number of pages' to get the 'total number of major defects in the specification' (for dramatic effect!).

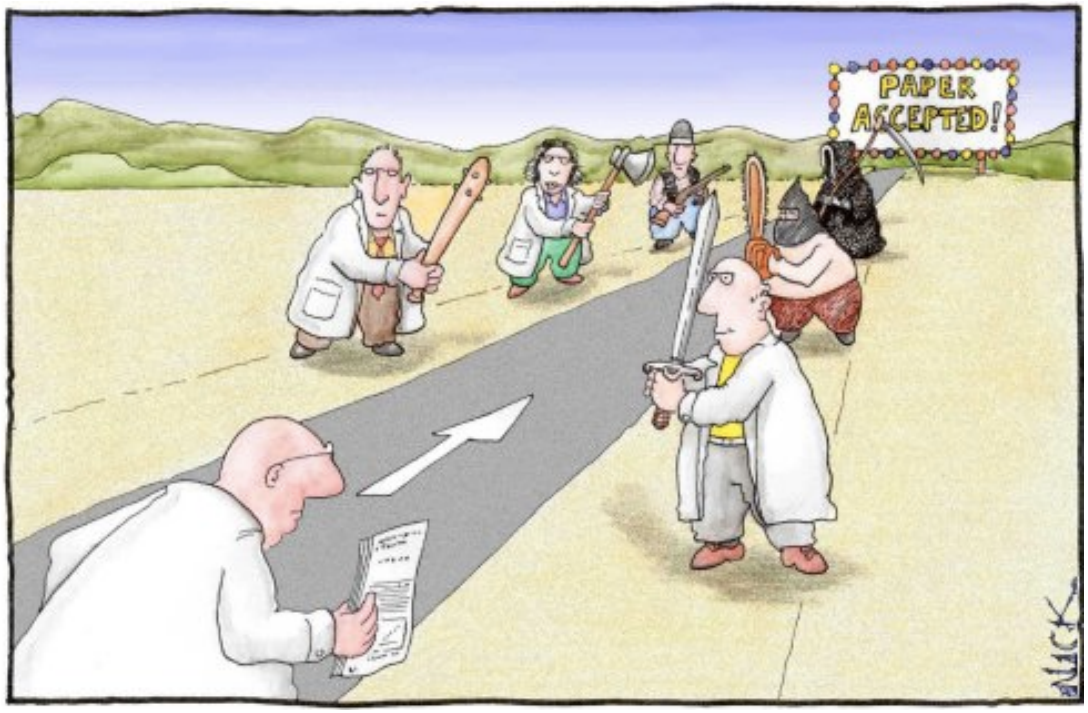
P8: Decide Action: If the number of majors per page found is a large one (ten majors or more), then there is little point in the group doing anything, except determining how they are going to get someone to write the specification 'properly', meaning to acceptable exit level. There is no economic point in looking at the other pages to find 'all the defects', or correcting the majors already found. There are simply too many majors not found.

P9: Suggest Cause: The team then chooses any major defect and thinks for a minute why it happened. Then the team agrees a short sentence, or better still a few words, to capture their verdict.

Agile SQC Process

Entry Conditions

- A group of two, or more, suitable people* to carry out Agile SQC is assembled in a meeting.
- The people have sufficient time to complete an Agile SQC. Total Elapsed Time: 30 to 60 minutes.
- There is a trained SQC team leader at the meeting to manage the process.



- Exit Conditions
- Exit if less than 5 majors per page extrapolated total density, or if an action plan to 'rewrite' the specification has been agreed.

The formal Agile SQC Process: Some Sources

- Cutter 5-page Paper
- http://www.gilb.com/tiki-download_file.php?fileId=64
-
- INCOSE SQC Paper
  http://www.gilb.com/tiki-download_file.php?fileId=57

- Agile SQC Slides with Standard for Process (JUSE 08)
- http://www.gilb.com/tiki-download_file.php?fileId=239

- CE book: pages: 242-245
  - 'Simplified Spec QC Process"

- Javazone Video 2009
  - http://tcs.java.no/tcs/?id=E4C42322-C78C-42C0-9477-2DD742A7E837

Dealing with your wayward requirements writers: How to get them to write decent requirements

- **IT Management must take charge**
- **Policy:**
  - **Requirements will be written to our standards**
  - **If not, they are not deemed acceptable for *any* purpose**
  - **Requirement quality levels (majors/page) will be *measured*, as basis for process exit and entry.**
  - **The *maximum* level will be 1 major/page.**
- **People who cannot loyally follow this policy, should leave the organisation.**

Conclusion:
the place where you
got tired of thinking

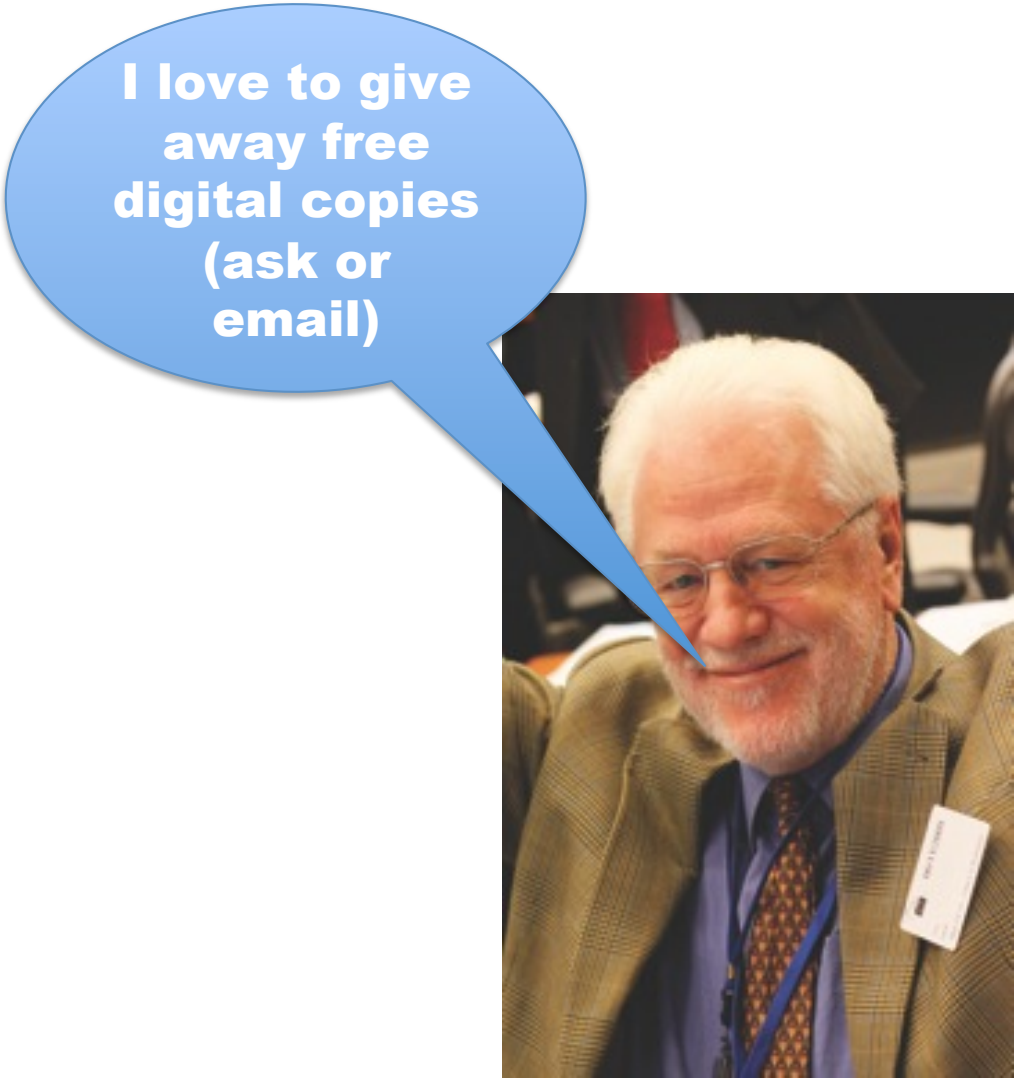
?

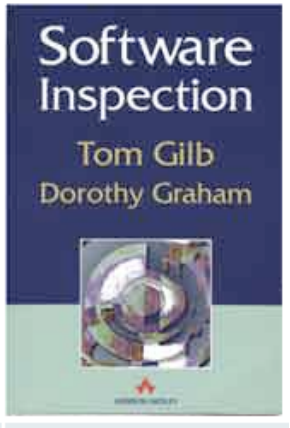
- **What are *your* conclusions**
  - **Regarding <u>how requirements are written</u>, from a test point of view?**
  - **Regarding <u>*Quality Control of Requirements*</u>, before using them in testing?**

My Conclusions

- Set decent **standards**
- **Measure adherence** to your standards
- Measure **consequences** (improvements) of adherence to requirements standards (= **bugs and delays** reduced sharply)
- **Propose** necessary **changes** to your IT Management
- **Lead by example** in Test Specification!
  - Make sure your quality is as good as you expect others to be for you
- **Measure** all **input** to **test** process, and report back
  - Have your **own standards** for acceptable inputs to test.

A *Source* of Standards for 'Good' Requirements





End slide

Requirements for Testers

Tom Gilb

(TOM@GILB.COM, WWW.GILB.COM)

These slides will be found at
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