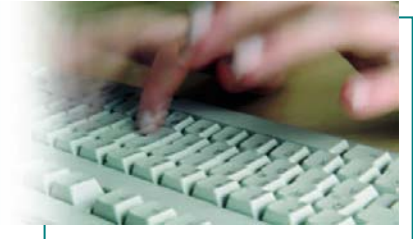
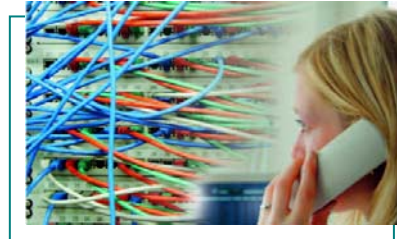


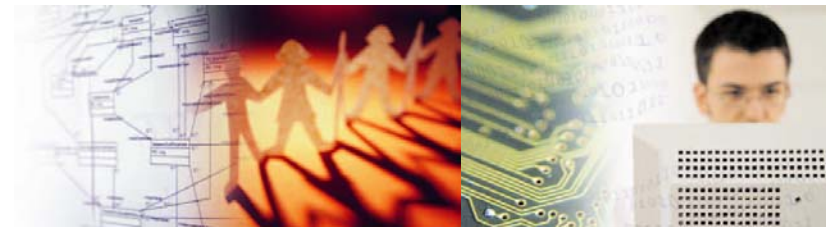


Software
Quality Assurance and Test

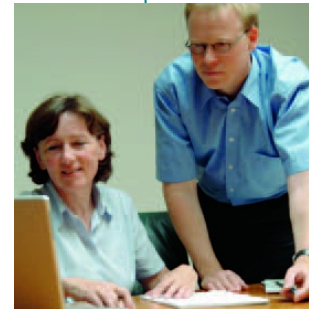
How Requirements and Testing Fit Together



EuroStar 2004



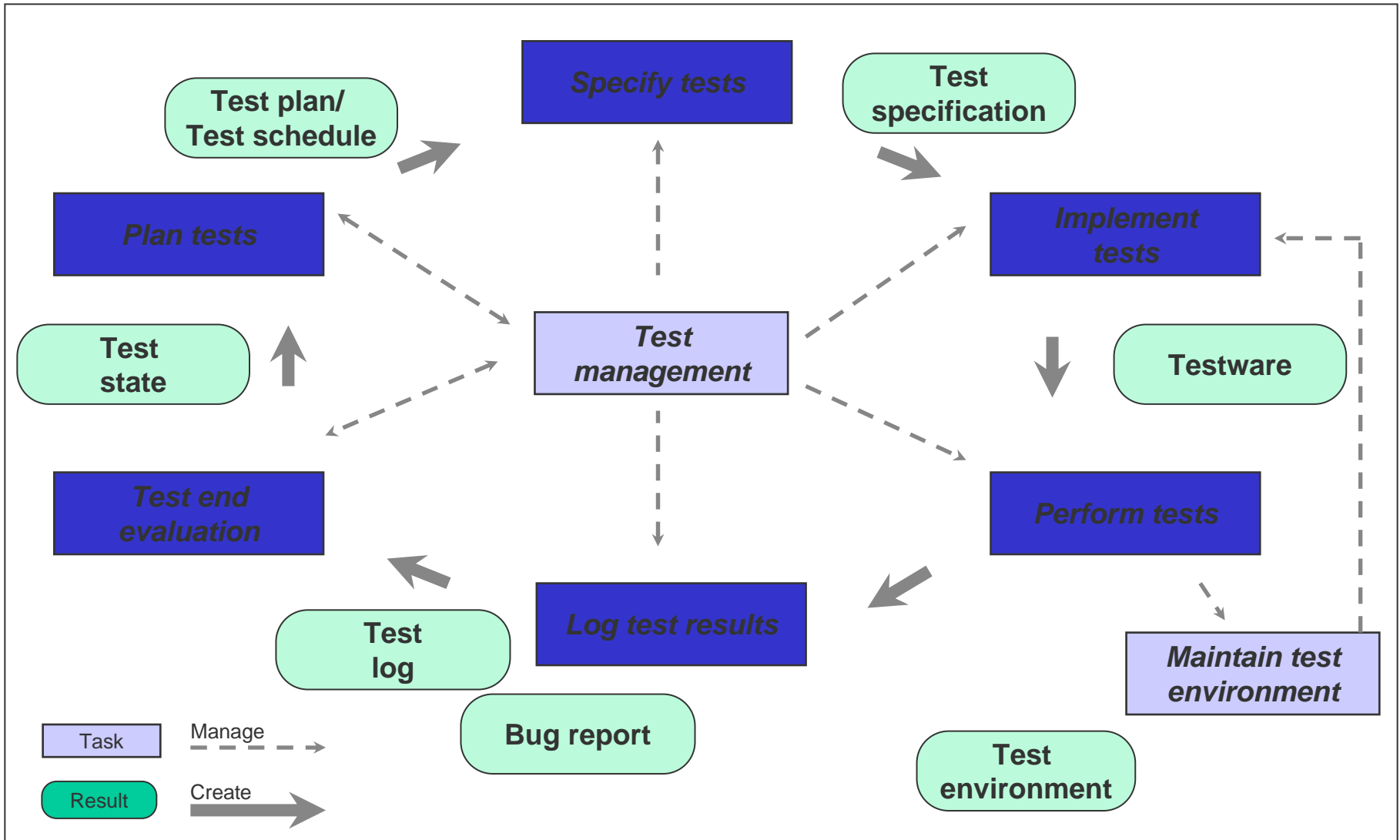
Klaudia Dussa-Zieger, imbus AG
Matthias Daigl, imbus AG



Building Software



Test Process



- ◆ Elicitation
 - ◆ Who are the stakeholders?
 - ◆ What is the scope of the system?
 - ◆ What are the requirements?
 - ◆ How to formulate requirements?
- ◆ Management
 - ◆ Administration: How to store requirements, how to keep them up to date?
 - ◆ Tracing: How do we know whether our requirements are designed, implemented, tested (correctly)?

Requirements Based Testing - a Myth?

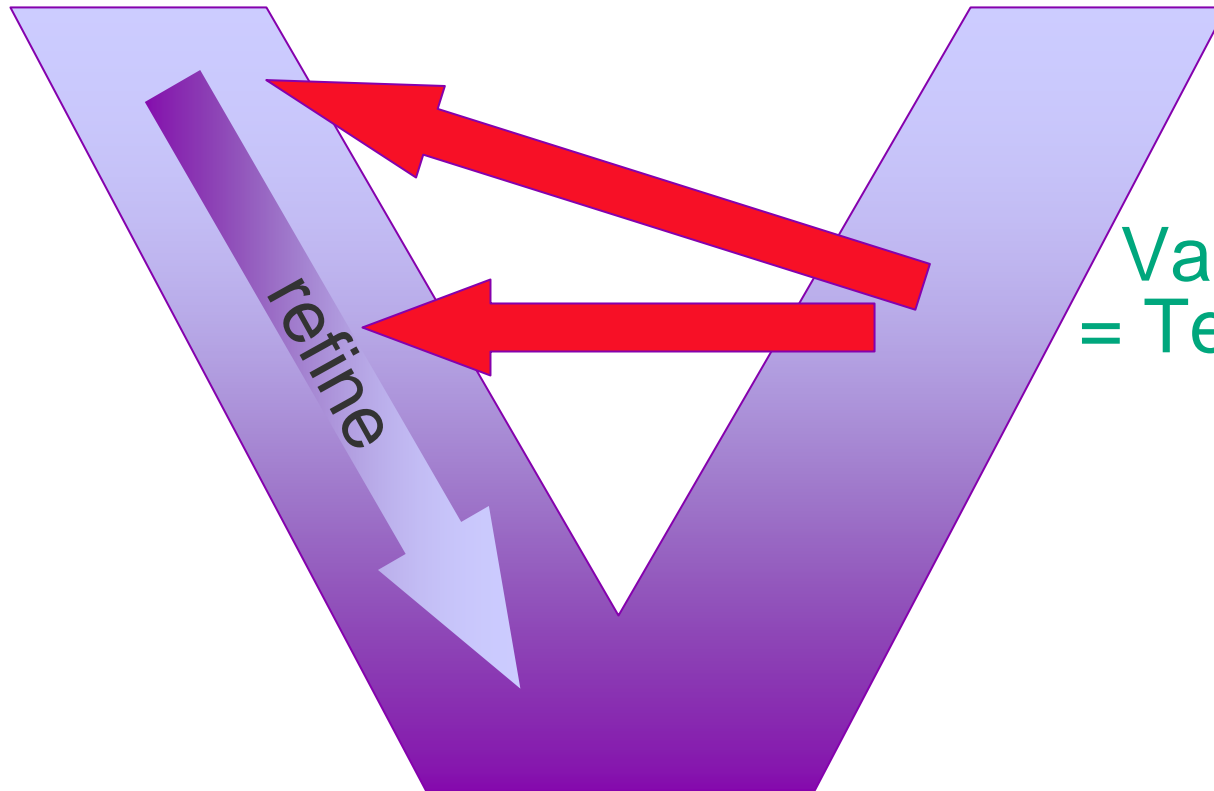
If what you are doing is not to meet a requirement - then why are you doing it at all?

(stolen from ???)

Requirements Based Testing

Requirements

Acceptance



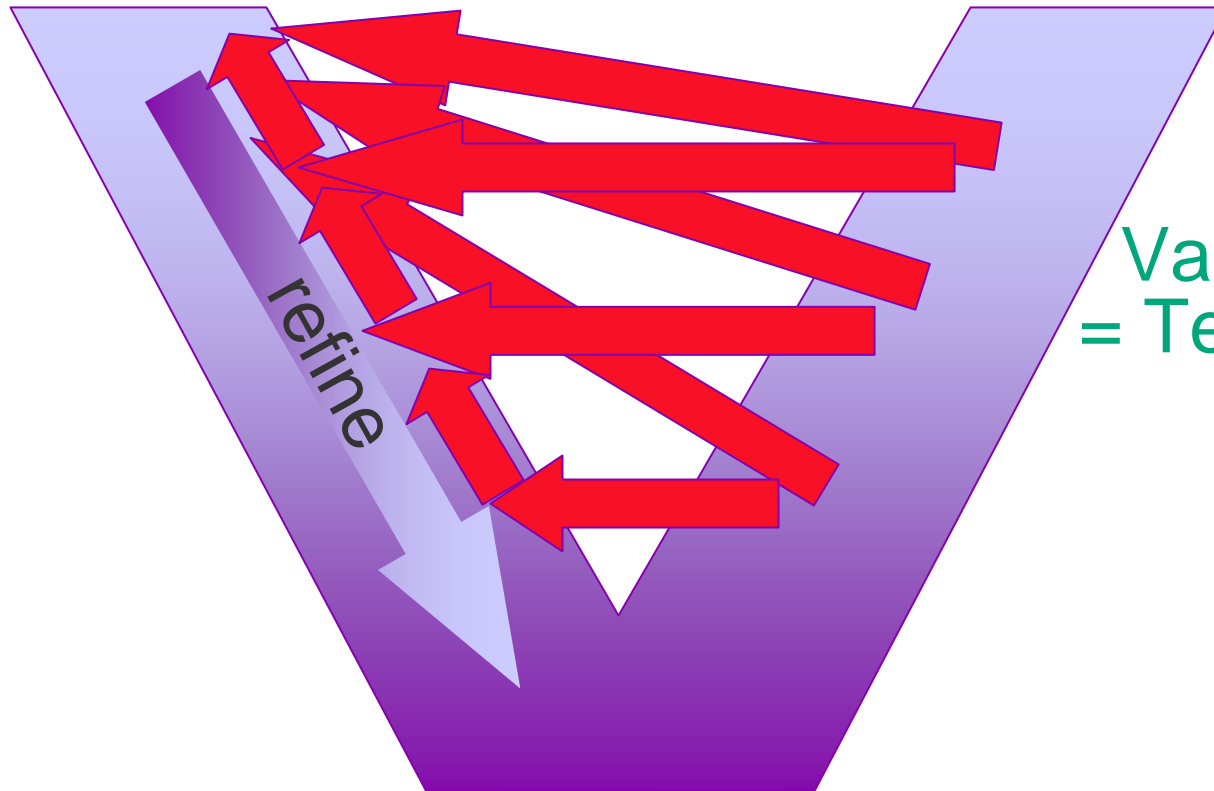
Validation
= Test

Coding

Requirements Based Testing

Requirements

Acceptance



Coding

Requirements on Requirements



Correct

Feasible

Necessary

Prioritized

Unambiguous

Verifiable



Complete



Consistent

Modifiable

Traceable



RE&M vs. Testing

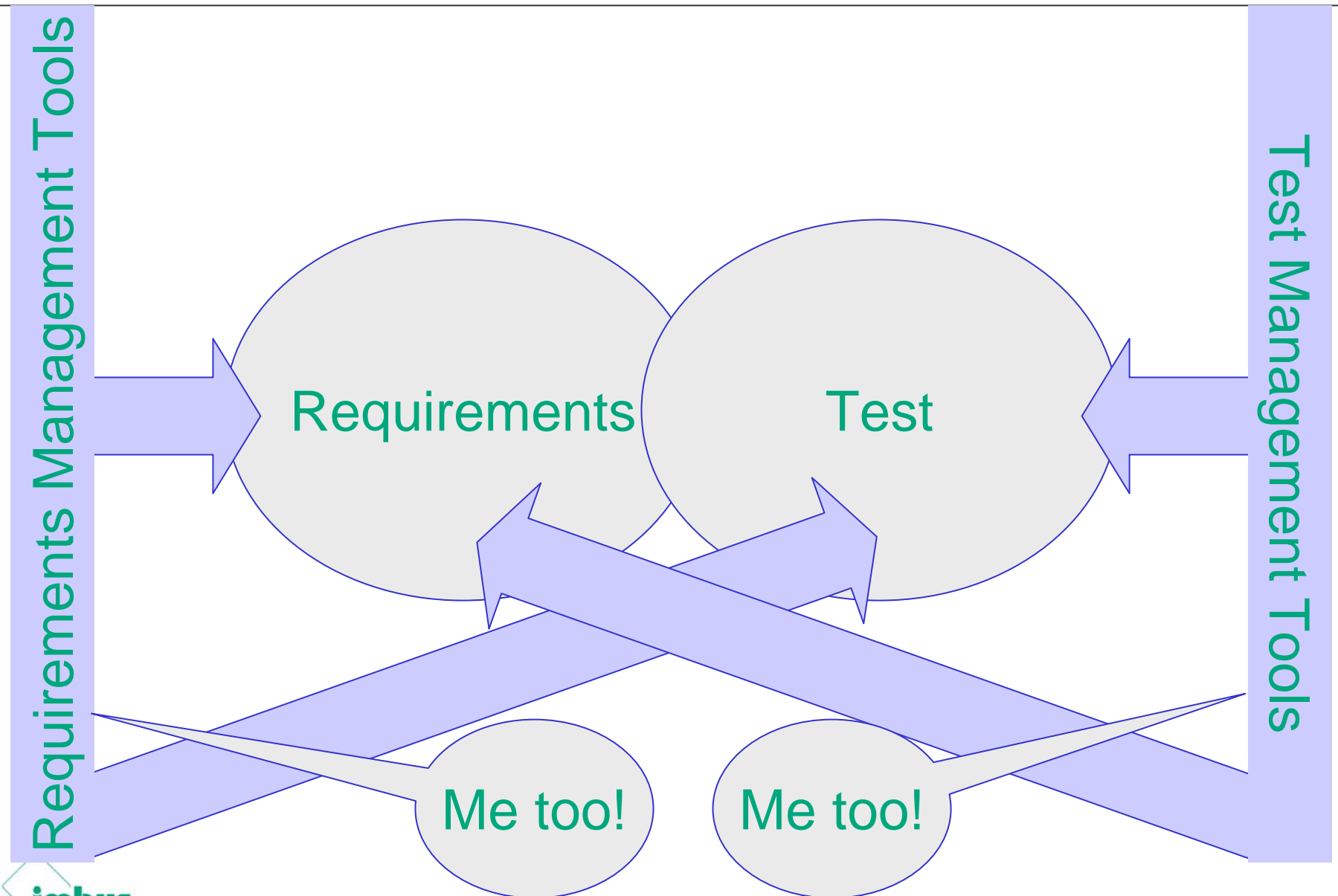
Requirements...

- ◆ need to be verifiable
- ◆ are supposed to contain a part which tells you how to verify them
- ◆ need to be verified (management of requirements)

Testing...

- ◆ is based on any suitable information about what the test object is supposed to do
- ◆ is, eventually, based on requirements
- ◆ covers more than the verification part of a requirement

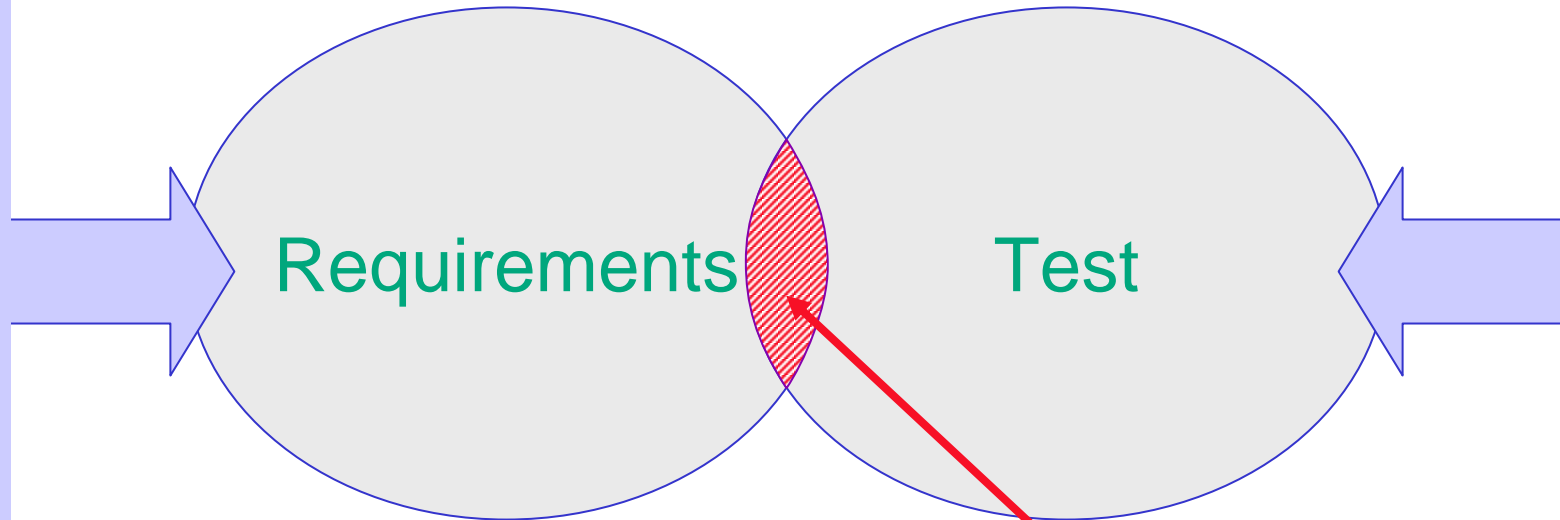
Tool Support - Status Quo



Tool Support - Desired

- Coverage: Requirements \Rightarrow Tests
- Version Control

Requirements Management Tools



Test Management Tools

- Coverage: Tests \Rightarrow Requirements

Case Study I: Requirements Spec

SW to support the work flows in a pharmacy

- ◆ Requirements described with UML:
 - ◆ mainly activity diagrams
- ◆ Test cases were derived directly from the activity diagrams
 - ◆ Path through the activity diagram constitutes a test case
 - ◆ Coverage analysis of the activity diagrams
 - ◆ The set of test cases was augmented by experience based test cases

Case Study II: Requirements Tracing

SW for a medical device

- ◆ FDA regulations state that:
 - ◆ Every SW requirement must be tested
 - ◆ SW requirements must be traced from the design up to the last test (continuous chain of proof)
- ◆ As a consequence
 - ◆ Every test case links to a requirement
 - ◆ Every test execution including the test verdict links to a requirement

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