



**ISTQB®**  
**CERTIFIED TESTER,**  
**FOUNDATION LEVEL**  
**EXCERPT FROM TRAINING MATERIAL**



Methods, techniques and tools  
for efficient software testing



# Mission Software Quality

400 employees   05 countries   11 locations   29 years

## ACADEMY

- ✓ Educate, train, coach

## CONSULTING

- ✓ Increase development process efficiency
- ✓ Shorten time-to-market

## TESTING SERVICES

- ✓ Plan, manage, design, automate and execute tests
- ✓ Security Testing

## TESTBENCH

- ✓ Introduce tools and strengthen your test automation

# ■ Experience from over 7,500 projects

**FINANCE**



**MEDICAL TECHN.**



**TELECOM & IT**



**PUBLIC SECTOR**



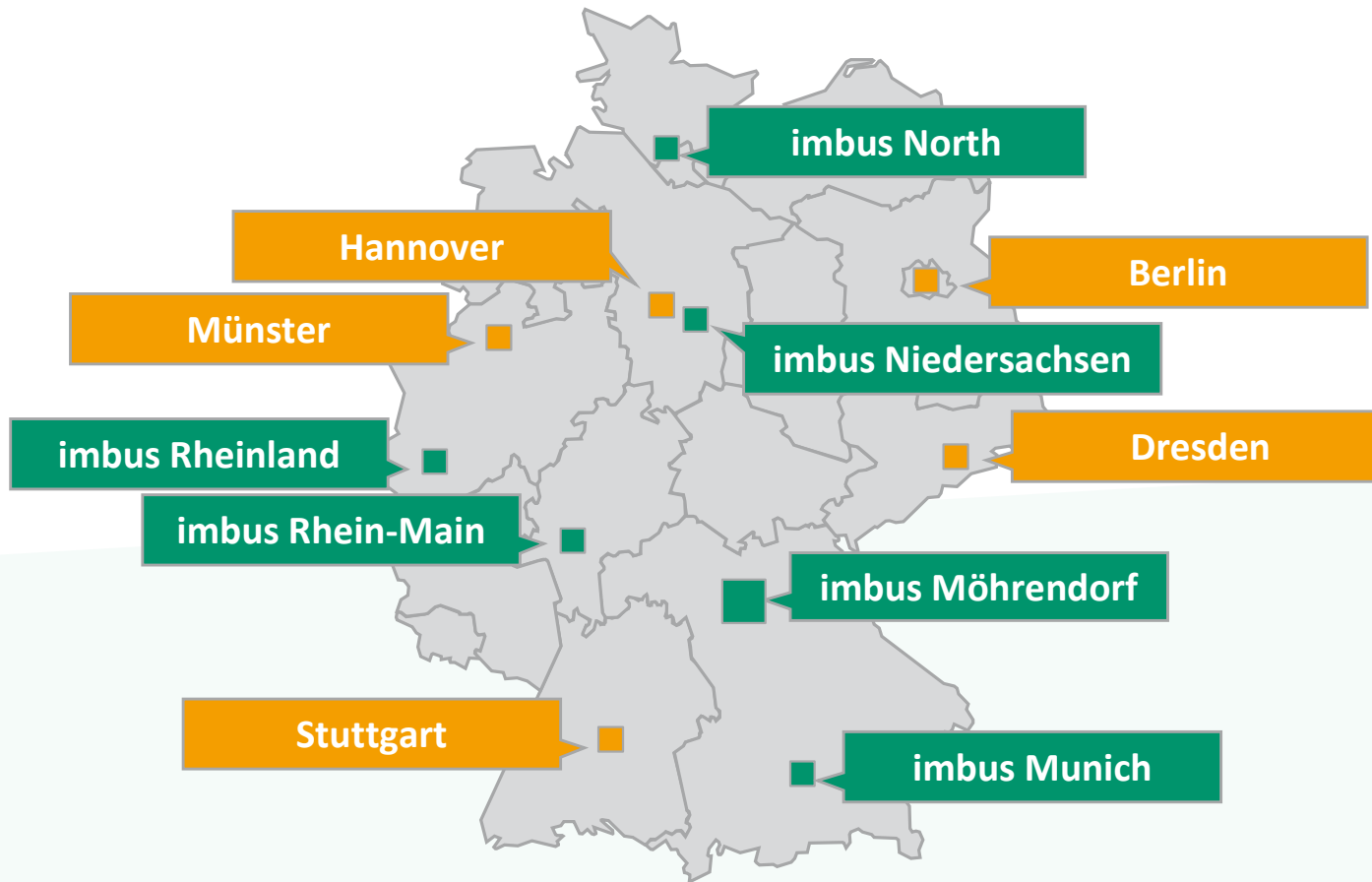
**TRANSPORTATION TECHN.**



**LOGISTICS**



# Locations and training centers in Germany



Online in the Virtual Classroom



340

employees in Germany

ibus locations

training centers

# ■ Know-how



## Training at first hand

- Strongest and most experienced training provider for software quality assurance and software testing in Germany
- Since 2020 also Live Online in the Virtual Classroom
- Over 20,000 training participants
- Pioneer of the international training standard ISTQB® Certified Tester
- Experience from over 7,500 test and consulting projects



\*\* Customer survey 2010 – 2020



Premium Partner  
Software. Testing. Excellence.



# ■ Agenda

## I – Fundamentals of Testing

- What is Testing?
- Why is Testing Necessary?
- Test Process
- Summary



# What is Testing?

## Typical Objectives of Testing are

- to find failures and defects.
- to build confidence in the level of quality of the software.
- to verify whether all specified contractual, legal, or regulatory requirements and user expectations have been fulfilled.
- to provide information to make decisions.

## Testing and Debugging

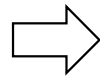
- **Testing** = The process consisting of all lifecycle activities, both static and dynamic to find defects in software and document them.
- **Debugging** = The process of finding, analyzing and removing the causes of failures in software.

# Definitions



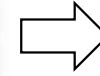
## error (mistake)

A human action that produces an incorrect result.



## defect

An imperfection or deficiency in a work product where it does not meet its requirements or specifications.



## failure (fault, bug)

An event in which a component or system does not perform a required function within specified limits.



# ■ Agenda

## III - Test Techniques

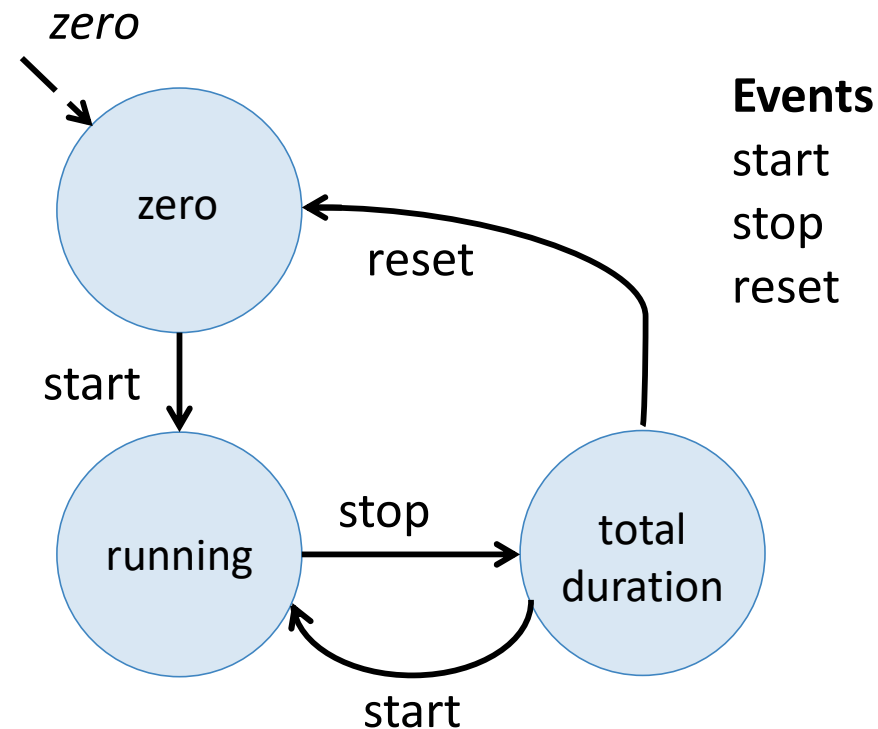
- Basics
- Black-Box Test Techniques
- White-box Test Techniques
- Experience-based Test Techniques
- Summary



# State Machine for a Stopwatch



*Initial state:*



Note: State transition diagrams normally show only the valid transitions and exclude the invalid transitions.

# ■ Agenda

## V – Test Management

- **Risks and Testing**
- Test Planning und Estimation
- Test Monitoring und Control
- Defect Management
- Configuration Management
- Summary

# ■ Risk and Testing

**Risk** is the possibility of suffering **losses** due to an event that occurs with a certain **probability**. A risk is a potential problem.

*according to M. Gaulke, Risikomanagement in IT-Projekten, Oldenbourg Verlag, 2002*

## **Risk**

A factor that could result in future negative consequences.



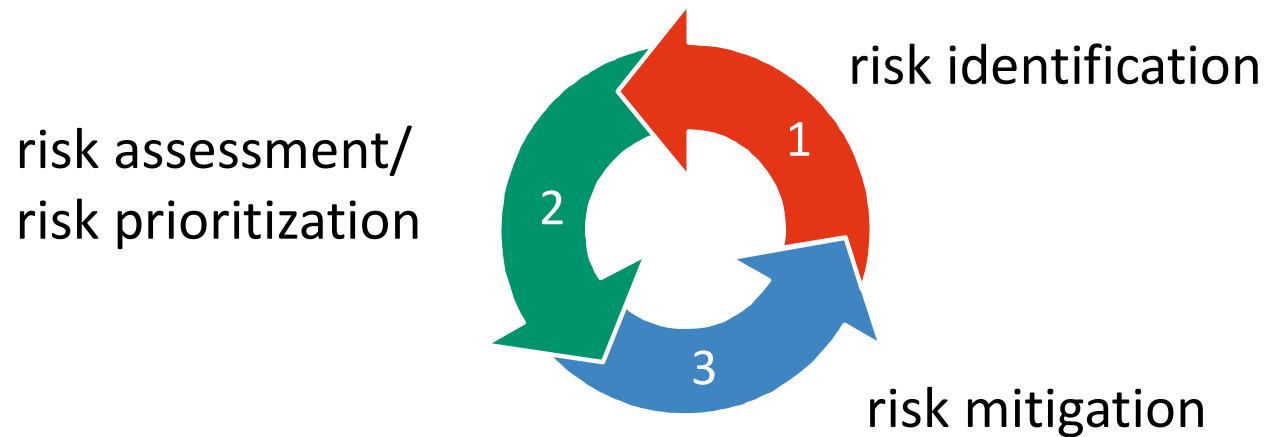
## **Risk likelihood**

The probability that a risk will become an actual outcome or event.

## **Risk impact**

The damage that will be caused if the risk becomes an actual outcome or event.

# ■ Risk Management



**Product risk analysis includes risk identification and risk assessment** by project stakeholders.

**Risks** are used to focus effort during testing and to decide when, what, where and how to test.

**Testing** is used to reduce the likelihood or impact of an adverse event. Testing is a technique of risk mitigation to provide feedback on identified risks, residual risks and, where appropriate, new risks.



# Product Risk

- Software might not perform its intended functions according to the specification.
- Software might not perform its intended functions according to user, customer, and/or stakeholder needs.
- A system architecture may not adequately support some non-functional requirement(s).
- A particular computation may be performed incorrectly in some circumstances.
- A loop control structure may be coded incorrectly.
- Response-times may be inadequate for a high-performance transaction processing system.
- User experience (UX) feedback might not meet product expectations.



# Project Risk

## Project issues

- Delays may occur in delivery, task completion.
- Delays with satisfaction of exit criteria or definition of done.
- Inaccurate estimates, reallocation of funds to higher priority projects, or general cost-cutting across the organization may result in inadequate funding.
- Late changes may result in substantial re-work.

## Organizational issues

- Skills, training, and staff may not be sufficient.
- Personnel issues may cause conflict and problems.
- Users, business staff, or subject matter experts may not be available due to conflicting business priorities.



# Risk Matrix

likelihood (e. g. very high, high, mid, low)

impact (e. g. high, mid, low)

The diagram shows a risk matrix with 'impact' on the vertical axis and 'likelihood' on the horizontal axis. The impact axis has levels 'high', 'mid', and 'low'. The likelihood axis has levels 'low', 'mid', 'high', and 'very high'. The matrix cells contain risk levels: A (high risk, red), B (mid risk, orange), and C (low risk, blue).

impact	high	B	A	A	A
	mid	C	B	B	A
	low	C	C	B	B
		low	mid	high	very high

source: ISTQB® Advanced Level – Test manager



high risk



mid risk



low risk



# ■ Interrelationships

## Impact of Risks & Risk Management on Testing

- Analysis of the risks (and regular reassessment) of what can go wrong.
- Determining which risks need to be dealt with.
- Taking measures to reduce these risks.
- The creation of emergency plans to deal with risks in the event of their occurrence.

## Impact of testing on risks & risk management

- Help identifying new risks.
- Reducing risks by finding defects.
- Reduce uncertainty about possible risks.



# Risks and Testing

**The level of risk** is determined by the likelihood of the event and the impact (the harm) from that event.

**Product risk** (quality risks) refer the legitimate needs of the users and/or stakeholders.

**Project risk** may have a negative effect on a project

- Project issues
- Organizational issues
- Political issues
- Technical issues
- Supplier issues

**Risk-based Testing** uses product risk analysis to influence the intensity and extent of testing.

# ■ Agenda

## V – Test Management

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# ■ Defect Management

**All defects identified should be investigated and should be tracked from discovery and classification to their resolution**

(e.g., correction of the defects and successful confirmation testing of the solution, deferral to a subsequent release, acceptance as a permanent product limitation, etc.)

## → **Definition of a defect management process**

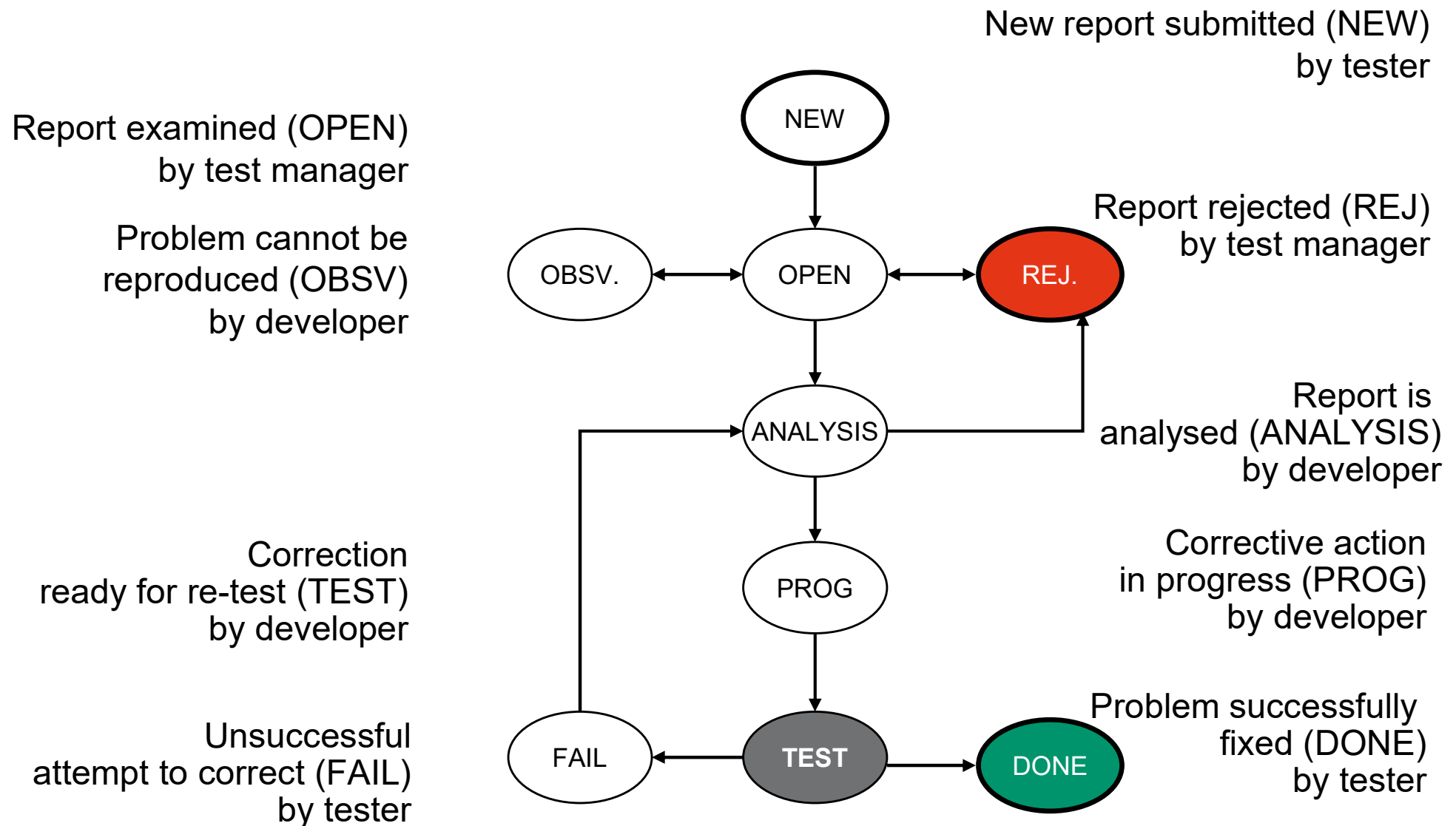
includes a workflow, defined defect reports und rules for classification, defect management, defect handling, defect tracking and defect control

The way in which defects are logged may vary, depending on

- context of the component or system being tested
- test level
- software development lifecycle model



# Defect Status Model



# Defect Management



**Objective:** Documentation and tracking of all identified defects from detection through classification to solution.

## Content of a defect report

- Identification
- State
- Information

The recording of defects varies according to the ...

- context of the component or system to be tested.
- test level.
- software development lifecycle.

*We look forward to  
your training  
participation*

*Your team of the imbus Academy*



- TestBench
- Die smarte Lösung  
für alle Testaufgaben
- Unterstützung aller Aufgaben im Softwaretest
  - Arbeitsumgebung für Testteams jeder Größe
  - leichte Spezifikation von Tests
  - Integration mit vielen ALM-Werkzeugen
  - Testergebnisse 100% nachvollziehbar und revisionsicher
  - übersichtliche, aussagekräftige Berichterstattung
  - sofort einsteigen – keine hohen Investitionen