Test Automation Approach
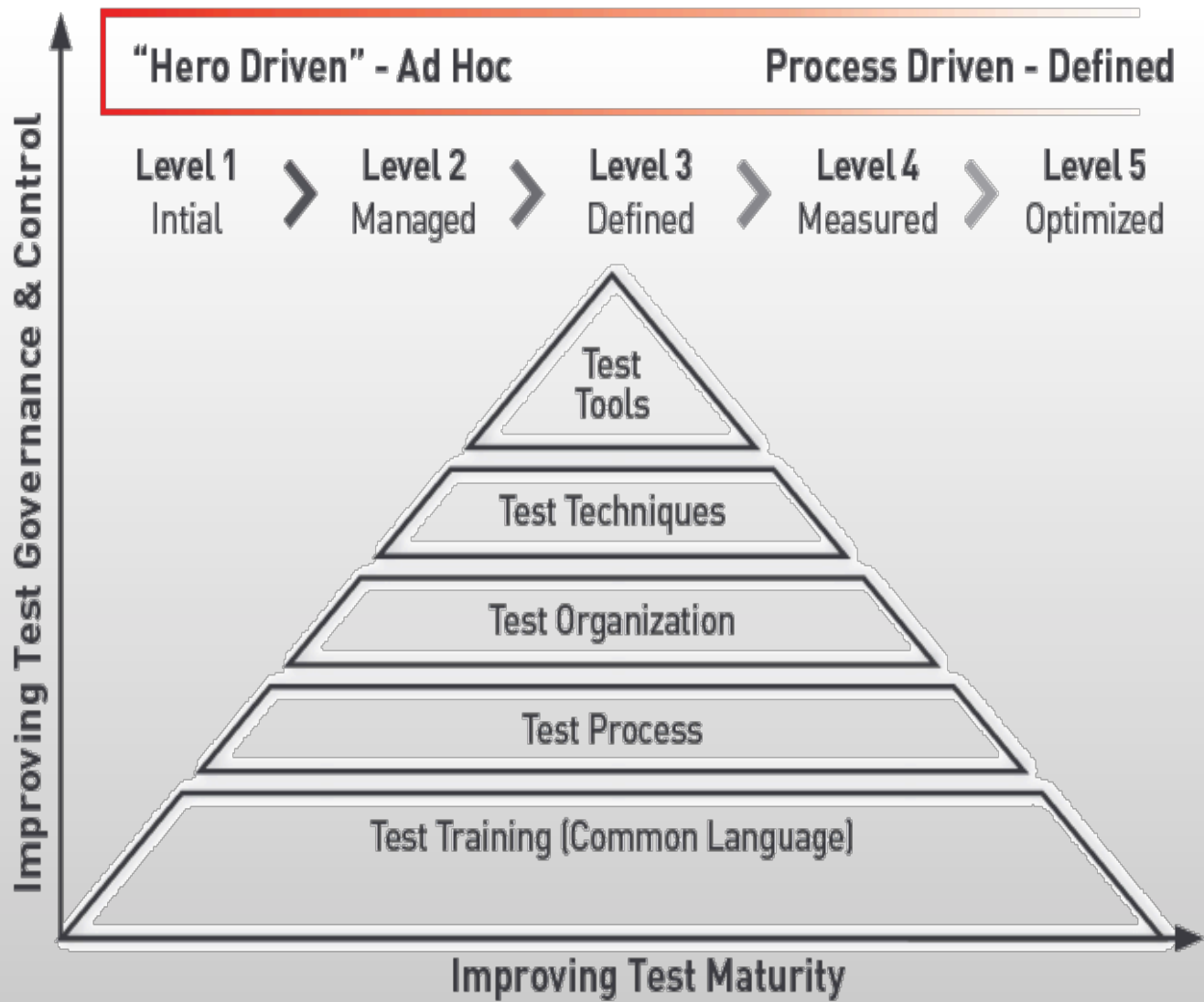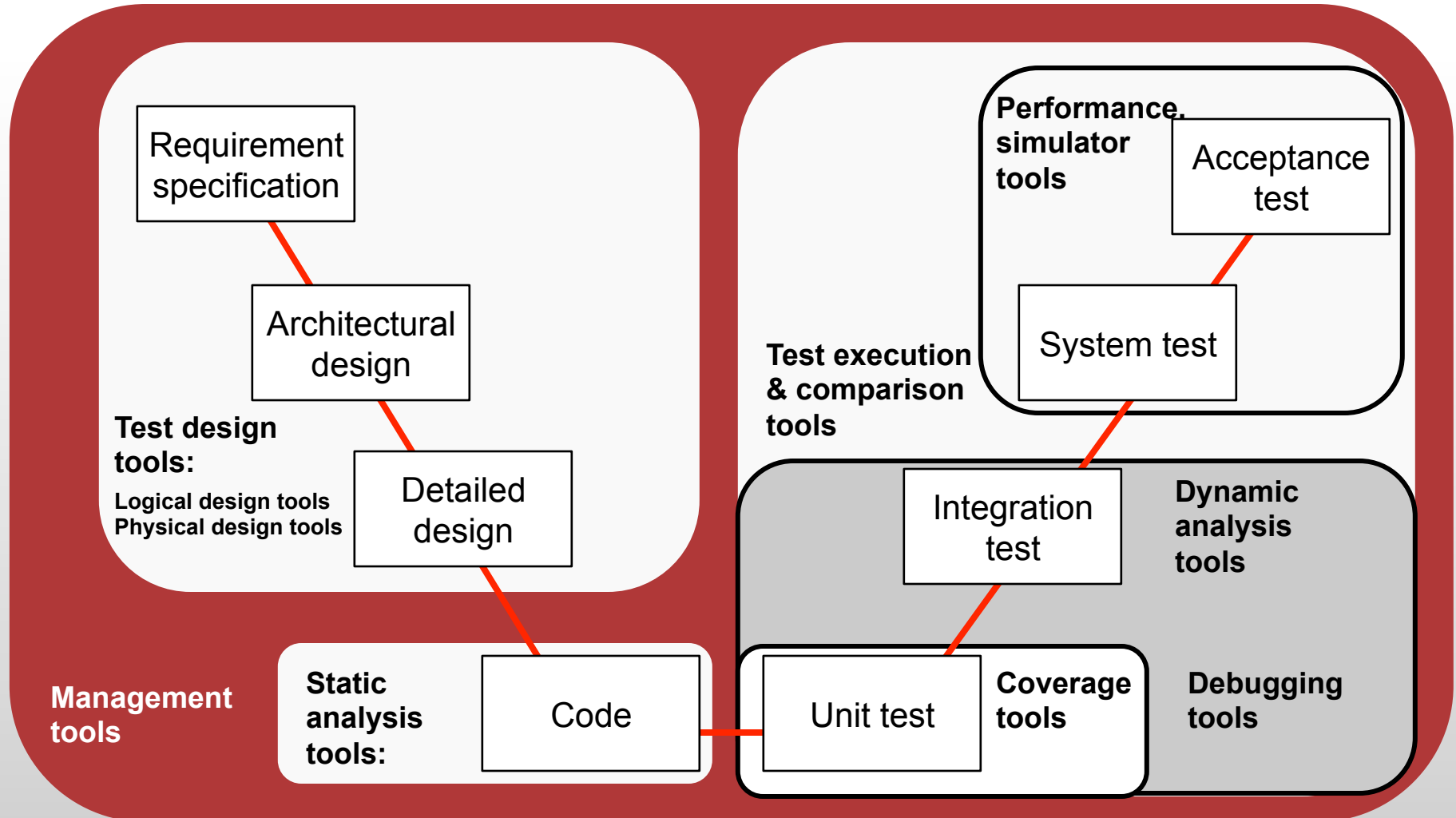
➢ In software testing, **test automation** is the use of special software (separate from the software being tested) to control the execution of tests and the comparison of actual outcomes to predicted outcomes. Test automation can automate some repetitive but necessary tasks in a formalized testing process already in place, or add additional testing that would be difficult to perform manually.

➢ **Test automation** is; the use of software to perform or support test activities, e.g. Test management, test design, test execution and results checking.
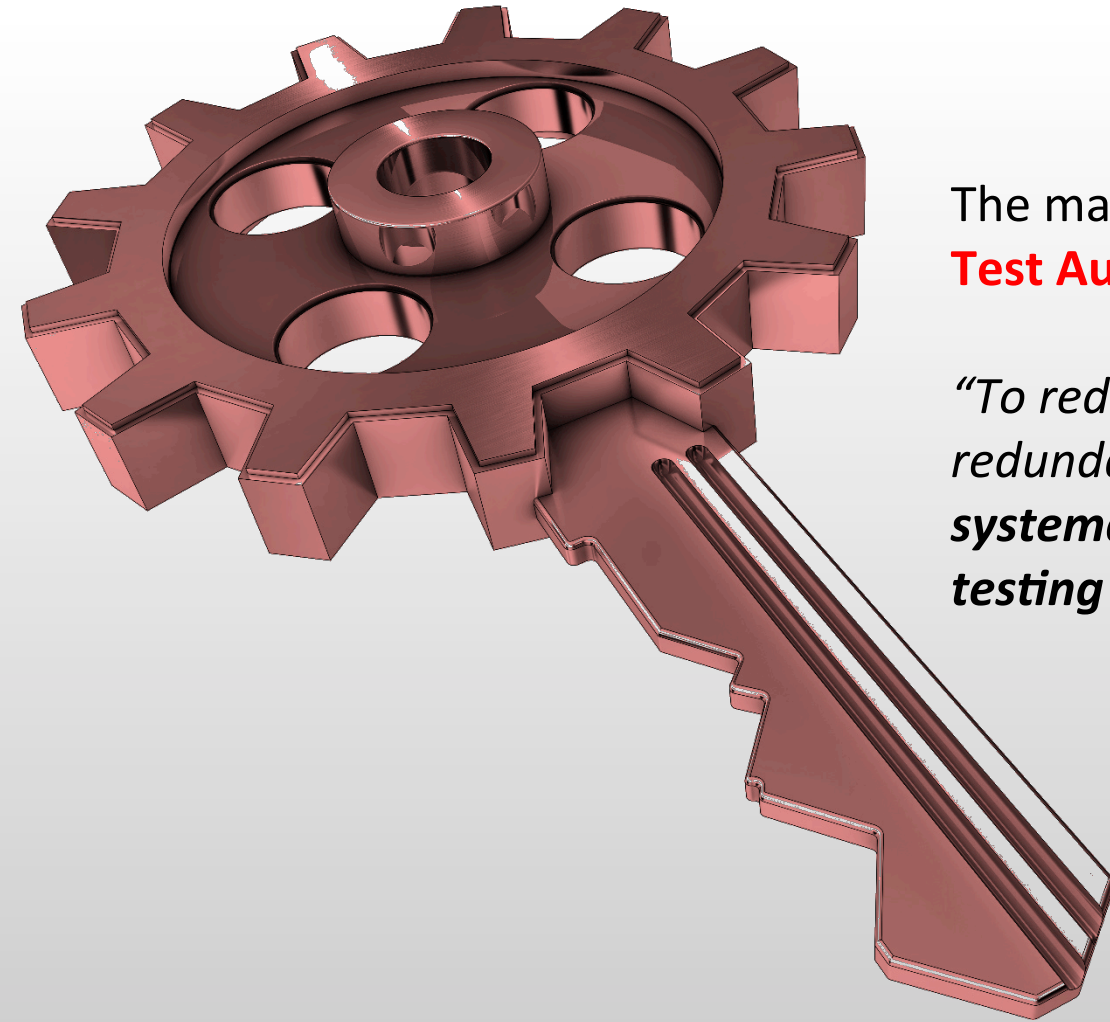
tested by
keyt✓rc

"Hero Driven" - Ad Hoc   Process Driven - Defined

Level 1 Intial > **Level 2** Managed > **Level 3** Defined > **Level 4** Measured > **Level 5** Optimized

Improving Test Governance & Control (vertical axis)

Test Tools

Test Techniques

Test Organization

Test Process

Test Training (Common Language)

Improving Test Maturity (horizontal axis)

Test Automation in Software Delevopment Lifecycle

The major key to the success of
Test Automation:

*"To reduce **manual testing** activities and redundant test operations using a **systematic solution** to achieve a better testing coverage."*

Test Automation Decision

- Test Execution Period ? (Frequency)

- Maturity & Maintenance Effort ? (Cost)

- Required Technology ? (Cost, Technology)

- Cross-platform Support and Reusability ? (Cost, Modularity)

- Mismatch between Automated and Manual Application Behavior ? (User Experience)

Are the Scenarios Automatable?			
Test Execution Period		Not Possible	Costs Much	Costs Little
	Whenever Possible	✗	?	✓
	Regularly	✗	?	✓
	Once in a While	✗	✗	✗

Regression Test Development

Only Once

Test Execution

As Much As Needed / Periodic

Maintenance

- Aut. Decision
- Tool Selection
- Test Coverage
- Schedule & Frequency
- Effort Est.

- Test Design
- Test Script Generation
- Test Data Preparation

- Test Execution
- Defect Detection
- Defect Reporting

- Test Reporting
- Quality Ratio Announcement

- Test Script Update
- Test Data Update
- Test Tool Maintenance
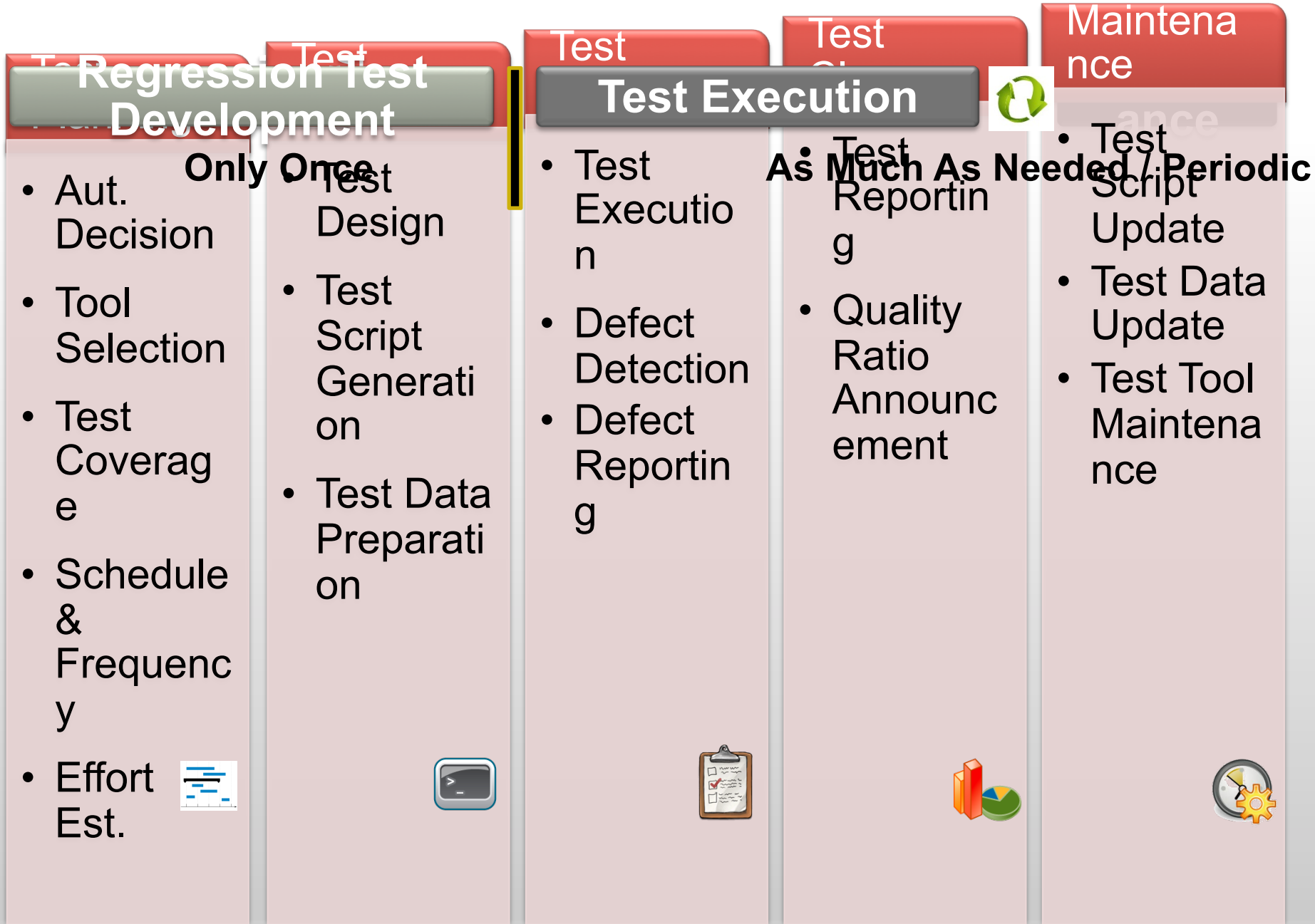
- ▶ Functional testing
- ▶ Regression testing
- ▶ Compatibility testing
- ▶ Endurance testing
- ▶ Load testing
- ▶ Localization testing
- ▶ Performance testing

- ▶ Recovery testing
- ▶ Security testing
- ▶ Scalability testing
- ▶ Stress testing
- ▶ Usability testing
- ▶ Volume testing
- ▶ Installability testing

Real Experience

Fewer Start Up Costs

Detailed

Accurate

Quick

Relentless

Efficient

TESTING

Manual
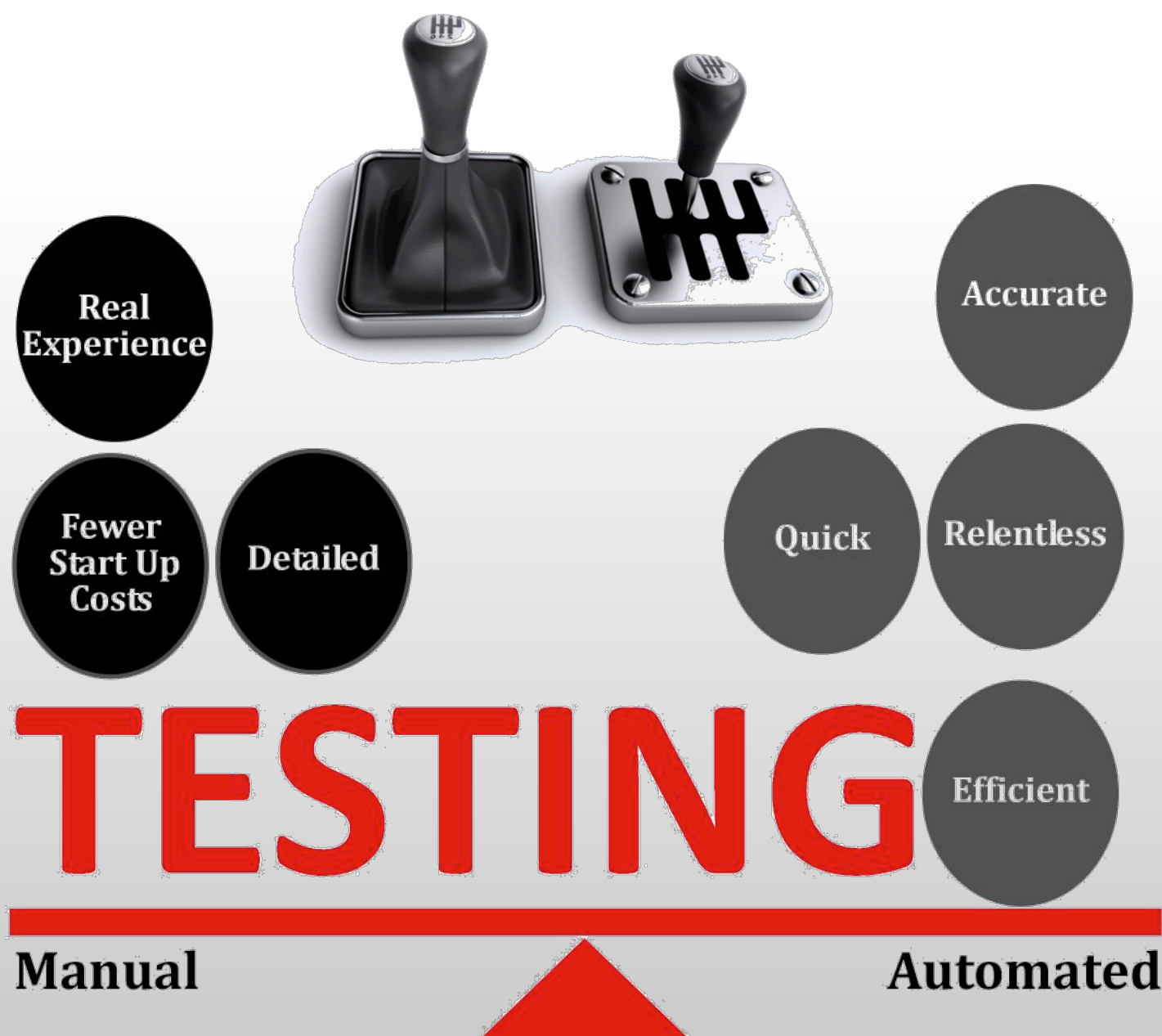
Automated

Test Automation Technology

Test Levels

Model-based Testing

GUI Testing

SOA Testing

Code Driven Testing

Object Recognition

Image Recognition

Pre-Condition Data State

Post-Condition Data State

Pre-Condition System State

System Under Test

Post-Condition System State

Test Input

Test Output

Object-Based Recognition

COST

BENEFIT

Advantages

Disadvantages

- Very flexible controls
- Deep-dive automation chance
- Not sensitive for mature applications

- Platform dependent
- Unified control handicap
- Have maintenance issues for low quality code

Image-Based Recognition

Advantages

- Automates everything appears on screen
- Platform independent
- Valid for web, desktop and mobile
- Easy-to-use

Disadvantages

- Cannot automate non-GUI software
- Extremely-sensitive to screen properties
- Less flexible than object-based recognition

Test Automation – Case Study

▶ **500** manual test cases/platform
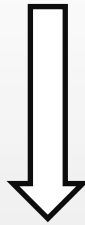
40% Automation Ratio

▶ **200** automated test scripts/platform
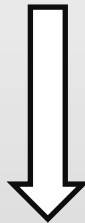
52 Distinctive Runs/Year

▶ Regular Regression Tests - Weekly

Test Automation – Case Study

Source: Based on 200 automated regression test scripts

Test Automation – Case Study

Cost (Euro)

- 90K EUR
- 80K EUR
- 70K EUR
- 60K EUR
- 50K EUR
- 40K EUR
- 30K EUR
- 20K EUR
- 10K EUR
- K EUR

Months	Manual	Automated
3	22K	18K
6	40K	24K
12	82K	38K

■ Manual ■ Automated

Source: Based on 200 automated regression test scripts
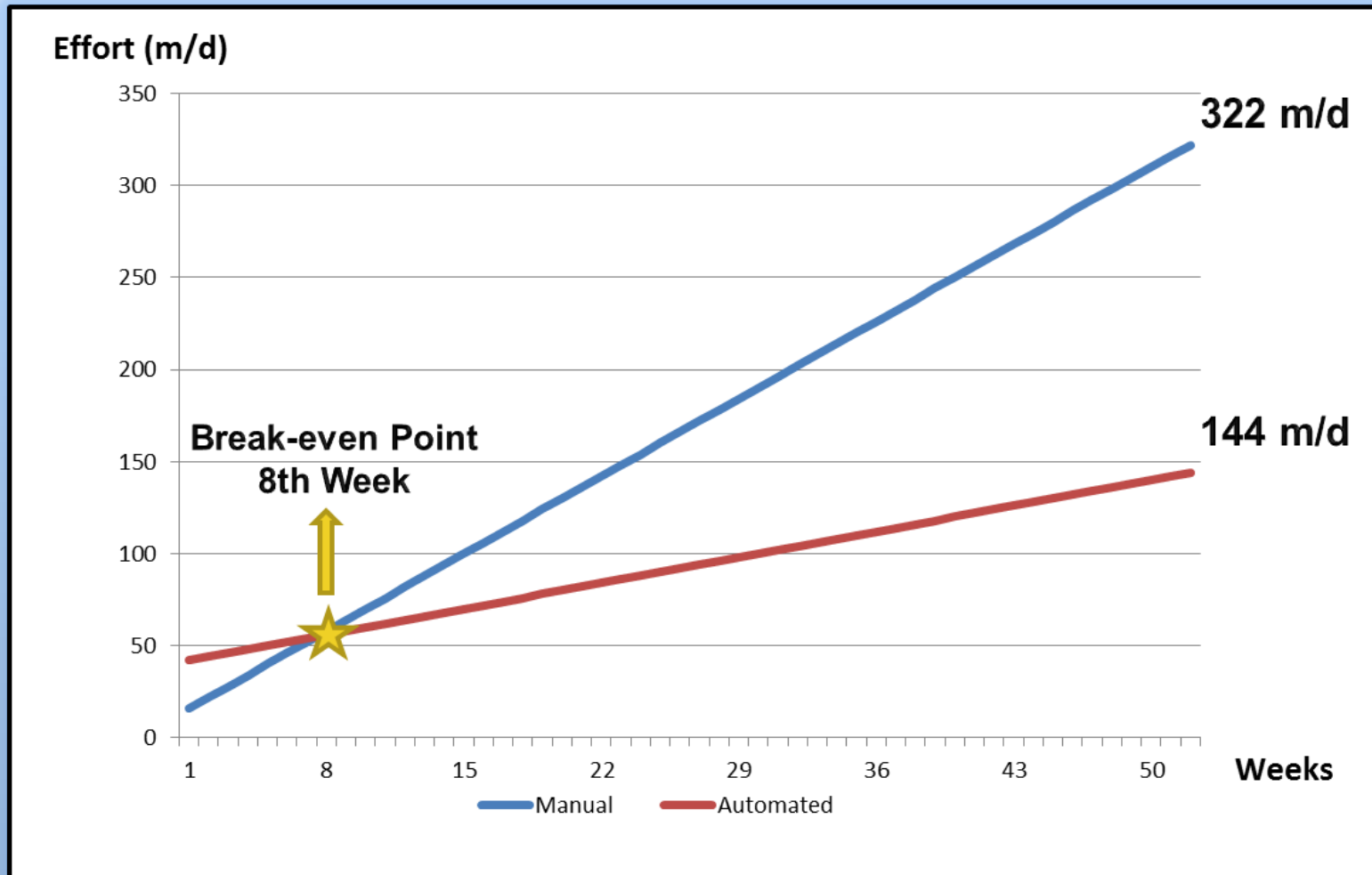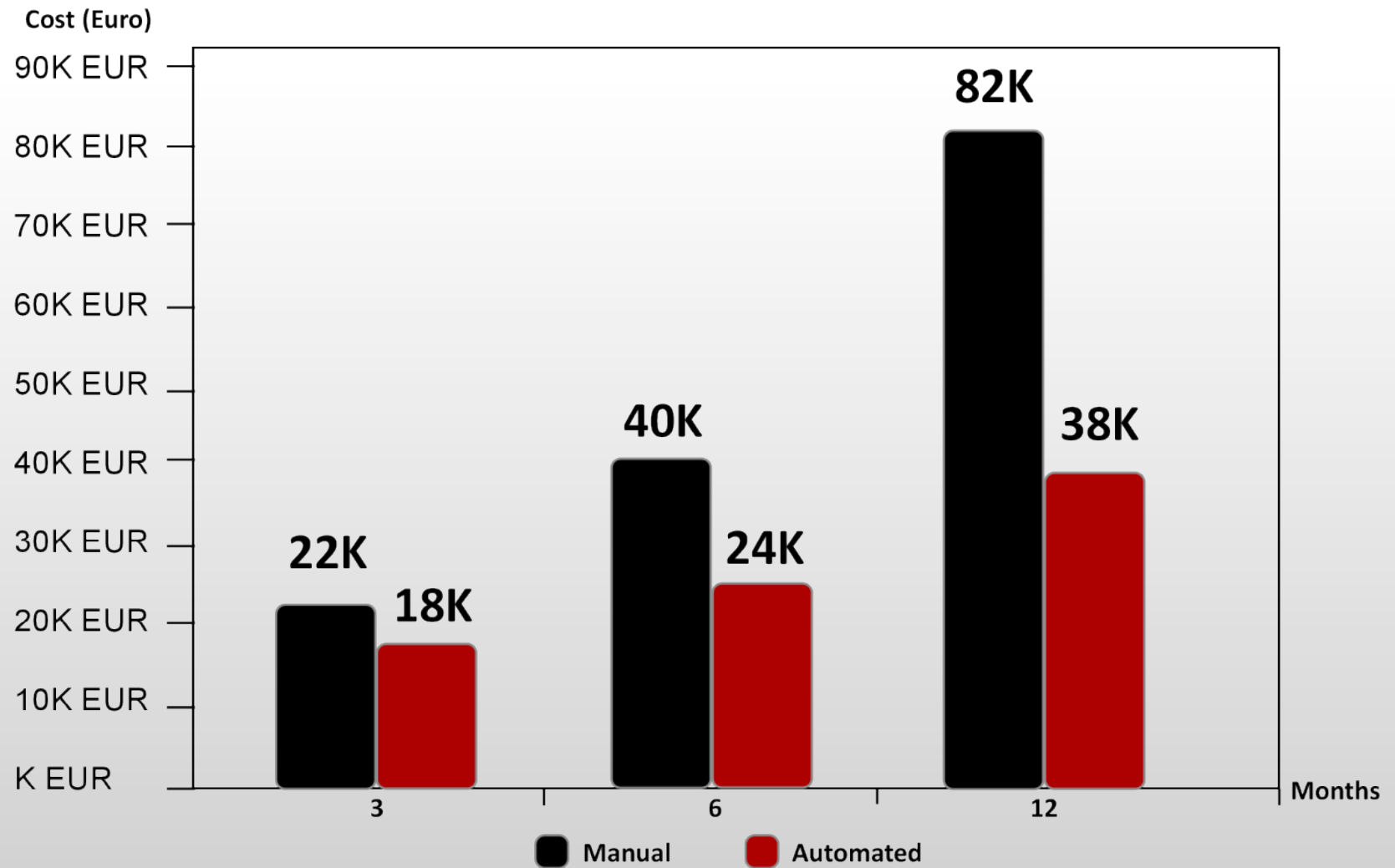
Test Automation – Case Study

- ▶ **56%** total test effort reduction

- ▶ **66%** head-count reduction

- ▶ **20%** decline on UAT defects

- ▶ **10%** decline on Live defects

- ▶ Prevention of operational blindness

- ▶ Reusability & Frequency

- ▶ Less dependency on domain knowledge

- ▶ Ease of rotation

- ▶ Flexibility for weekly deployments

Source: Based on 200 automated regression test scripts

Keytorc Test Framework

Test Types & Levels

Integration Testing	System Testing	User Acceptance Testing	Functional Testing	Performance Testing	Usability Testing	Structural Testing	Regression Testing

Business Analysis Center of Excellence

- Use Cases
- Requirement Management
- UML Diagrams
- BPEL
- BPMN
- ALM
- CR Management
- Agile Requirements Management

Test Processes

Test Automation

Test Techniques

Test Types

Risk

Test Automation Tools

- Functional Testing
  - Capture & Play
  - Data Driven
  - Keyword Driven
- Performance Testing
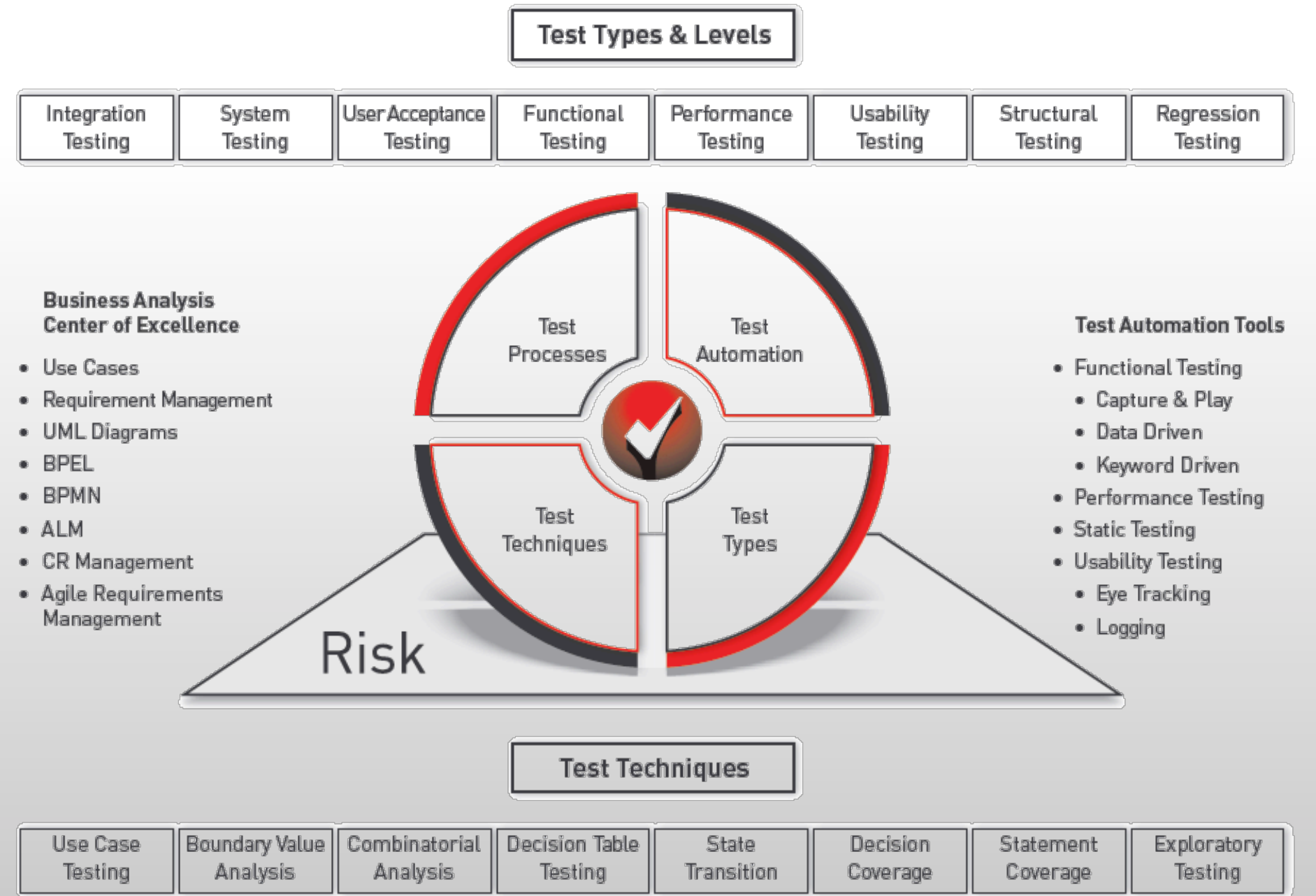- Static Testing
- Usability Testing
  - Eye Tracking
  - Logging

Test Techniques

Use Case Testing	Boundary Value Analysis	Combinatorial Analysis	Decision Table Testing	State Transition	Decision Coverage	Statement Coverage	Exploratory Testing

Test Consultancy

Test Outsourcing

Software Testing Courses

- Testing Center of Excellence
- Test Automation Services
- Performance Testing Services
- Test Maturity Assessments
  - (TMMi, TPI, customized)

- Value-added Outsourcing
- Service Level Agreements
- ISTQB Certified Test Engineers

- ISTQB Foundation Level
- ISTQB Advanced Level
  - Test Analyst
  - Technical Test Analyst
  - Test Manager
- Test Automation Course
- Performance Testing Course
- Mobile Testing Course
- Usability Testing Course

http://turkishtestingboard.org/turkish/tsqr.htm

INTERNATIONAL CONFERENCE ON SOFTWARE QUALITY

TEST ISTANBUL
www.testistanbul.org

Software Testing: Quality Bridge Between Business and IT
Istanbul May 6, 7 - 2010

TEST ISTANBUL
www.testistanbul.org

More Usability Testing, Better User Experience
Feriye Palace, Istanbul May 26,27 - 2011

TEST ISTANBUL
www.testistanbul.org

Test Automation
For a Better, Faster Software

May 24th-25th 2012, Istanbul

TEST ISTANBUL

Future of Testing: New Techniques and Methodologies
23-24 May,2013, Sheraton Maslak İstanbul

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