

Using Functional Test Automation to Prevent Defects from Escaping the Development Phase

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Agenda

- Prevention versus cure
- Testing close to development
- Focus on the user perspective
- Automation as a quality-enhancing activity
- Open points for the test process
- Checklist and conclusions

Prevention versus cure

- Prevention?



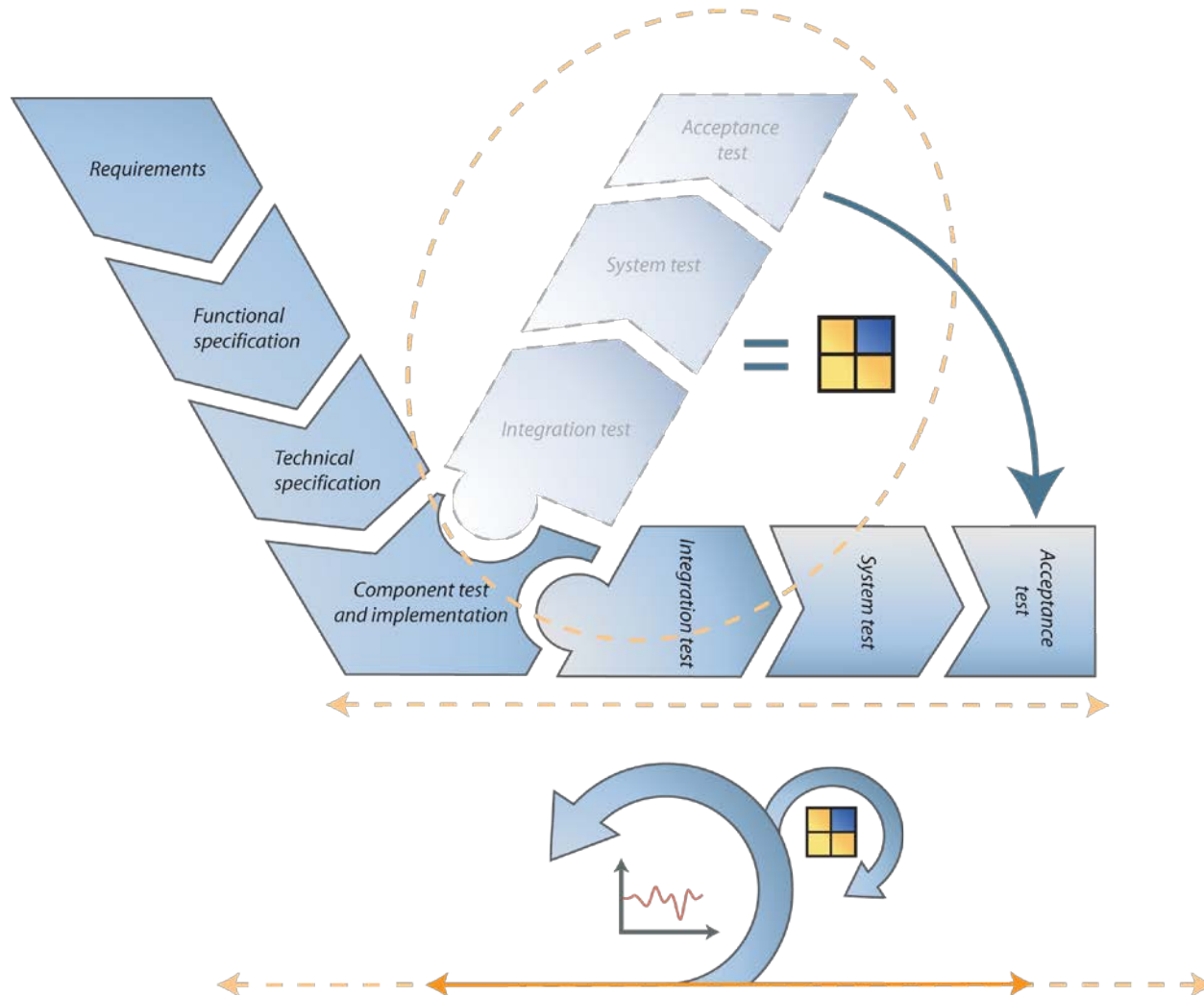
- Discovery and removal



- (or: seek and destroy)



How soon is now?



Software, defend yourself!

- Justification
 - Test criteria
 - During development
 - Frequently
- Regardless of model...
 - More information is beneficial
 - As early as possible



Focusing on what's important

- What information do we want?
- What sources are available to us?
- What are our priorities?

- Our focus: customer perspective
 - ... the perspective with which it will be used



Use test automation to test...

- Automate acceptance tests during development
 - ATDD / In parallel / Just after
- The early automator gets the worm

- Steps...
 - Review
 - Automate
 - Repeat
 - (React)



Step 1: Preparing for automation

- Explore
 - Read, talk, prototype, document, play
- Set the bar
 - What is good enough
 - Tests and checks
- Select automation candidates



Bugs prevented in step one

○ Case 1: Remembered report

Report written during test

Report generated after test

Execution Stack

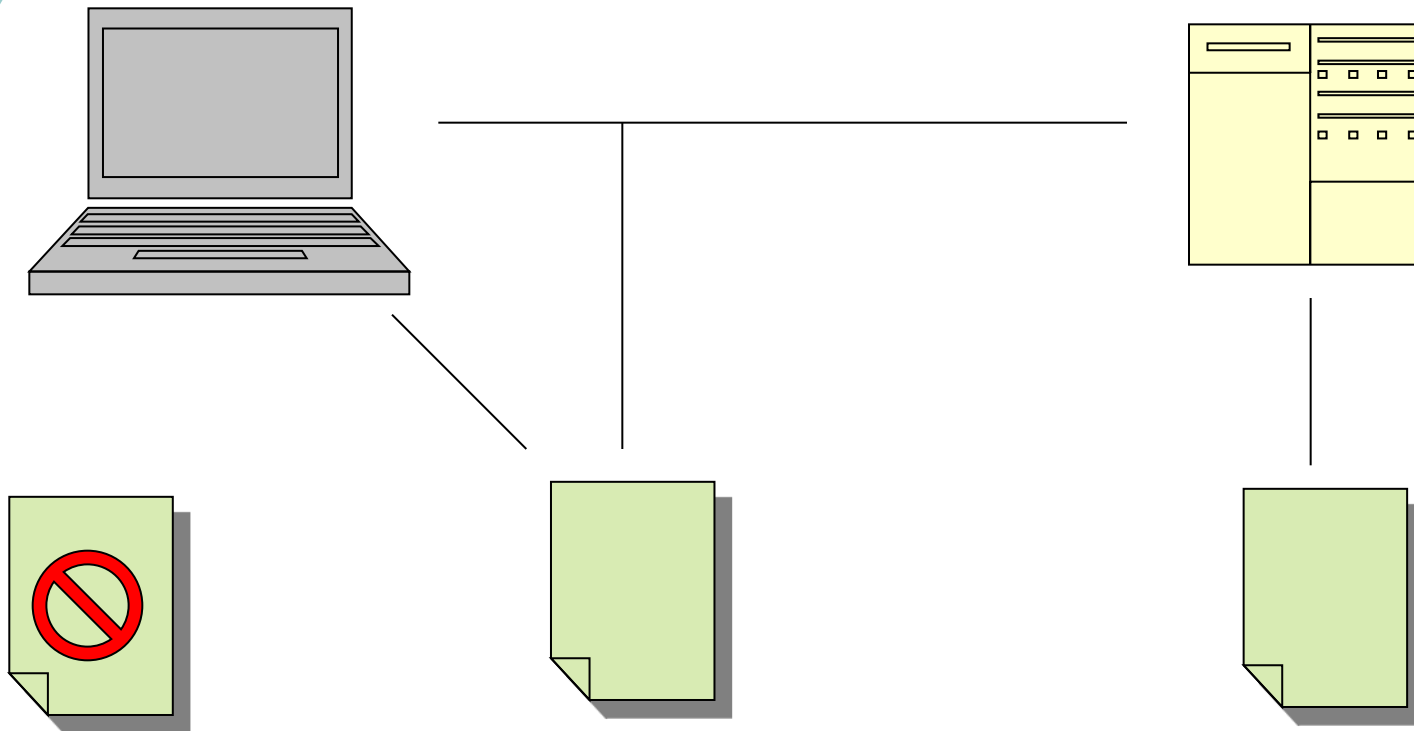
- ITE-FULLTEST-GDXP - TC (ok) - 1:23:34.204
 - FULLTEST-WinXP - TC (ok) - 1:23:34.204
 - FULLTEST-Win - TC (ok) - 1:23:34.204
 - FULLTEST - TC (ok) - 1:23:34.188
 - init - TC (ok) - 0:00:00.688
 - SPECIFIC - TC (ok) - 1:23:33.500
 - Hauptfunktionen 01 - TC (ok) - 1:15:36.646
 - Ticket_#2198 - TC (ok) - 0:02:20.816
 - Ticket_#2279 - TC (ok) - 0:01:51.628
 - Ticket_#2398 - TC (ok) - 0:02:18.347
 - Ticket_#3512 - TC (ok) - 0:01:26.063
 - SPECIFIC-Win - TC (ok) - 0:00:00.000
 - SPECIFIC-notLin - TC (ok) - 0:00:00.016

```
<?xml version="1.0" encoding="UTF-8"?>
<!--<?xml-stylesheet type="text/xsl" href="format.xsl"?-->
<report style="Complete">
  <project>
    <name>GUIDancer 5.2</name>
    <test-start>Thu Oct 06 19:59:09 CEST 2011</test-start>
    <test-end>Thu Oct 06 21:22:47 CEST 2011</test-end>
    <test-length>01:23:38</test-length>
    <expectedNumSteps>5985</expectedNumSteps>
    <numStepsTested>6389</numStepsTested>
    <numEventHandlerSteps>404</numEventHandlerSteps>
    <numFailedSteps>0</numFailedSteps>
    <language>Deutsch (Deutschland)</language>
    <testsuite duration="1:23:34.204">
      <name>ITE-FULLTEST-GDXP</name>
      <status>1</status>
    </aut>
  </project>
</report>
```

- UC_Spaltenkonfigurationen_AddFahrzeugspaltenkonfiguration
- TS_Common_AUT_InkCypris
- TC_Spaltenkonfigurationen_CreateFahrzeugspaltenkonfiguration
- TS_Spaltenkonfigurationen_OpenDialogFahrzeugspaltenkonfigurationen
- TS_Spaltenkonfigurationen_ClickButtonAdd
- TS_Spaltenkonfigurationen_SelectSpaltenkonfigurationenRowInTableSpaltenkonfigurationenByBezeichnung
- TS_Input.TextAndPressKeyENTER
- TS_Spaltenkonfigurationen_CheckExistenceOfSpalteInUnassignedListByBezeichnung
- TS_Spaltenkonfigurationen_CheckExistenceOfSpalteInAssignedListByBezeichnung
- TS_Spaltenkonfigurationen_MoveSpalteToAssignedList
- TS_Spaltenkonfigurationen_ClickButtonOKAndWaitForDialogToClose
- TS_Spaltenkonfigurationen_OpenDialogFahrzeugspaltenkonfigurationen
- TS_Spaltenkonfigurationen_CheckExistenceOfSpalteInTableSpaltenkonfigurationenByBezeichnung
- TS_Spaltenkonfigurationen_SelectSpaltenkonfigurationenRowInTableSpaltenkonfigurationenByBezeichnung
- TS_Spaltenkonfigurationen_CheckExistenceOfSpalteInUnassignedListByBezeichnung
- TS_Spaltenkonfigurationen_CheckExistenceOfSpalteInAssignedListByBezeichnung
- TS_Spaltenkonfigurationen_ClickButtonCancelAndWaitForDialogToClose

Bugs prevented in step one

- Case 2: Forgotten option



Step 2: Do the automation

- As close as possible
- Be a user while writing the test
 - Different paths and alternatives while designing / testing
 - Exactness for automation
- Added bonuses
 - Usability testing
 - Open questions

Step 2: Do the automation

- Long-life tests
- Test structure
 - Levels of detail
 - Small use cases
 - Independent tests
- Plan for change



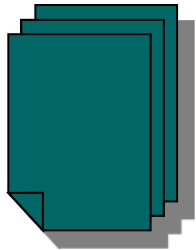
Bugs caught in step two

- Enter customer name
 - Enter address
 - Enter telephone number
 - Leave field via enter
- Enter customer name
 - Enter address
 - Enter telephone number
 - Don't leave field / leave field via click

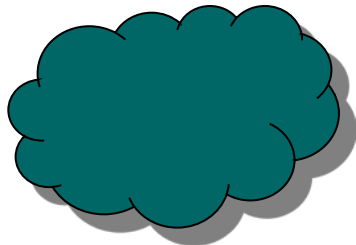


Bugs caught in step two

- Validation



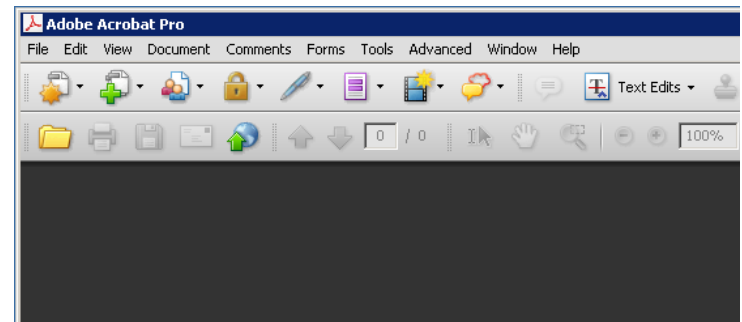
Mandatory fields
with *



Mandatory fields
validated by
program

...all of them?

- PDF Library



... NoClassDefFound

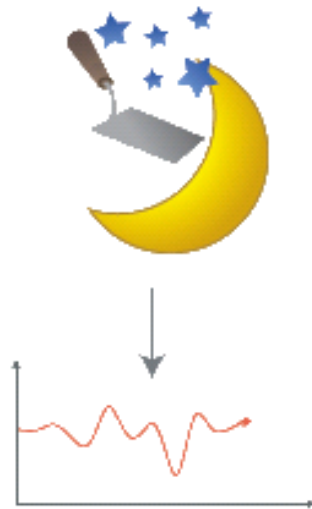
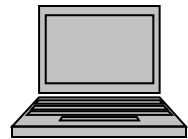
Step 3: Lather, rinse, repeat

- Activity of automating test has gathered all information it can?
- Multiply
 - Same test → new area of application
 - Same test → another platform
 - Same test → new software versions

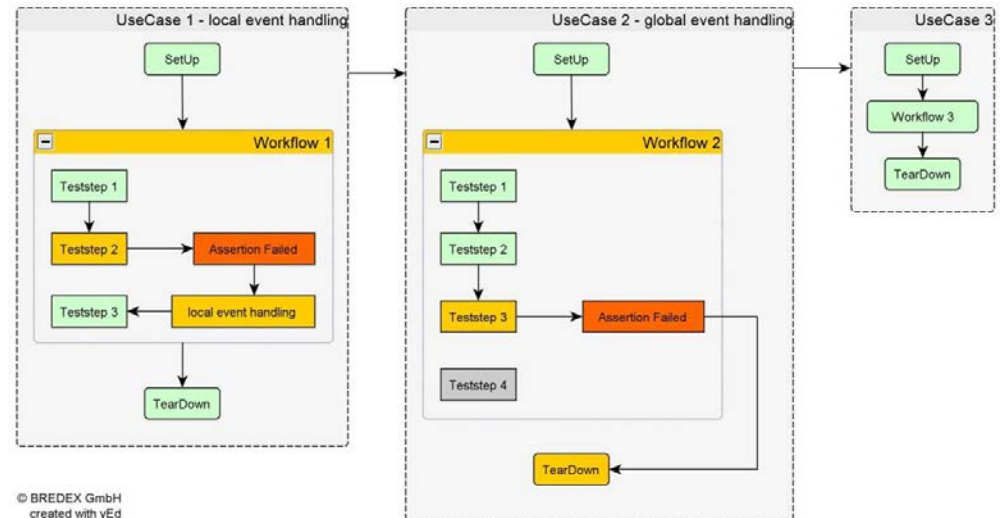


Step 3: The glossy finish

- Continuous integration

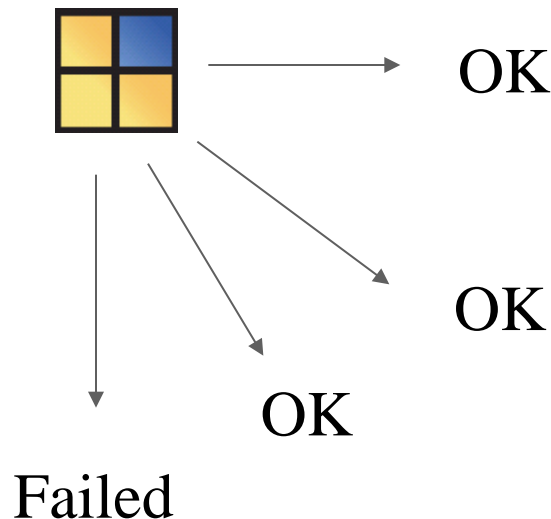


- Error handling in tests



Bugs prevented by step three

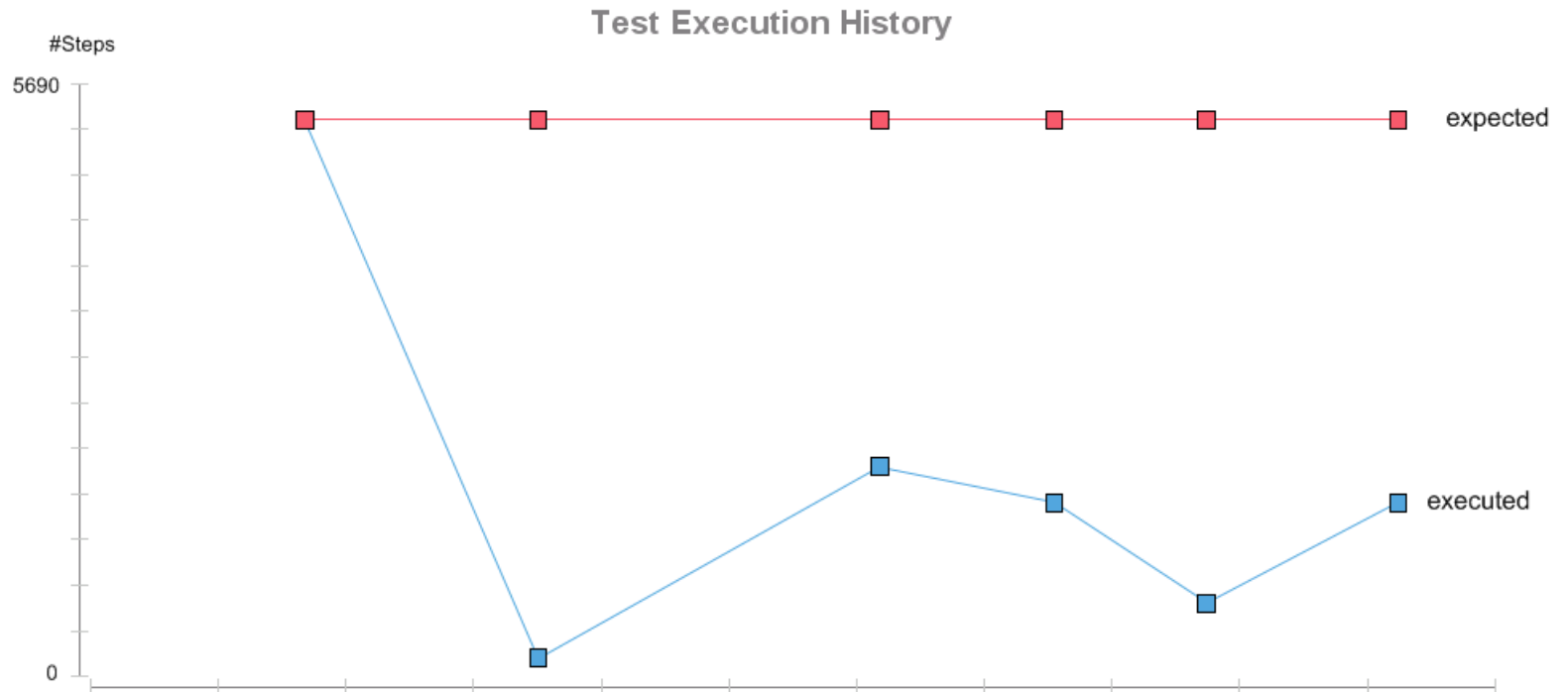
- Case 1:
Multiplication error



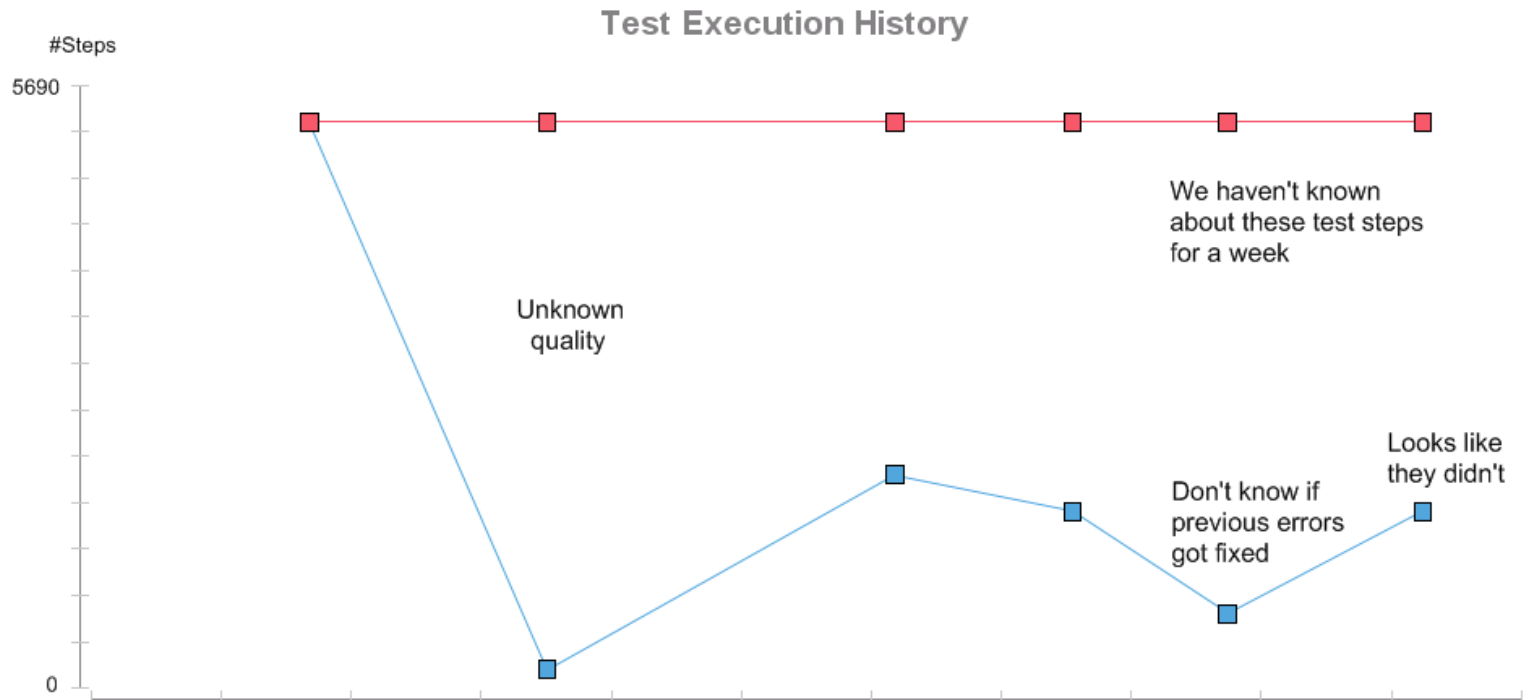
- Case 2:
Regression error

```
[-] X FULLTEST
  [-] X FULLTEST
    [+][✓] UC_Spaltenkonfigurationen_AddFahrzeugspaltenkonfiguration
    [+][✓] UC_Spaltenkonfigurationen_RemoveFahrzeugspaltenkonfiguration
    [+][✓] UC_Spaltenkonfigurationen_AddTerminspaltenkonfiguration
    [+][✓] UC_Spaltenkonfigurationen_RemoveTerminspaltenkonfiguration
    [+][✓] UC_Datenfilterkonfigurationen_CreateDatenfilterkonfiguration
    [+][✓] UC_Datenfilterkonfigurationen_DeleteDatenfilterkonfiguration
    [+][✓] UC_Referenzdaten_Fertigung_CreateFertigung
    [+][✓] UC_Referenzdaten_Fertigung_DeleteFertigung
    [+][✓] UC_Referenzdaten_Fertigung_CreateFertigungSortierung
    [+][✓] UC_Referenzdaten_Fertigung_DeleteFertigungSortierung
    [+][✓] UC_Referenzdaten_Marken_CreateMarke
    [+][✓] UC_Referenzdaten_Marken_DeleteMarke
    [+][✓] UC_Referenzdaten_Marken_CreateMarkenSortierung
    [+][✓] UC_Referenzdaten_Marken_DeleteMarkenSortierung
    [+][✓] UC_Referenzdaten_Symbole_CreateSymbol
    [+][✓] UC_Referenzdaten_Symbole_DeleteSymbol
    [+][✓] UC_Referenzdaten_Format_CreateFormatgruppe
    [+][✓] UC_Referenzdaten_Format_DeleteFormatgruppe
    [+][✓] UC_Referenzdaten_Fahrzeug_CreateFahrzeugsymbolgruppe
    [+][✓] UC_Referenzdaten_Fahrzeug_DeleteFahrzeugsymbolgruppe
    [+][✓] UC_Referenzdaten_Termin_CreateTerminsymbolgruppe
    [+][✓] UC_Referenzdaten_Termin_DeleteTerminsymbolgruppe
    [+][✓] UC_Daten_Zweige_CreateArbeitsstandFromArbeitsstand
    [-] X UC_Daten_Zweige_CreateArbeitsstandFromBasisstand
      [+][✓] TS_Common_AUT_InitCypris
      [+][✓] TC_Daten_Zweige_CreateZweig
      [+][✓] TC_Daten_Zweige_CreateZweig
      [-] X TC_Daten_Zweige_CreateZweig
```

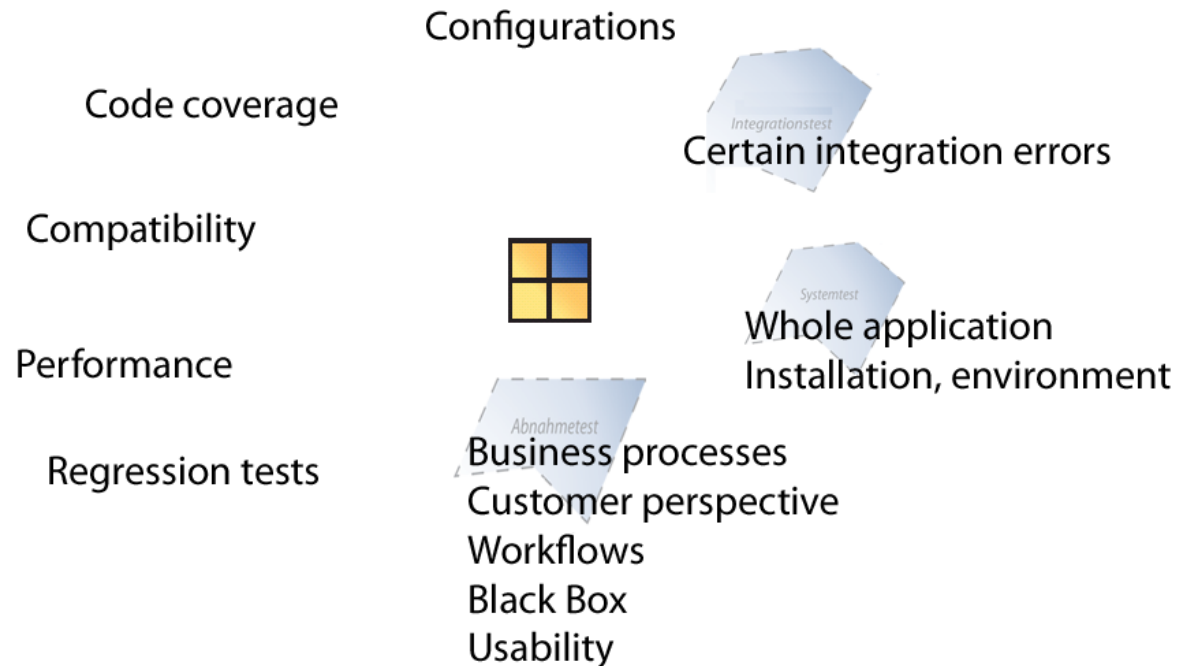
Step 4: React



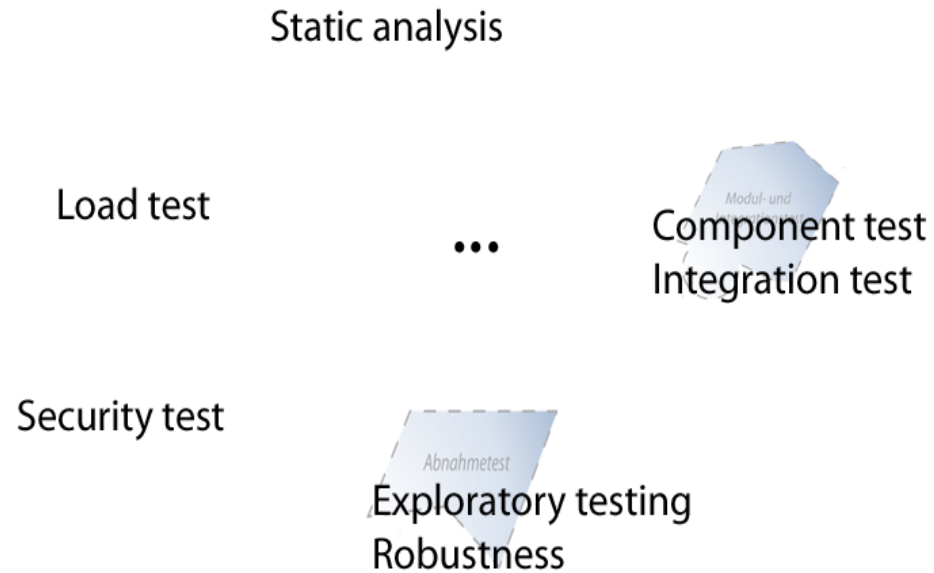
Step 4: React



What have we got so far?



What's missing?



Checklist

- Add the test perspective
 - Tester, User, Documentation
- Start automating
 - As close as possible
 - Explicit tests
- Find ways to gain feedback
 - CI, Show & Tell, Docu
- React to feedback



Thank you!

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