

# **ET in the vehicle industry**

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*TESTFAB*

# AGENDA

*Vehicle industry*

*ET*

*ET Project*

# Vehicle Industry Context

*Many small computers and sensors*

*A distributed system*

*A lot of different suppliers*

*Requirement oriented*

*Risk-based oriented*

*OEM's are not willing to be first with a technology*

*Growing costs for faults in electronic devices & softwares*

*Faults are costly*

*Failure sensitive customers*

*Customers very sensitive to costs*

*"Military requirements at no cost"*

*Still a lot of "bending steel"-mentality*

# Vehicle Industry Difference

*What is the big difference?*

*Not that much of:*

- *Web interfaces and databases*
- *Windows and OS issues*
- *Compatibility issues between SW's and HW's*
- *GUI's / UI's*
- *New technologies*

*What is common? ...*

*Almost everything!!*

**ET**

*Tell me about it ...*

# As I see it

*"Make everything as simple as possible, but not simpler."*

*Albert Einstein*

*ET / SBTM is a structured way of being creative*

*ET is a way to learn and do at the same time*

*ET a way forward to effective testing*

# As I see it

*Most important attribute - creativity*

*Everyone do it, so why not document it?*

*Hard part:*

*Documenting what you do... that's an art*

*SUT knowledge*



# The company

*"Supplier" of software and research within the company*

*Embedded-SW*

*Non-safety-critical*

*Test Department*

*Well structured*

*All Tools needed*

*QC, CaliberRM, Clearcase, Issue tracking...*

# Project under discussion

*Req based scripted testing*

*Reports of about 800 pages*

*Using QC with a couple of 100 testcases*

*Bench tests on a simulated environment*

*Customer tested in complete vehicle and bench*

*A lot of detailed manual regression tests (and not that good)*

*A lot of time spent on test case updates*

*Every testround revealed a number of wrong test cases*

*Customers found a lot of faults after delivery*

**NOT GOOD!**

# Test pilot

*Needed a challenge*

*More inspiring test*

*Add more to the profession*

*So we started a number of pilot project*

*We got a challenge from the management..*

*More effective*

*Less expensive regression tests*

# How to convince

*The arguments to the management*

*The arguments to the customers*

*Killer arguments... are there any?*

# The Argument

- *Scripted testing are good when introducing new people...*
- *Afraid of missing an area...*
- *We don't know that all requirements will be completely tested...*
- *Management do not know how test will be performed...*
- *What about timeplan when you dont know the exact tests...*
- *Tests can not be reproduced...*
- *Test reports are not detailed enough...*
- *We invested in these expensive tools...*

# Planning

*Identified all functions*

*Analyze & assign charters*

*Developer clash*

*Late changes – Total waste of time, 1 hour*

*Big and complex areas*

*Smoother than expected*

# Time estimation

*Easy to estimate*

*# of charters \* (charter time + debriefing) + overhead*

*4 charters/day/tester -> 1-2 / day.*

*”Burn-up” - charts*

*Updated continuously*



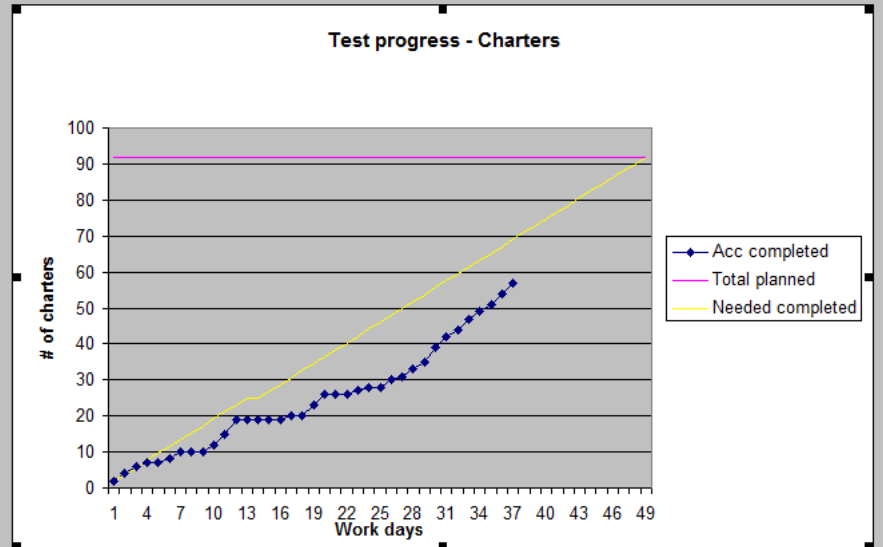
# SBTM Status chart

## Completed

**61,96%**

Total number of work days: 48  
 Avg needed charters/day: 1,92

| Function area | # of charters | Days     | Charters done | Charters Left | % done |
|---------------|---------------|----------|---------------|---------------|--------|
| <b>Area 1</b> |               |          |               |               |        |
| Function 1    | 10            | 3,333333 | 9             | 1             | 90%    |
| Function 2    | 5             | 1,666667 | 5             | 0             | 100%   |
| <b>Area 2</b> |               |          |               |               |        |
| Function 3    | 12            | 4        | 8             | 4             | 67%    |
| Function 4    | 15            | 5        | 11            | 4             | 73%    |
| Function 5    | 25            | 8,333333 | 0             | 25            | 0%     |
| Function 6    | 10            | 3,333333 | 10            | 0             | 100%   |
| <b>Area 3</b> |               |          |               |               |        |
| Function 7    | 15            | 5        | 14            | 1             | 93%    |
| <b>Total:</b> | <b>92</b>     |          | <b>57</b>     | <b>35</b>     |        |



# Charters

*3 liners*

*Test area / function*

*Remember to test ...*

*Use these techniques*

*Requirement reference*

*Everything in QC*

*The first 2-3 charters - "test the complete function"*

# Test cases vs. Charters

*Waste of time!*

*Lets test some and compare...*

*SW-REQ-5v3 User help*

*Help window should always be available to the user while program is the active application, either via menu or via F1 button.. Note: active application is the front most application. See reference SW-REQ-87 for more info.*

# Debriefing

*One thing is for sure...  
How did this work for us?*

# Regression tests

*Analysis during the project.*

*Simple testcases with the most important parts included*

*When creating a regression test keep automation in mind*

# Automated testing

*Simple automated regression tests*

*Expensive so choose wisely*

*...unless you are working with a product that is really mature and the product is in a maintenance phase*

# The result

*Outcome after first three releases*

*Handful new fault reported by customer*

*Never get the quality without this approach*

*Customer was satisfied with the quality*

# Hints

*Use a pilot*

*Use logs*

*Produce few but not too few*

*Learn how to write*

*Be undisturbed*



*Get in Touch!*

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