3rd UCAAT User Conference on Advanced Automated Testing

ETSI World Class Standards

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WAYS INTO AUTOMATED CHAOS AND OUT AGAIN LESSONS (RE-)LEARNED

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sepp.med Qualität sichert Erfolg

Outline

- Context
- Ways into automated chaos …
  - The challenges we faced
- … and out again
  - Technical mitigations
  - Organization mitigations
- Lessons (re-)learned
- Recommendations

CONTEXT

initial situation and organisational context

Context

System

- Automotive ECU
- Features
  - Functional Safety
  - Communication (CAN, FlexRay, Ethernet)
  - …
- SW branches
  - for (parallel) integration steps

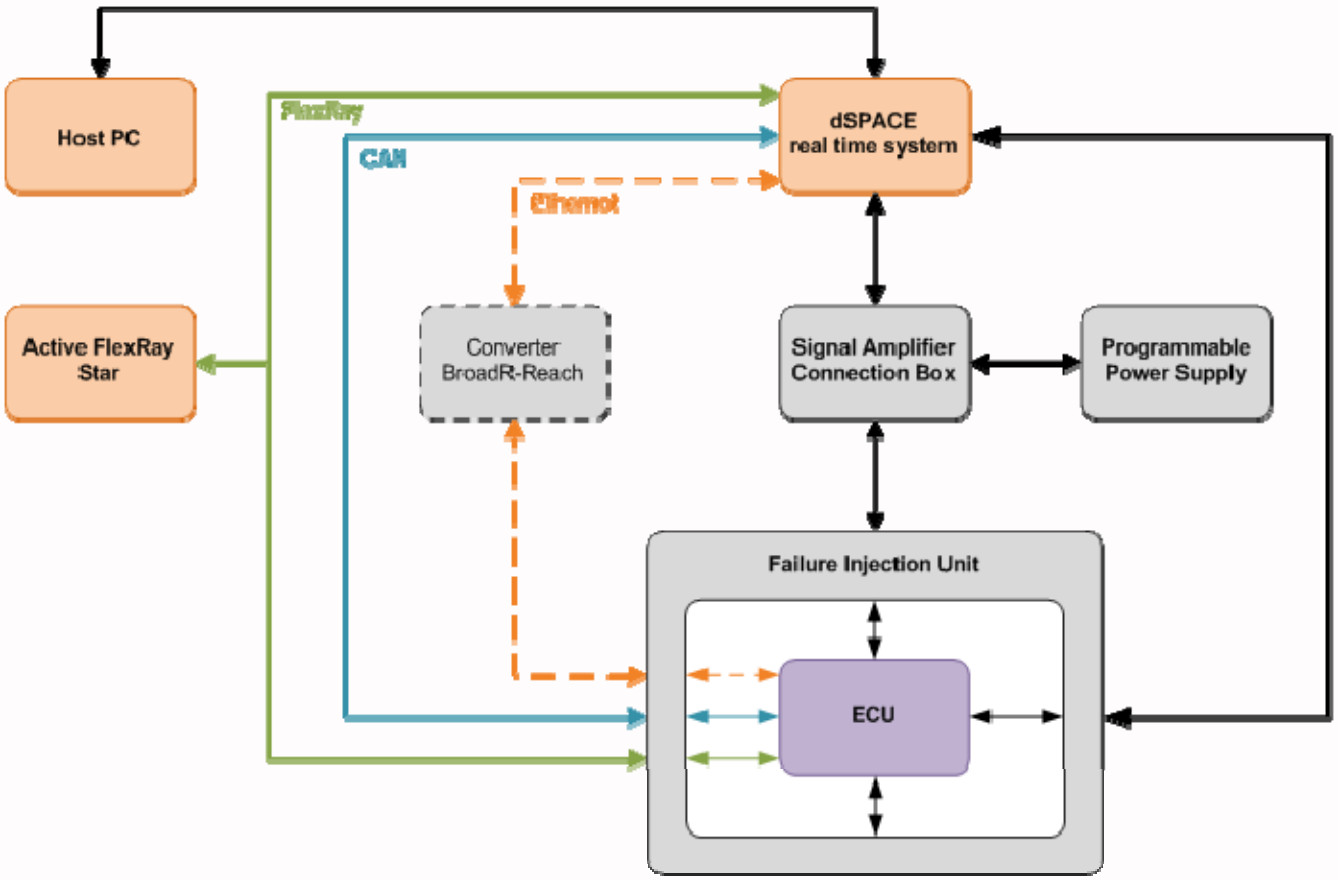
Project

- Project delayed
- Task force mode
  - on-site customer

Test

- Automated tests
  - Python test scripts
- Execution over night
  - shift plan

Automated Test Environment



Organizational Context (Task Force)

- Tier 1 Supplier

- Subcontractor 1
  - Requirement specification
  - Test specifications
  - Traceability

- Subcontractor 2 (our part)
  - Test (specification, implementation, execution, environment)
  - Defect tracking

- Customer (OEM)
  - High Level SW Development
  - Internal Subcontractor

- External Consultants and Task Force Manager

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WAYS INTO AUTOMATED CHAOS ...

The challenges we faced

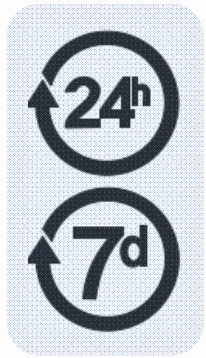
Challenges Best Of (1/2)

Planning

- unclear prioritization
  - different managers used different metrics
- lack of know-how and know-how transfer
  - experts had no time for discussions and reviews
  - team completely delocalized

Execution

- unsynchronized test environment
  - no results / different results for same tests and SW
- too many test runs
  - parallel test of different SW branches
  - no time for analysis



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Challenges – Best Of (2/2)

Reporting

- interpretation of test results difficult
  - test had to analyse and report SW failures
- several deliveries per week
  - manual merge of different test runs per delivery
- defect „ping-pong“
  - „gray area“ between development and test

Organization

- no single point of contact with OEM
- test / reporting 24/7 („meeting-driven development“)

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... AND OUT AGAIN

technical mitigations

organisational mitigations

Technical Mitigations

- Re-review of requirements
  - incl. check of test case links (Traceability)
- Improved test architecture
  - configurable test scripts to cover several integration steps
  - systematic preparation and clean-up in test scripts
- Increased automatisms
  - automated script to copy new SW to test sites
  - MS Excel macros for planning and reporting
  - checklist for manual steps (incl. systematic reboot of HILs)
- Unified test environment
  - new HW ordered
  - unified realtime simulation model

Organizational Mitigations

- Adoption of Kanban / agile methods in task force mode
  - clear prioritization by OEM managers
- Unified controlling
  - common dashboard for everybody
- (Technical) Change Control Board
  - controlled system and software changes
- Reorganisation of team
  - outsourcing reduced
  - relocation of team in one location
  - dedicated persons for daily test runs and result analysis

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LESSONS (RE-)LEARNED

processes, psychology, organisation

Lessons (re-)learned

- Regarding processes
  - Most problems originate from unclear requirements.
  - Well-defined processes are extremely important.
- Regarding psychology
  - "Trust" is a core value.
  - It is allowed to say "No".
  - Panic is contagious
- Regarding organization
  - Too many context changes reduce efficiency to zero.
  - Adding (untrained) people makes you slower, not faster.

RECOMMENDATIONS

Recommendations

- Sharpen the axe.
  - Allocate time for improvements.
  - Clean up from time to time.
- Stick to the plan.
  - ...and have a plan - especially for managing changes
  - unreflected process or SW changes do more harm than good
- Try to have fun.
  - no shouting during meetings
  - laughing is a good medicine against burn-out
  - testers are no roboters

Thank you very much!

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