The Software Factory - discussion

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Structure

- The next slides gather the contributions of industry on software factory
- And sort the comments according to the questions
- In brackets are the originator of the comment

Questions for the round table

Why should we **automate** software engineering in software factories?

- Faster, reuse, cost (telephone), long life cycle (aircraft, ast)
- Master complexity → need to have views on the system (non space, ast)
- Need to master architecture in a safety context and relate to system (non-space)
- Need collaboration (non space, csde), interoperability, component sharing (non space)
- Need to brake the walls in development process (duplication, inconsistencies) (Tas)
- Need to produce doc automatically, to automate verification (Ast)

Questions for the round table

What are the **preconditions**, the **obstacles** and the **limits** of **automation**?

- Enablers:
    - Transparent tooling integration, no vendor lock in (tas)
    - Reference archi enables reuse and automation (tas, ase5)
    - Generic spec, existing sw bb and stable hw are enablers (ohb)
    - Need sw data models & parameters (ast, ase5)
    - Need a lot of numerical simulators (incl target) (ast)
- Obstacle:
    - lack of precise objective of modelling (feasibility? Analysis/verif? Req formalisation?) (ast)
    - UML misses real-time/dynamic (ast)
    - models are not always part of conf management and traceability
- No one reported limits to automation!!!

Questions for the round table

Is there a **process model** or life cycle, which is more favourable?

- Process must allow sharing interface specification (tas)
- Move towards an enhanced more iterative life cycle (ast)
- Process must include system sw co-engineering with models (ops, fdir, sat, avionics, hw) (ast)
- Process must evolve from conf management plus change management to workflow (ast, csde)
- Process must be structured, must provide feedback to the team (csde)
- Identify volatile components (ase5)

Questions for the round table

Is there a **business context** more favourable? Relationship automation/product line.

- Comparison with Ford factories (tas)
- Business interest:
  - Capitalize on best practices in sw factories shared with other domains (ast, non space, csde)
  - Enabler for subcontractors (SMEs) (non space, tas)
  - OSRA agreed at european level enables business creation (tas)
- Business need:
  - Define the core reference set of tools shared by all stakeholders (non space & ast)
  - Better support product lines (ast)
  - Reduce regression/incremental testing of 50% (ast, ase5)
- Yes, but: payback time? (ohb)

Product line wrt model driven?

Feature model?

Questions for the round table

What is the **tool support organisation** of software factories?

- Share generic infrastructure, keep business added value (tas)
- Tool vendors must be user driven (non space)
- Open source may be a solution (ast, ase5)
- If open source, governance is needed (non space)
- Workflow open source tools need to be improved (ast, ase5)
- Integrate better development and test tools (ast, ase5)
- More efficient check-in/check-out and merge/diff of models (ast)
- All tools in the same workstation (ast)
- ..and in Eclipse? (ast, ase5)
- Provide security for trans-national tools (ast, csde)
- Training curve & tool evaluation (ase5)

Questions for the round table

Should the **customer** do something to make software factories more efficient?

No one dared to say, but among the enablers (previous question), the customer can provide:

- OSRA agreed at European level
- Software (functional) data model definition in addition to OSRA: consistency of functional data between system & software (SRDB?)
- Generic specification: up to feature model?
- Modelling objectives guidelines
- UML profile with real-time/dynamic (CoRDeT SCM? Chess? Marte?)
- Stable hardware...?
- Support to tools:
    - What is the core reference set of tools shared by stakeholder
    - transparent tooling integration

Conclusion of the conclusion

- Danke schön