CP-SETIS

towards Cyber-Physical Systems Engineering Tools Interoperability Standardisation

Jürgen Niehaus

SafeTRANS
Content

• Cyber-Physical Systems Development
  – Engineering Environments
  – Interoperability Specification

• CP-SETIS
  – Goals
  – ICF: IOS Communication Forum
  – Status
(CP)Systems Engineering Environments

• Cyber-Physical Systems (CPS)
  – are becoming omnipresent in our daily lives
    • many new business opportunities
  – are difficult to develop
    • A multitude of development tools by different vendors, spanning
      – different engineering disciplines
      – different phases of the development process
    • must be integrated into Engineering Environments to support
      – company (and sometimes even application) specific design processes
      – quality requirements (like safety, security, reliability, traceability of design artifacts,…)
      – physically and organisationally distributed design teams
      – …
Data and Tool Integration Problem

- Point-to-point Integrations don’t scale
- Monocultures lock you in
- Maintenance, management, and change costs go up over time
- Monocultures lock you in
- End-user productivity suffers: Either stuck with the wrong tool, stuck doing manual integration; often stuck doing both
- Ongoing and unexpected costs drain resources
- Integrations consume more of the IT budget: integration failures are the top 2 causes of software project delays*
- Creating new integrations is unpredictable
- Past choices restrict present action and future vision
- Even more: limited ability to respond to change
- Constrained by exhausted IT budget and lower productivity

* Commissioned study conducted by Forrester Consulting.
IOS – Interoperability Specification

- IOS is a set of specifications covering data and tool interoperability
  - based on (relevant parts) of existing standards, whenever possible
    - I.e., OSLC for Lifecycle Data Integration and Exchange, FMI for Heterogeneous Co-Simulation, etc.
  - containing extensions of these standards
  - containing stand-alone specifications not based on any existing standard
  - containing bridges between these standards

- Has been developed in various European projects
  - Mostly in the ARTEMIS context: iFEST, CESAR, MBAT, CRYSTAL, HOLIDES, and more, but also ITEA, FP-7,…
CP-SETIS: Goals and Motivation

**Goal 1:** The alignment of all IOS-related forces within Europe to support a common **IOS Standardisation Strategy**, aiming at a formal standardisation process of the IOS.

To avoid splitting of forces and uncoordinated activities, which would endanger the huge effort that has already been put into the IOS.

To enable all stakeholders to realize the potential of IOS.

**Goal 2:** The definition and implementation of **sustainable IOS Standardisation Activities** supporting both, formal standardisation of ‘stable’ IOS versions as well as extensions of IOS, if possible within existing structures that survive the lifespan of single projects.

These activities exceed both, the scope as well as the lifetime of any single project.
ICF – IOS Coordination Forum

SUSTAINABLE STRUCTURE AS A FORUM (PLATFORM) FOR ALL STAKEHOLDERS TO COORDINATE ACTIVITIES

INTEROPERABILITY SPECIFICATION (IOS)

- Incubate new projects
- Provide method for sustainable achievement of project results
- Sustainable, beyond the lifetime of a single project
- If possible, within existing structures
- Open for all stakeholders
- Enable coordinated, goal-oriented standardisation

R&D PROJECT 1  R&D PROJECT 2  R&D PROJECT ...

PROJECT CANDIDATE 1  PROJECT CANDIDATE ...

SUPPLIER ...

TOOL VENDOR ...

OEM ...

STANDARDISATION BODY 1  STANDARDISATION BODY 2  STANDARDISATION BODY ...

Author: Jürgen Niehaus
Event: CPS Clustering and Communication Event
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ICF – Benefits for Stakeholder

- have one place where all information about IOS is available
- use ICF as an independent, neutral forum, to meet other stakeholders at eye level
- find allies and cooperation partners, e.g., to extend and shape those parts of the IOS that are relevant to this particular group of stakeholders, including pushing of formal standardization
- find experts for IOS related matters
- be able to guarantee sustainability and accessibility for their IOS related project results
- easily exchange and gather IOS related information, e.g., the current baseline of IOS, new extensions under development, standardization activities, etc.

- while at all times being able to focus on those parts of the IOS, that are actually of interest to them.
Status

Year 1

- Definition of first draft of operational/business model for ICF
  - Assets
  - Roles, responsibilities
  - Participation rules (rights and obligations)
  - Financing (to be finalized)

- Alignment of model with stakeholders

- First evaluation of potential host structures

Year 2 (starting now)

- Refinement of model

- Deciding upon a host structure

- Implementation of ICF within host structure
Project Factsheet

Coordinator: SafeTRANS

Core Partner: AIT, ARTEMIS, AVL, KTH, OFFIS, THALES, SIEMENS

Associated Partners: ABB, AIRBUS GROUP, ASAM, DAIMLER, ETSI, VOLVO

Additional Associated Partners welcome!

Duration: 01.03.2015 - 28.02.2017

Total Budget: 780,000 Euro (similar to Support Actions)

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