

Panel 4: Rationalisation or Standardisation?

First standardised use cases of all simulators -

USE CASES?

Need is a Reference Architecture on top of SMP standard

REF/SSAA
- too much a "personal" view on how a simulator should behave
- not objective enough
- technical responses "claimed" it would have been easier to start again.

Standardisation:
architecture + interfaces
Rationalization:
what is inside by being inside

SMP+ (Conf, Tests)

Reference Architecture
But: How to handle different approaches - Data Flow
- Interface based
???

Current SMP standard does not allow real model exchange
A clear need for Level 1/2 e SSAA/REFA is mandatory

STANDARDIZATION
↳ SMP is an initial point but other aspects in the life cycle are also needed.

What about defining a standard for writing tests.

- Agree on a Reference Arch.
- Config. Data Def.
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Extend Standards to cover
- Configuration
- Testing (Simulator)

TEST HIGH LEVEL STANDARDIZATION

- * 1st STDs → Then Ref (NOT DONE YET)
- * STDs must be simpler
- adaptation
- SME's jump in
- * USE CASES
- * Compliance (models & Infos.)
- * Beyond Level 2
- * STDs for Conf, Tests
- * Outside SPACE

Standard for Sim-Configuration Needed
↳ Link to System Data Model 23

Add standardize mechanisms for distributed simulation (SMP distributed)

EDS

Use Electronic Data Sheets

RATIONALIZATION BY POLICY STIFLES INNOVATION.
STANDARDIZATION SHOULD OPEN UP MARKET FOR SME'S AND START-UPS

STDs SIMPLER SMEs

Electronics data sheet of Standard - Thermal model
~~Thermal~~ and Geometrical (simplified model) would be interesting

Complex standards can increase the barriers to entry, both for new players and new tools

Standardization should simplify
↳ SMP high level of training necessary/required

Standards should be as easy/simple as possible.

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Standardization is the synthesis of rationalization

Standard → allows exchange and still allows flexibility!
Rationalization → Risk to limit ideas and to not meet new needs

Level 2 & beyond

Need for COM e APFG level 2 standardization along with exchange

Establish more specific levels of SMP compatibility (>2)

Standardization helps to overcome monopolies & allows for interdisciplinary new works/approaches → long-term cost ↓

Standard → exchange
Rationalization → Cost Savings Exchange

20% STANDARDIZATION
80% RATIONALIZATION

STANDARDIZATION DRIVES RATIONALIZATION IF YOU USE A MODULAR APPROACH

STDS 1st, Then Rat. ✓
We are not done

WITH MATWORKS YOU CAN GO WITH STANDARDIZATION OR RATIONALIZATION. WE WILL SUPPORT BOTH APPROACHES. FLEXIBILITY IS MATWORKS MINDSET

STDS Compliance ✓

How can the compliance to a standard be verified?

SPACE IS OUT THERE

Actively seek usage of non-space standards.

Use cases?

- First standardized use cases of all simulations
- Need is a reference architecture on top of SMP standard
- REFA/SSRA:
 - Too much a "personal" view on how a simulator should be built i.e. not objective enough
 - Companies "claimed" it would have been easier to start again

- 1st standardisation then rationalisations; standardisation is not enough.

General agreement that standardisation enables and helps rationalisation but does not address all issues.

Standardisation addresses "effective exchange" (~20% of the problem) while rationalisation addresses "efficient use of resources" (~80% of the problem).

In some cases standardisation can be seen as a synthetic process within the rationalisation effort; common practises, needs, ideas... are captured in standards to allow exchange, collaboration a reuse across stakeholders, nurturing more efficient processes with less exchange, migration and reuse cost, as well as interdisciplinary collaboration culture.

Standardisation can be a driver for rationalisation if a modular approach is used.

Excess of rationalisation shall not kill competitiveness; flexibility for customisation and differentiation is required.

Rationalisation by policy stifles innovation.

- Standards must be simpler, should easy adoption and enable SMEs to support on these areas (e.g. tooling, customisation...).

Complex standards might cause adoption barriers (more prominently among smaller players), effectively jeopardising rationalisation.

SMP is presented as an example for which substantial training and effort is required to make effective use of it.

- Clear use cases are required to focus the harmonisation process, but also should be clearly defined for the existing/future standards.

- Tooling and processes to ensure/certify compliance is necessary.

- Standardisation on model portability requires going beyond Level 2 (infrastructures first, then models... but also architectures, conceptual data models, etc.).

It is necessary to establish different levels of compatibility to allow real exchange not only at implementation level but also functional (e.g. data flow vs interface based approaches).

Rationalisation requires to go also inside the models to help reuse across life cycle and missions.

- Areas where standardisation is missing: Simulator configuration, [writing] Tests, Distributed simulation, Simulation data archiving/exchange...

- Use of Electronic Data Sheets (EDS).

- Think out of the box: There is more than the Space Business.

Automation and aeronautics have walked this path already, we cannot afford missing their lessons learnt or reinventing the wheel.

Actively seek for already existing standards before developing new or updating existing ones.