

Panel 4: Rationalisation or Standardisation?

First standardised
use cases of
all simulators

Need is a Reference
Architecture on top
of SHP standard

USE CASES?

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

Standardisation:
architecture +
interfaces
Rationalization:
what is inside building
blocks

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

Current SHP standard does
not allow great model exchange
A clear need for level 1/2 &
SSAA/REFA is mandatory

✓ SHP+ (Conf, Tests)

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

What about defining
a standard for
writing tests.

Extend Standards
to cover
- Configuration
- Testing (Simulator)

TEST HIGH LEVEL
STANDARDIZATION

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

Add standardize mechanisms
for distributed simulation
(SHP distributed)

- * 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

- Agree on a
Reference Arch.
- Config. Data Def.
-

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

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

STDs SIMPLER SMEs

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

Standards should
be as easy/simple
as possible.

EDS

Use
Electronic
Data Sheets

Electronics data sheet &
Standard - Thermal model
simplified as Geometrical
(simplified model) would be
interesting

Standardization
is the synthesis
of rationalization

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

Standardization helps
to overcome monopolies
& allows for interdisciplinary
new works/approaches
 \Rightarrow long-term cost \downarrow

Standard \rightarrow exchange
Rationalization \rightarrow cost
savings
exchange

20% STANDARDIZATION
80% RATIONALIZATION

STANDARDIZATION
DRIVES RATIONALIZATION
IF YOU USE A MODULAR
APPROACH

STDS 1st, Then Rat. \checkmark
we are not done

Need for COM & APPG
level 2 standardization along
with exchange

Establish more
specific levels of
SMP compatibility
(>2)

WITH MATLABWORKS YOU CAN
GO WITH STANDARDIZATION OR
RATIONALIZATION. WE WILL
SUPPORT BOTH APPROACHES.
FLEXIBILITY IS MATLAB'S STRONG
POINT

STDS Compliance \checkmark

How can the
compliance to
a standard be
verified?

SPACE IS OUT THERE \checkmark

Actively seek usage
of nonE-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.