CNES

RATIO-SIM Position

CNES Statement/Position

1. Current status: What are the major bottlenecks maintaining or replacing the Modelling and Simulation Infrastructures?
   - BASILES is a set of proprietary tools covering all the functions needed to develop/execute models and perform validation tests (FES, SVF, AIVS and TOMS)
   - BASILES is distributed all over CNES projects (CSO, MERLIN, SWOT…) as ISIS TOMS (which defines sub-systems interfaces) and for all others simulation purposes
   - BASILES is "under control " by CNES and SPACEBEL (perfect adaptation to our needs, very good reactivity, easy to improve…) maintained over 10 years to deal with technical evolutions (performance, SMP…) through R&T and invest.
   - Renewal studies started to treat technology obsolescence especially for MMI and scripting languages

2. Opportunities: what are main drivers to renew simulation infrastructure (technology push or application pull, obsolescence, etc.) ?
   - Full native compliance to SMP to get the best benefit of the standard
   - MBSE approach is a necessity

3. Common interest: are the European Industry (Primes and SMEs) willing to work towards a harmonised Modelling and Simulation Infrastructure?
   - Why not because we share the same objective but for which purpose ? Saving cost ? It will take time !
   - ESA UMF already under test at CNES (licencing and support to be improved)
   - Continue the model sharing adopted for Myriade Evolutions/Merlin… with primes

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5. <u>Approach:</u> What are the next steps that need to be taken to work towards a harmonised Modelling and Simulation infrastructure? Who needs to be in charge and who shall develop and maintain the tools?
    - To confirm that SMP2 is the standard to keep on (vs FMI or other solutions)
    - Decide which tools to share in priority (execution runtime products are very dependant to models patrimony, model design tool seems easier to start with)

6. <u>Problems to solve :</u>
    - Transition phase from BASILES to RATIO-SIM will be complex, long and expensive (patrimony validation…)
    - Product appropriation to become autonomous is mandatory
    - Lack of independence to maintain/adapt the tools can be critical

7. <u>Conclusion :</u> CNES is in line with the rationalization objective and is fan to participate …to the condition
    - Involved in specification process including functional building blocks definition
    - Shared building blocks not too ambitious (crescendo functions implementation)
    - After SMP2 orientation confirmed and SMP2 Level 2 normalization
    - Reference Architecture (e.g. SSRA approach) to be considered as a priority
    - An active development community with efficient organization (primes, SMEs…)

A big European challenge to face, open source an opportunity to succeed