



# CAE-IF : R3S and Pilot #3 RESULTS SUMMARY

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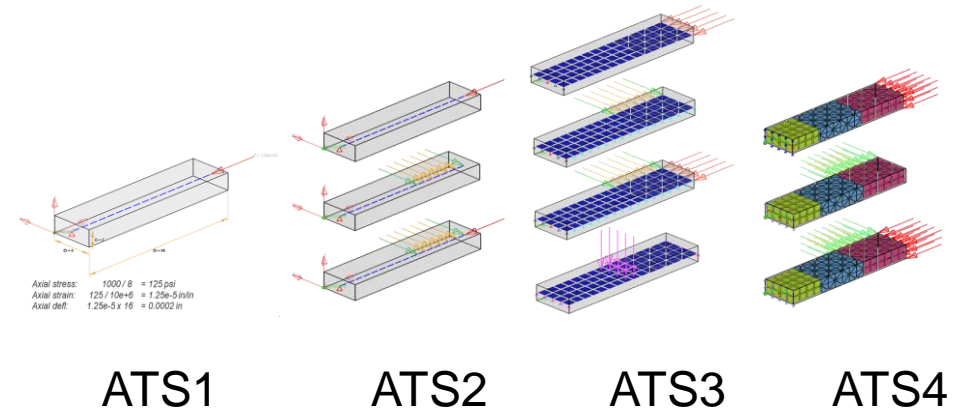
March 12, 2019



# R3S scope

- Same simple test suite than R1S :

- Beam modeled with rod, bar, shell or solid elements
- Lumped and/or distributed applied forces



- But process extended to the FEA round trip :

- Focused on input data regeneration in CAE solver format
- The rerun sequence will be executed by the LOTAR EAS\_WG and is not due by the participants

- In addition to R1S :

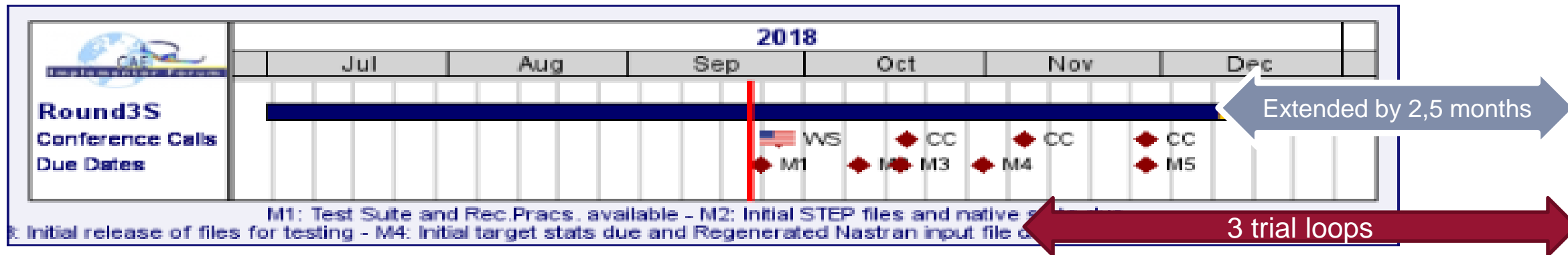
- New statistics added
- FEA validation properties to be assigned

} Postponed

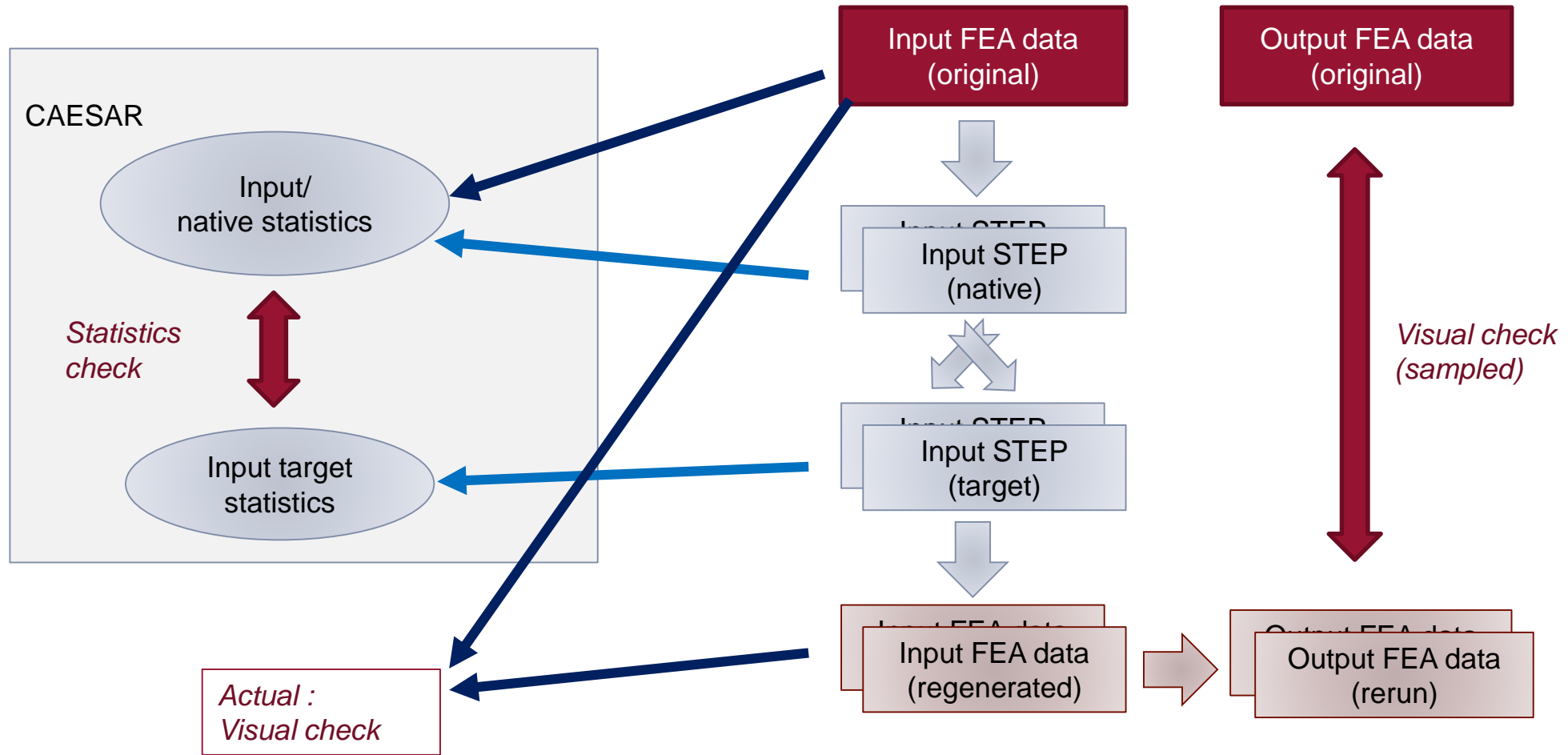
# R3S schedule and milestones

- Kickoff : PDES/LOTAR meeting
- Conf call every 3 weeks
- Re-run trials
  - From Oct, 31 to Nov, 28 - **Feb 28, 2019**

Date	Action
2018-09-23 (Sun)	Test Suite and Rec.Pracs. available
2018-09-26 (Wed)	Round 3S Kickoff meeting in Jacksonville, USA
2018-10-10 (Wed)	Initial STEP files and native stats due
2018-10-17 (Wed)	Initial release of files for testing
2018-10-18 (Thu)	CAX-IF Round3S Conference Call
2018-10-31 (Wed)	Initial target stats due and Regenerated Nastran input file due
2018-11-07 (Wed)	CAE-IF Round3S Conference Call
2018-11-28 (Wed)	CAE-IF Round3S Conference Call / Preliminary results available
2018-12-11 (Tue) - 2018-12-13 (Thu)	CAE-IF Round3S Review Meeting in Darmstadt, Germany



# CAE-IF R3S : round trip process focusing on input translated data



# STEP translation results

- SFA : RAS
- EDM check : 3 remaining errors
  - uniqueness rules violations (ATS1, ATS2, ATS3,ATS4)
    - -> dummy nodes v/ nodes name attribute
  - WHERE rule violations (ATS2, ATS3, ATS4)
    - -> FEA\_PARAMETRIC\_POINT
  - unset mandatory attributes (ATS4)
    - ->VOLUME\_3D\_ELEMENT\_LOCATION\_POINT\_VARIABLE\_VALUES



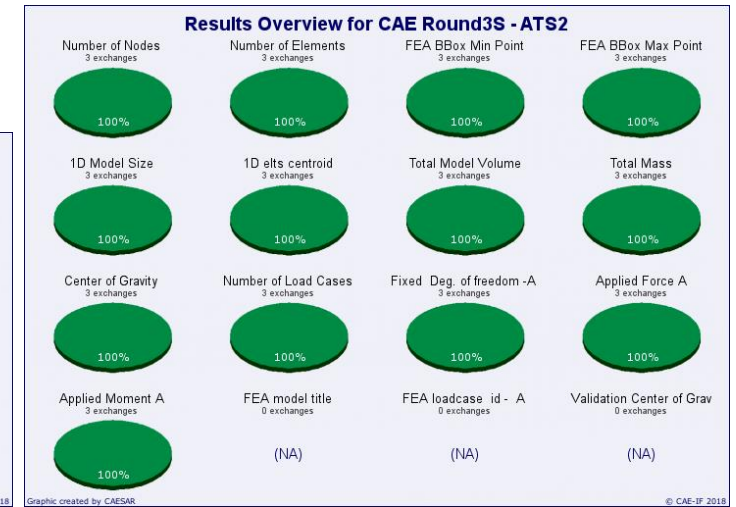
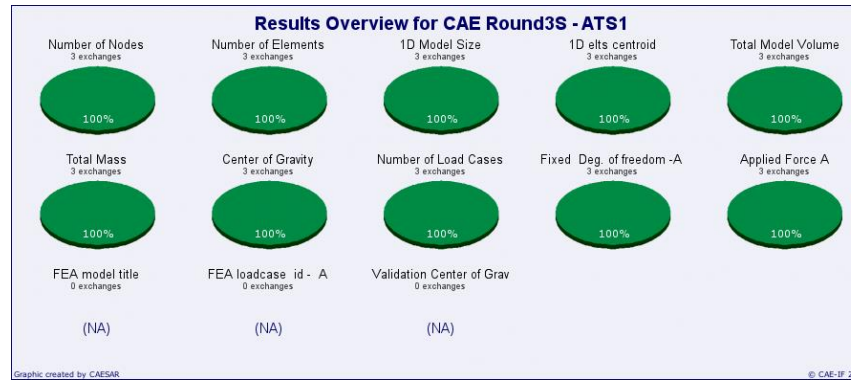
Being fixed soon



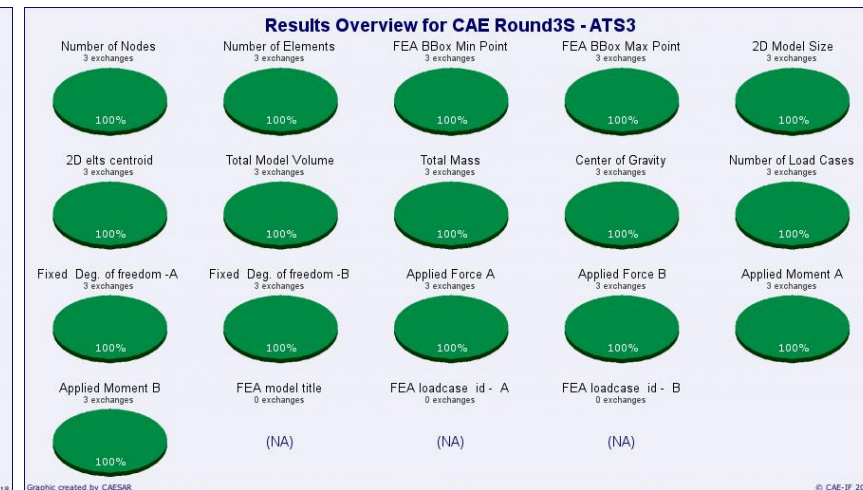
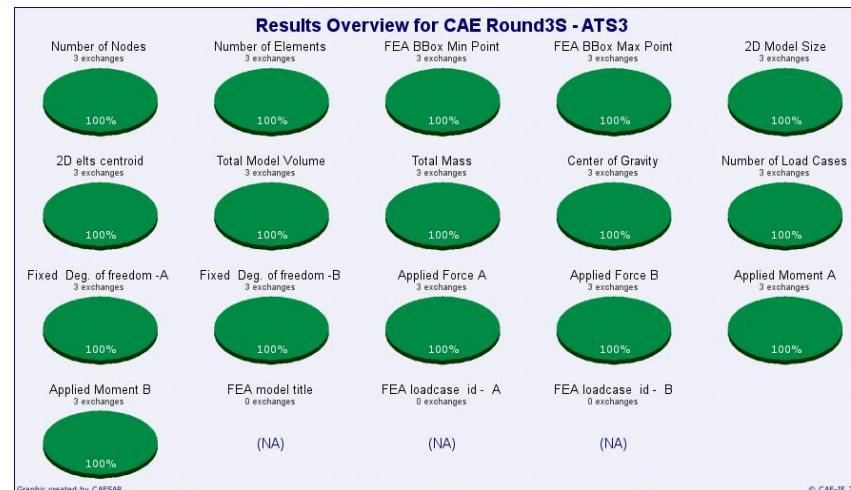
Under investigation

# R3S statistics

- 100% passed (unless metadata and VP)
- No more error captured



➔ *Need to further analyze Nastran regenerated files*



# Nastran regenerated files

	From STEP	Regenerated by	ATS1	ATS2	ATS3	ATS4
Re-run completed	A	->A	ok	ok	ok	ok
		->B	ok	ok	ok	ok
	B	->A	ok	ok	Bad prop_id management	ok
		->B	ok	ok	Ok	ok
Equivalent results	A	->A	ok	ok	PLOAD2 Sign error	ok
		->B	ok	ok	ok	Fixed field issue
	B	->A	ok	ok	----	ok
		->B	ok	ok	ok	Fixed field issue

## CAE-IF R3S : Nastran regenerated files statistics

	ATS1	ATS2	ATS3	ATS4	% passed
Re-run completed	4/4	4/4	3/4	4/4	94%
Results OK	4/4	4/4	2/3	2/4	75%

### Remaining issues

- Critical (not equivalent model)
  - Formatting issues : Fixed field management
  - Element property id management
  - Surface loads orientation
- Non critical (equivalent model)
  - Title and load case identifiers
  - Element numbering
  - Element property numbering
- To be considered later
  - Multi coordinate system management
  - Output request (PBAR : location of stress recovery)

### Conclusions

- *Critical issues being fixed soon*
- *Big improvement thanks to extension of R3S*
- *Efficient cooperation between participants*
- *Further items to be addressed in future test rounds*



## R3S : lessons learnt

- AP209 EXPRESS Schema corrected
- Calculation of resultant moment fixed
- Opened discussion on :
  - « equivalent FEA model »
  - Titles and identifiers translation
  - Output request : point location for stress recovery

# R3S results : conclusion

- General
  - Big improvement since last offsite meeting in Darmstadt
  - Very efficient cooperation between participants
- Statistics
  - Metadata (title & other ids) and FEA validation properties have been postponed to R4S
  - All other statistics are OK. Calculation of resultant moment has been fixed.
- Still some (minor) syntax issues in the STEP files for 1 participant
- Regeneration of Nastran files
  - 75% round trip processed with correct results regeneration
  - Remaining critical issues identified will be fixed quickly
  - But still further items to be addressed

***On track for the Live Demo @ NAFEMS WC19  
→ Task will be monitored task by EAS\_WG***

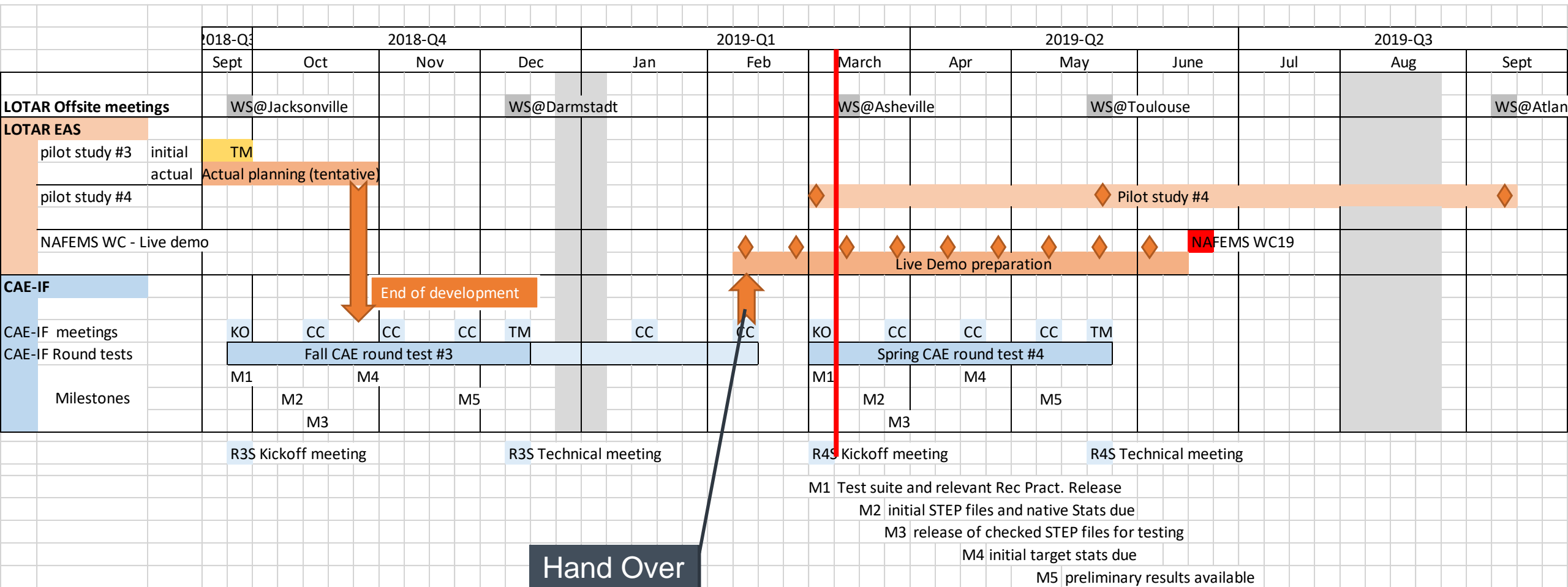


# APPENDIX

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# CAE-IF / EAS master planning and concurrent tasks



**Hand Over**