



ADVANCED FE BIOMECHANICAL POSITIONING METHOD

2023/06/15



1. Stellantis company
2. PFDI Virtual Engineering
3. Biomechanical analysis
4. Advanced Biomechanical Positioning Tool
5. BETA-CAE integrated solution
6. Conclusions

STELLANTIS COMPANY



50% ex-FCA  50% ex-PSA 

14
Brands

30
Countries

130
Markets

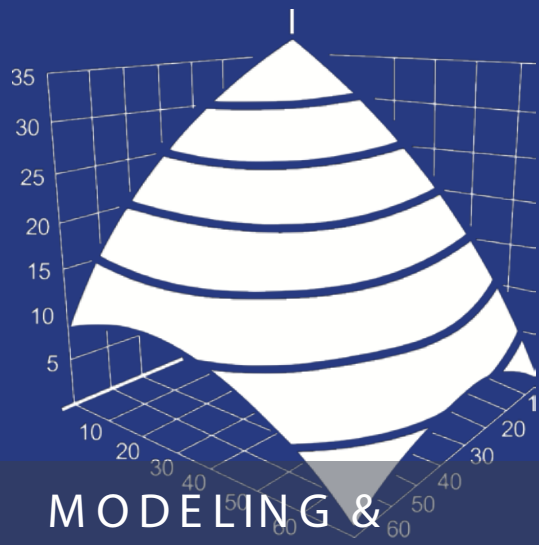
~ 272 000
Employees





PFDI - VIRTUAL ENGINEERING (VENG)

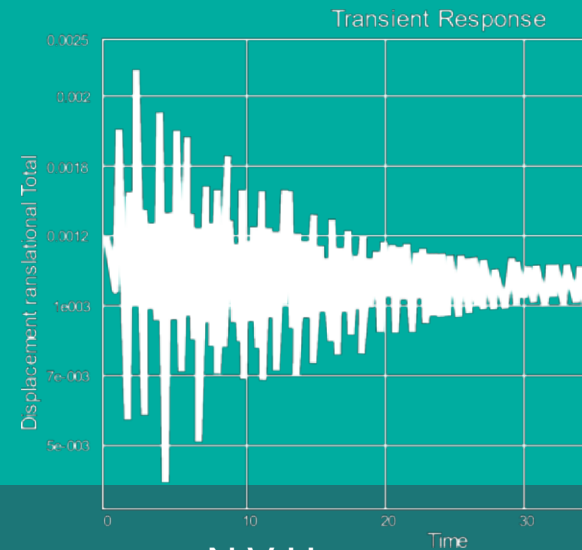
ENG



MODELING & OPTIMIZATION



DURABILITY



NVH



SAFETY & BIOMECHANICS

BIOMECHANICAL ANALYSIS

01 Couple seat & dummy

Original dummy
Deformable seat

02 Articulate dummy

H-Point placed dummy
Deformable seat

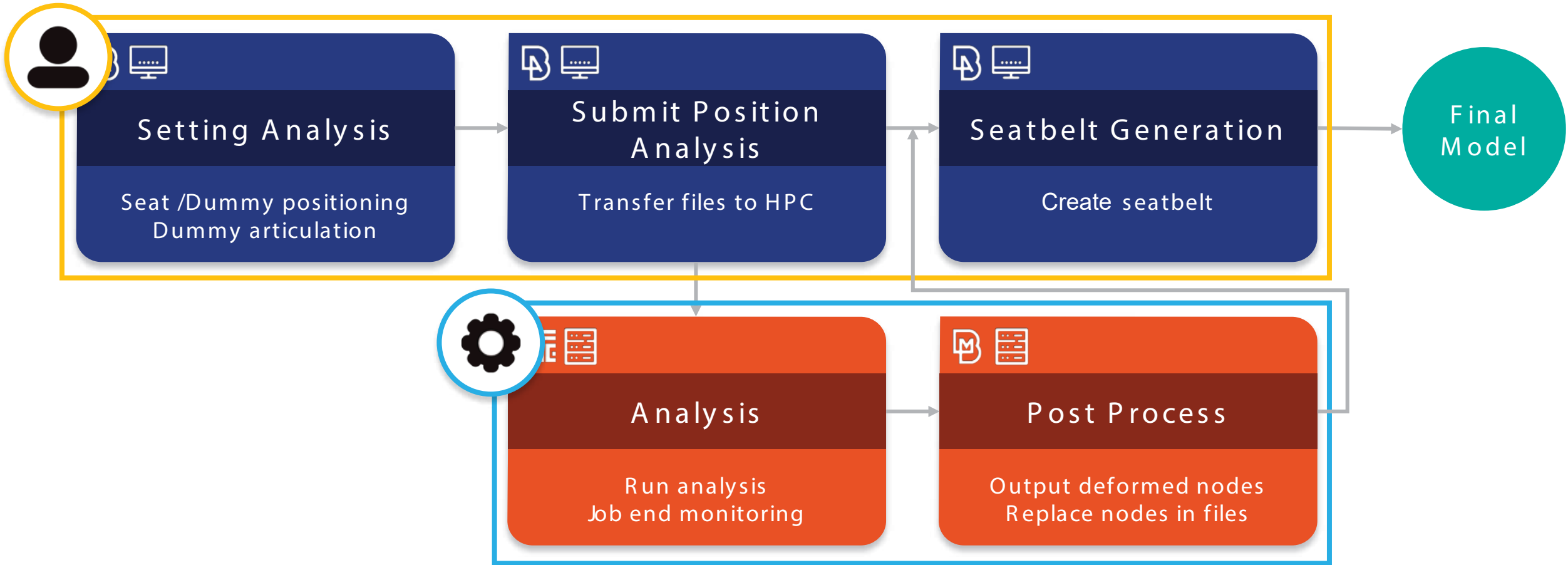
ADVANCED BIOMECHANICAL POSITIONING TOOL

GOALS

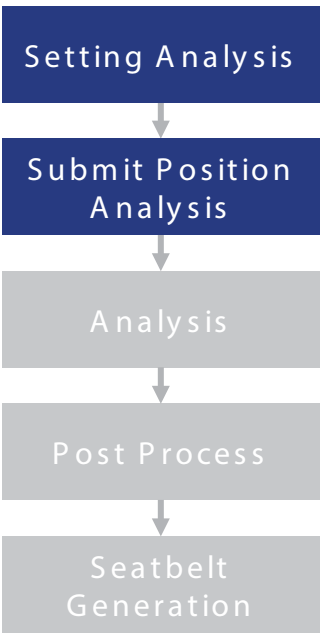
03

- ④ Simplify the pre-processing (also for non expert user)
- ④ Deformed dummy
- ④ Deformed seat
- ④ Reduce pre processing time
- ④ STELLANTIS world wide common procedure
- ④ Integrated in ANSA
- ④ LS-Dyna compatible

ADVANCED BIOMECHANICAL POSITIONING TOOL



DETAILED PROTOTYPING AND APPLICATIONS

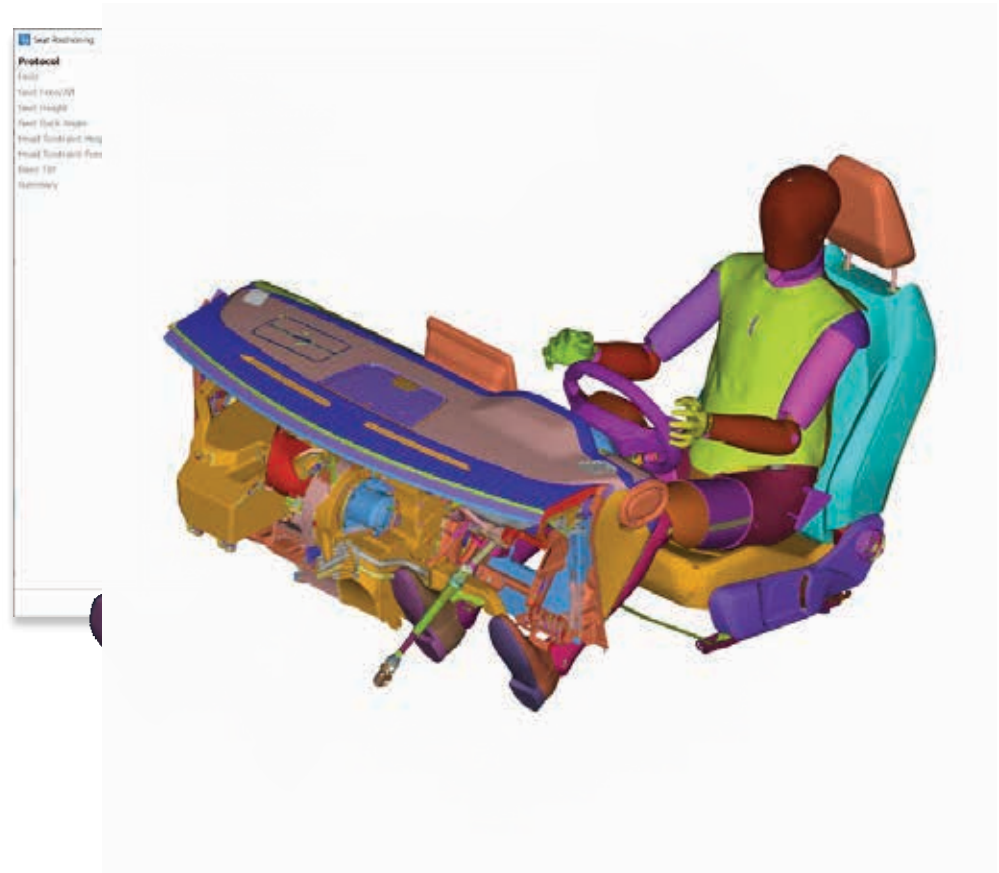


The screenshot shows the 'Job Submission' window in the 'Advanced Positioning' software. The 'Analysis Files' section is highlighted with a yellow box and contains the following table:

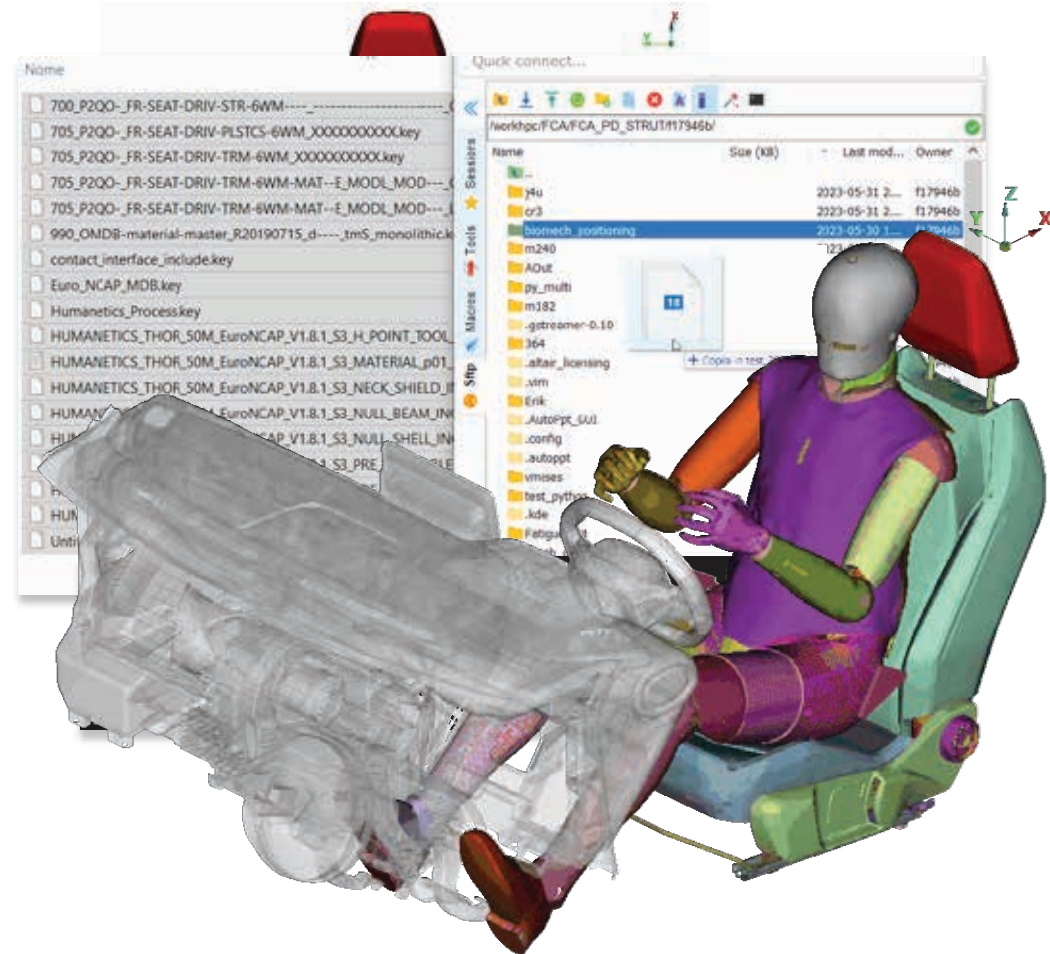
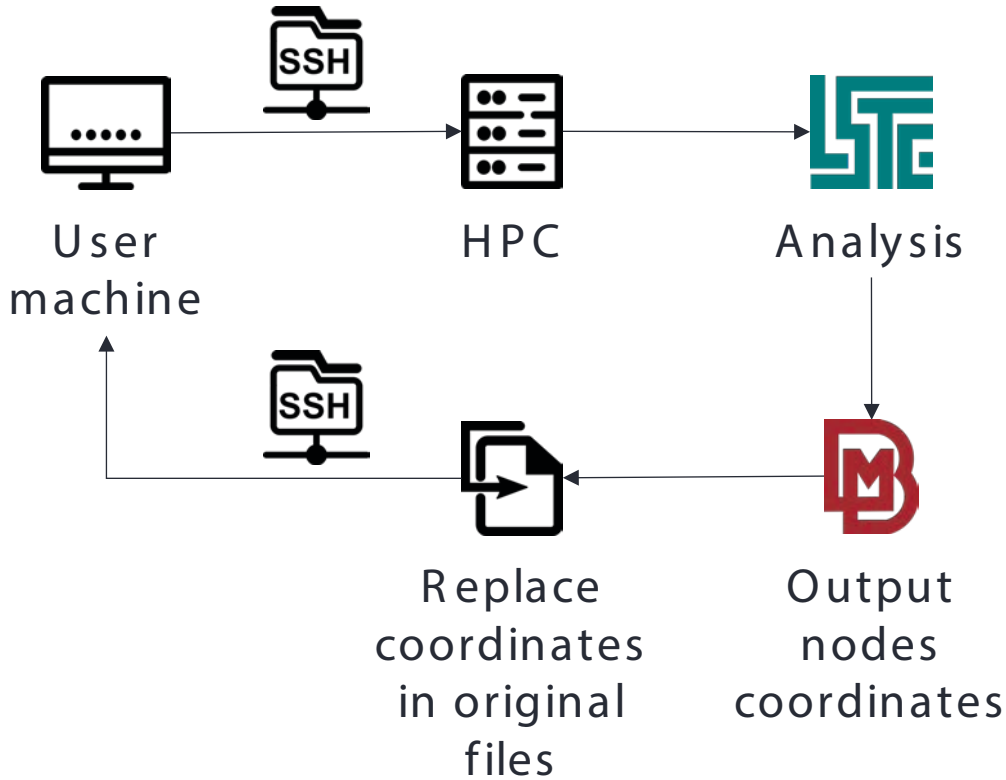
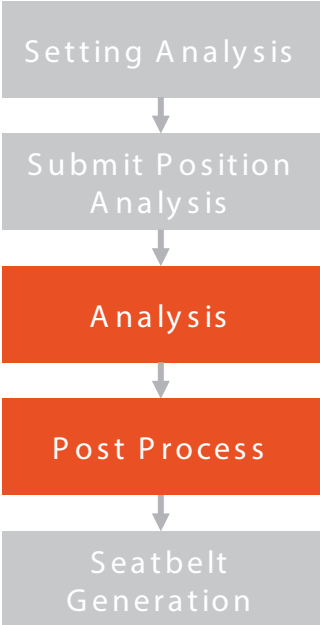
File Name	Is Run File	Add suffix	Remove
705_P2QO-_FR-SEAT-DRIV-TRM-6WM_XXXX...	<input type="radio"/>		
990_OMDB-material-master_R20190715_d----	<input type="radio"/>		
contact_interface_include.key	<input type="radio"/>		
Euro_NCAP_MDB.key	<input type="radio"/>		
Humanetics_Process.key	<input checked="" type="radio"/>		

Below the table, it indicates 'total 2 selected 1'. A 'Run Analysis' button is visible at the bottom right of the highlighted area. Other fields include 'Analysis deck' set to 'LS-Dyna', 'Analysis files' pointing to a key file, and 'Dummy original files' pointing to a zip file.

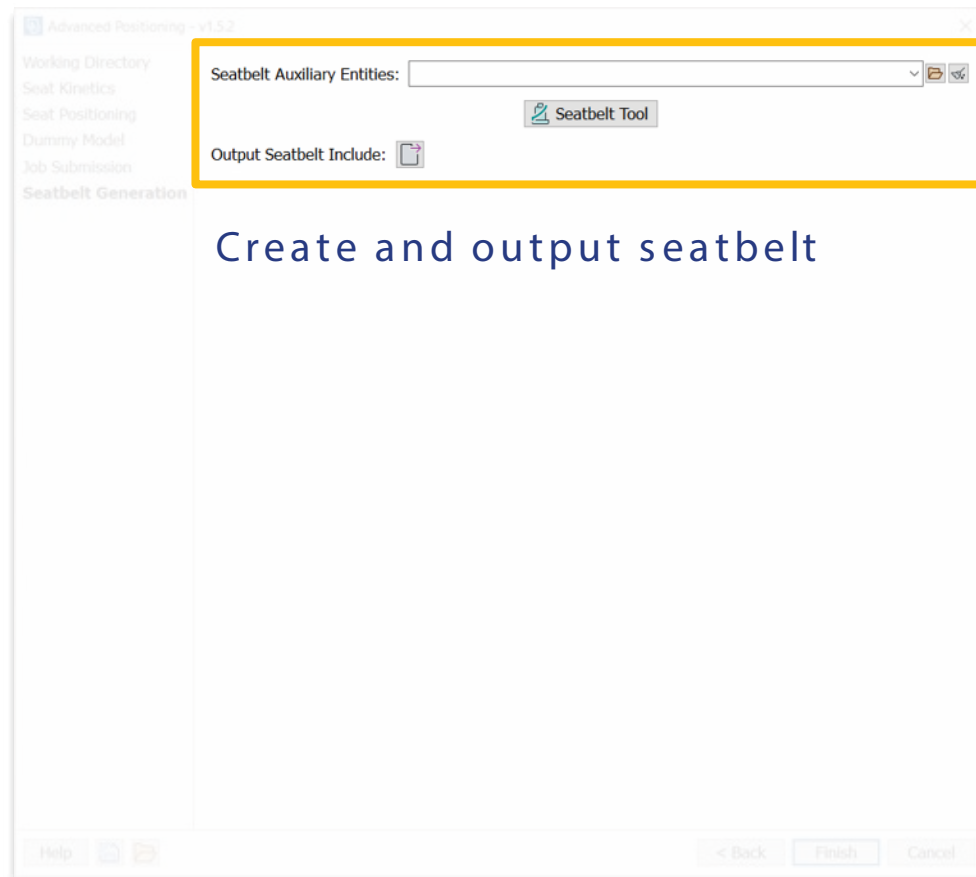
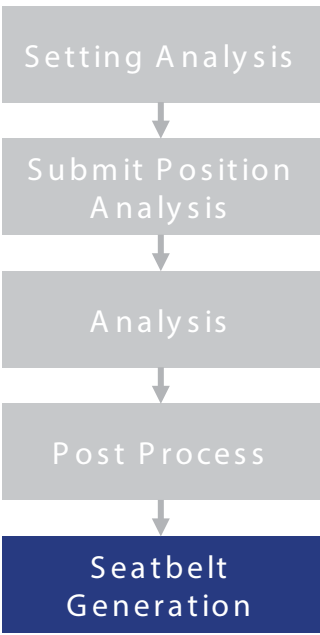
position output analysis files
 Select run file and submit
 articulating dummy and output
 cables nodes



POSITION ANALYSIS



SEATBELT GENERATION





CURRENT DUMMIES POPULATION COVERAGE



ACHIEVEMENTS

- ✔ Make position feasible for non expert user
- ✔ 30% of pre-processing time reduction
- ✔ Deformable dummy in positioning analysis
- ✔ Procedure under testing all over STELLANTIS South Europe teams

FURTHER DEVELOPMENTS

- ▮▮▮ Manage EuroSID and WorldSID dummies
- ▮▮▮ Add default library of dummies
- ▮▮▮ STELLANTIS World Wide shared procedure



THANKS

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