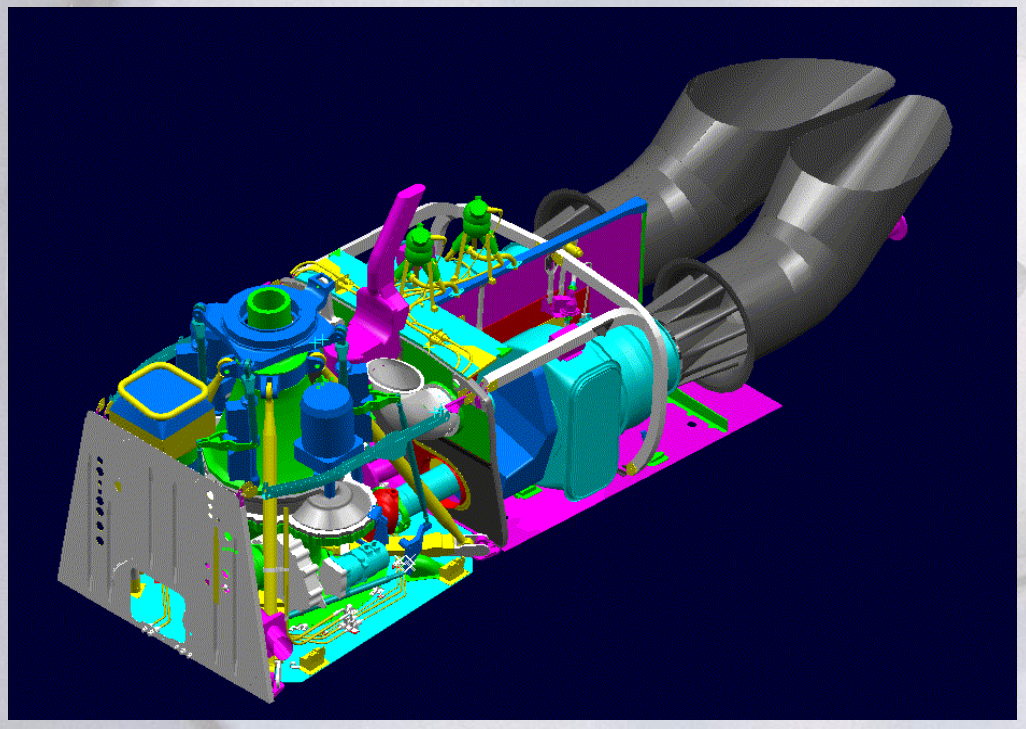
eurocopter

Back to Session Subjects

3D MOCK-UP CAD

WHAT IS A DIGITAL MOCK-UP ?

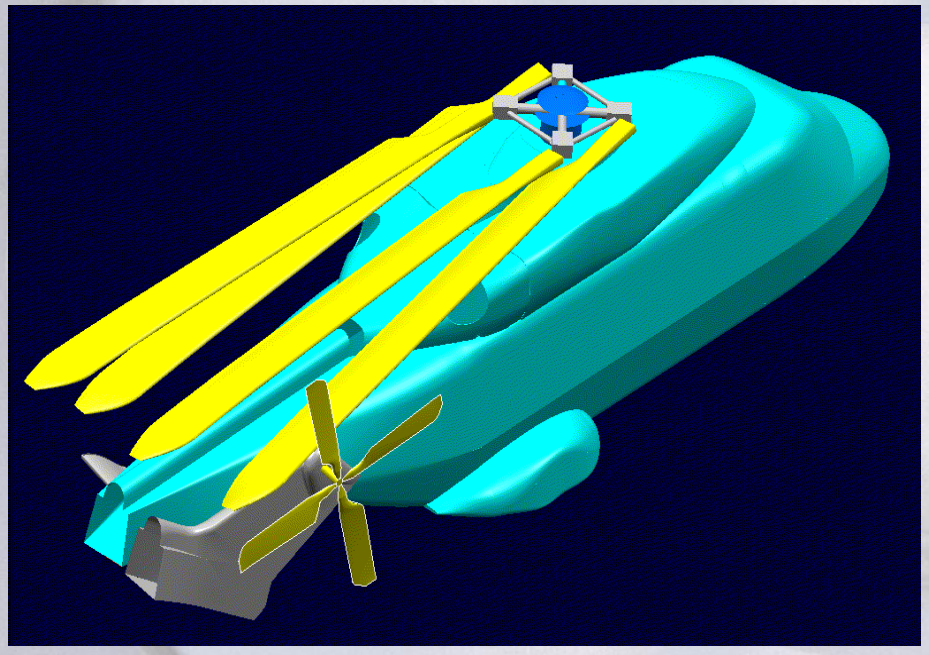


- A MULTI SKILL TOOL
- A SINGLE DATA BASE
- CONSTITUTED FROM ELEMENTARY 3D MODELS

WHICH KIND OF DIGITAL MOCK-UP ?

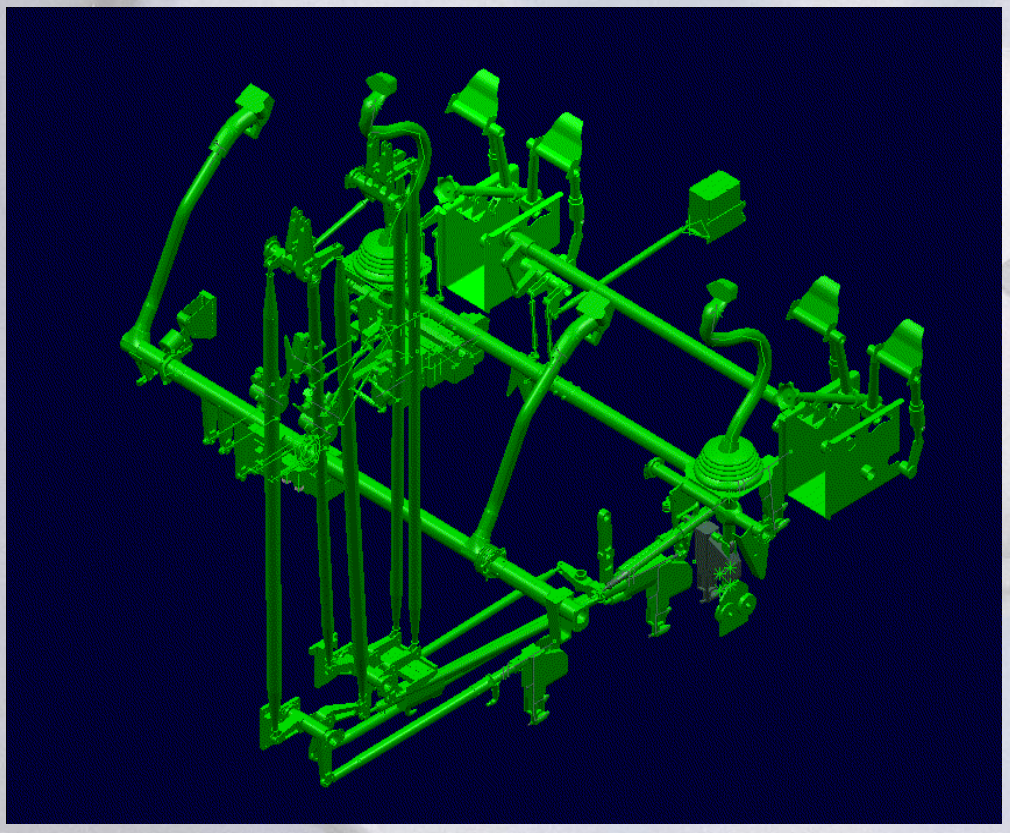
❶ LOFT MOCK-UP

DATABASE OF REFERENCE GEOMETRIES



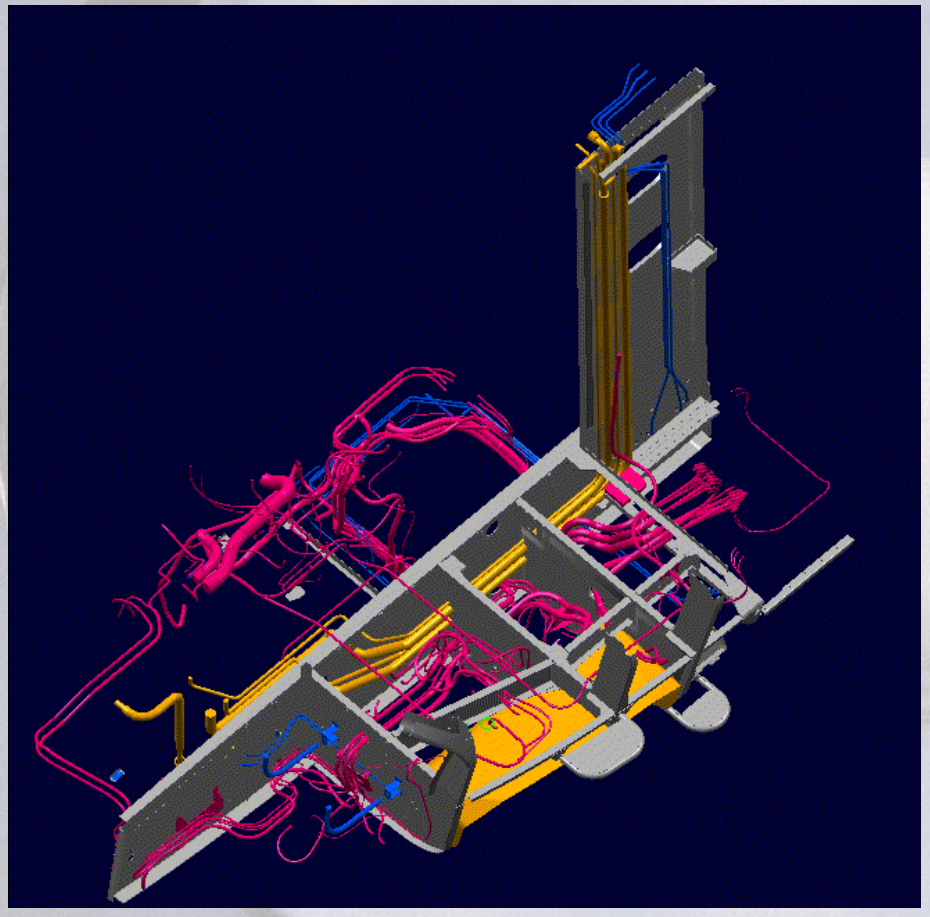
- AERODYNAMIC STUDIES
- ELECTROMAGNETIC STUDIES
- ICING INVESTIGATIONS
- ...

❷ INSTALLATION MOCK-UP

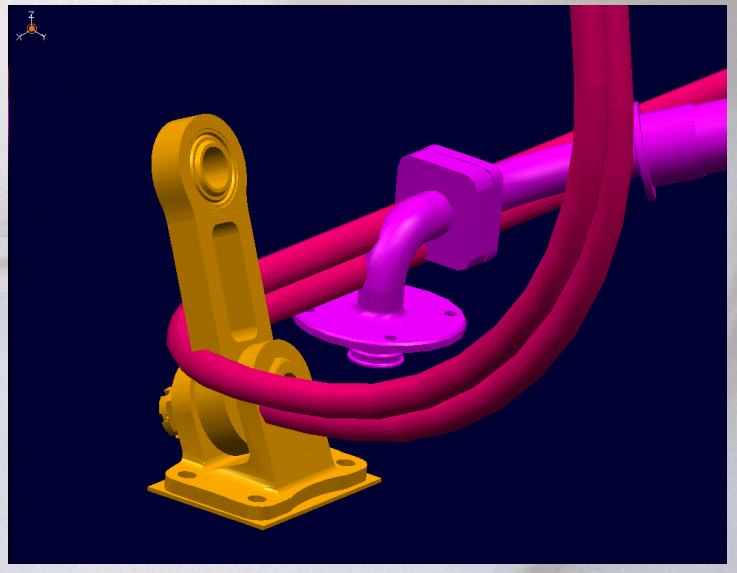


- SPACE ALLOCATION
- GENERAL ROUTINGS FOR ELECTRICAL WIRES, HYDRAULICS, FUEL SYSTEM, ECS PIPES ...
- KINEMATICS (ROTORS, FLIGHT CONTROLS, LANDING GEARS...)

❸ DEFINITION MOCK-UP



- EXACT BASIC ROUTINGS IN THEIR ENVIRONMENT
- BASIS OF DEFINITION FILE DRAWINGS
- INTERFERENCE ANALYSIS



eurocopter

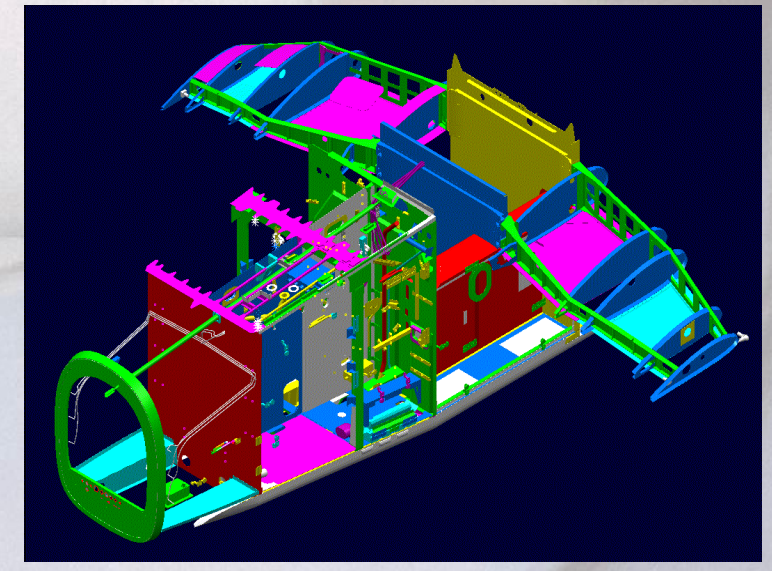
National and industrial cooperations

Programmes					
TIGER	FRANCE 50% EUROCOPTER	GERMANY 50%			
NH 90	FRANCE 42,4% EUROCOPTER	GERMANY 24%	ITALY 26,9% AGUSTA	NETHERLANDS 6,7% FOKKER	
COLIBRI	61% EUROCOPTER	24% CATIC	15% SINGAPORE AEROSPACE		
MI 38	33% EUROCOPTER	33% MIL	33% KAZAN		

E-C911-FEV98

TIGER

- The digital mock-up is built up from the drawing set, then used by electrical designers
- Central fuselage : PT1, PT2, PT3, PT4, PT3R, PT5, PT5R
- UPPER DECK : PT5R
- PT5R mock-up is used for the airframe serial drawing set

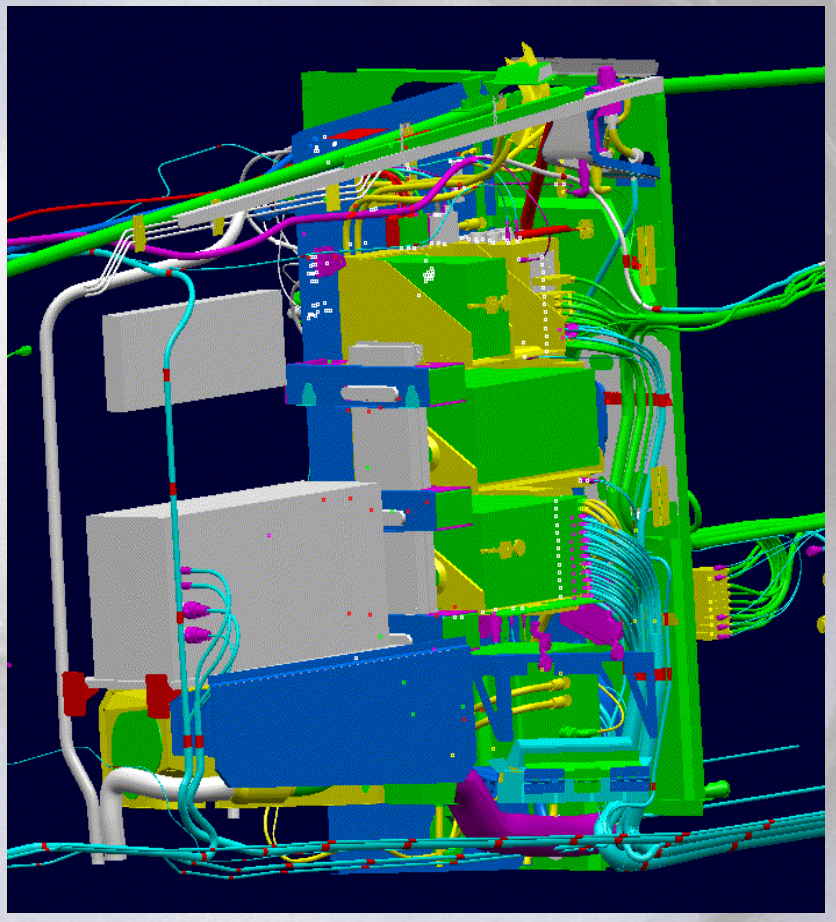


DIGITAL MOCK-UP PURPOSES

TIME CYCLE REDUCTIONS

TIGER harness creation -20%

gain = 3 months



DIGITAL MOCK-UP PURPOSES

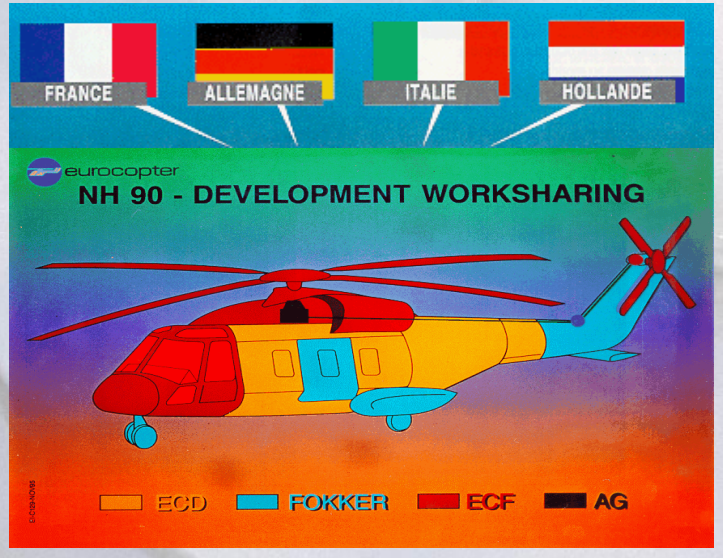
COST REDUCTIONS

- TIGER Central Fuselage

	PT1	PT2	PT3
DIGITAL MOCK-UP	5000 h	2000 h	
PHYSICAL MOCK-UP	DESIGN OFFICE 4000 h PRODUCTION 15000 h	DESIGN OFFICE 2000 h PRODUCTION 12000 h	ABANDONED

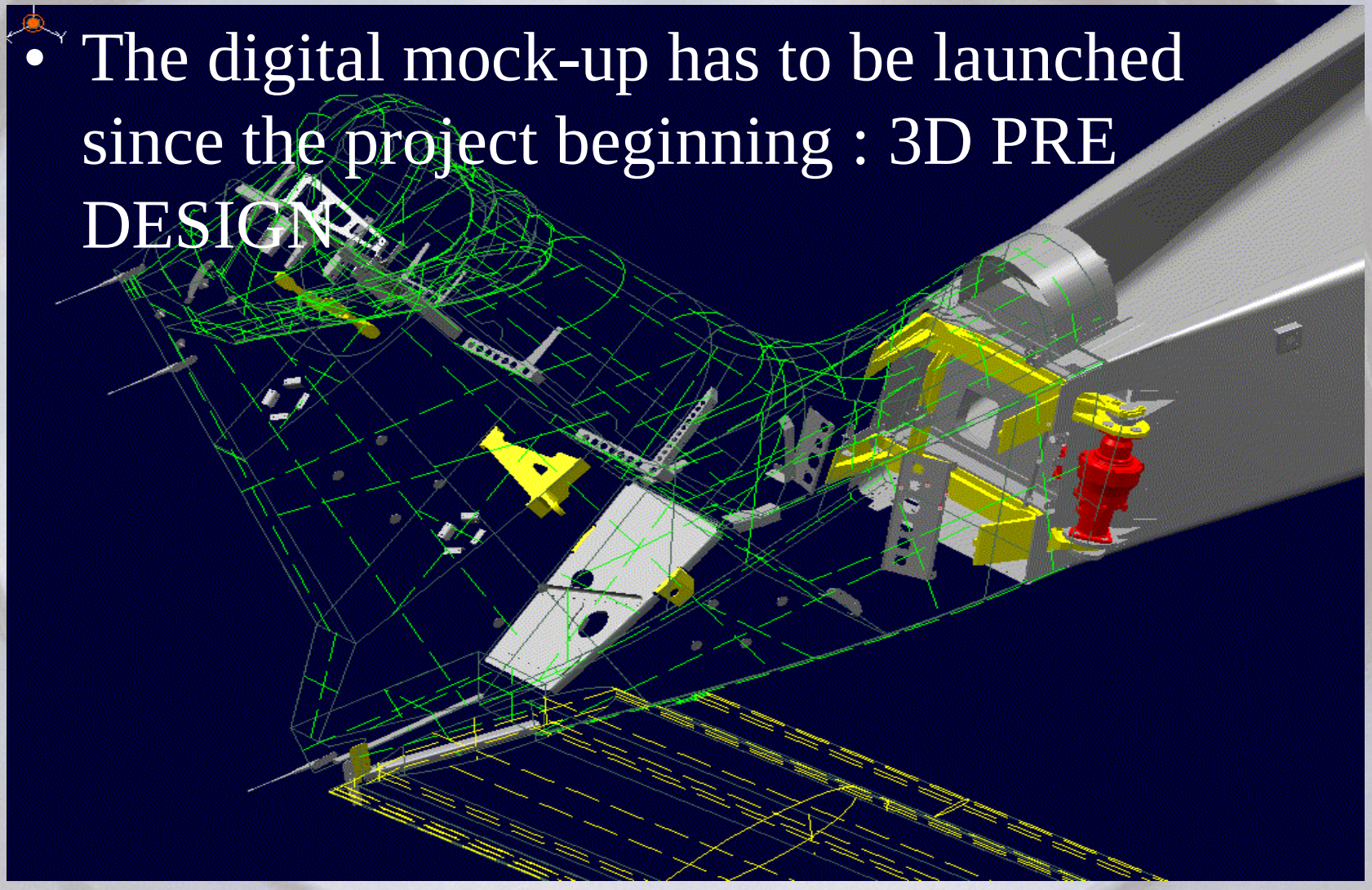
NH90

- Complete aircraft : PT1, PT2, PT3, PT4, PT5, TTH, NFH
- Multi partner digital mock-up built up in parallel to the design and the drawing set

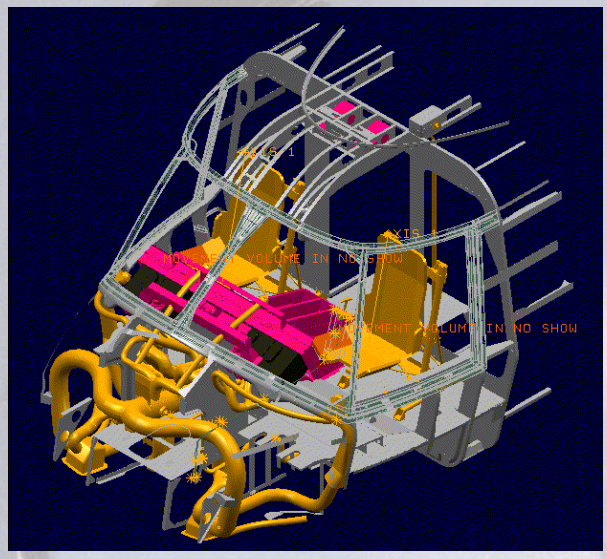


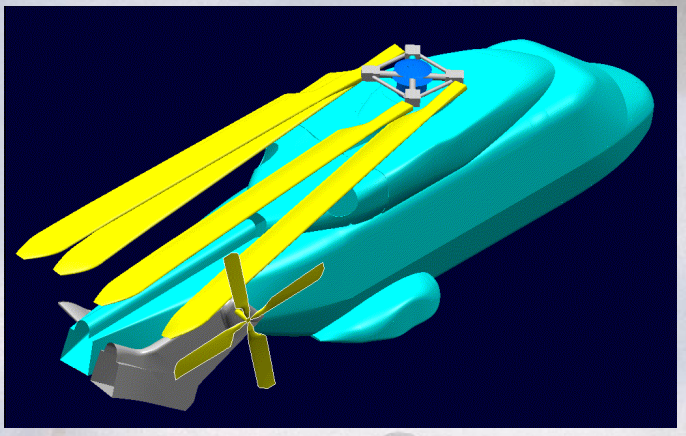
METHODOLOGY

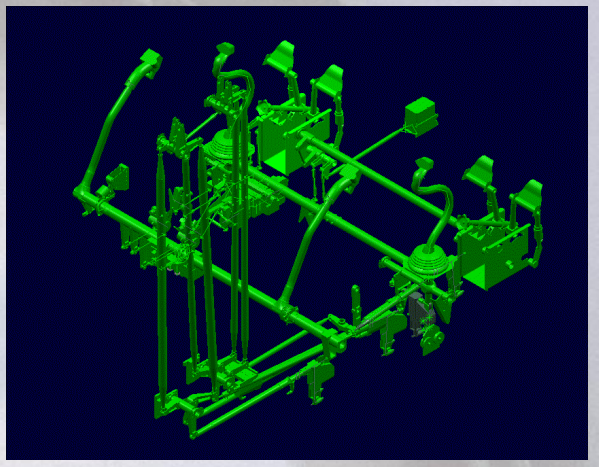
- The digital mock-up has to be launched since the project beginning : 3D PRE DESIGN.

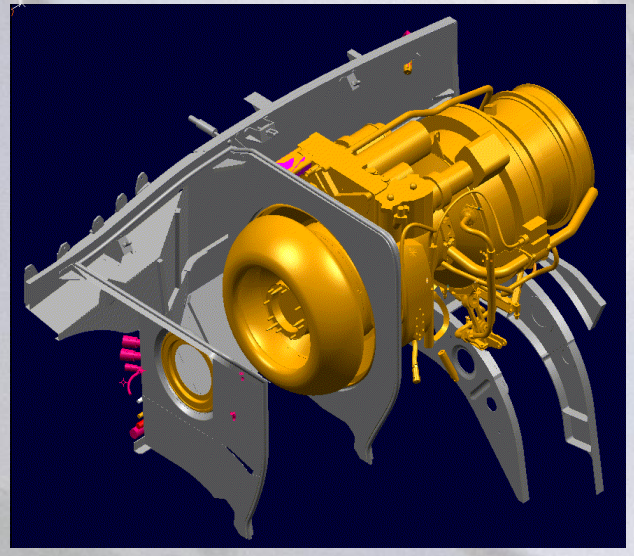


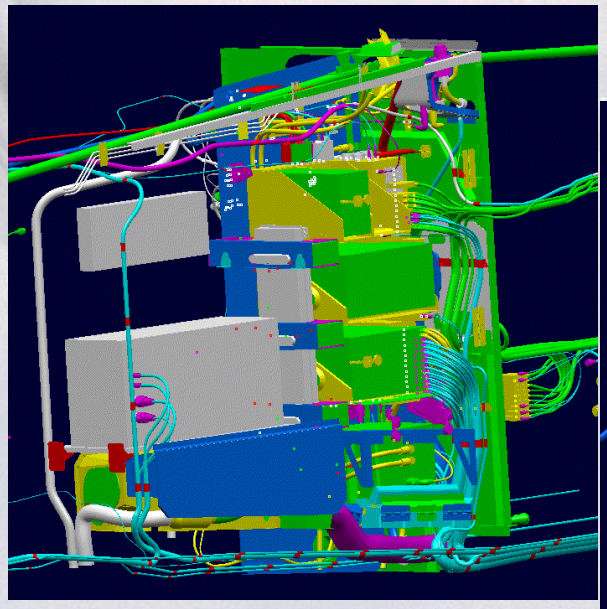
DMU IN THE DESIGN OFFICE

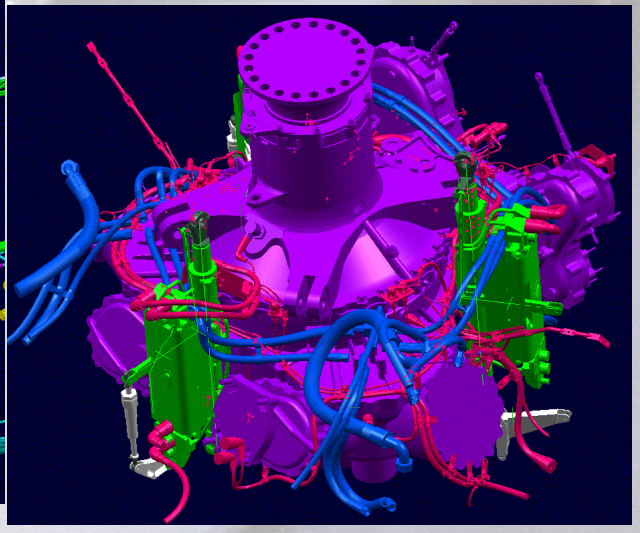






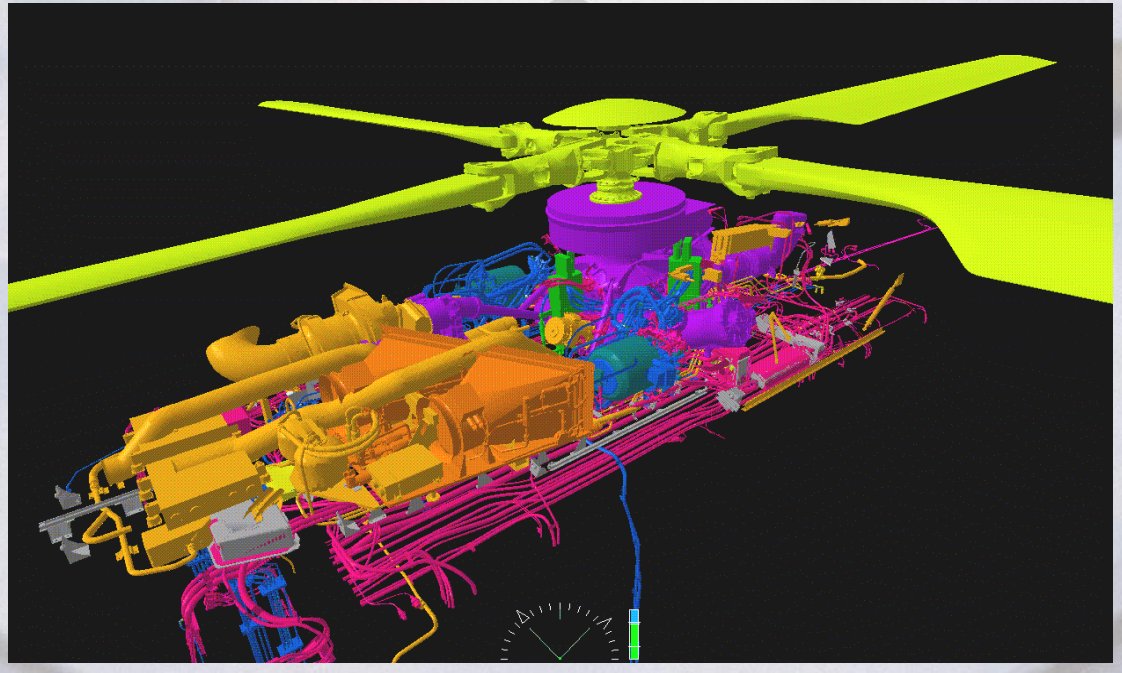






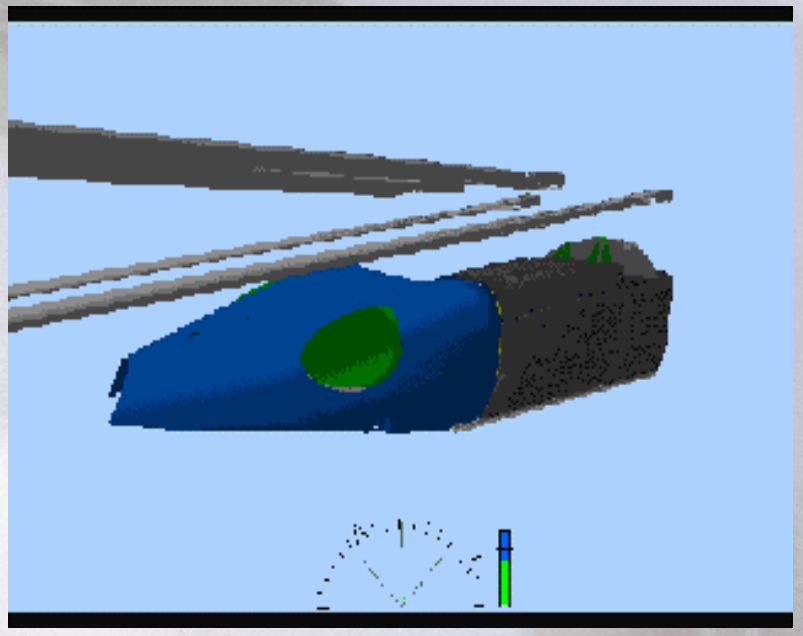
DMU Data

- 2000 CATIA 3D models
- 3.5 Go DMU space disk
- Responsibility on one site --> Marignane



DIGITAL MOCK-UP APPLICATIONS

- Interferences
- Specific representation (Kinematics)
- Pilot seat amenagement
- Easier integration
- Concurrent engineering
- Customer support
- Optimisation of solutions

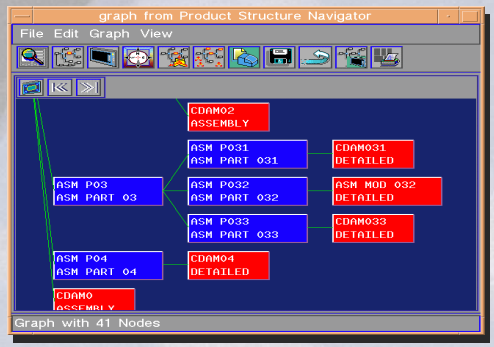


EXTENSION OF DIGITAL MOCK-UP APPLICATIONS

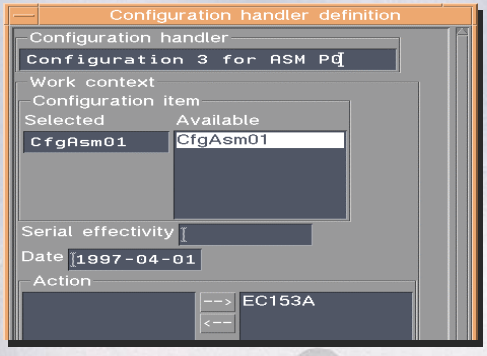
- Support to marketing documentation : presentation of project to customers before launching the development
- Customer support notice
- Preparation process list for assembly
- Help for maintenance aspects

DMU Evolution

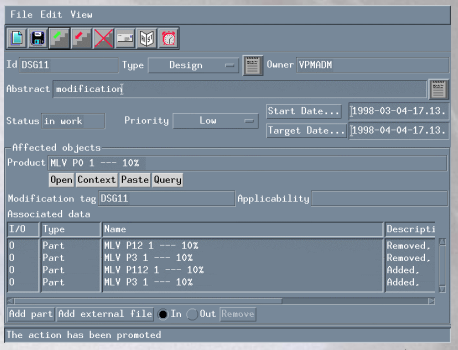
Product Structure / BOM



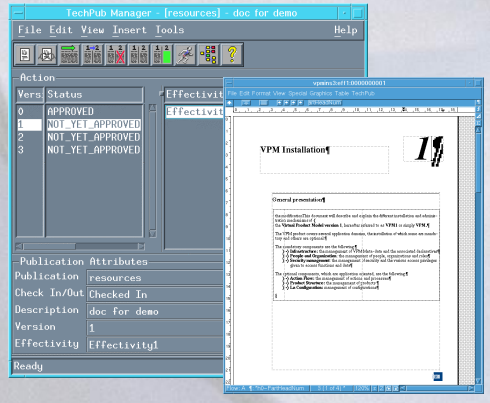
Configuration

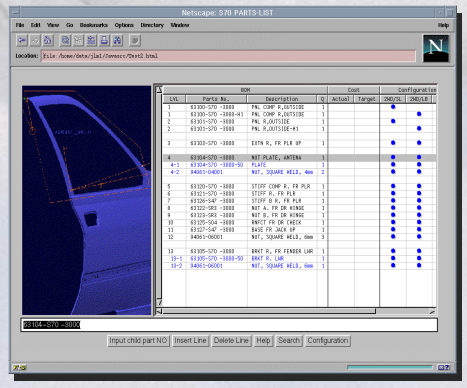


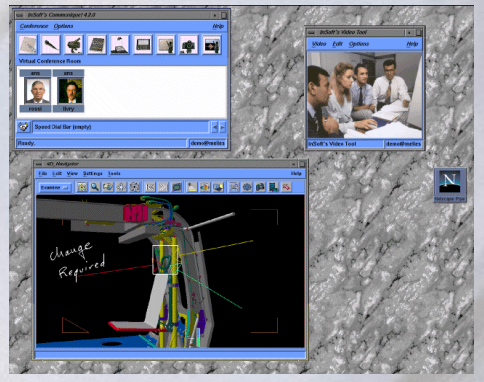
Action Control & Publish/Subscribe



Virtual Product Model







Technical Publishing

WEB Access

People & Organization

The Digital Enterprise

Sales & Marketing	Planning & Procurement	Finance	Human Resources

CATweb

Network Computing

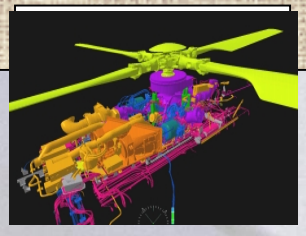
Product Production Pipeline

ENOVIA ENOVIA.PM ENOVIA.VPM

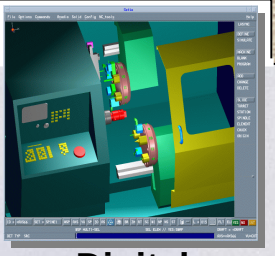
Product Creation Pipeline

ENOVIA Plug-Ins:

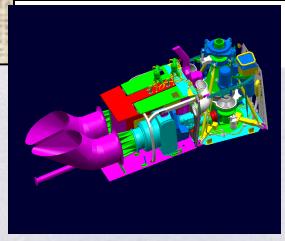
- *CAD/CAM/CAE (CATIA, …)*
- *Legacy*
- *ERP (SAP, BAAN, …)*
- *Office and collaborative suites*
- *…/...*



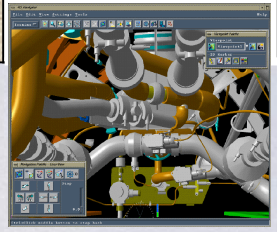
Digital Mock Up



Digital Manufacturing



Digital Integration



Digital Operation

END