

CATIA V5 ELECTRICAL DOMAIN OVERVIEW



Presentation objectives

Give an overview of the electrical process and the positioning of the CATIA V5 electrical products

Describe and explain the CATIA V5 electrical domain portfolio

General overview of integration possibilities with CAA and 3rd parties



Wire Harness environment/challenges

Complexity

- # Wires
- Length
- Shape
- # Components

Standards/Regulations

- Company
- Safety
- Government

Variants/versions

- Components
- Markets
- Functions



Lead time

- Time to market
- Design
- Manufacturing

Manufacturing

- Documentation
- Assembly of harness
- Product assembly
- Testing
- BOM

Packaging DMU

- Space allocation
- Interferences
- Assembly
- Manufacturability

Costs

- Components
- Wire length
- Assembly
- Weight



CATIA V5 Electrical Achievements

Eliminate physical MOCK-UP

Accurate and complete **Digital Mock-Up**

Realistic modeling

Avoid design changes late in the process

Integrated electrical design process

Complete and accurate electrical **information**

Wire length/harness diameter

Harness weight/center of gravity

Up to date manufacturing information

Manufacturing documentation

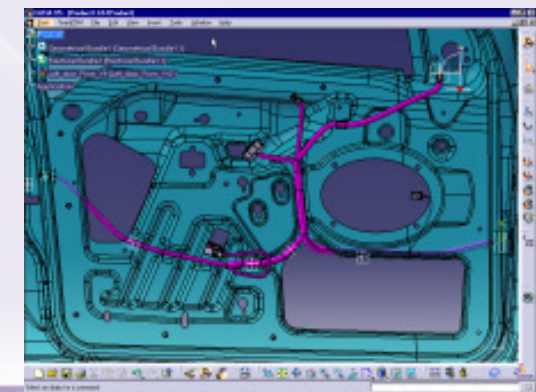
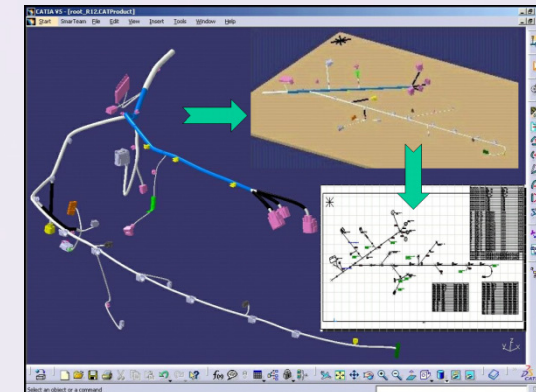
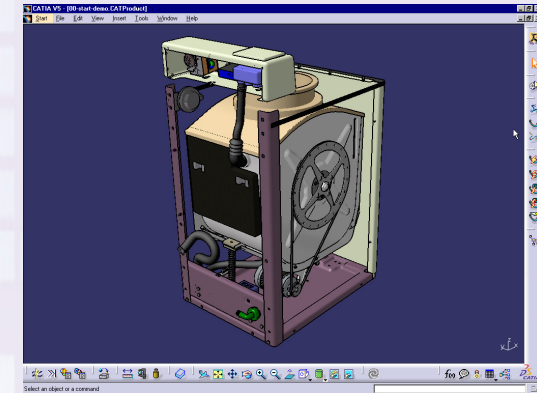
Wire/harness information

Shorten design process

Propagation of design changes throughout the process

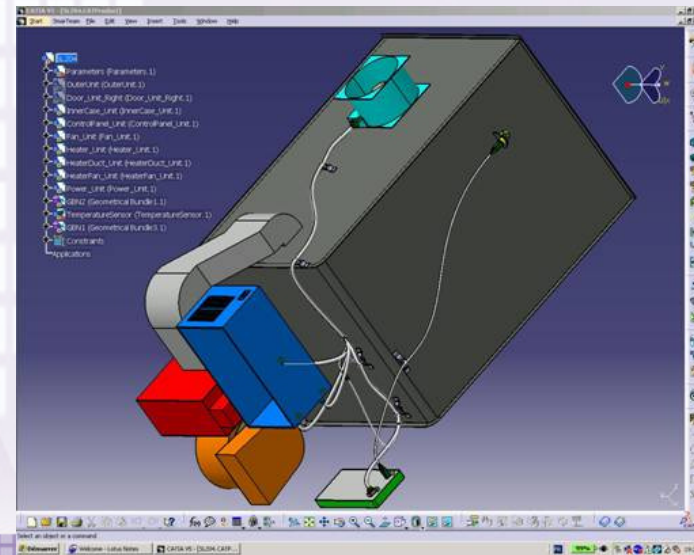
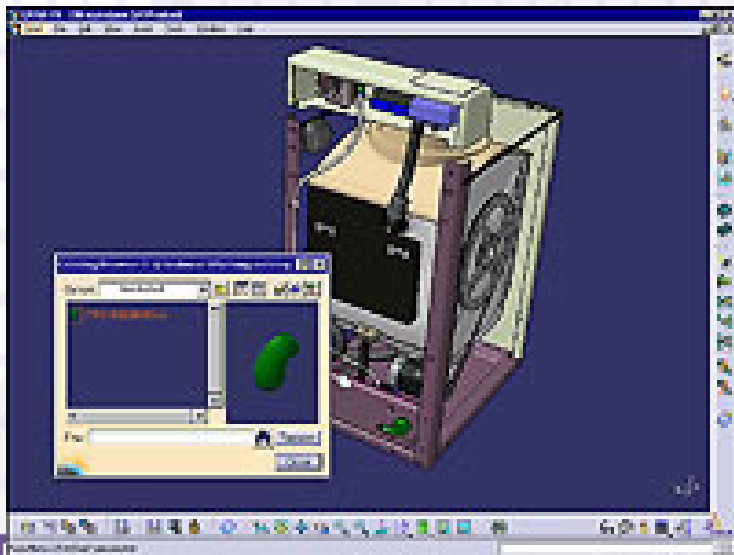
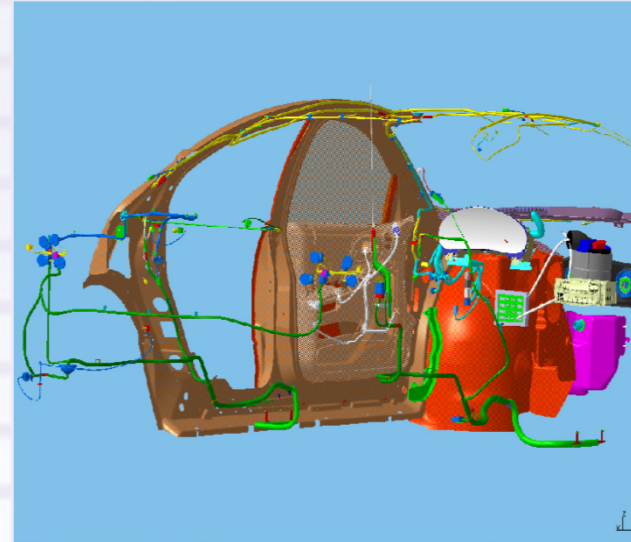
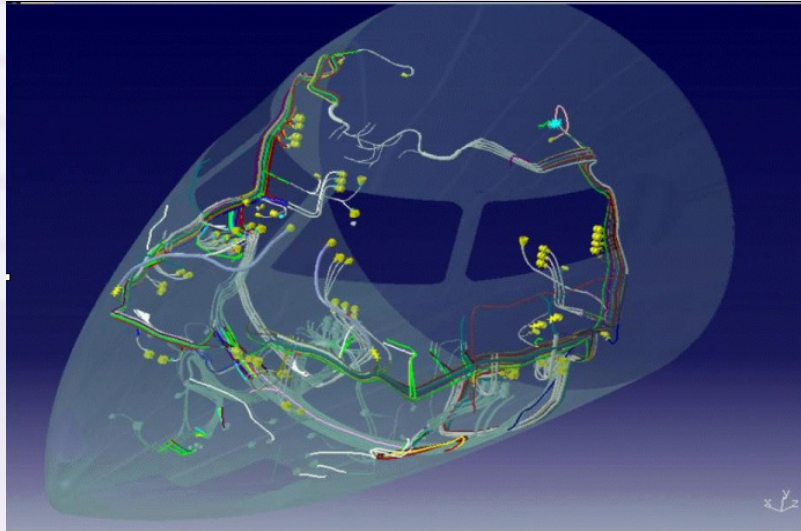
Reuse of **knowledge**/experience

Integrate company expertise





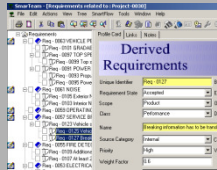
Industry Usage





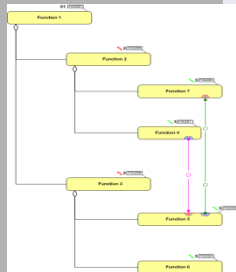
Electrical Systems Development Process

Requirements

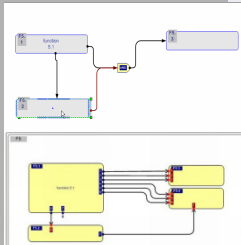


Requirements

Functional Design

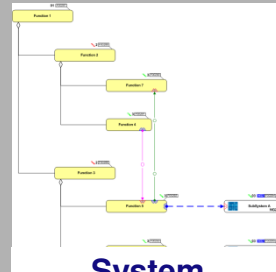


Function Decomposition

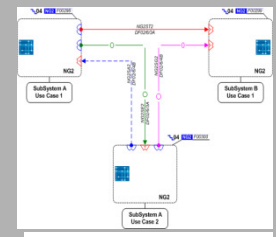


Function Flow, Functional Data Flow

Logical Design

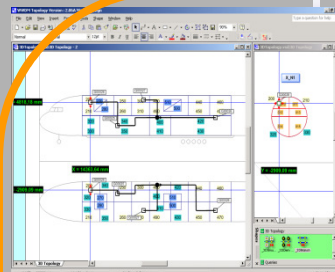


System Decomposition & Allocation

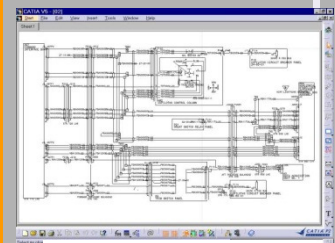


System's Connectivity Authoring

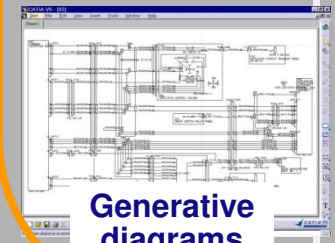
Physical Design



2.5D topology

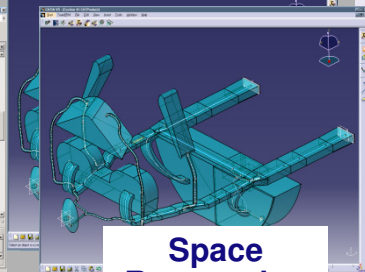


Interactive Wiring diagram

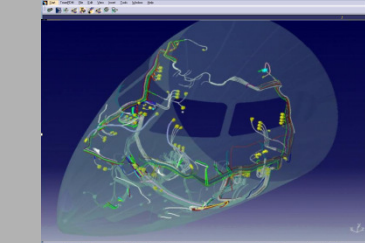


Generative diagrams

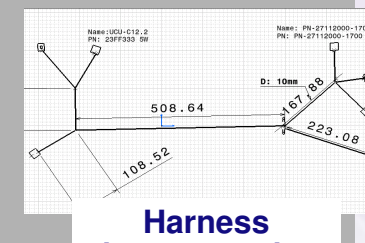
Physical Design



Space Reservation

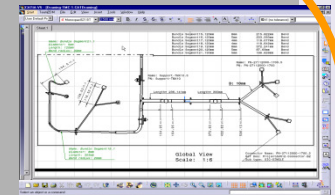


3D harness installation

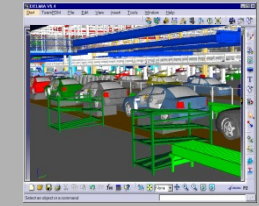


Harness documentation

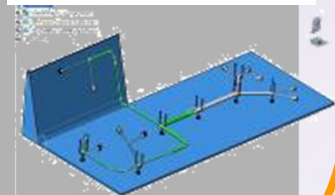
Manufacturing



Manufacturing documentation



Manufacturing & Assembly process



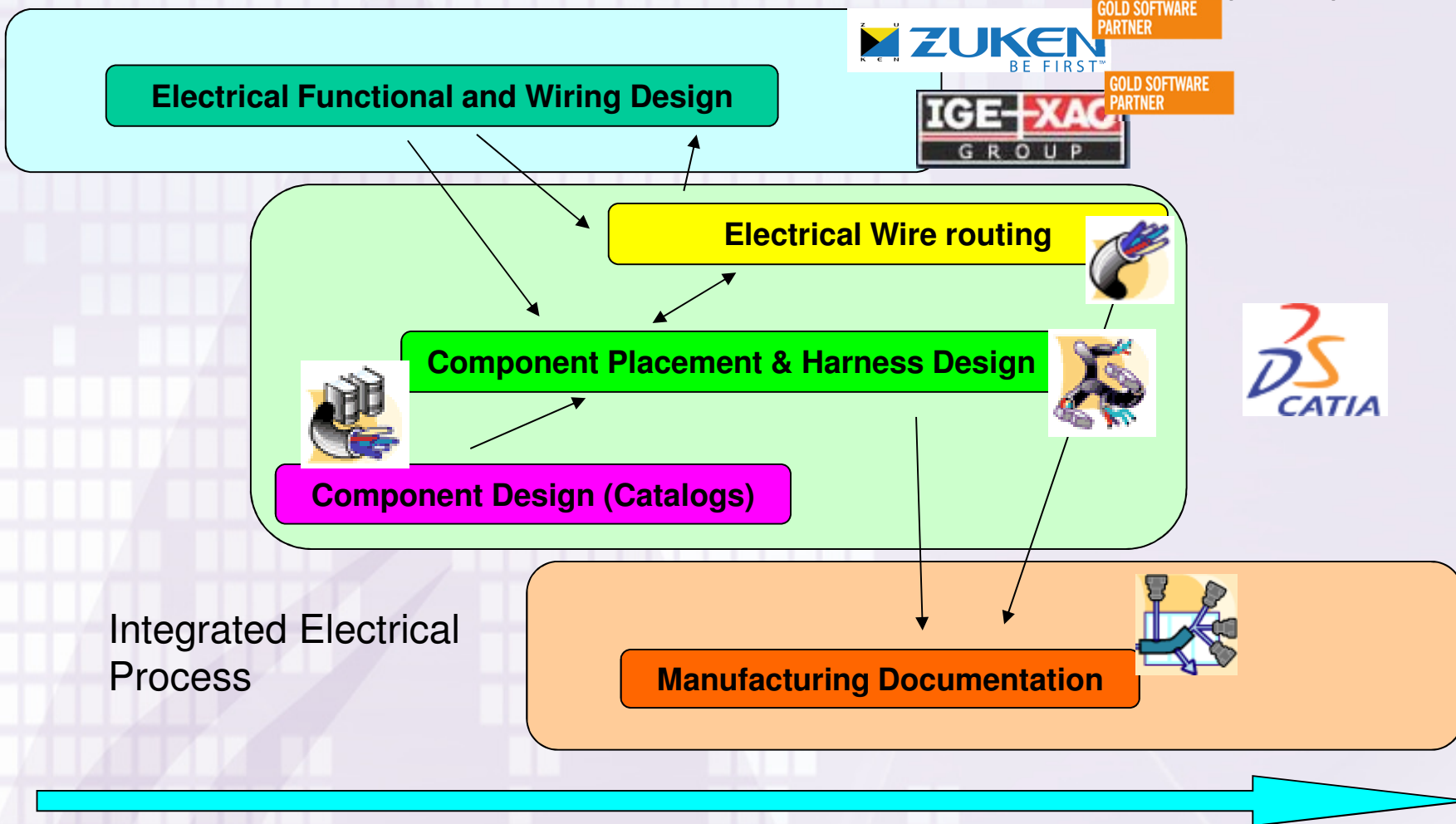
Manufacturing Formboard

Electrical specific



Electrical Process (Automotive/Aerospace)

Simplified process



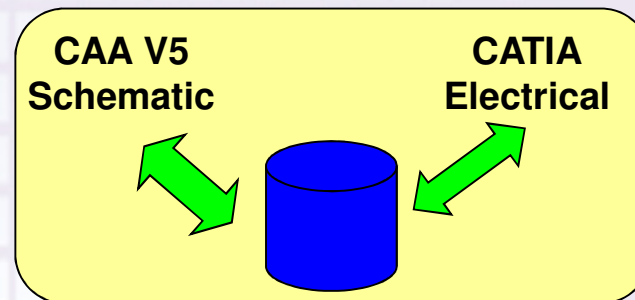


Electrical Process working with partners

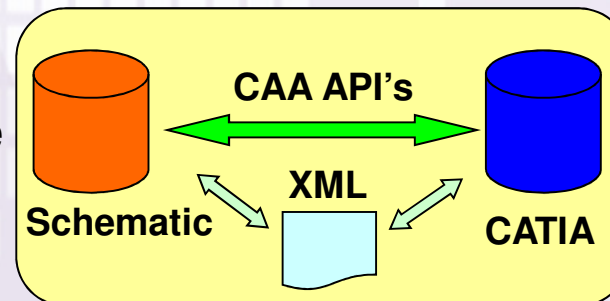
Solutions for integrating/interfacing with schematic applications:

CAA Gold Partners:

Strategic
Based on CAA V5
Enabling real integration



CAA Adopters (see www.3ds.com)
Through DS Spatial or RADE
Full process coverage possible



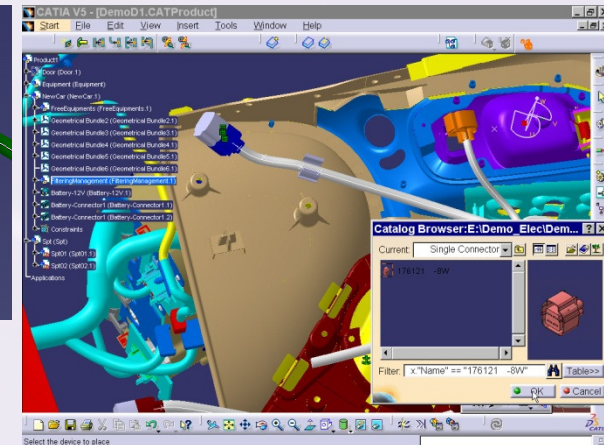
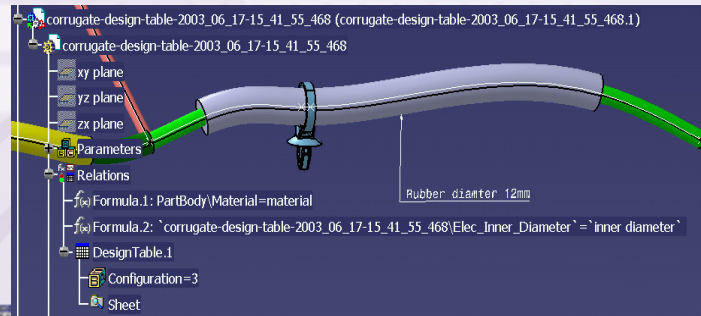
XML

Open to other applications
Exchanging of data
Limited functionality



CATIA - Electrical Library 2 (ELB)

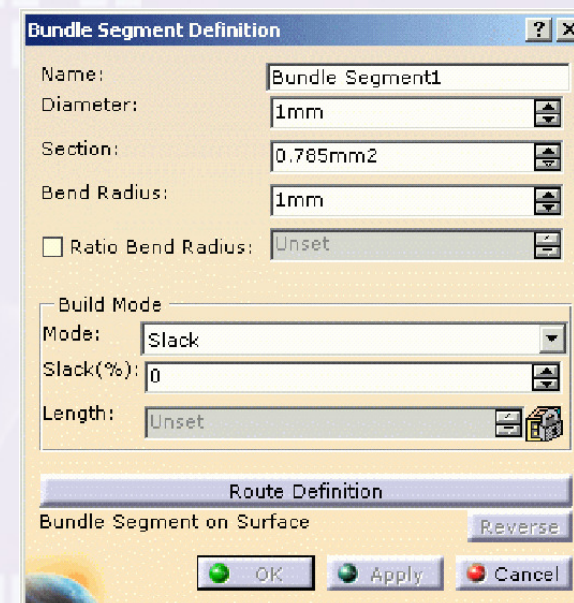
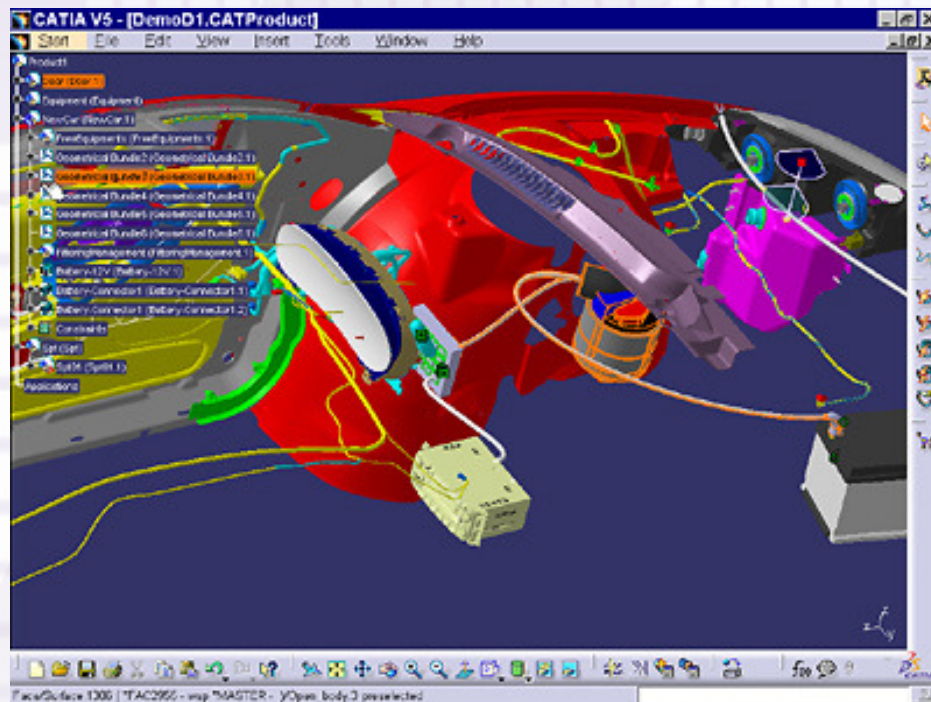
- Create and manage electrical components, harness supports and protections
 - define electrical attributes (e.g. number of pins, bundle position)
 - define connectivity
- Customization of electrical catalogs according to company standards
- Specification driven placement of electrical components in the 3D Digital Mock Up





CATIA - Electrical Harness Installation 2 (EHI)

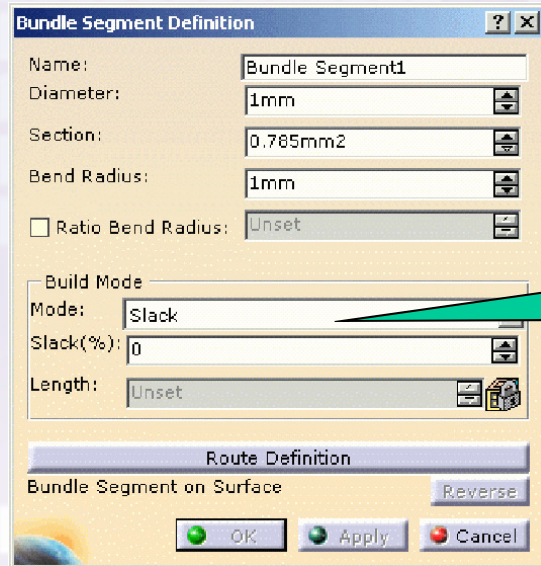
- Productive routing of the harness in the 3D Digital Mock Up
 - using geometrical bundle, bundle segments, bundle junctions
- Capability to associate with the mechanical environment
- Defines electrical connectivity between bundle segments and electrical components
- Analyzing electrical links between objects in the electrical system





CATIA - Electrical Harness Installation 2 (EHI)

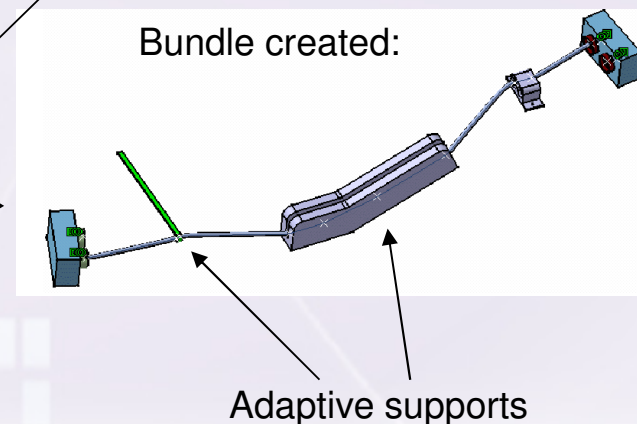
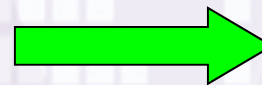
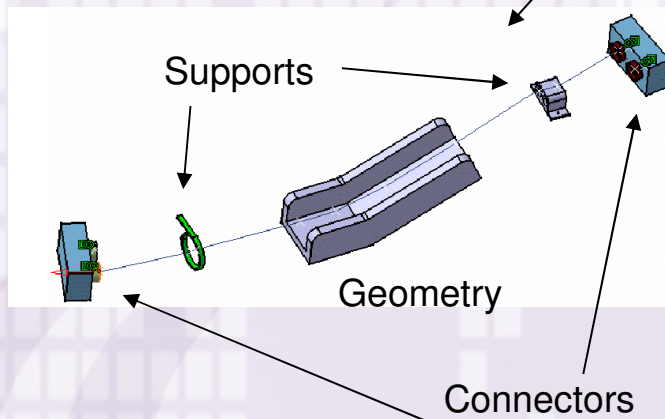
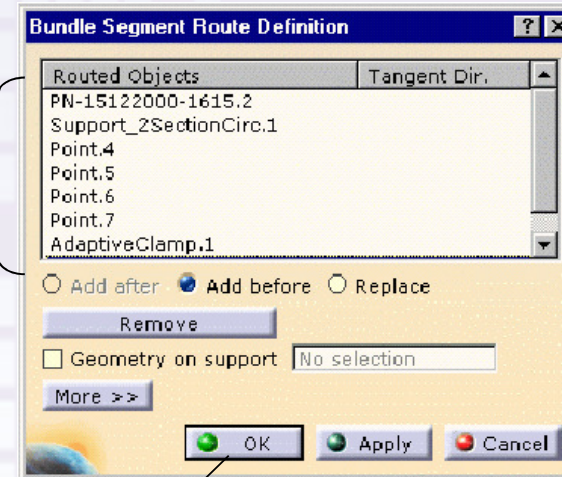
Defining the Bundle segment



Bundle Param's

Slack Length Bend

Routing/modifying the bundle

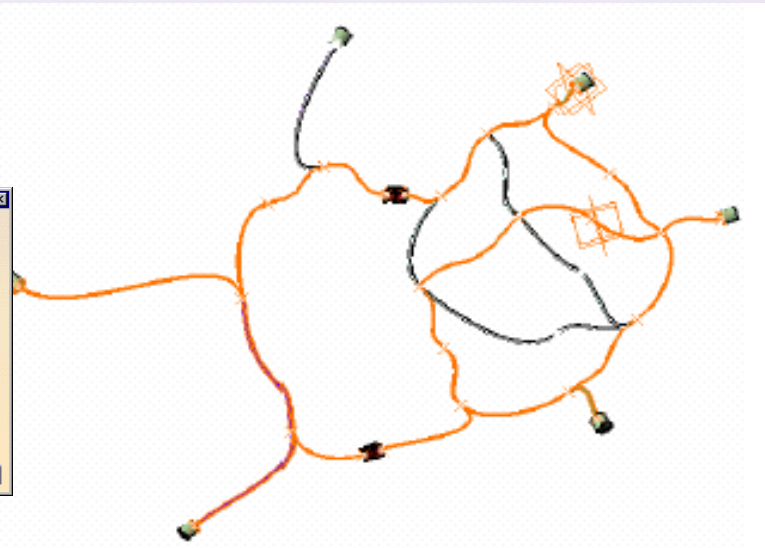
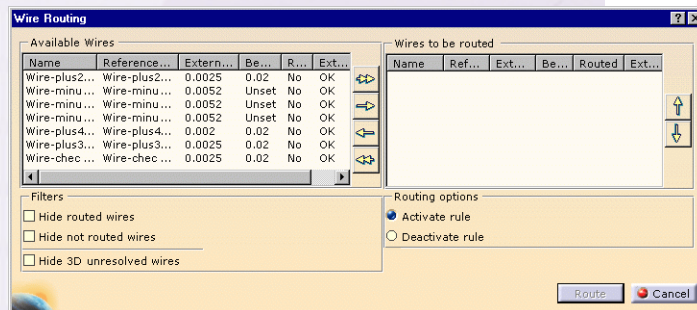




Electrical Wire Routing 2 (EWR)

Definition of electrical wires within the 3D Digital Mock Up according to the functional definition from the schematic

- Routing of the wires in the electrical harness (based on 'From-To' or signal information)
- Adjustment of the bundle segment diameters
- Output of the wire length annotation



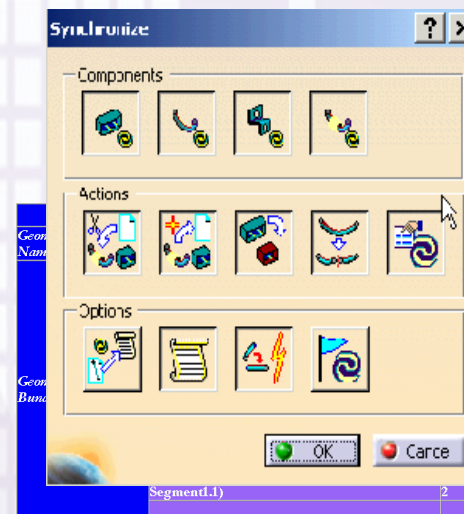
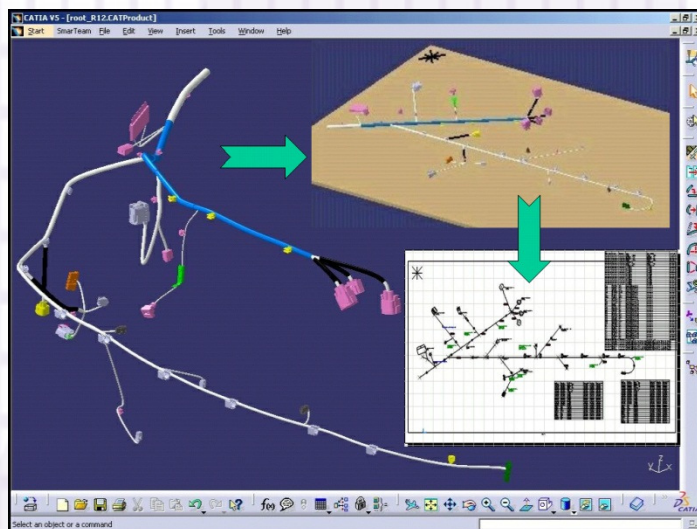
Wire List	Connector Part Number (From)	Connector/Device (From)	Pin (To)/Number (To)	Connector Part Number (To)	Connector/Device (To)	Connect Wire
Wire_plus		Connector_M1		Has-3270.1		
Wire_minu		Connector_M1		Has-3270.1		
Wire_chec		Connector_M1		Has-3270.1		

Wire List	Type	Reference Designator	Connected Wires
Termination_name	Connector		
Termination_name	Electrical Termination		Signal:sha3270.1
Termination_plus	Electrical Termination		Signal:pin3270.1
Termination_check	Electrical Termination		Signal:pin3270.1
Has-3270.1	Equipment Part	Has-3270	Signal:sha3270.1, Signal:pin3270.1, Signal:pin3270.1
Termination_name	Electrical Termination	HAB_ENTER_HAIR_DRYER_TERMINATION_MEDIO	
Termination_plus	Electrical Termination	HAB_ENTER_HAIR_DRYER_TERMINATION_PLUS	
Termination_check	Electrical Termination	HAB_ENTER_HAIR_DRYER_TERMINATION_CHECK	



CATIA - Electrical Harness Flattening 2 (EHF)

- Complete flattening of a 3D electrical harnesses for manufacturing documentation according to user specifications
- Manipulate bundle segments for flattening arrangement
- Propagate modifications from the 3D harness design to the flattened harness including update of drafting documentation
- Powerful capabilities for documentation dress-up (e.g. wire reports, connector reports, length)

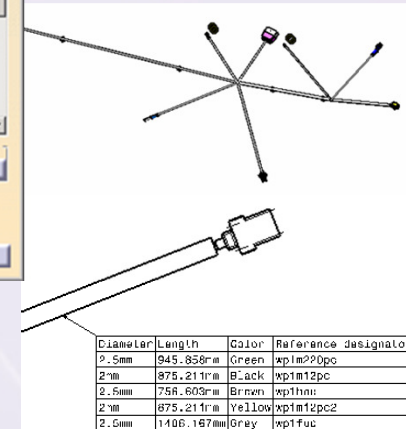
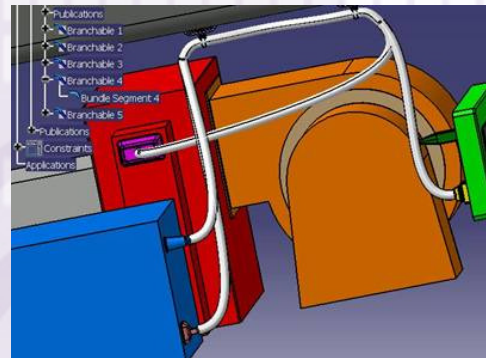
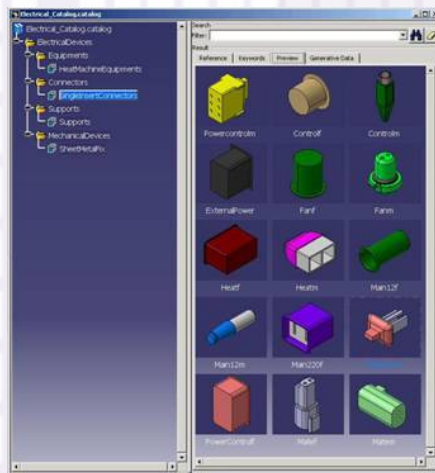


TRIBUTE MODIFICATIONS					
Connector	Length	Diameter	Bend Radius	Separation Code	Color
Segment	311.636	0.01	0.014		(0,255,0)
available	404.935				
available	550.913	Not Available	0.014	Not Available	Not Available
available	715.848				
Segment	279.132	0.008	0.014		(255,128,128)
available	322.106				
available	279.132	Not Available	0.014	Not Available	Not Available
available	322.106				
Segment	239.277	0.01	0.014		(0,128,0)
available	310.913				



Electrical 3D Design & Documentation (EC1)

- Link with wire & cable schematics for design and documentation
- Reduces the time and increases quality for cable/wire harness packaging and documentation
- Delivers an integrated end to end 3D cable/wire harness packaging and documentation solution
- Provides a process oriented solution for Fabrication & Assembly clients
- Integration with CATIA V5 Mechanical Design applications

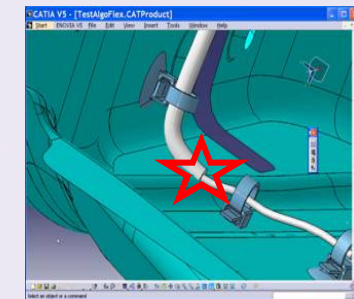
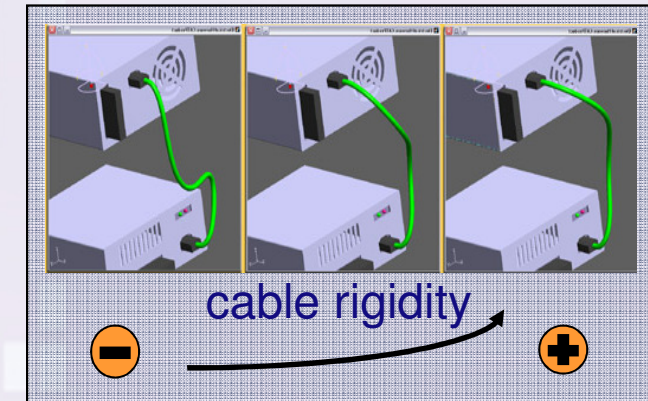




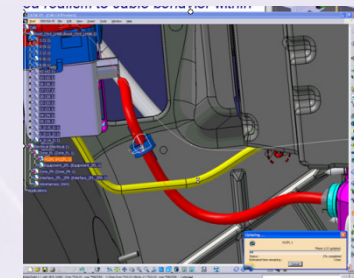
CATIA – Flex Physical Simulation 2 (FLX)

FLX together with the CATIA – Electrical Harness Installation product:

- Unprecedented realism to cable behavior within electrical harness design
- Accurate electrical systems Digital Mock Up
- → Improves product design quality and productivity in product validation phase
- → Reduces integration problem in the physical world
- → Help companies develop products “right first time”



New modification capabilities with respect of manufacturing constraints:
 Harness layout modification while keeping the bundle manufacturing length constants





Electrical integration CAA Gold Partner



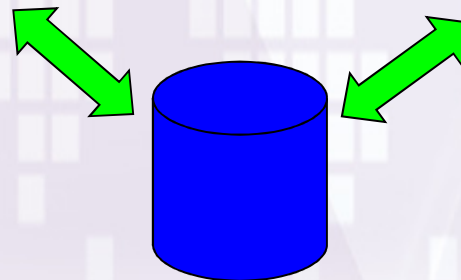
Remarks:

Strategic

Will be based on CAA V5 development platform Complete process coverage, real integration

CAA V5
Schematic

CATIA
Electrical





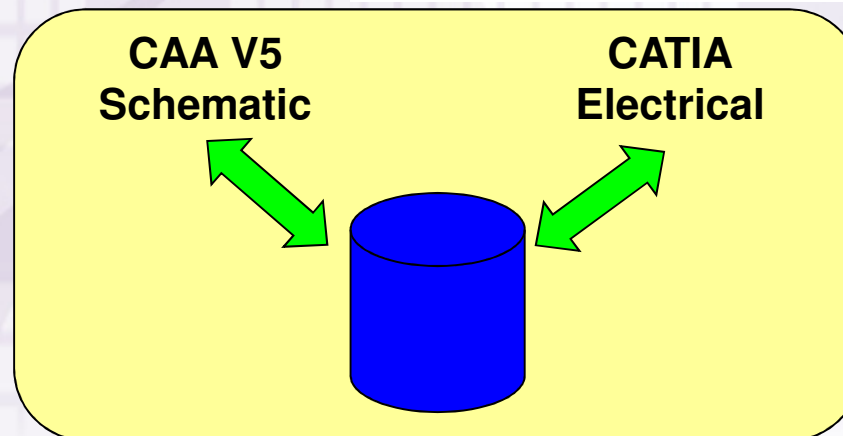
Electrical integration CAA Gold Partner



IGE+XAO and Dassault Systèmes Establish a Strategic Software Partnership to Develop Electrical Solutions

V5 Solutions will cover electrical engineering complementing Dassault Systèmes' PLM offering from early system design to manufacturing

Seattle, USA and Paris, France – September 30, 2003 – Dassault Systèmes (NASDAQ: DASTY; Euronext Paris: #13065, DSY.PA) and IGE+XAO (Euronext Paris, NextEconomy FR0000030827 FTSE 977) today announced the signing of a strategic development agreement under which IGE+XAO as a Gold Software Partner will develop, market and sell CAA V5 Based applications for electrical modeling (functional, topology and logical) and electrical diagrams generation. Through this partnership, IGE+XAO will complement the existing Dassault Systèmes' V5 electrical PLM solutions.





THANK YOU