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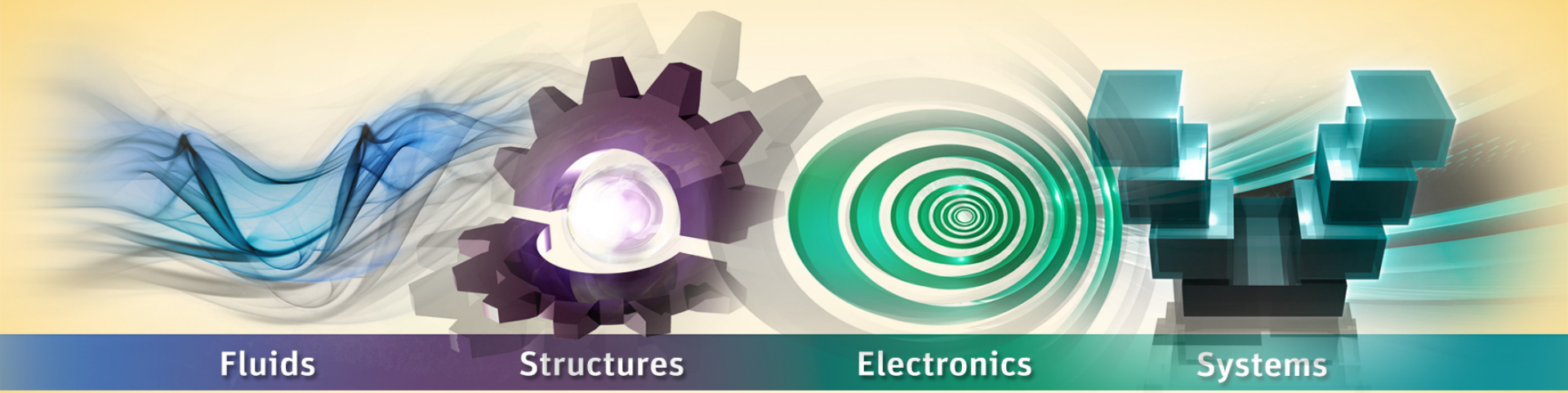
SCADE System Presentation



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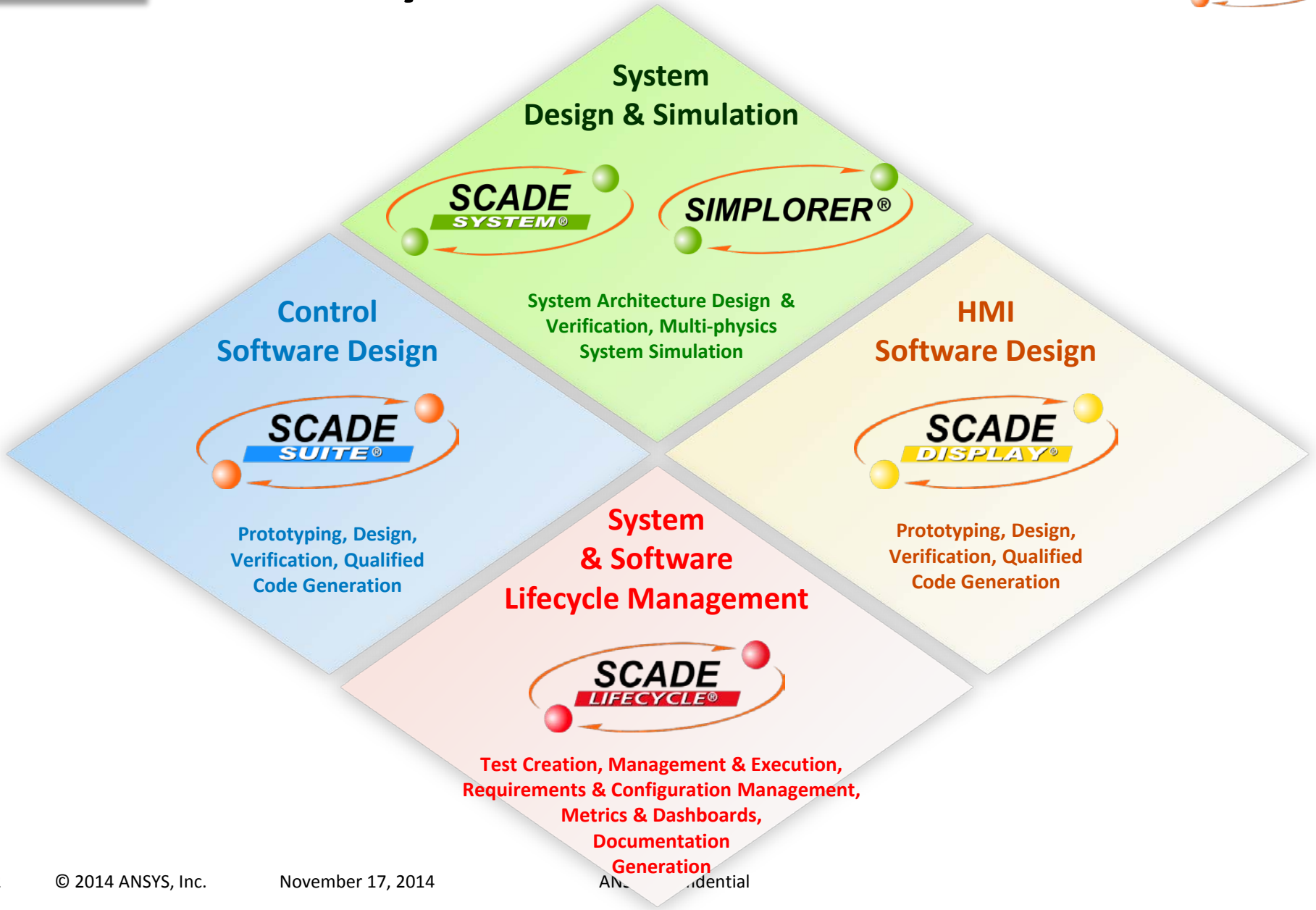
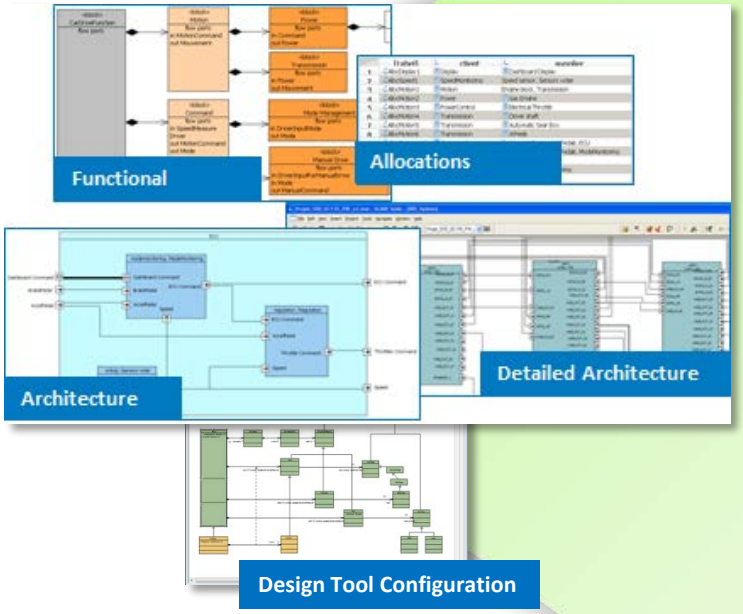
ANSYS Systems Products



SCADE System

Model-Based System Design



Model Checks

System Model Diff/Merge

System / Software Bi-directional Sync Up

Model Sharing & IP Protection

DESIGN & CONFIGURE

VERIFY

INTEGRATE & COLLABORATE

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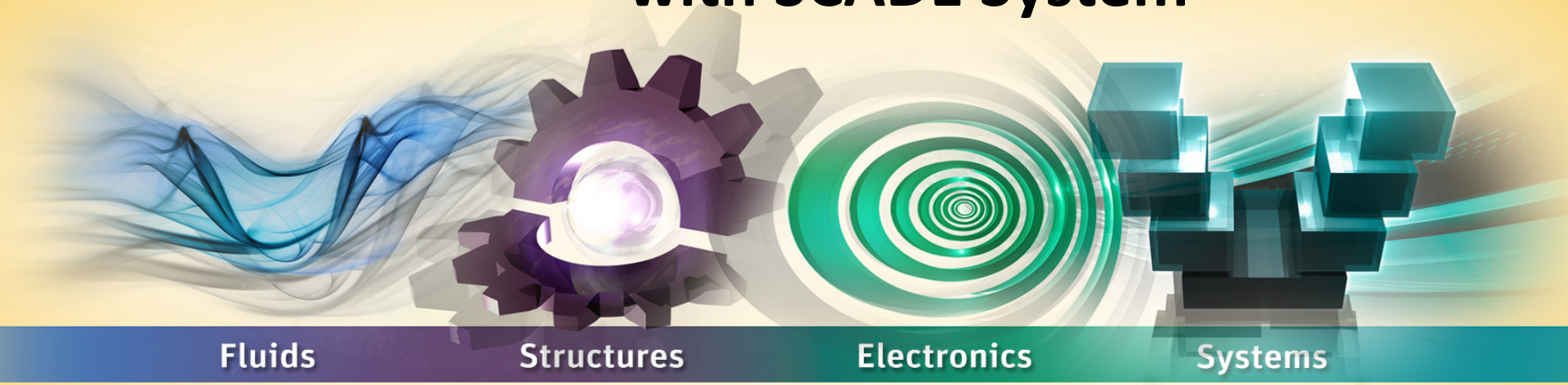
DESIGN Systems with SCADE System



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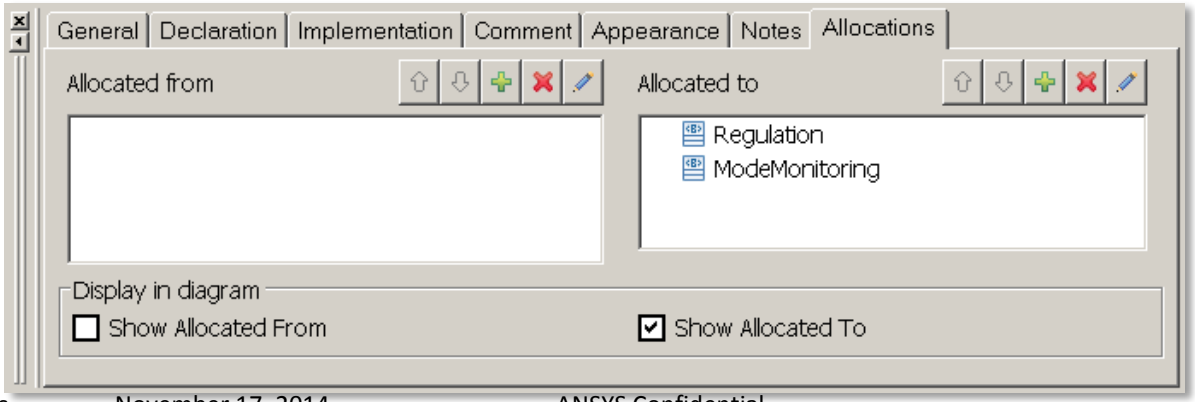
Allocations

For any objects, e.g. functions allocated on architecture components

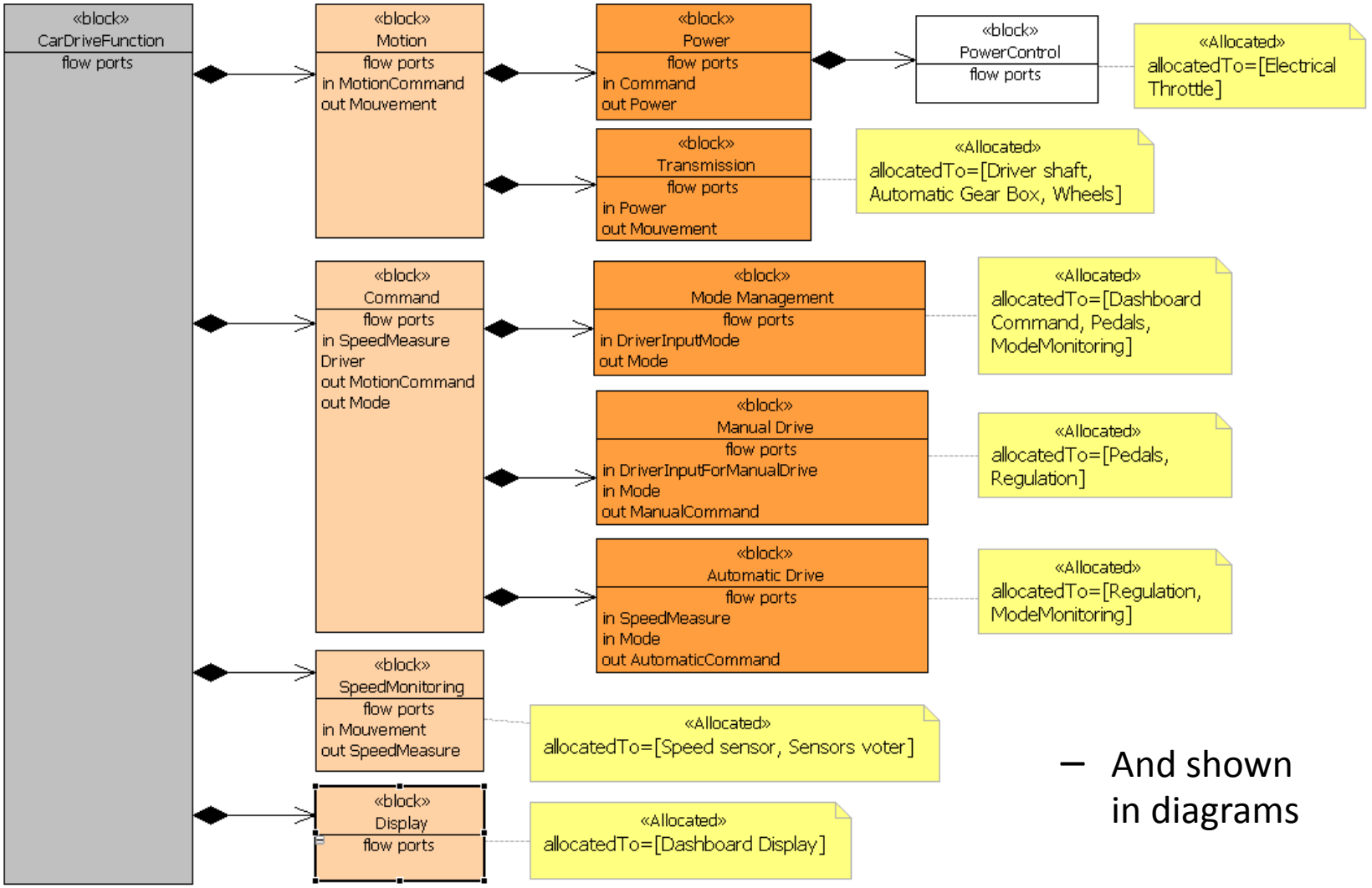
- **Can be defined in allocation tables**

	Declared In	Name	Source	Target
0	FunctionsAllocation	AllocDisplay	Display	Dashboard Display
1	FunctionsAllocation	AllocPower	Power	Gas Engine
2	FunctionsAllocation	AllocPowerControl	PowerControl	Electrical Throttle
3	FunctionsAllocation	AllocTransmission1	Transmission	Driver shaft
4	FunctionsAllocation	AllocTransmission2	Transmission	Automatic Gear Box
5	FunctionsAllocation	AllocTransmission3	Transmission	Wheels
6	FunctionsAllocation	AllocCommand1	Command	Dashboard Command
7	FunctionsAllocation	AllocModeManagement1	Mode Management	Dashboard Command
8	FunctionsAllocation	AllocManualDrive	Manual Drive	Pedals
9	FunctionsAllocation	AllocAutomaticDrive1	Automatic Drive	Regulation
10	FunctionsAllocation	AllocSpeed1	SpeedMonitoring	Speed sensor
11	FunctionsAllocation	AllocSpeed2	SpeedMonitoring	Sensors voter
12	FunctionsAllocation	AllocMotion1	Motion	Engine block
13	FunctionsAllocation	AllocMotion2	Motion	Transmission

- **Or in the object properties**



Allocations

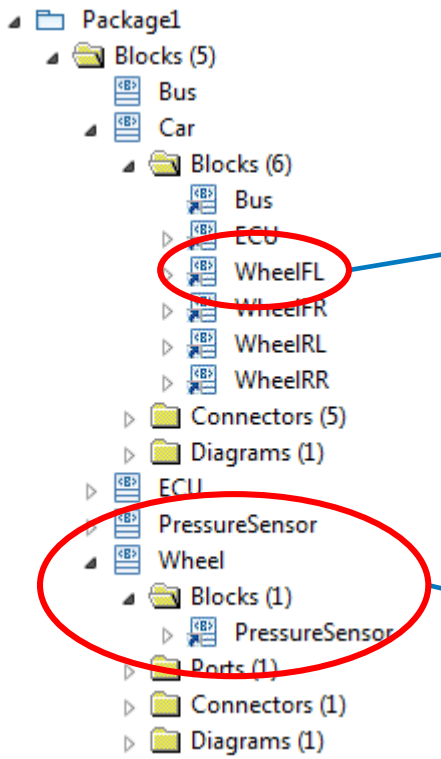


- And shown in diagrams

Unlimited Component Reuse

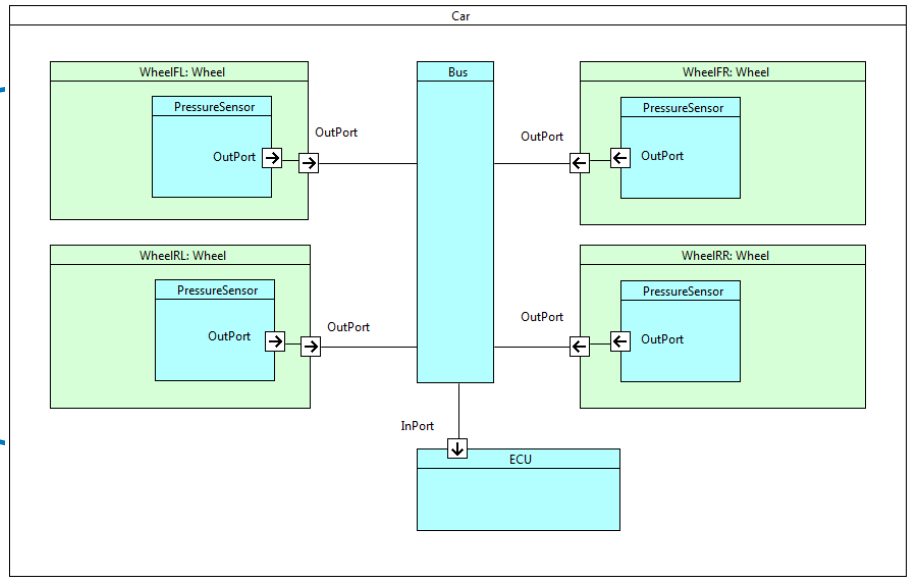
Multi-Instantiation Support

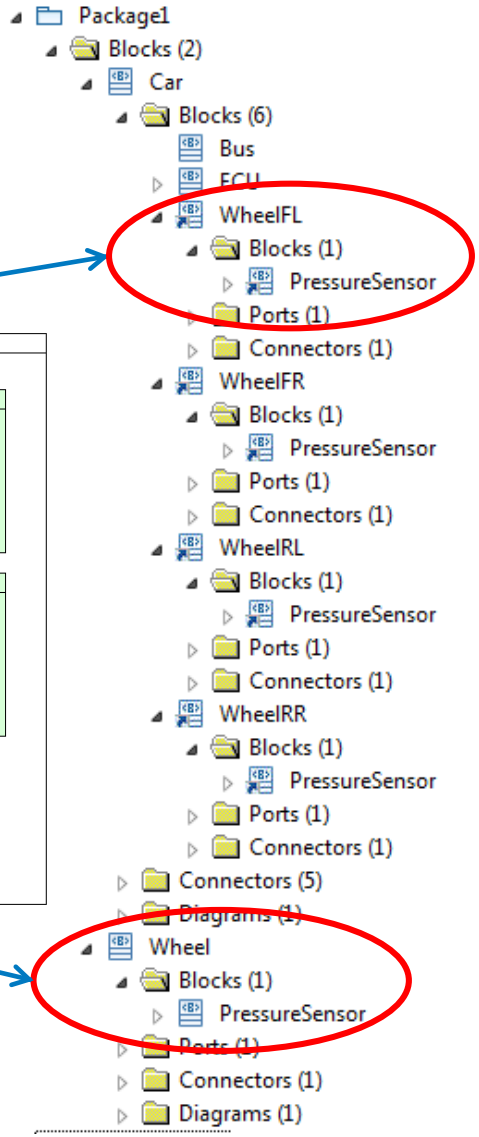
Traditional SysML tools



SCADE System

Each individual instance is **replicated**





Unique components are defined within other components

Data Management

Best practice in most industries
to manage the system interfaces: Data Dictionaries

- **Data attributes with various levels of refinements**
- **Large amount of data managed in data bases**

Full support of Data Dictionaries in SCADE System

- **Tables with customizable data attributes**
- **Import & export data dictionaries**
- **Link data with the functional and architecture models**
- **Data propagation management**

Data Management

Import/export data dictionaries

Direct copy&paste from/to Excel

- Creates data,
- Binds names to existing information e.g. datatype

<Ctrl> c

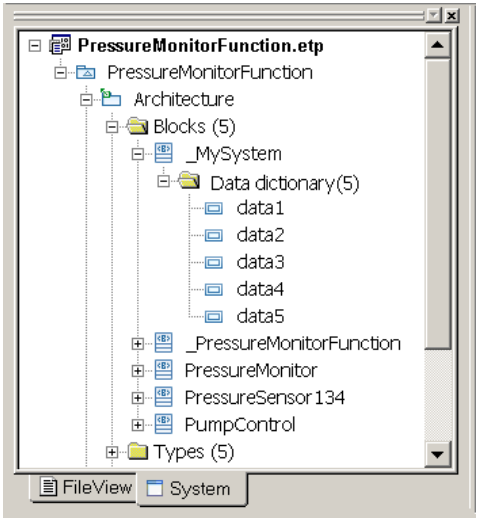
<Ctrl> v

	A	B	C	D	E	F
1	data1	Pressure	0	250	Description data	
2	data2	Validity			Description boolean data	
3	data3	Bool			Description data	
4	data4	Real			Description boolean data	
5	data5	Pressure	0	100	Description data	
6						

Sheet1 Sheet2 Sheet3

Ready Average: 87,5 Count: 19 Sum: 350 100%

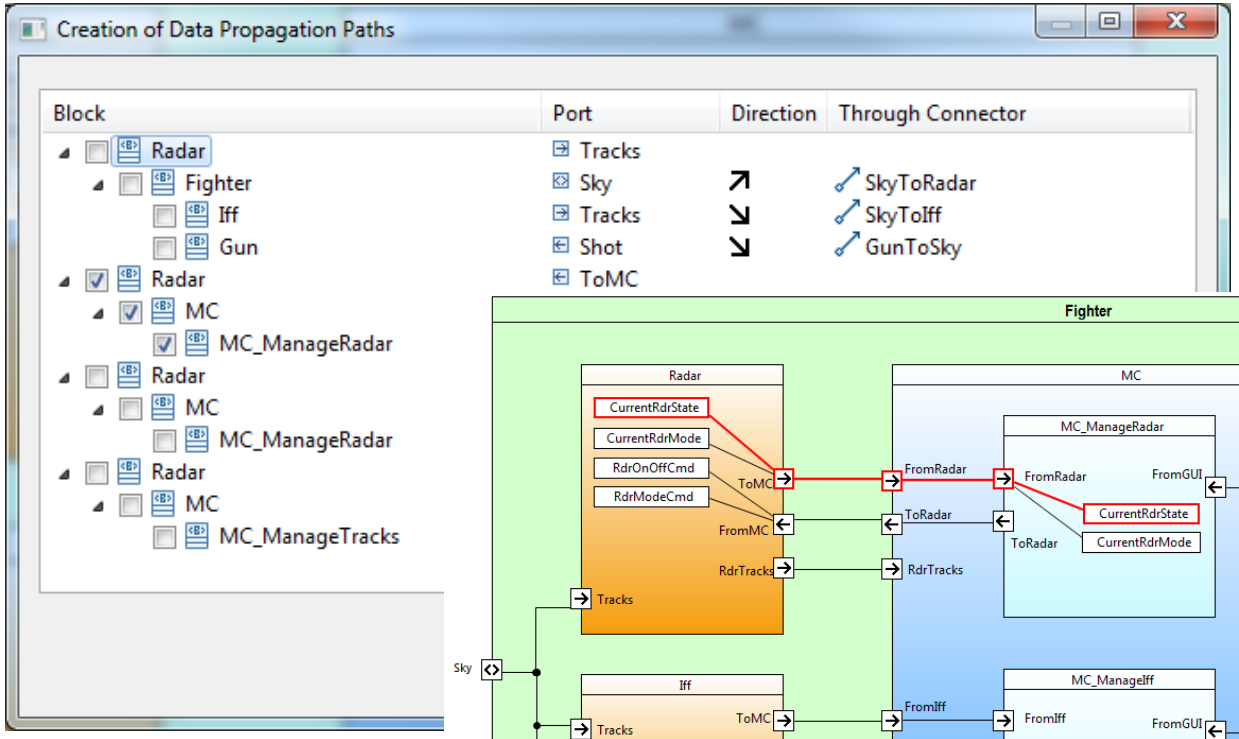
	Name	Type	Min	Max	Description
1	data1	Pressure	0	250	Descrition data
2	data2	Validity			Description boolean data
3	data3	real			Descrition data
4	data4	bool			Description boolean data
5	data5	Pressure	0	100	Descrition data

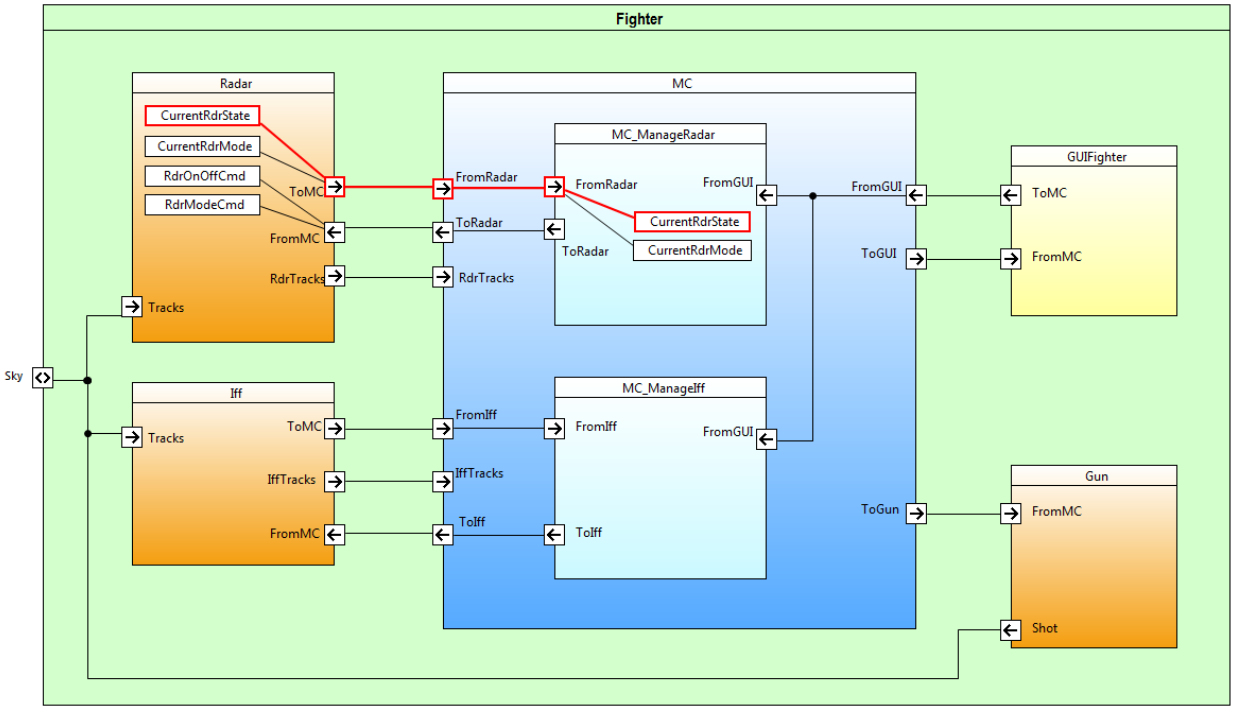


Data Management

Data Propagation Management

Data propagation between Blocks through Connectors





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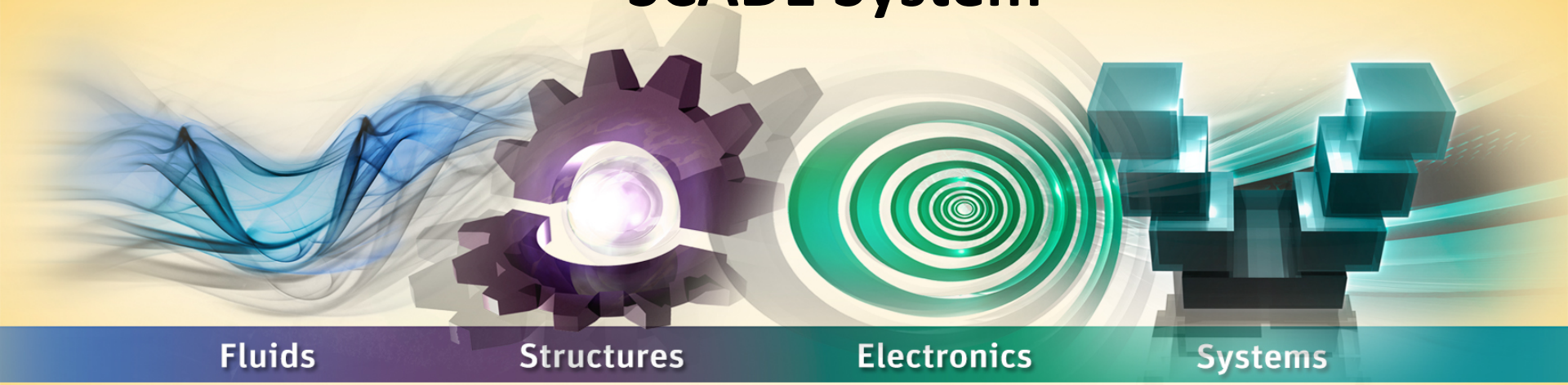
VERIFY & INTEGRATE Systems with SCADE System



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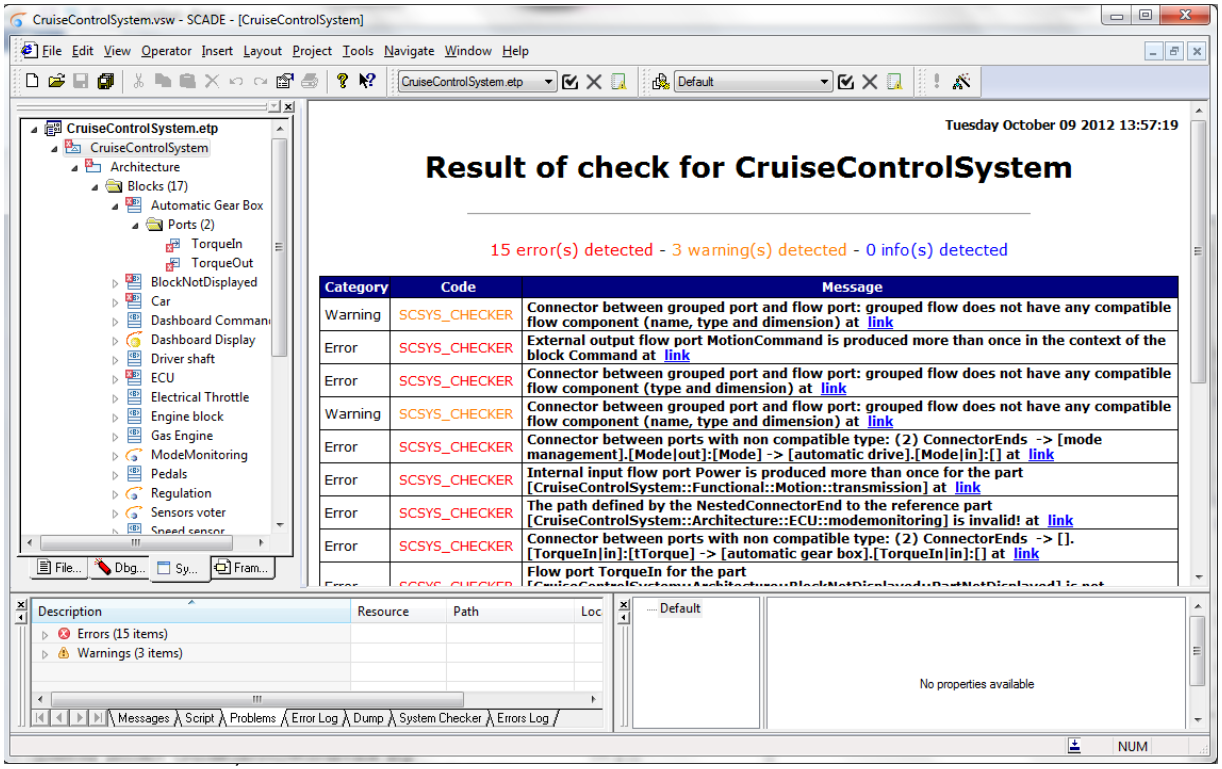
Checker

Automated System Design Rules Verification

Pre-existing set of rules

Easy customization of rules

- **Rule example: "*Are all data produced by exactly 1 component, and used at least once?*"**



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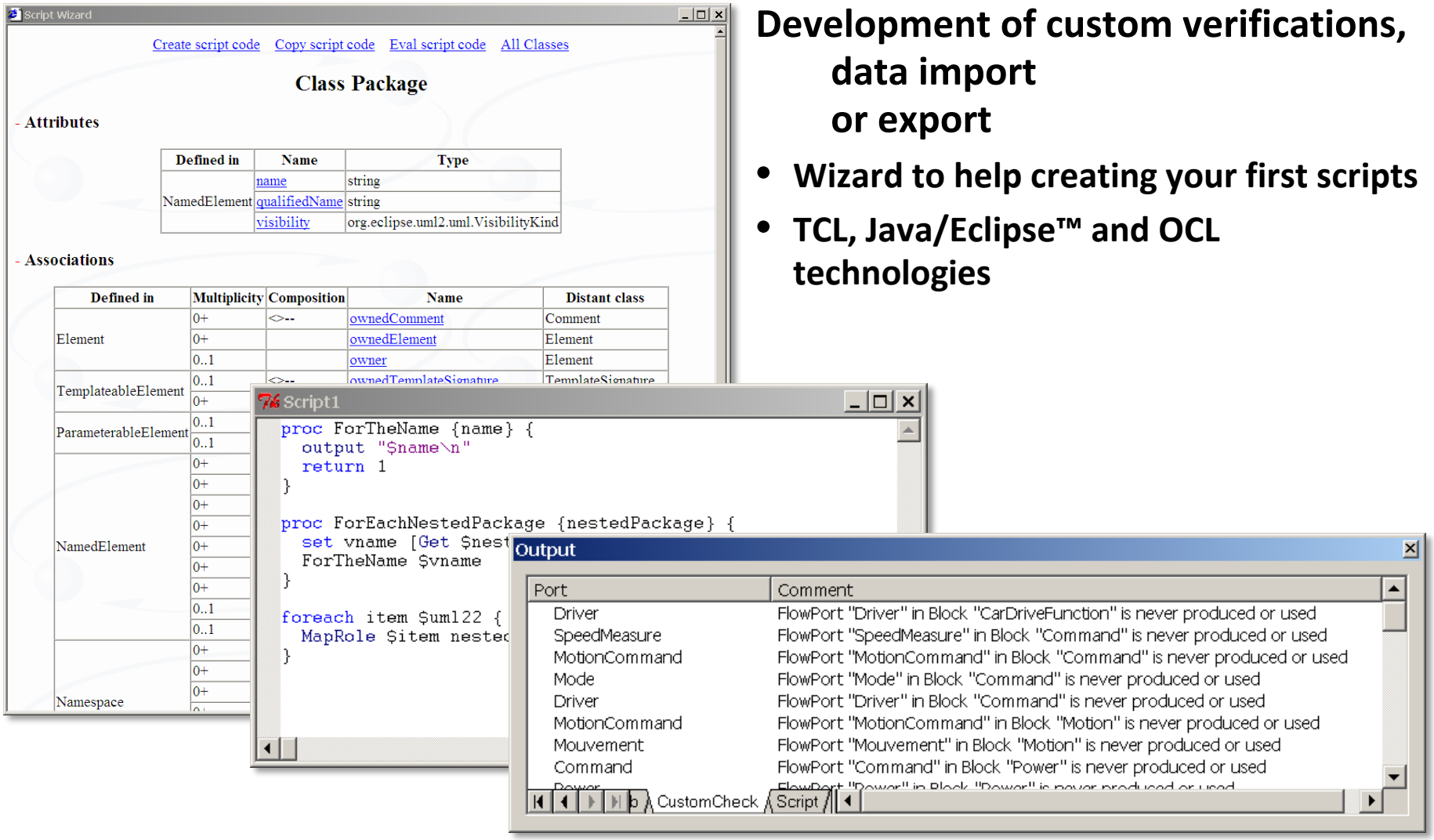
System Model API



- **Development of custom verifications, data import or export**
- **Wizard to help creating your first scripts**
- **TCL, Java/Eclipse™ and OCL technologies**

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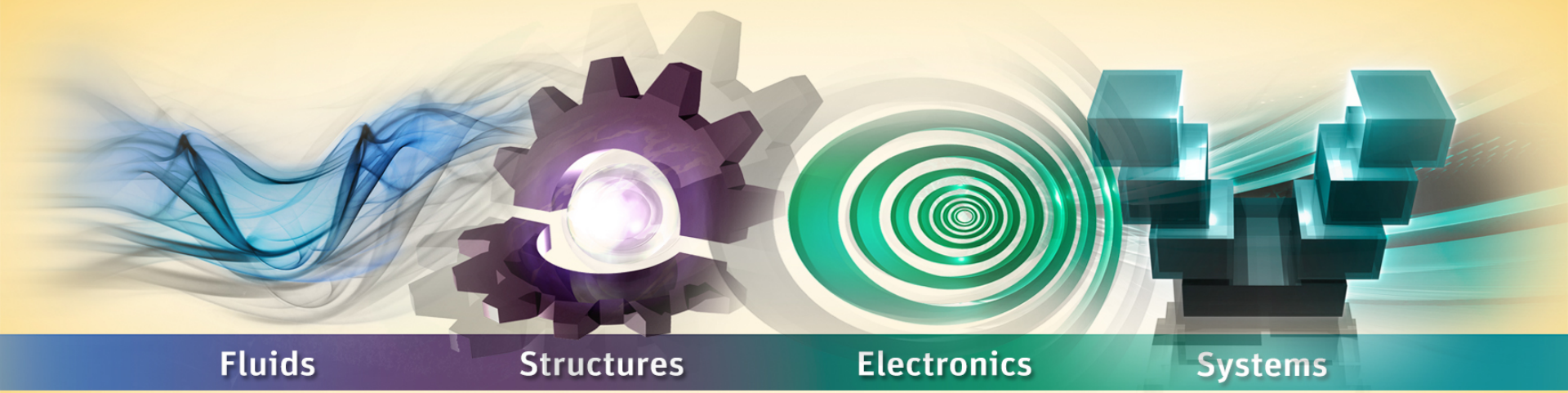
INTEGRATE & COLLABORATE



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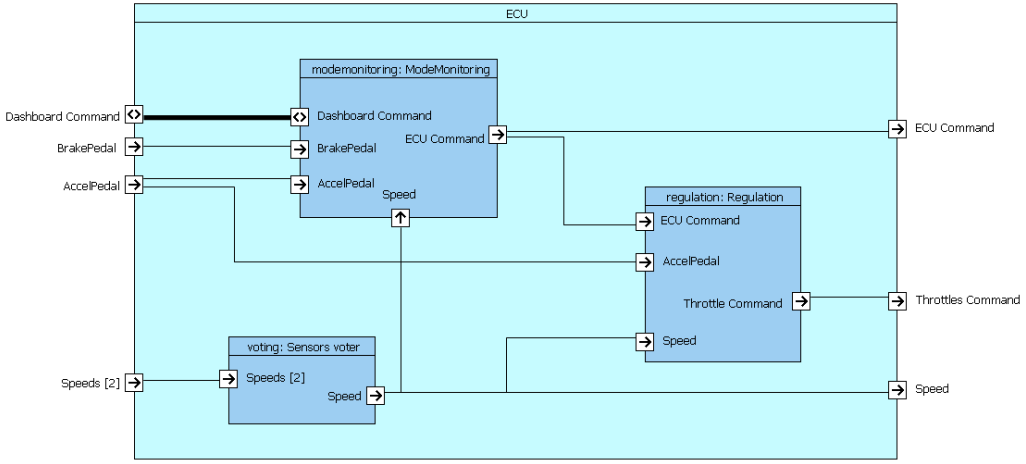
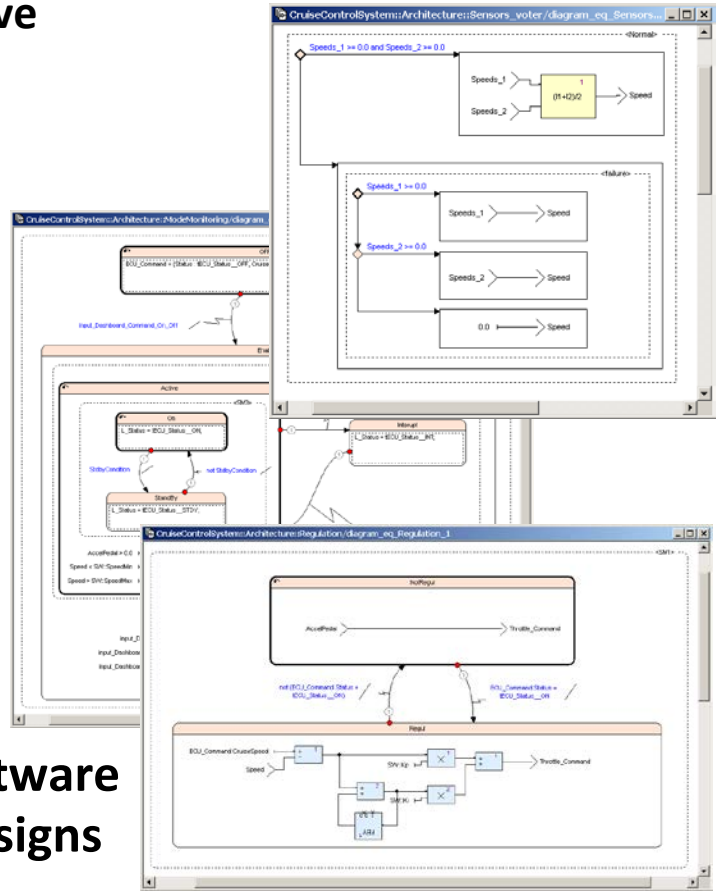
System – Software Collaboration

System – Software Models Synchronization

- Avoid duplication of efforts and inconsistencies between system structural models and software behavioral models
- System design and Software components evolve independently
- On-demand re-synchronization of interfaces

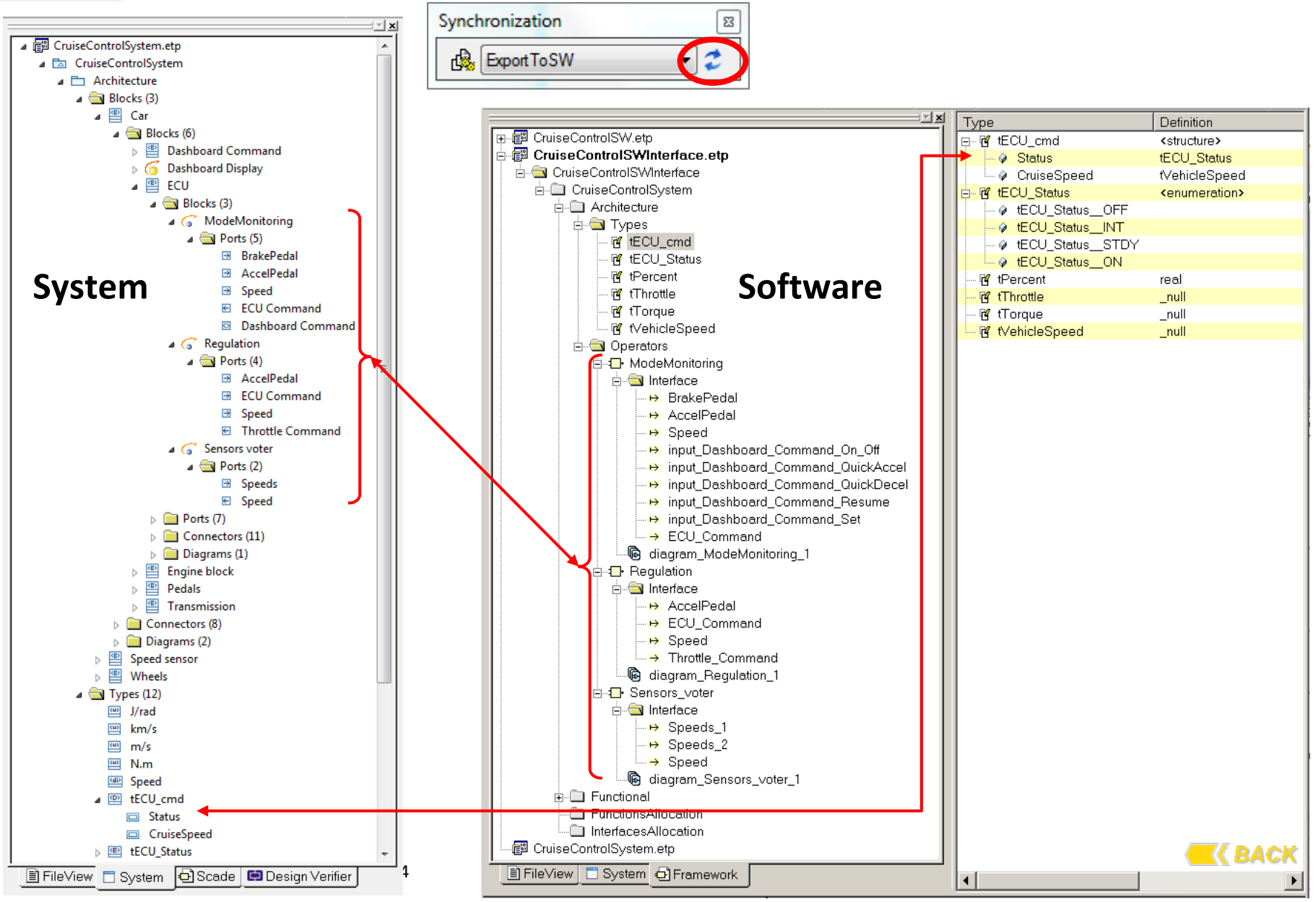
Interfaces described in SCADE System model





Software designs

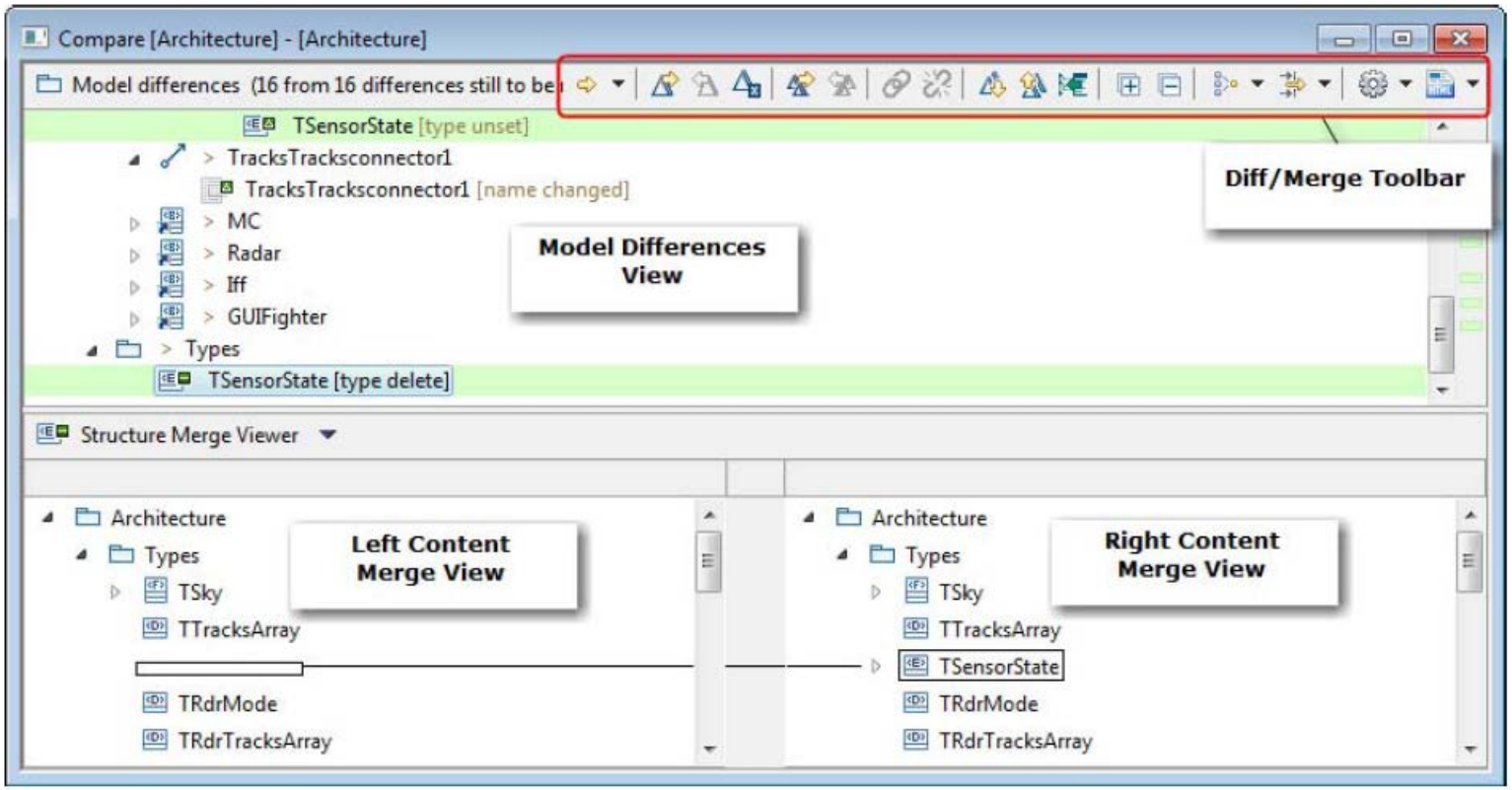
System – Software Collaboration



Model Diff/Merge

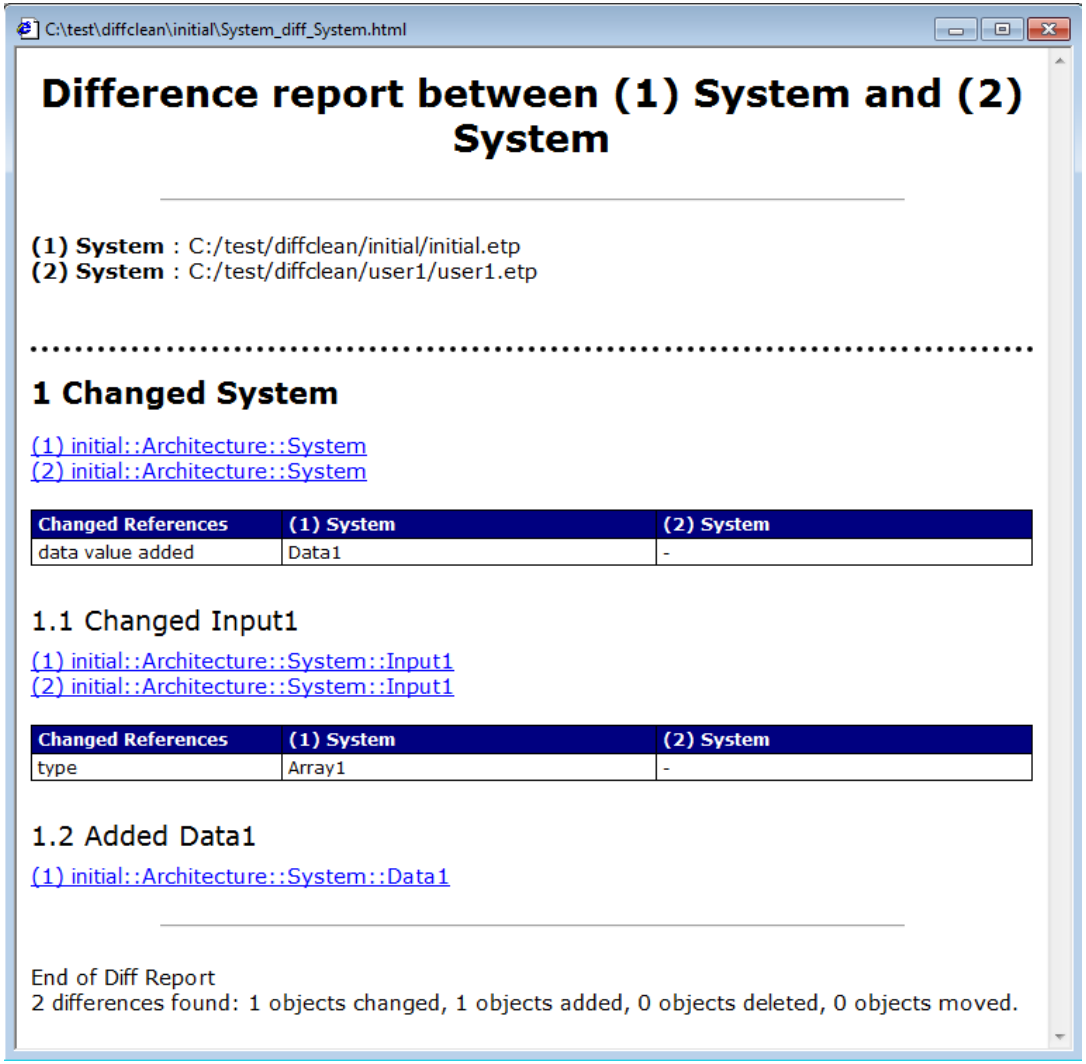
Compute, highlight and merge dependencies in 1 click

User control with “force match” and “exclude match” actions



Model Diff/Merge

- Comprehensive report generation
  - Differences *before* merge session
  - Merge *actions*
  - Differences *after* merge session



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Collaboration Capabilities

Model Component Export

- Preserve IP of other system design parts, e.g. to subcontract the SW development of one system block

Workflow example

- 1/ Export subsystems
  - Allow several teams working in parallel on the exported subsystems
- 2/ Reintegrate modifications
  - Rely on Diff-Merge tool
- 3/ Report from reintegration
- 4/ Iterate as often as needed

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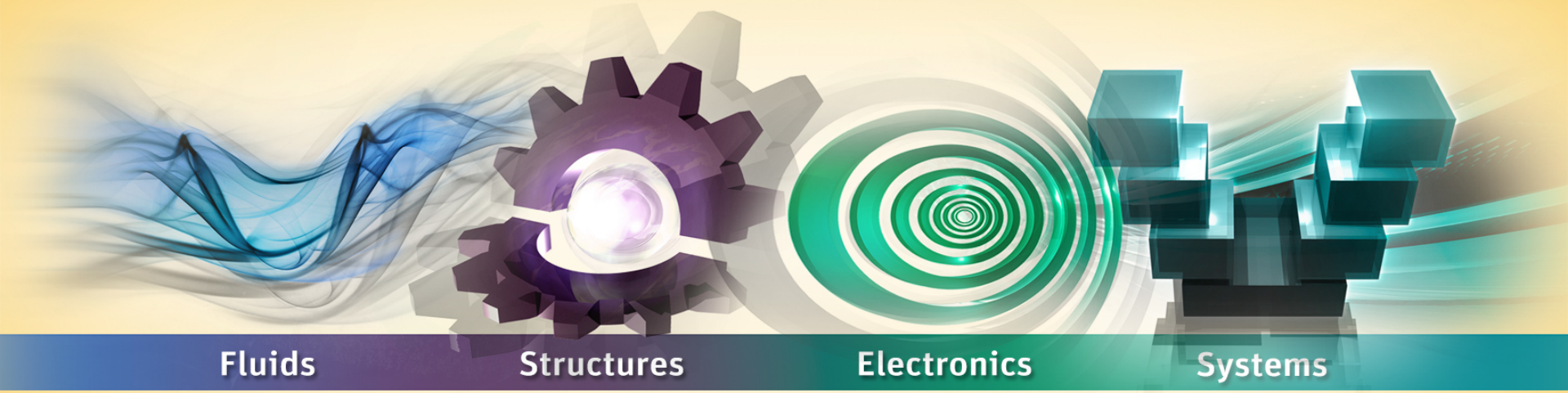
CUSTOMIZE the SCADE System Modeler



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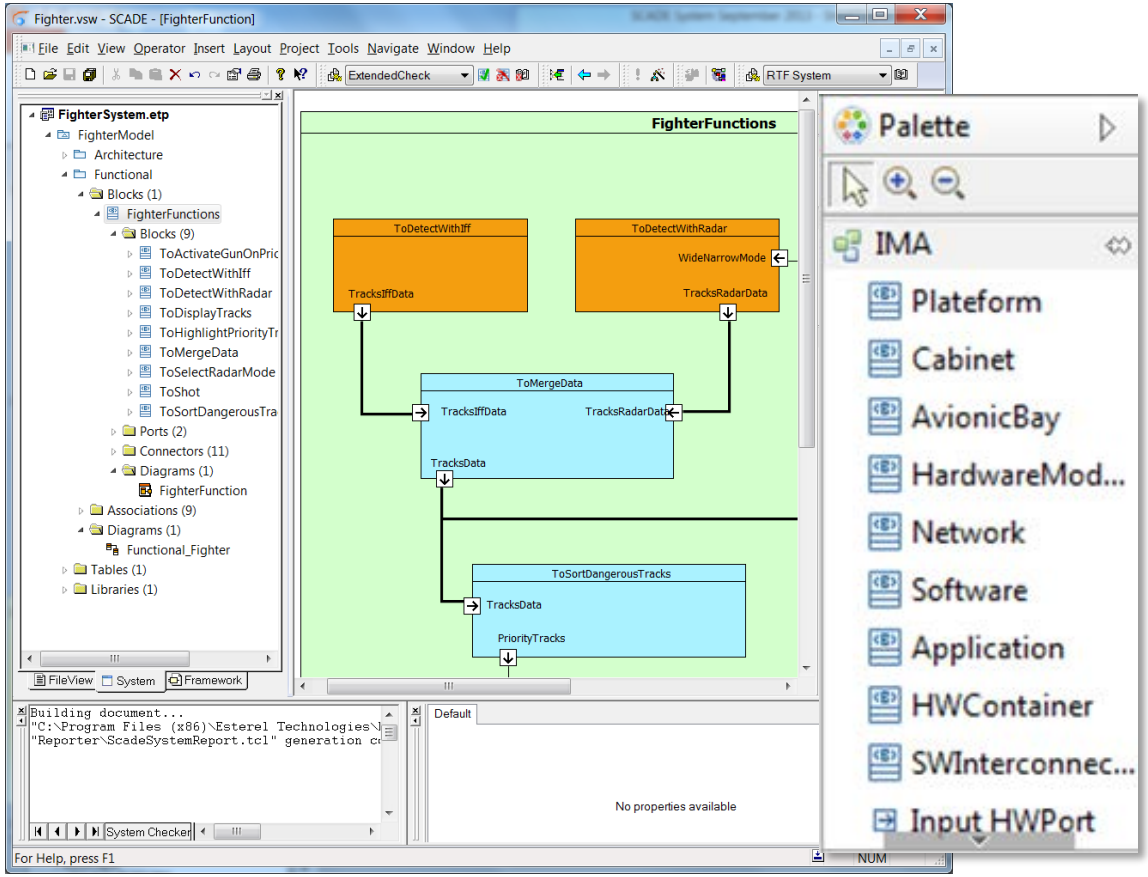
SCADE System Configurator

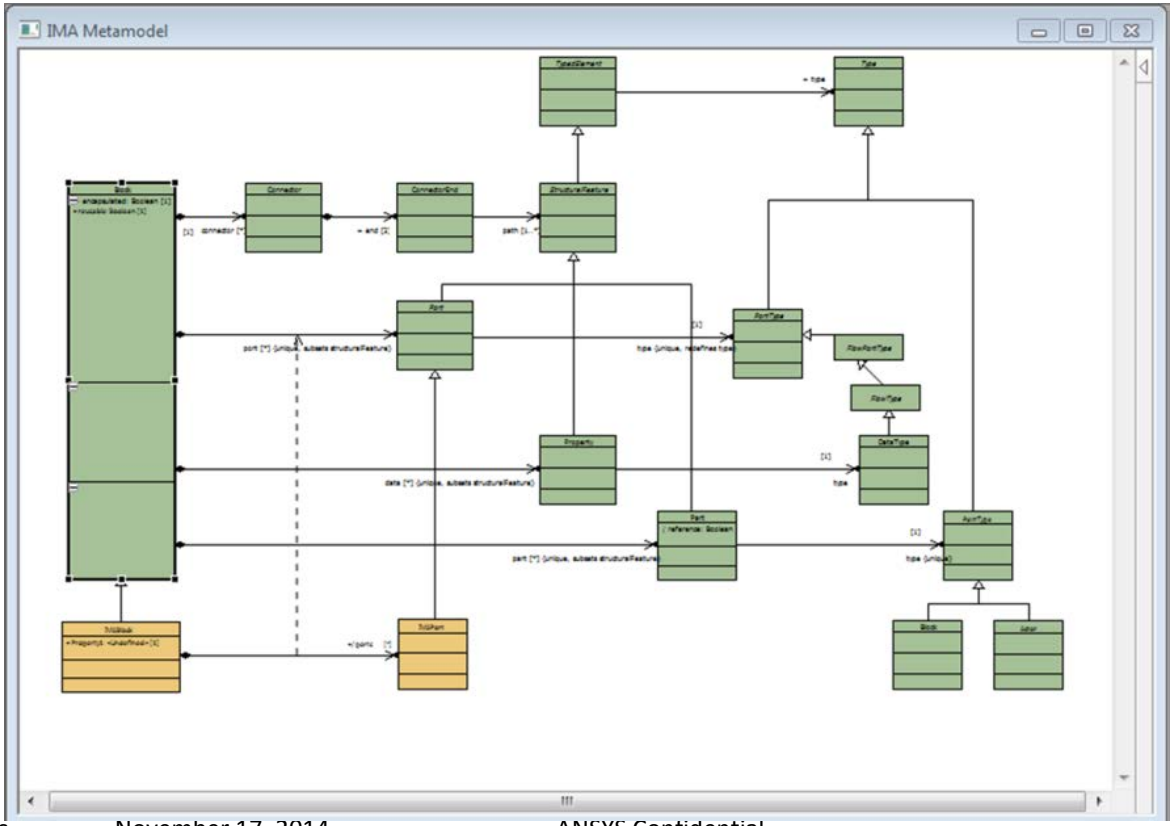
Customize SCADE System for a Customer specific domain, as well as standard domains such as IMA, AUTOSAR, etc…



SCADE System configuration 1/1

Definition of domain-specific objects

- Define new object, derived from SCADE System objects
  - Function, Equipment, Bus, Port…
- Domain specific objects properties and inter-objects constraints



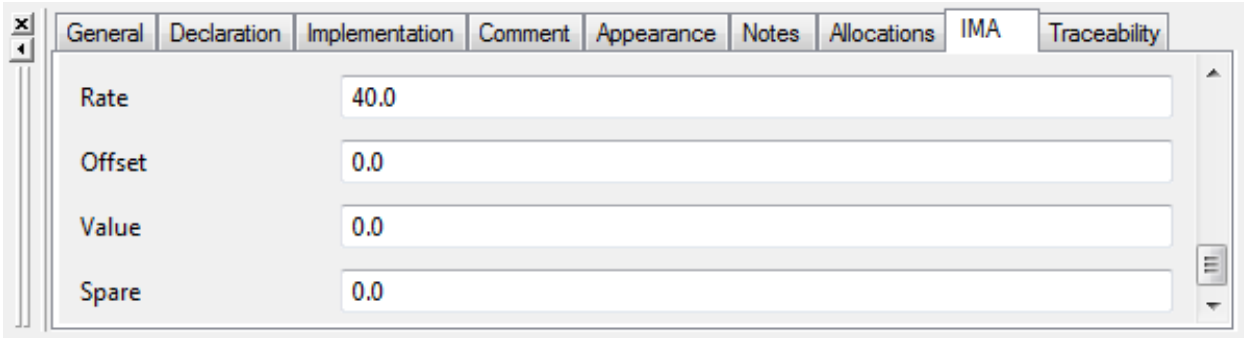
SCADE System configuration 2/2

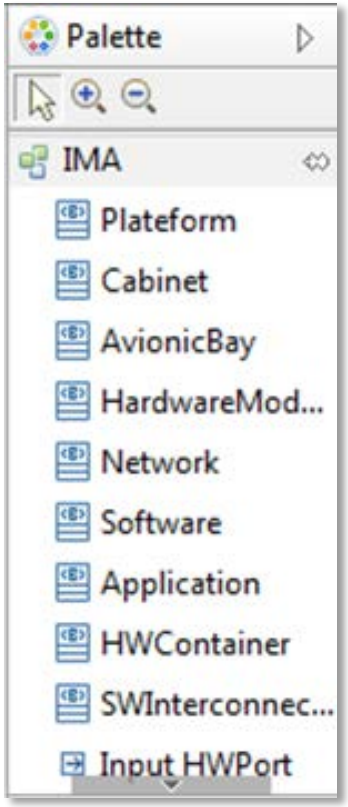
Automatic packaging of the SCADE System Configuration

- SCADE System Configuration managed as a SCADE project
- Simple deployment on SCADE System end-user machine

System Modeler IDE customization

- Dedicated user interface palettes
- Dedicated property view

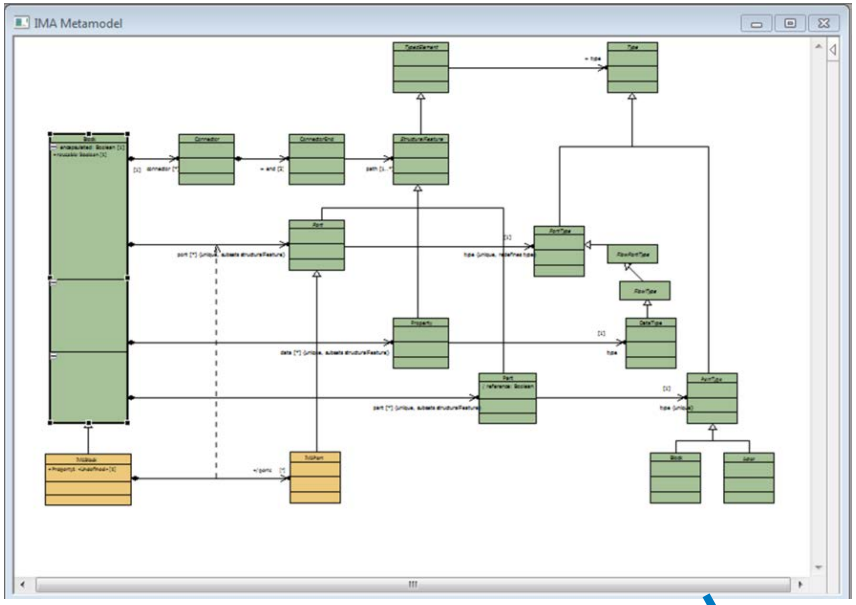




SCADE System configuration

Workflow

Specialist **SCADE System Configurator**



Define customized object kinds, derived from SCADE System objects

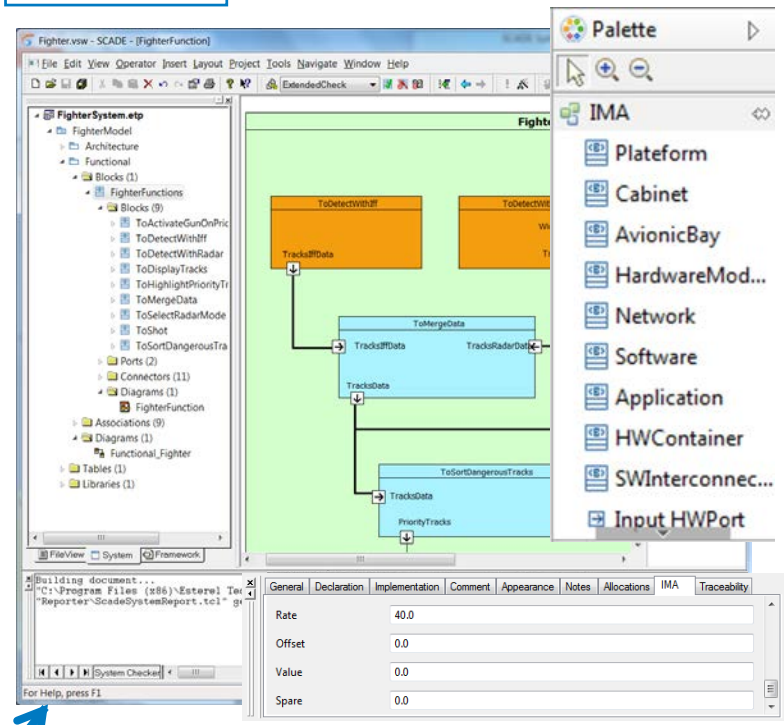
Function	Equipment	Bus
- prop1	- propX	- propZ
- prop2	- propY	

Generate

Deploy

Configuration Plug-in

End-User **SCADE System Modeler**



Domain specific modeler

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