What's new in MATLAB and Simulink for Model-Based Design

Magnus Jung
Application Engineer

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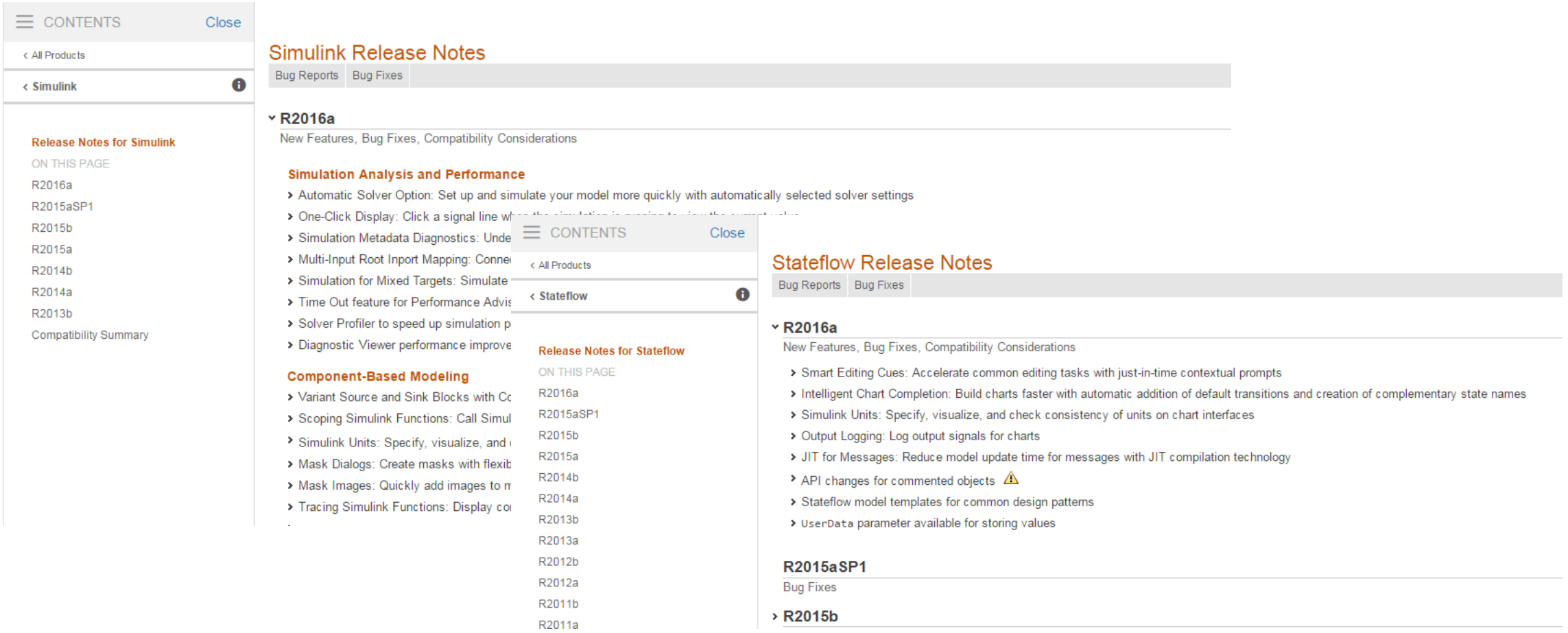
What's New?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Intelligent Chart Completion: Build charts faster with automatic addition of default transitions and creation of complementary state names
Simulink Units: Specify, visualize, and check consistency of units on chart interfaces
Output Logging: Log output signals for charts
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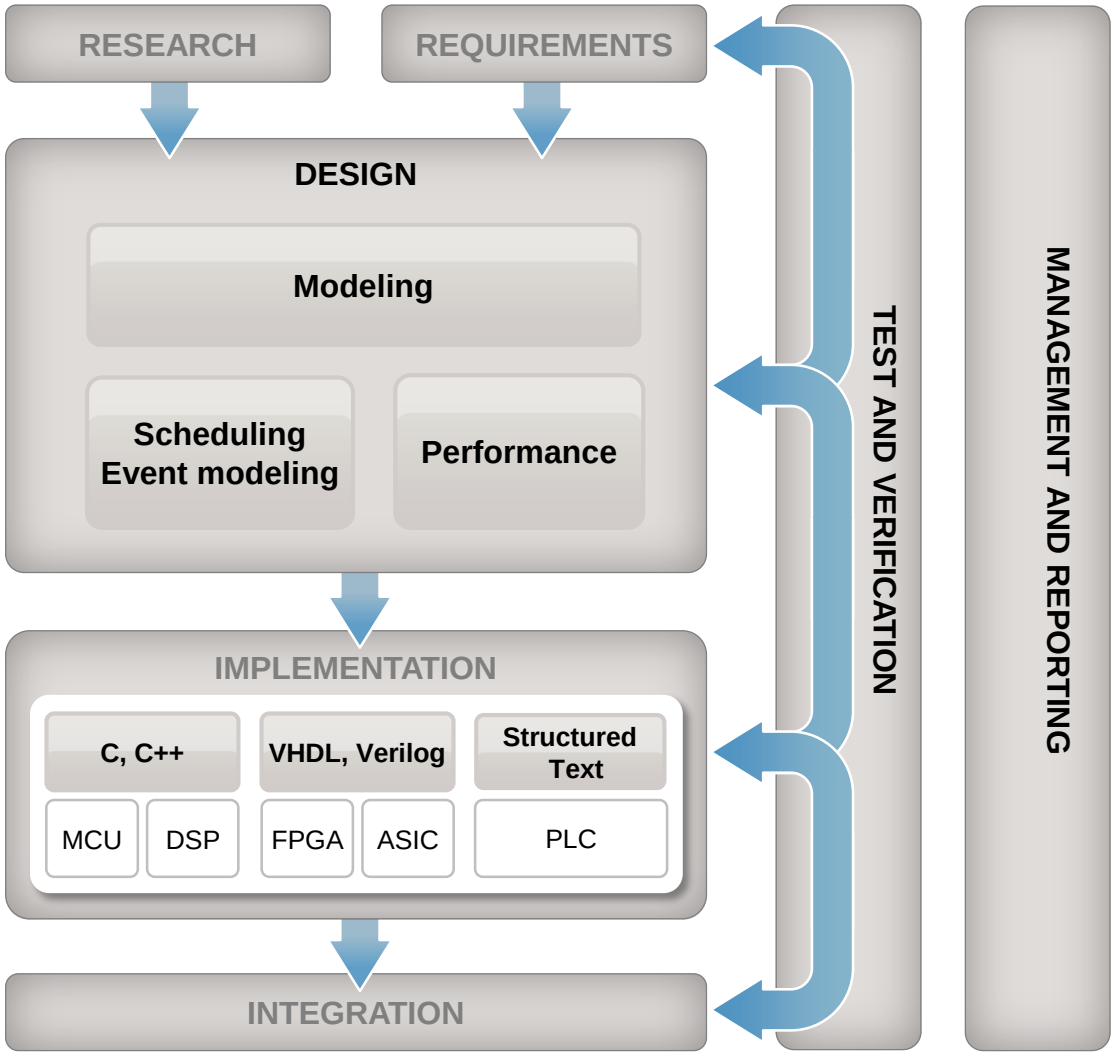
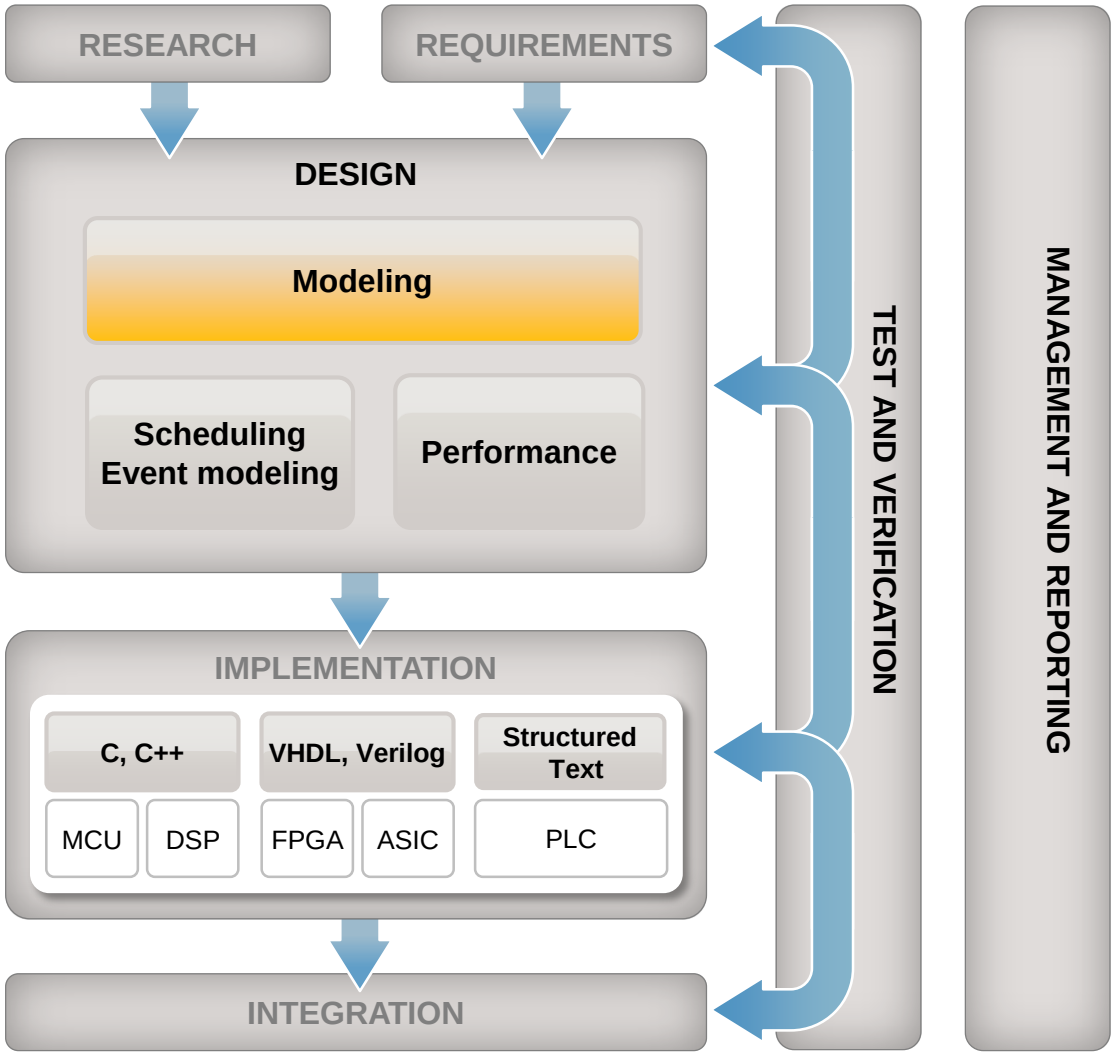
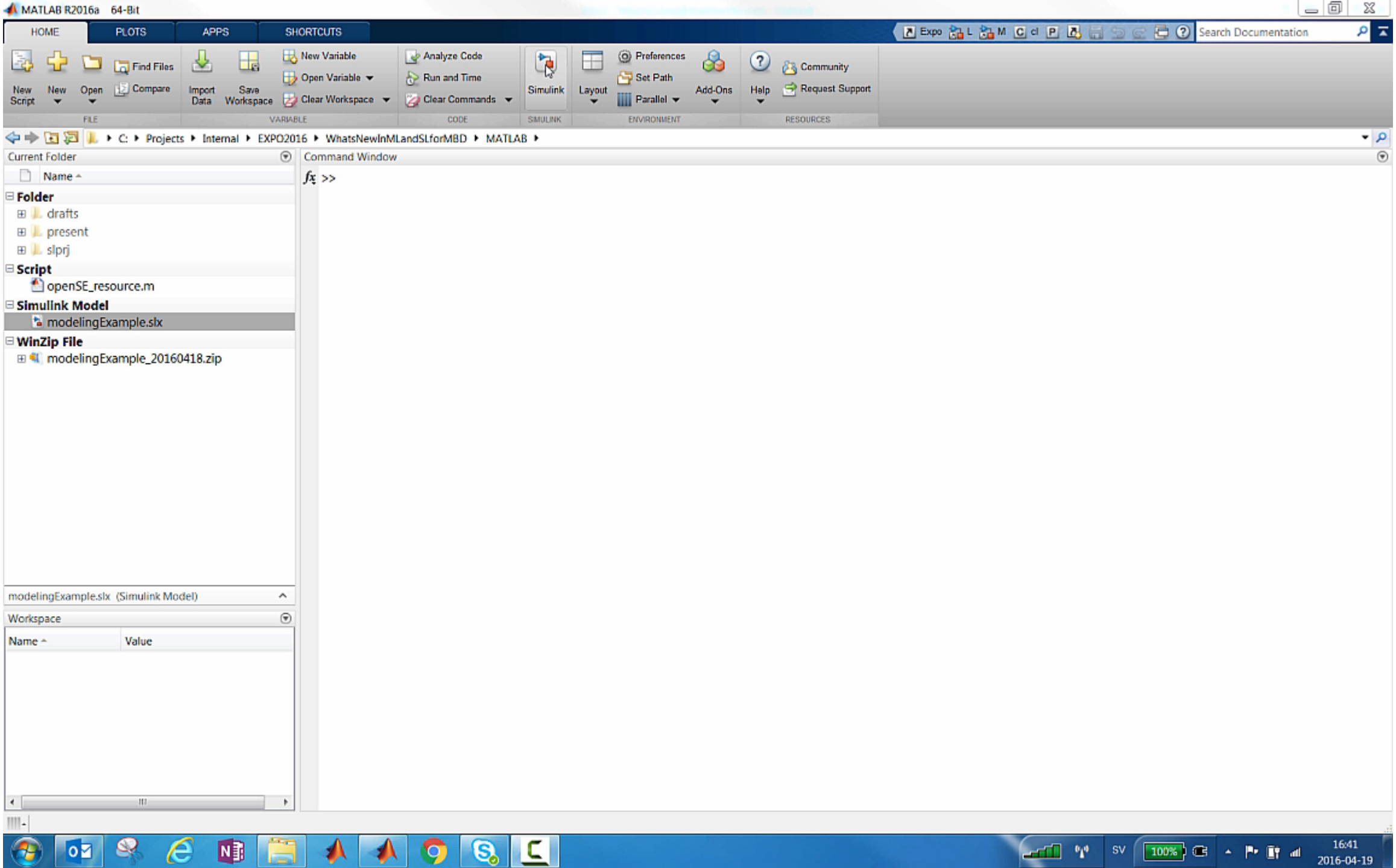
API changes for commented objects
Stateflow model templates for common design patterns
UserData parameter available for storing values
R2015aSP1
Bug Fixes
R2015b

Model-Based Design Workflow



Model-Based Design Workflow




MATLAB R2016a 64-Bit
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New Script
New
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Find Files
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Import Data
Save Workspace
New Variable
Open Variable
Clear Workspace
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Clear Commands
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RESOURCES
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Current Folder
Name
Folder
drafts
present
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Script
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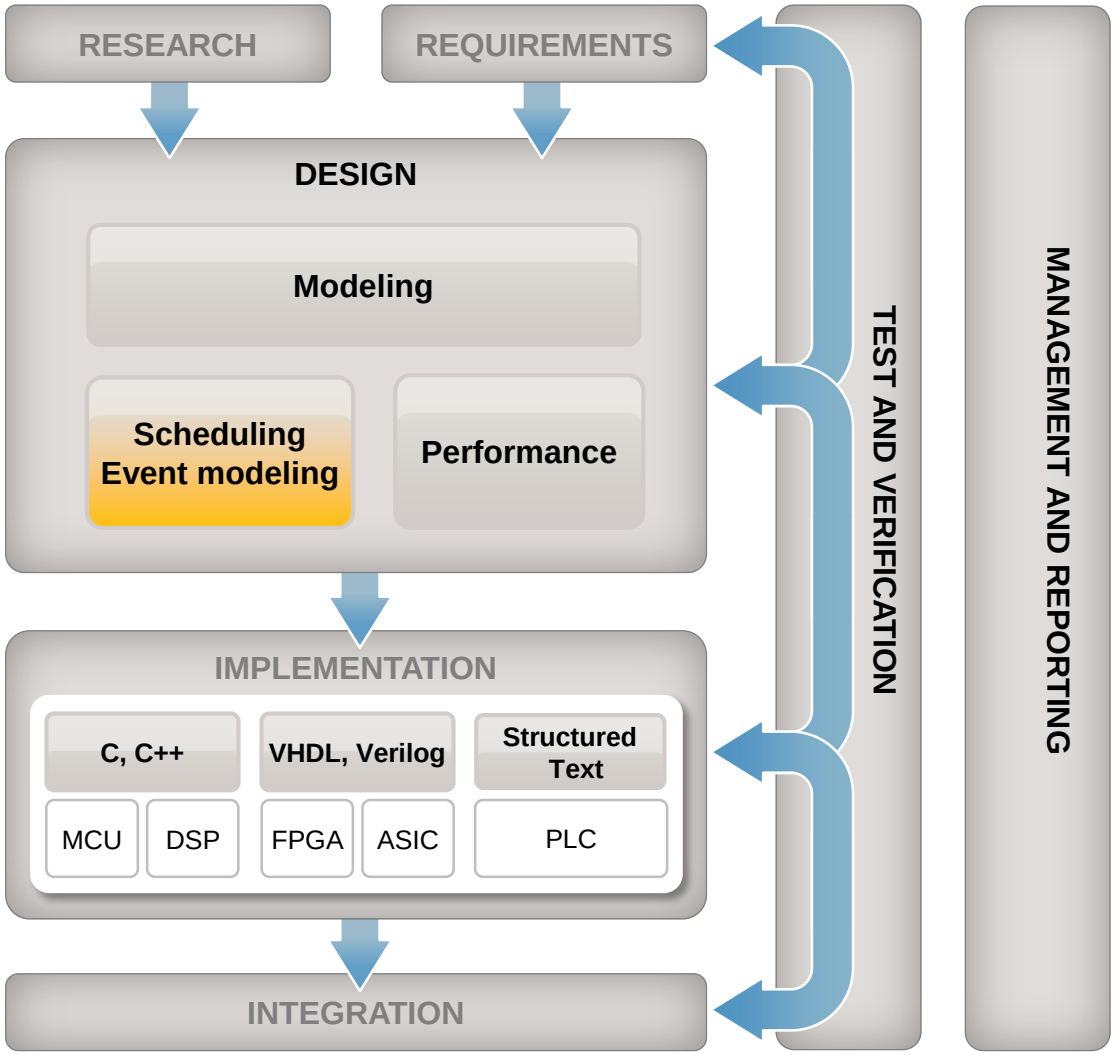
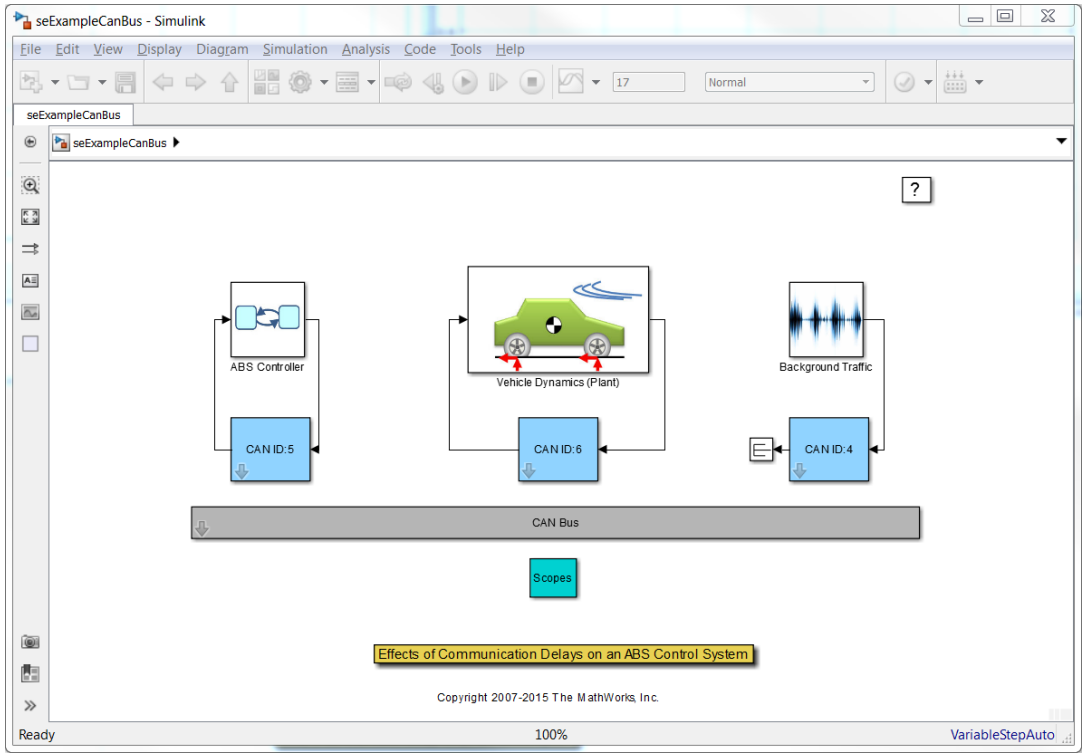
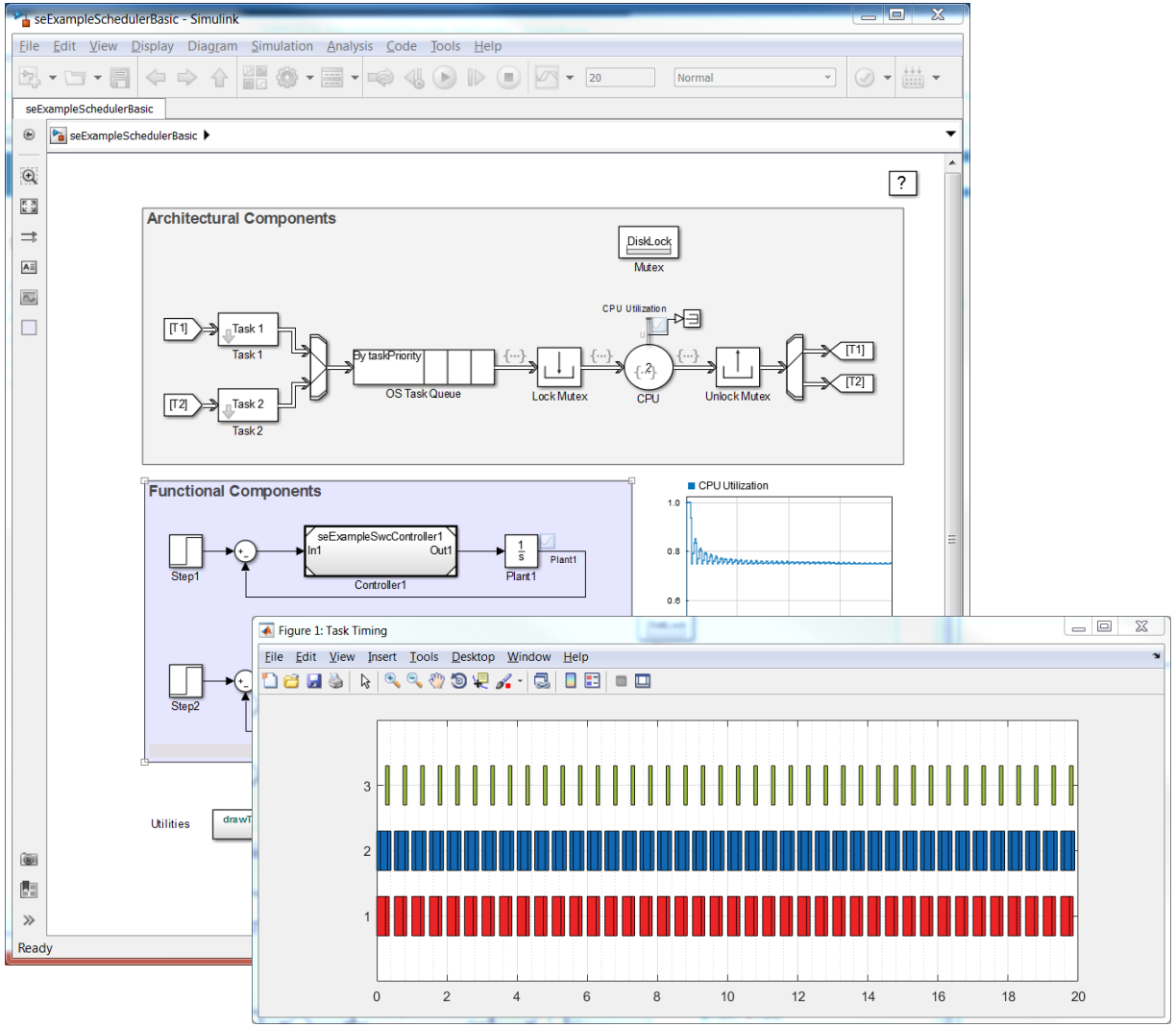
Model-Based Design Workflow



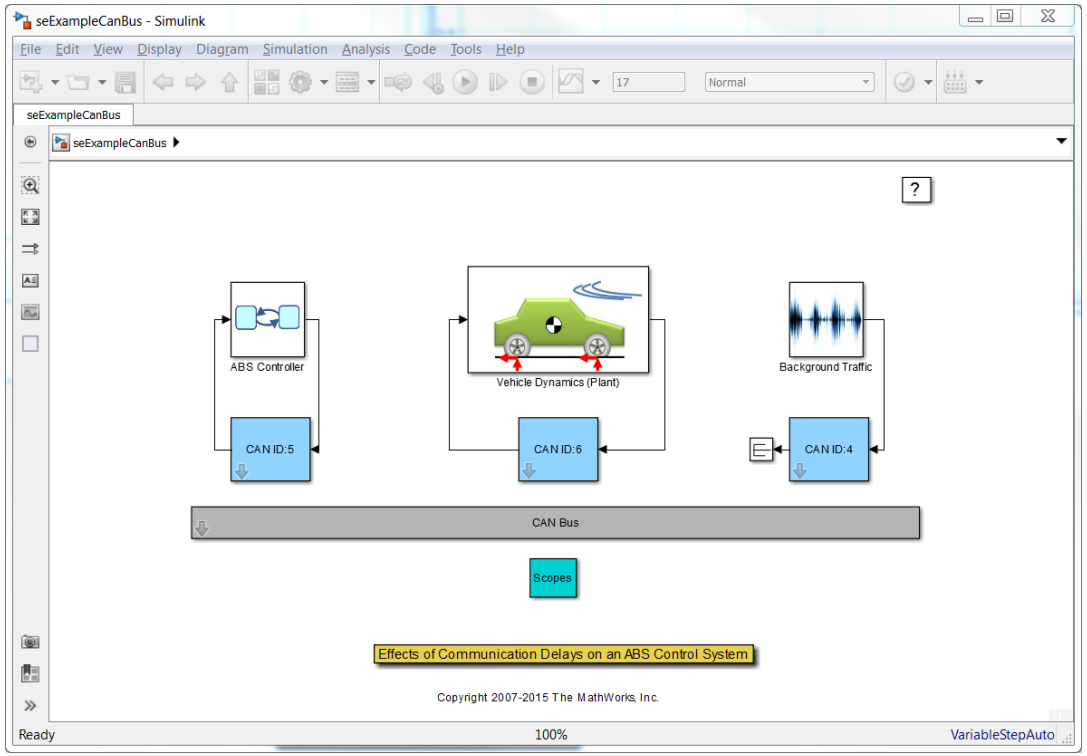
Messages, Functions and Scheduling

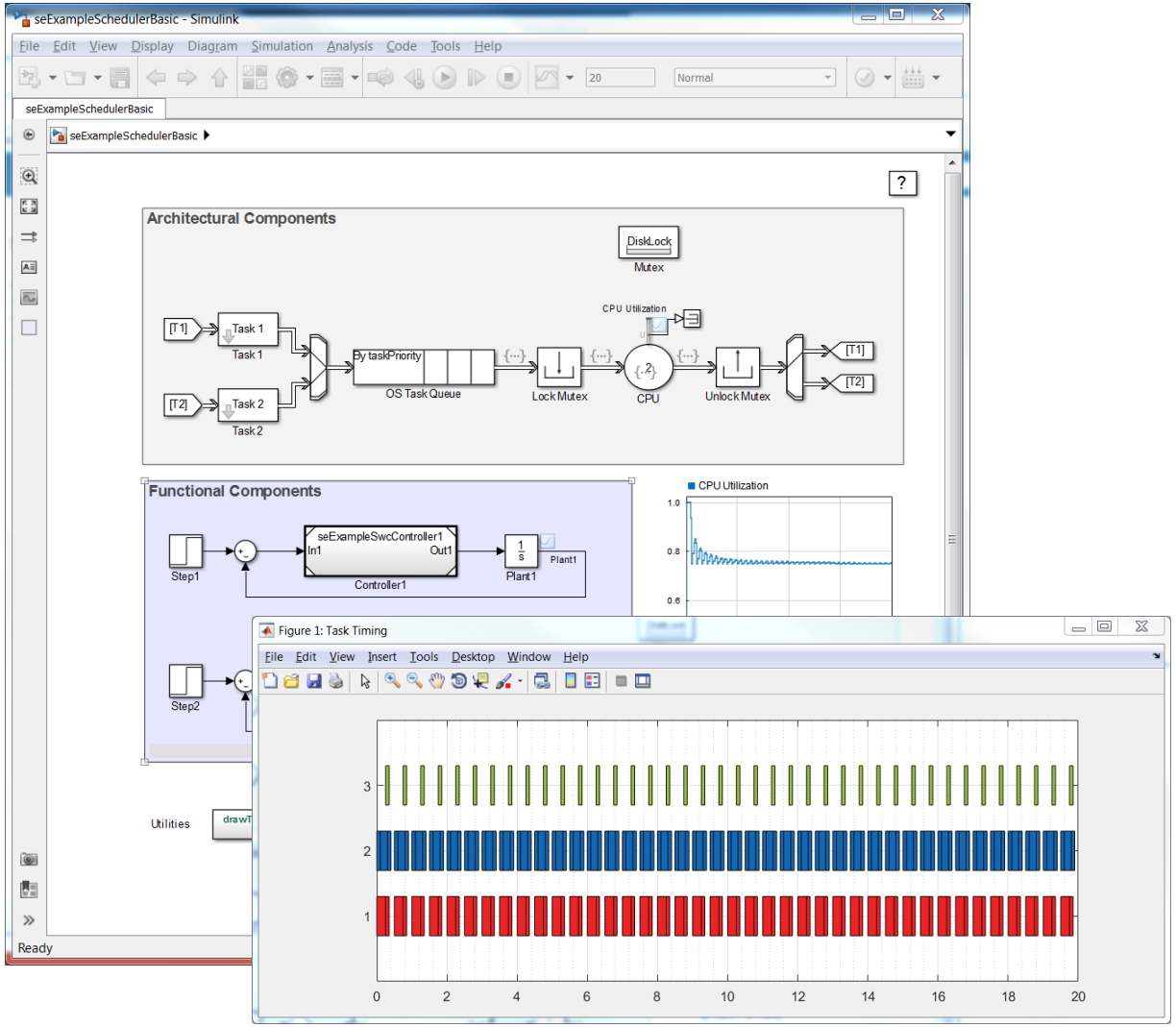




New SimEvents

Discrete-event simulation engine for multidomain system models





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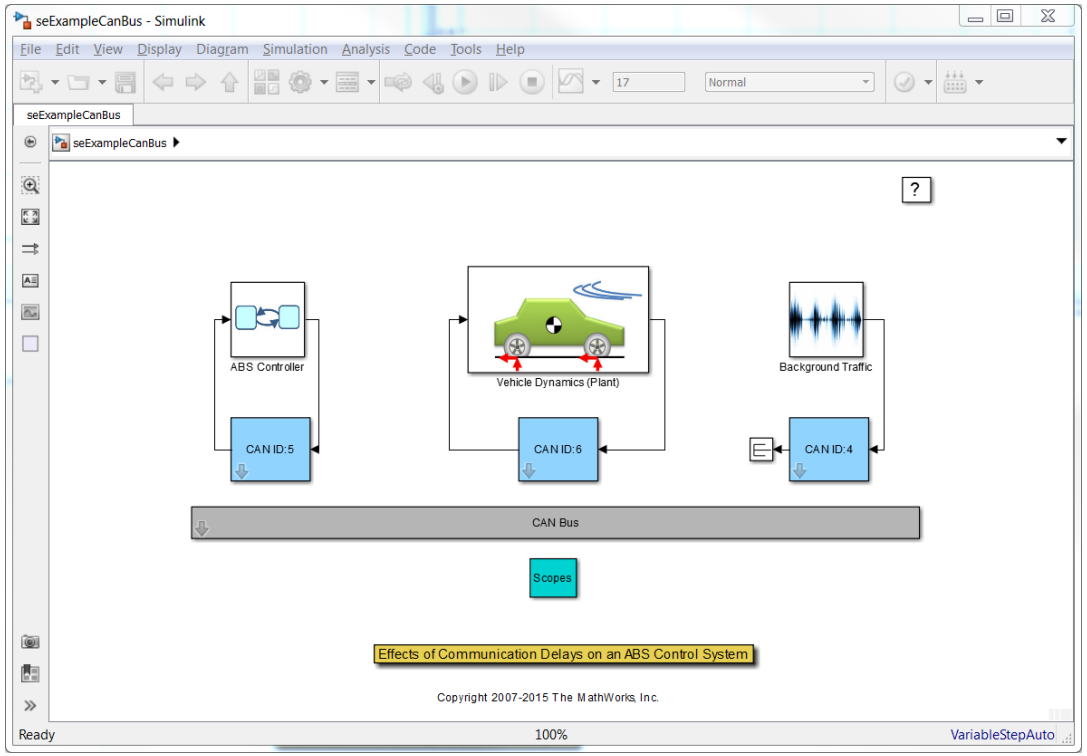

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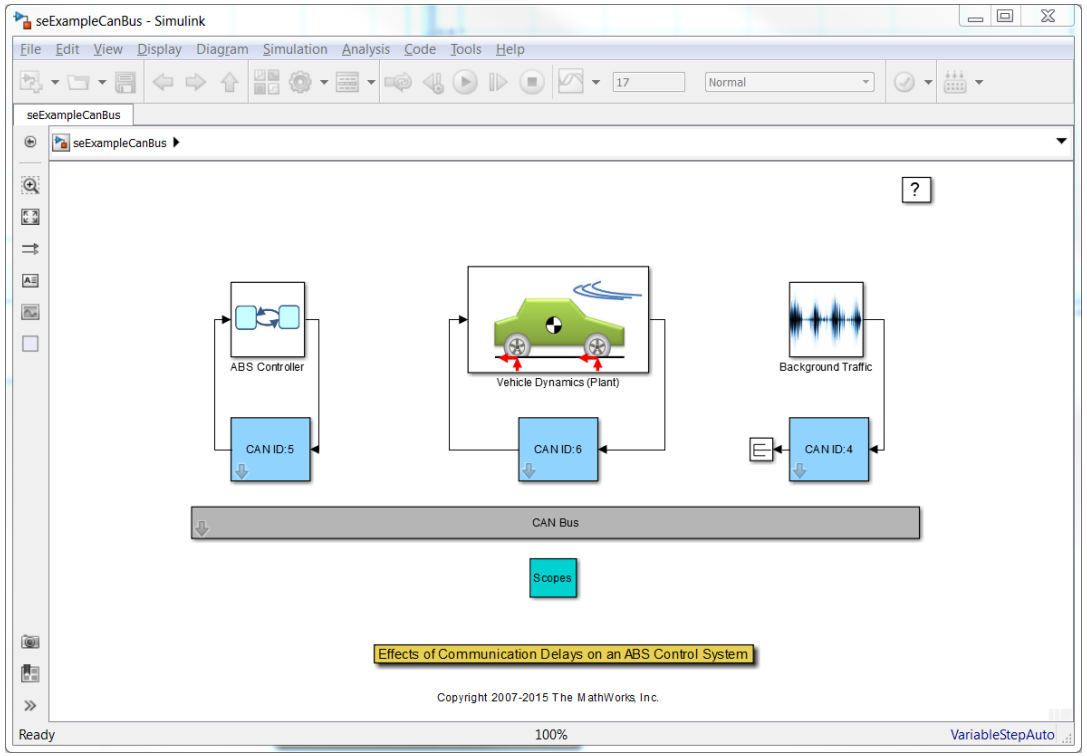
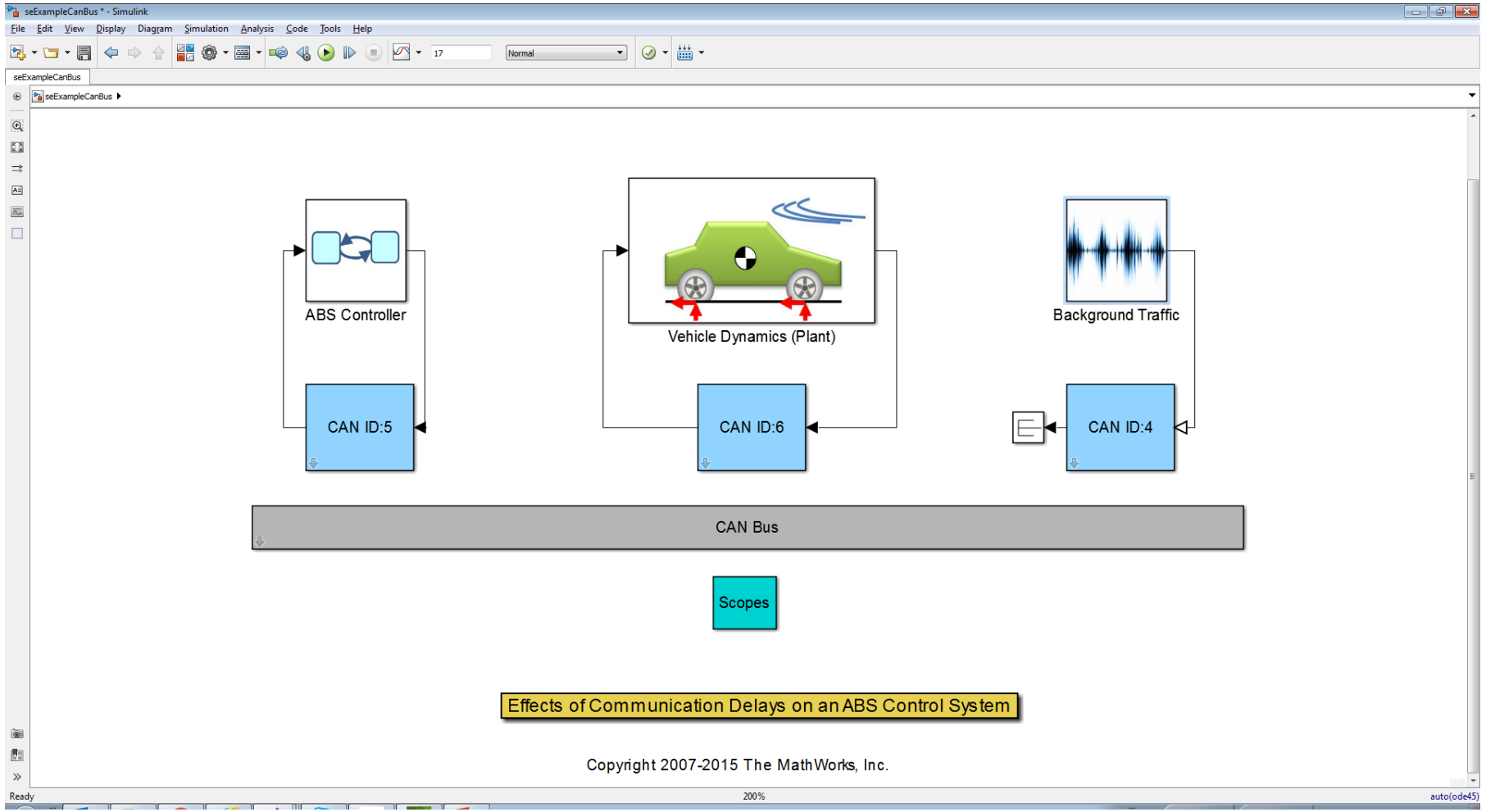
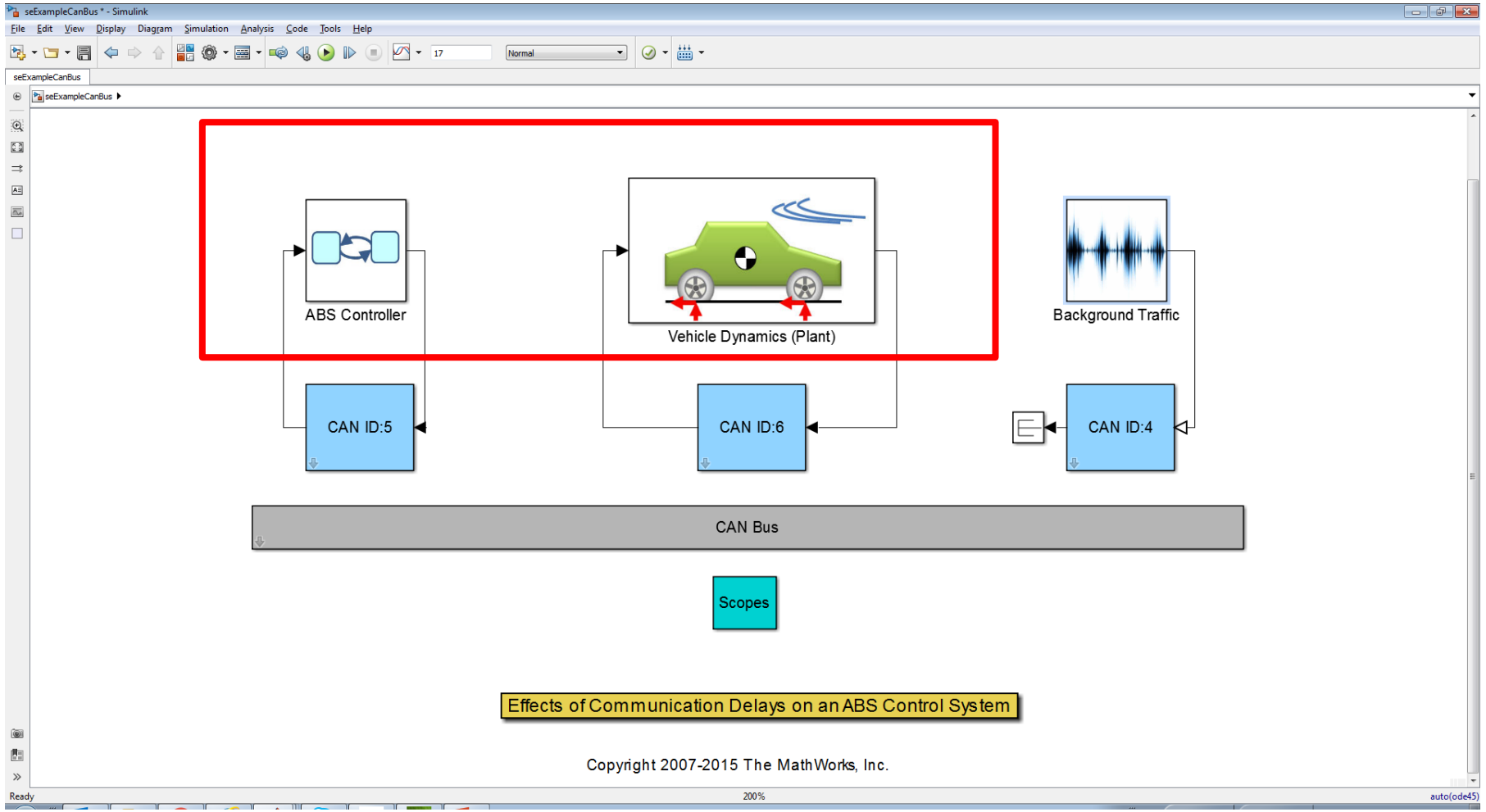


How does communication delays effect your system performance?

CAN simulation with Simulink and SimEvents



CAN simulation with Simulink and SimEvents



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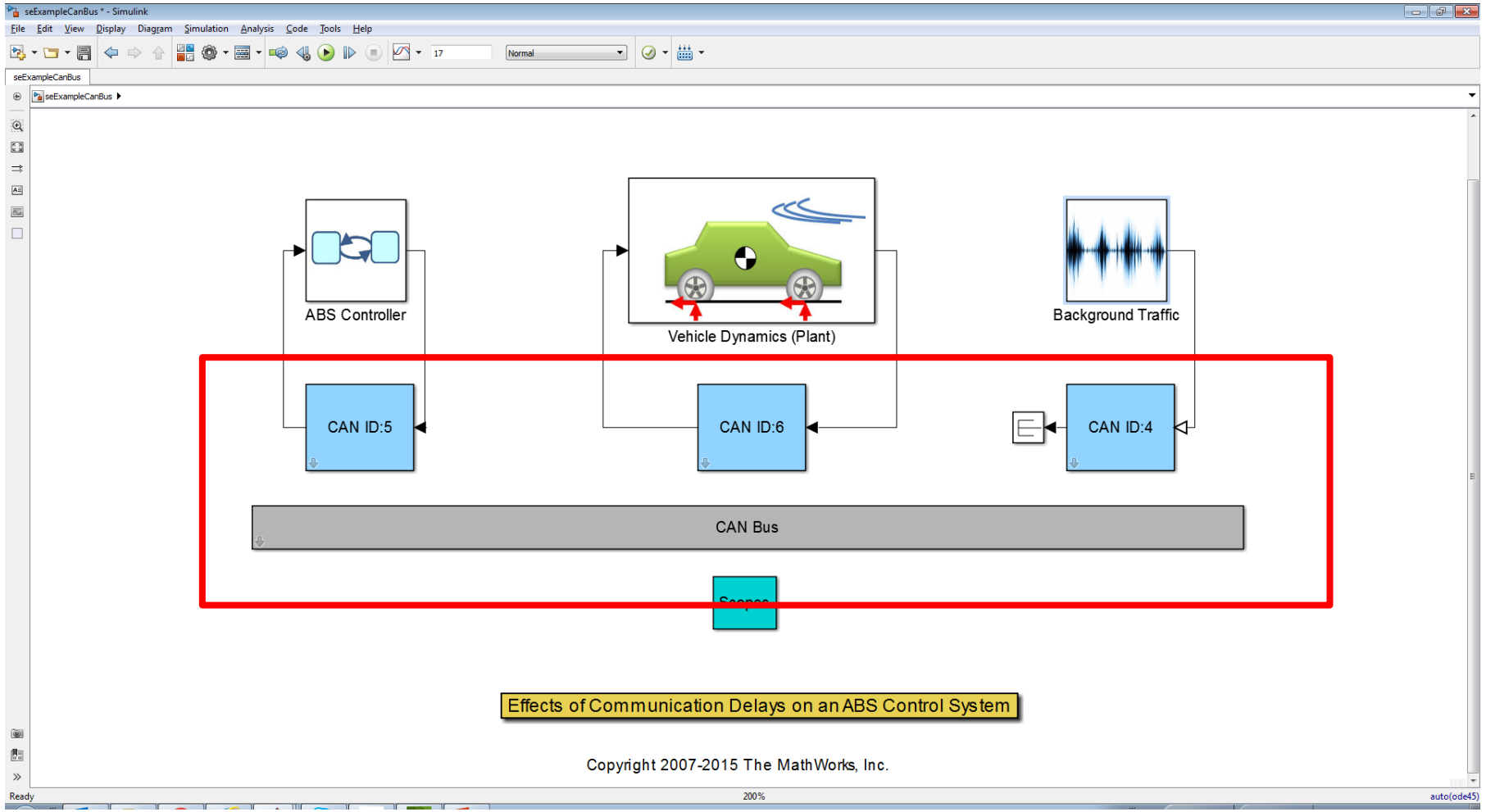

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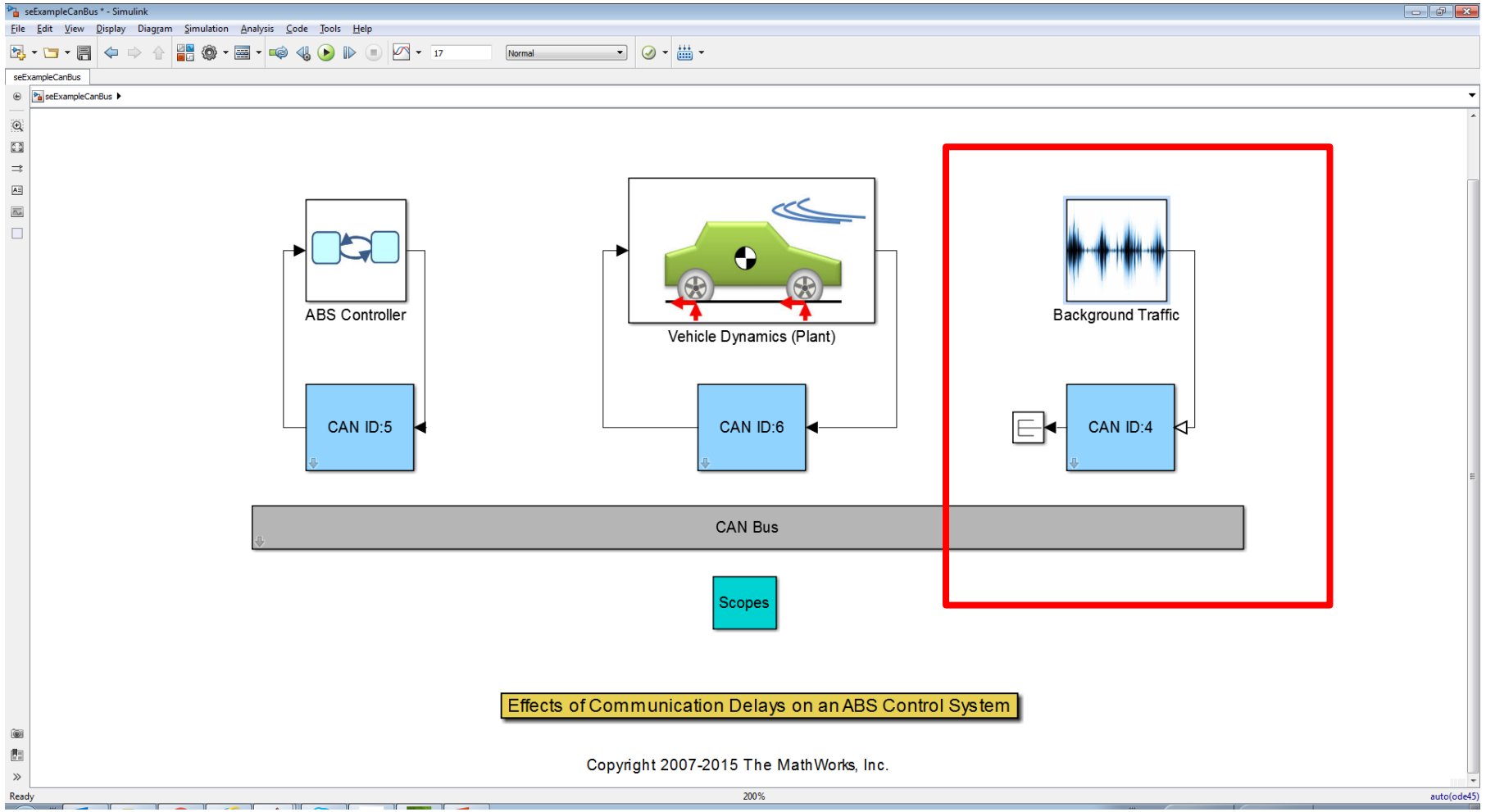
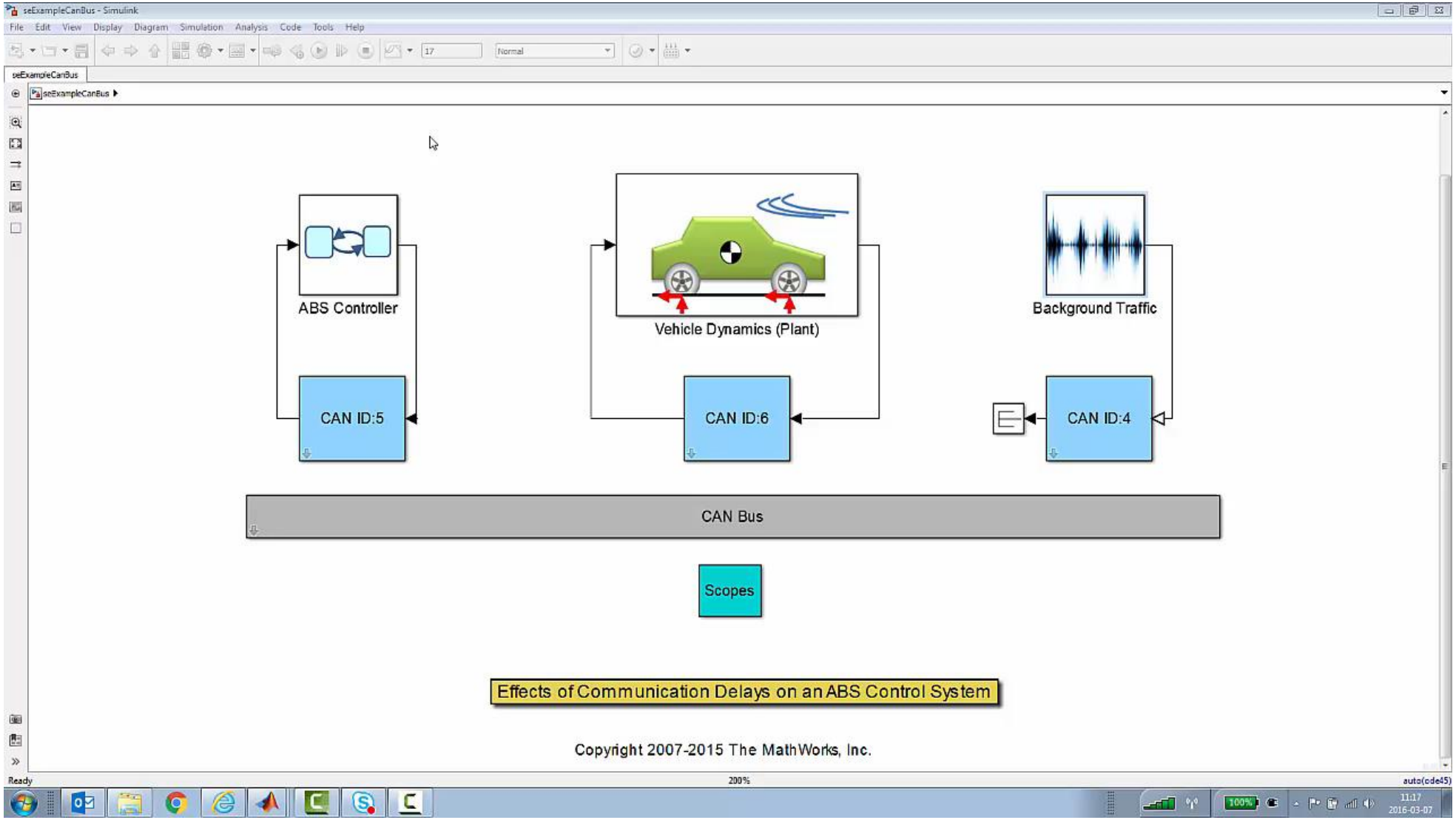
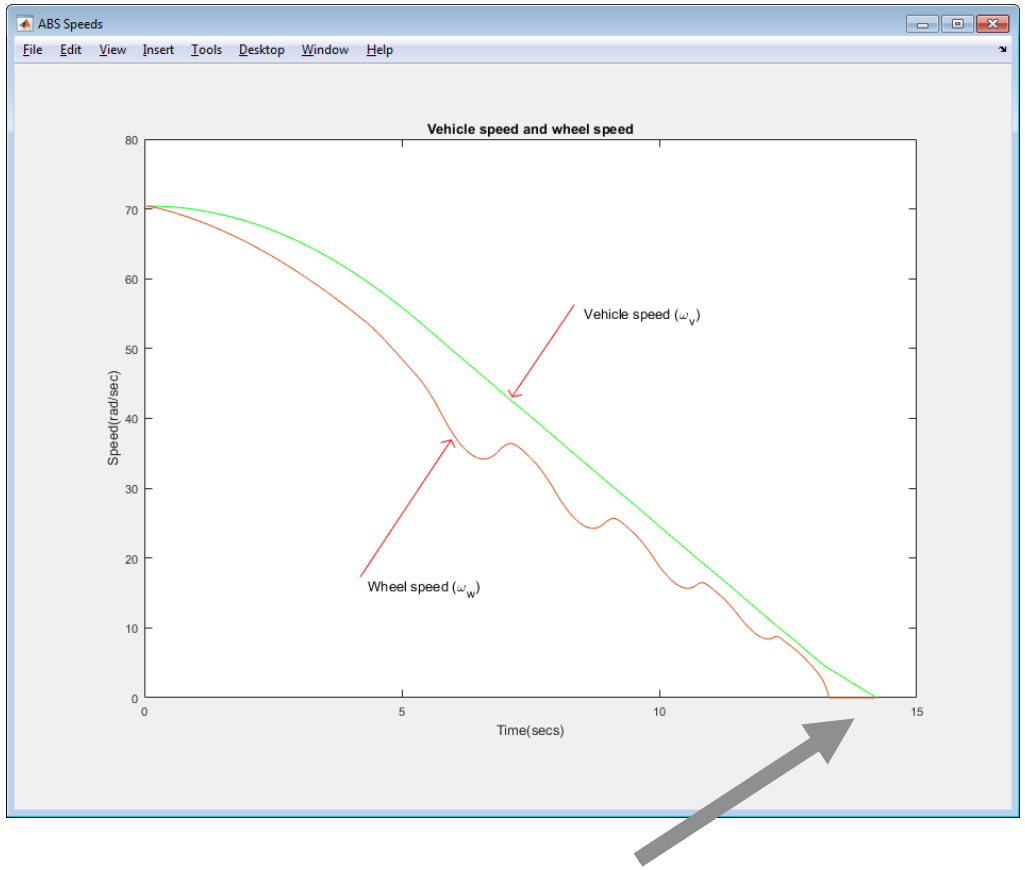


CAN simulation with Simulink and SimEvents



CAN simulation with Simulink and SimEvents

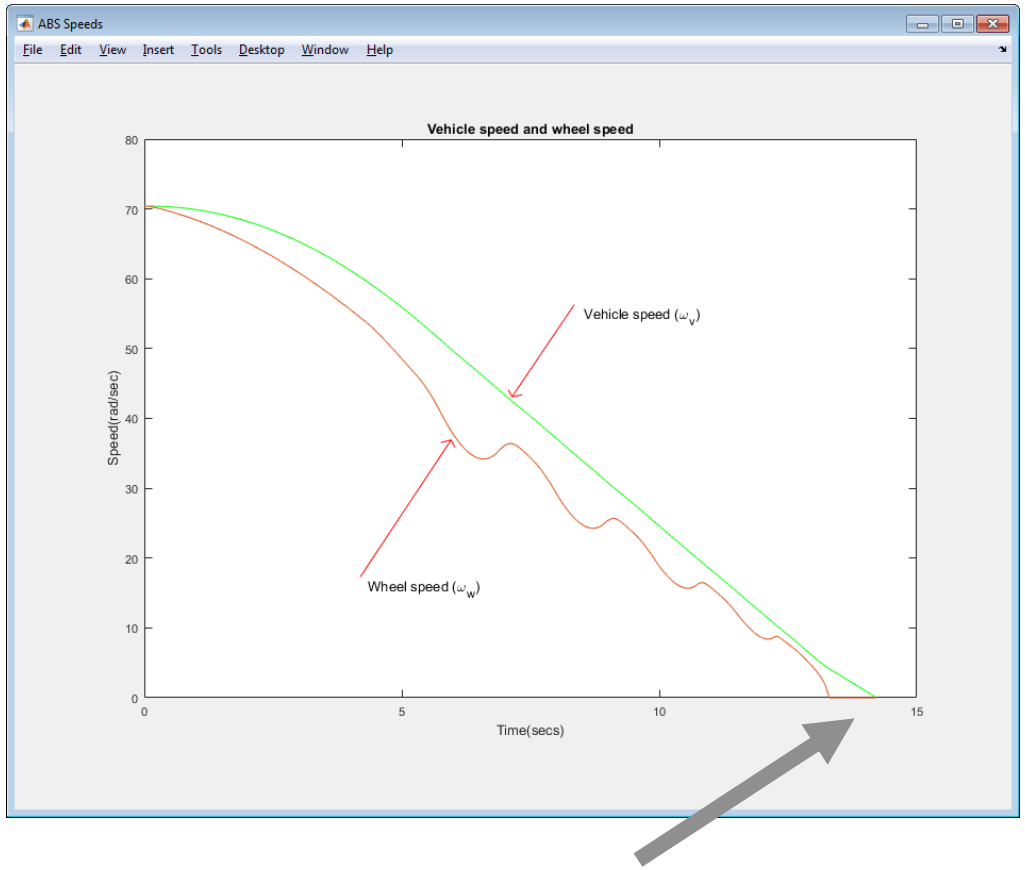
Without background noise



Vehicle stops after 14.2 seconds

CAN simulation with Simulink and SimEvents

Without background noise



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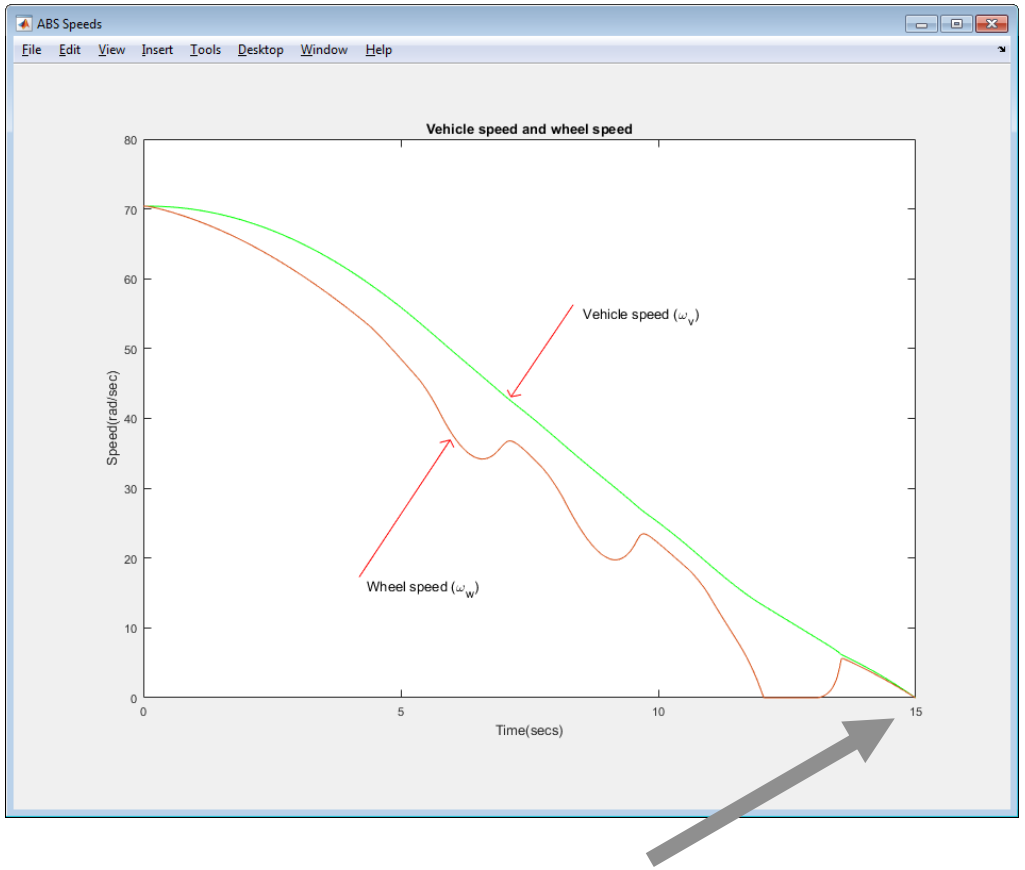
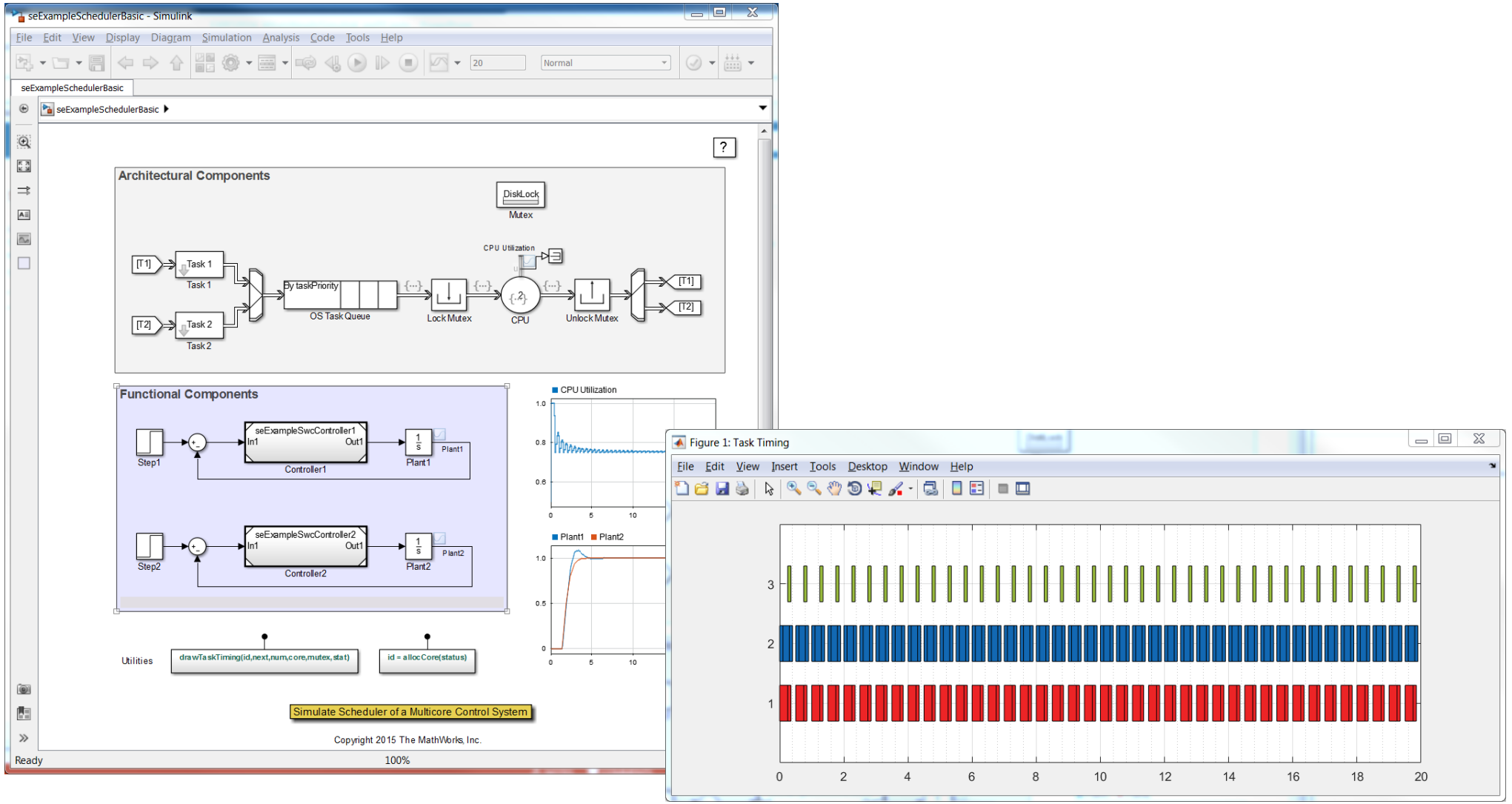
With background noise

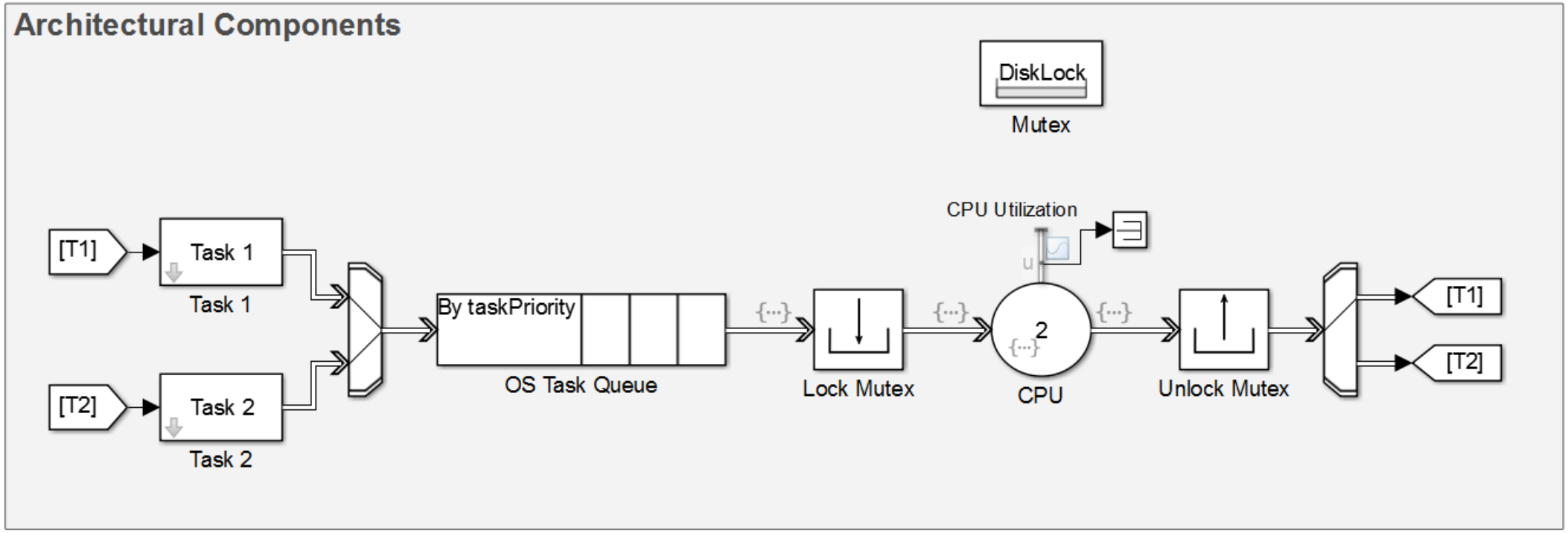


Vehicle stops after 15 seconds

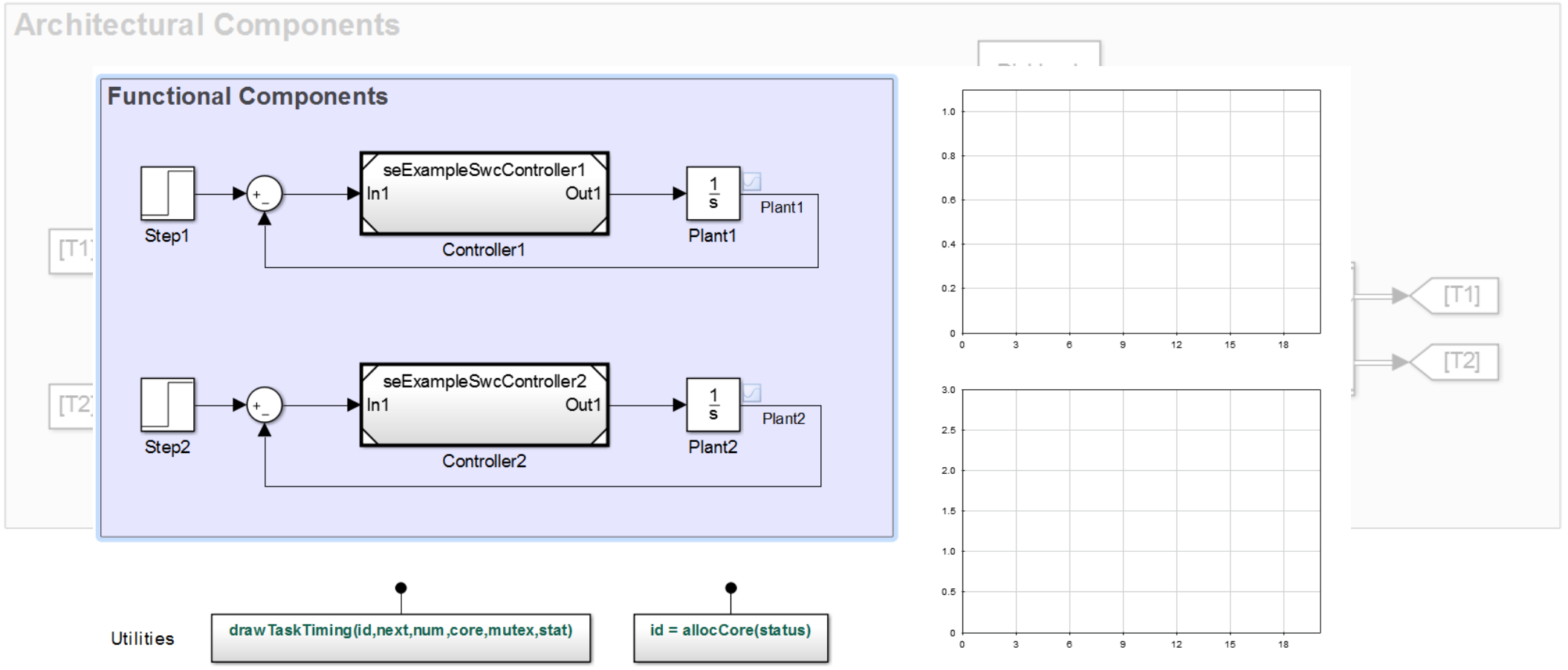
Scheduler Example



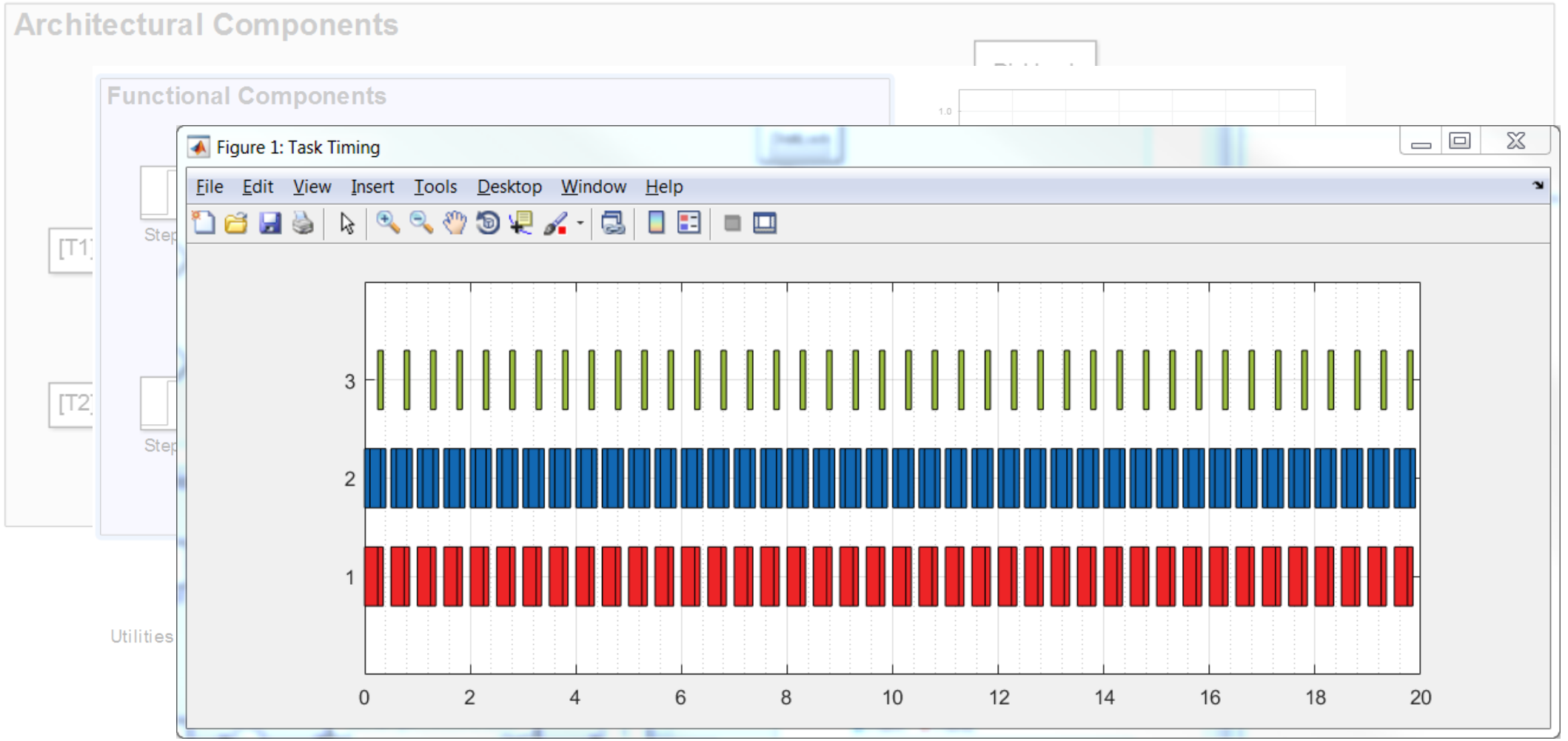
Scheduler Example



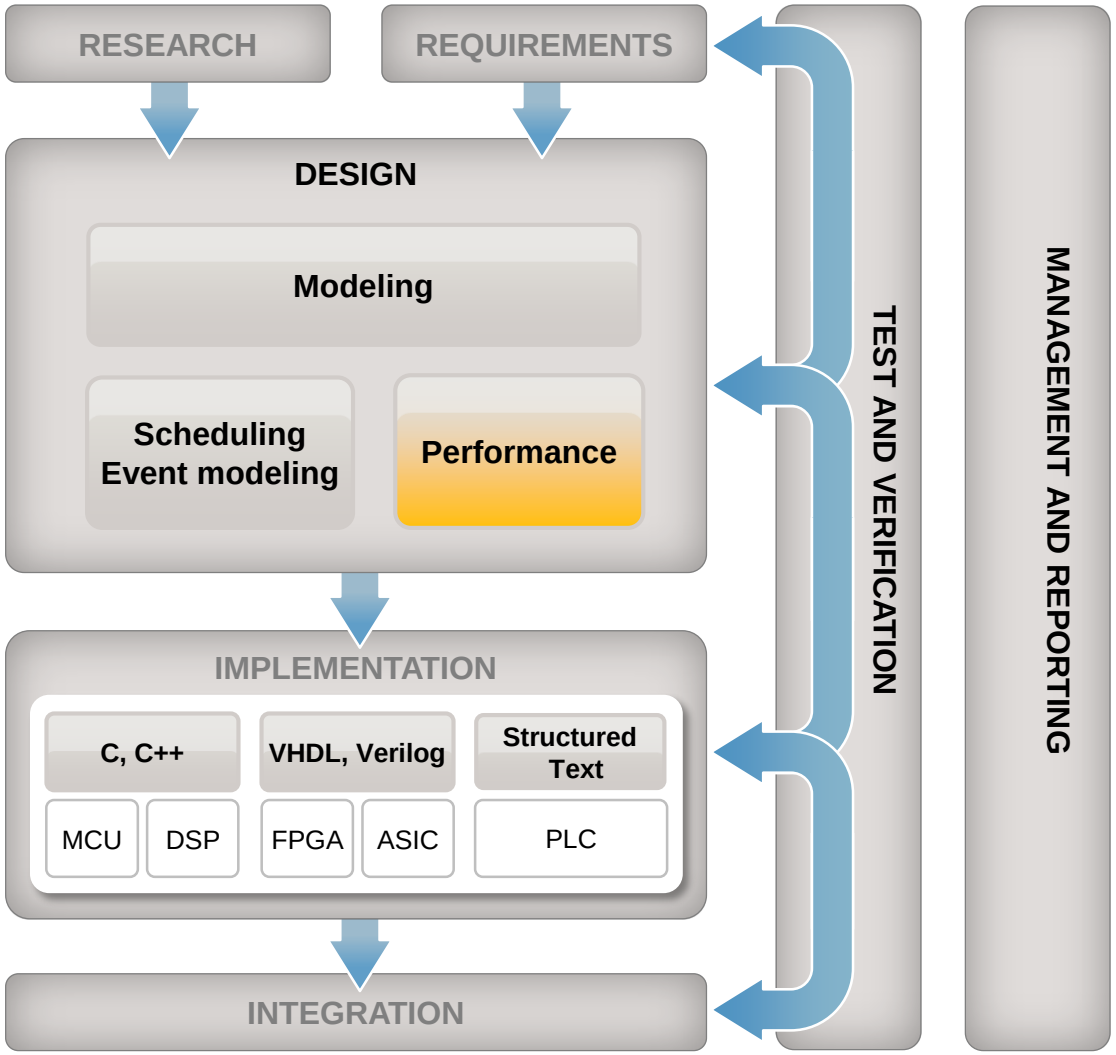
Scheduler Example



Scheduler Example

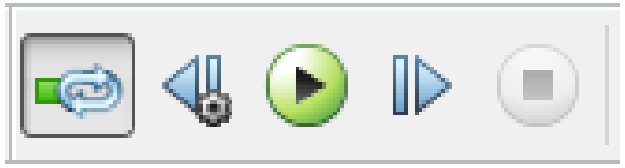


Model-Based Design Workflow



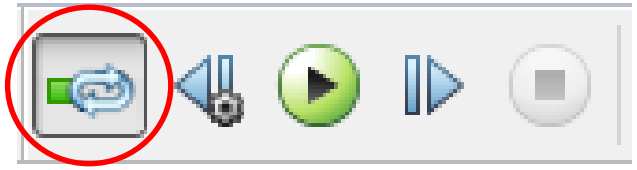
Fast Restart

Run consecutive simulations more quickly



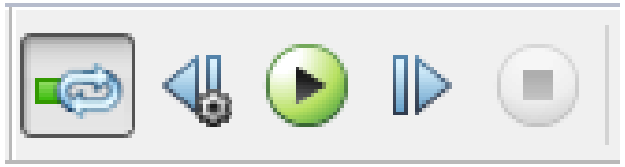
Fast Restart

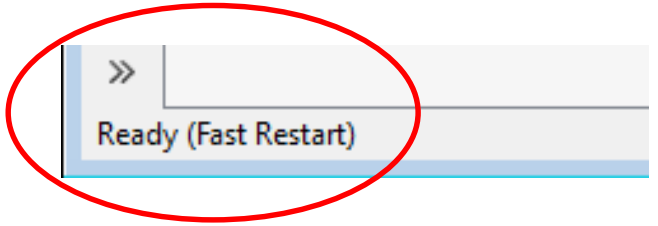
Run consecutive simulations more quickly



Fast Restart

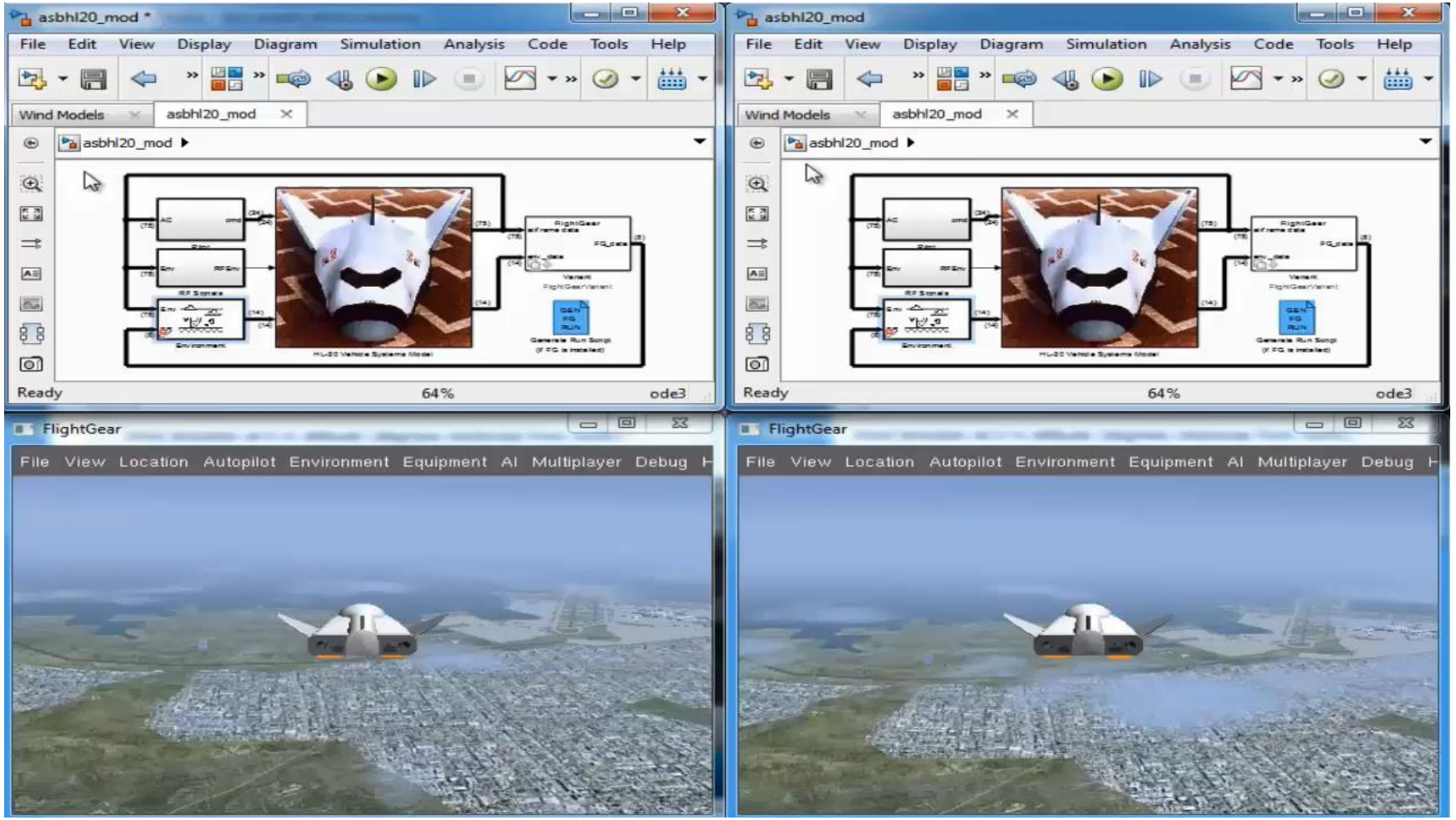
Run consecutive simulations more quickly



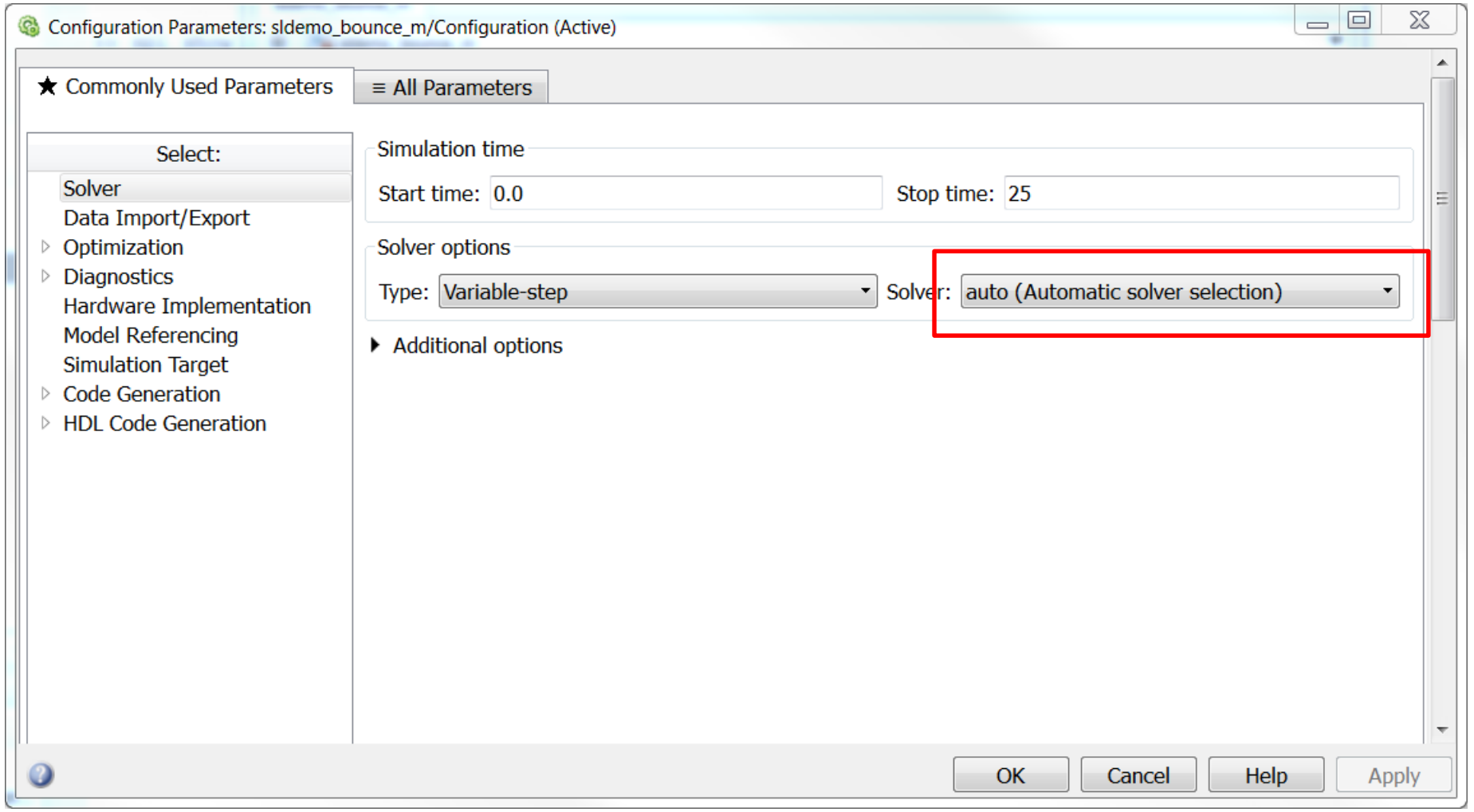


Simulink - Faster consecutive simulations

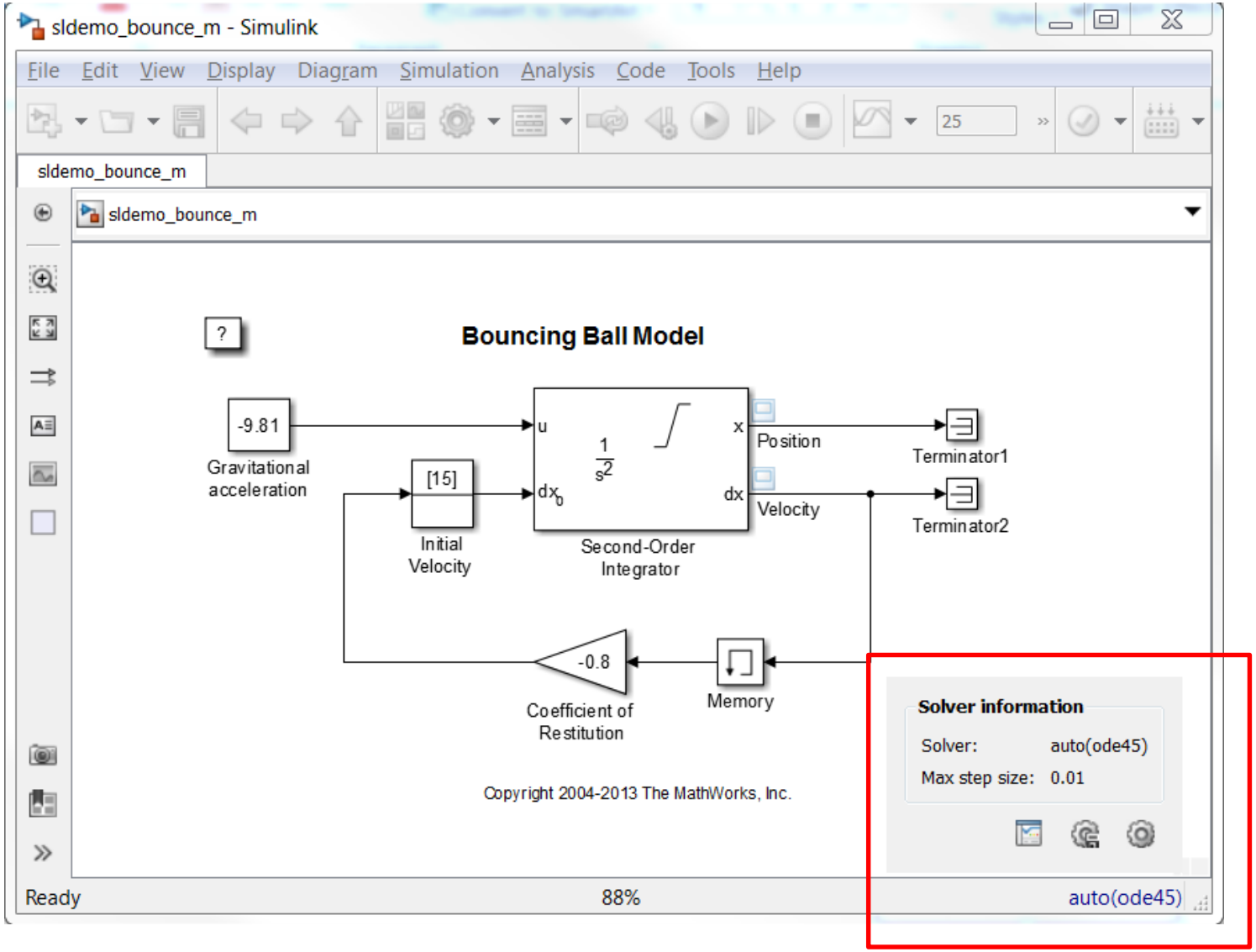
Fast Restart



Automatic Solver Selection



Understanding the selected solver



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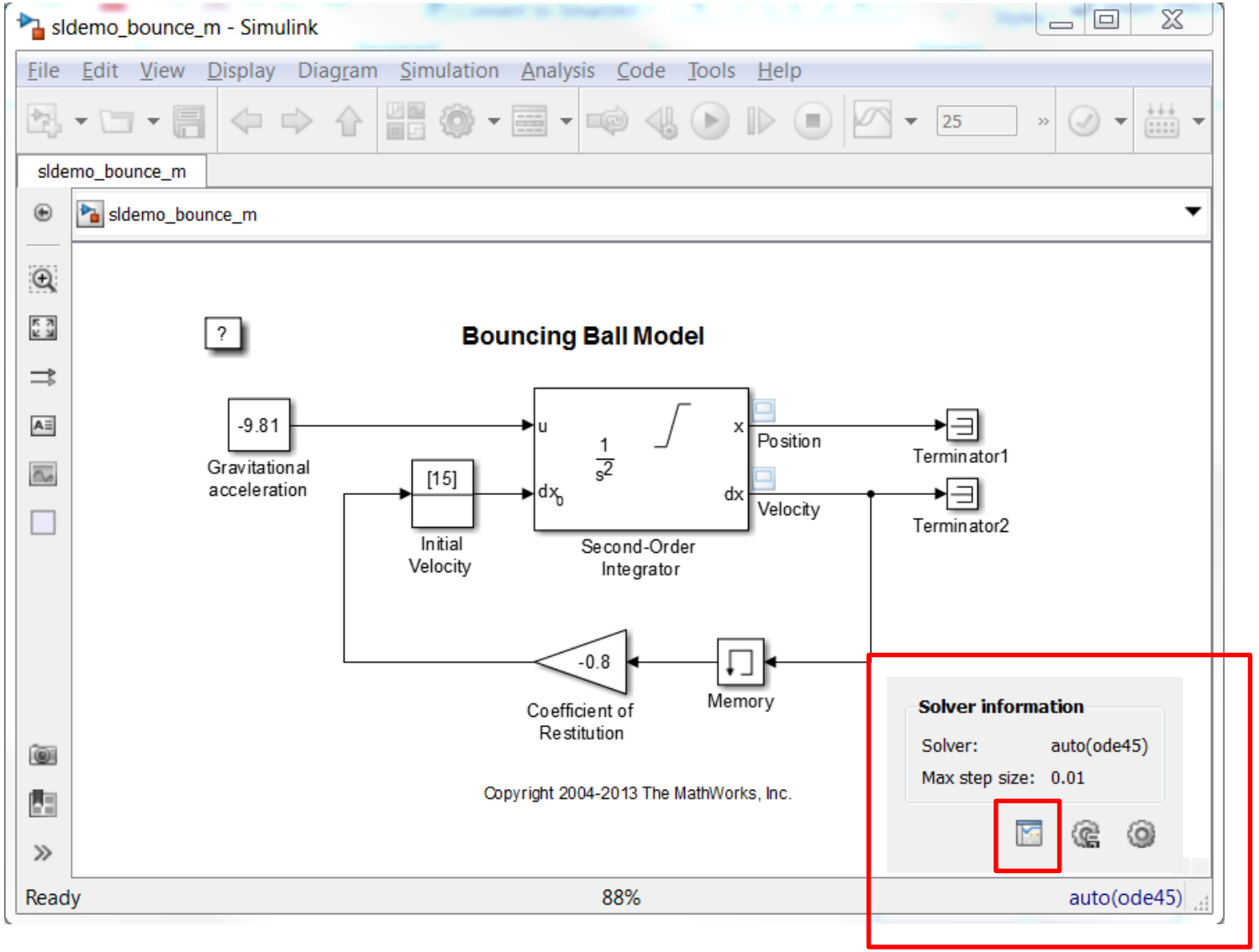
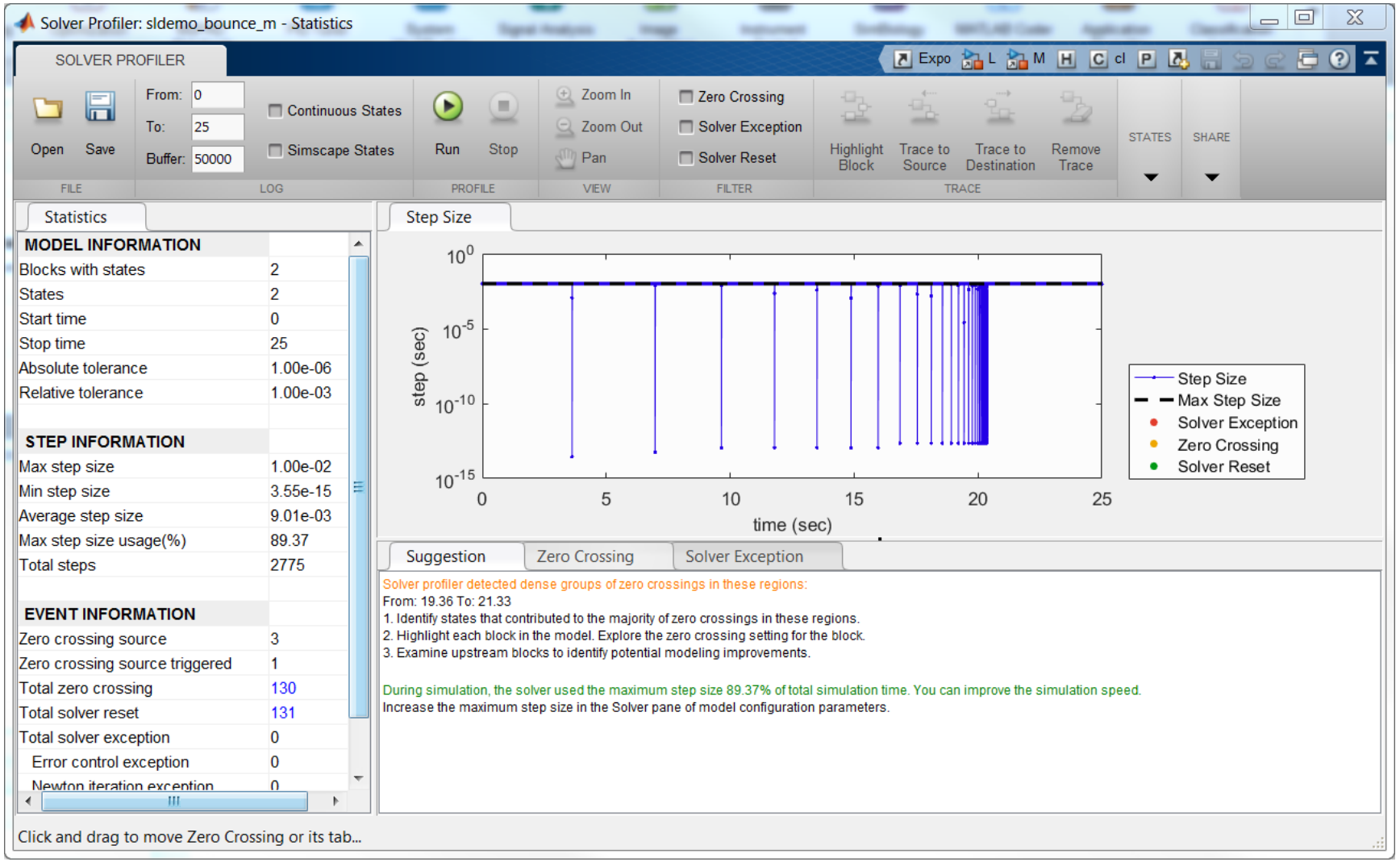
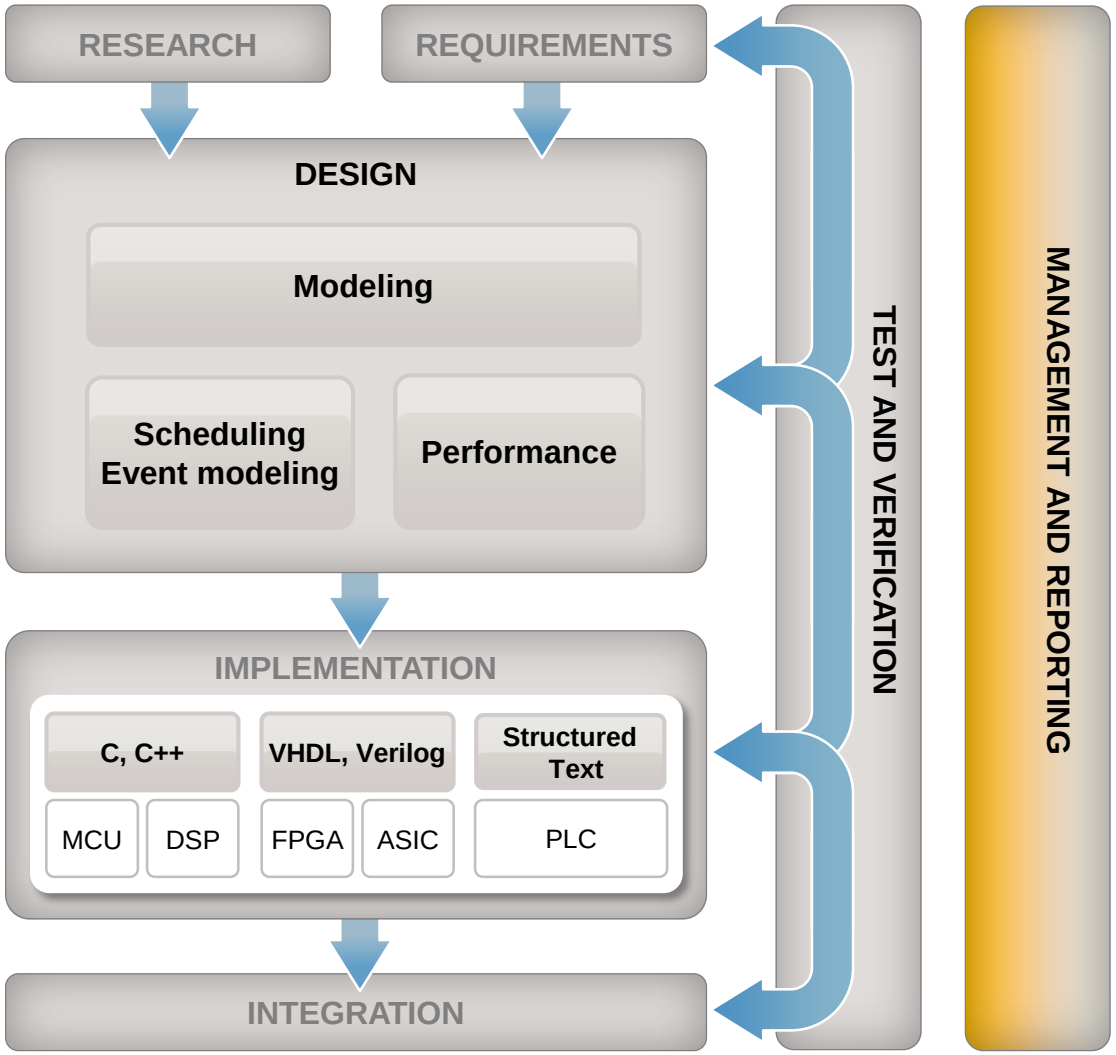


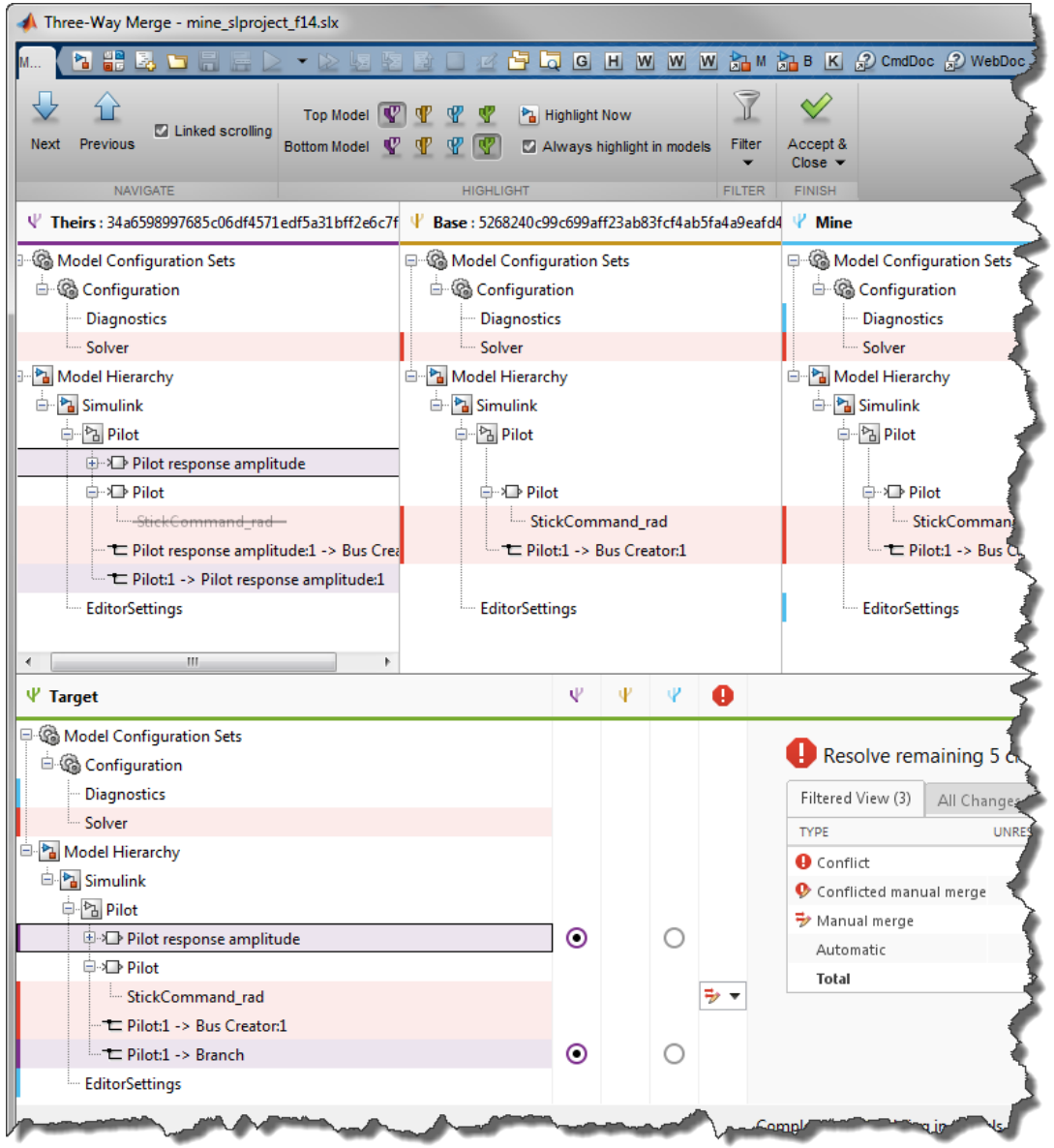
Understanding the selected solver - Solver Profiler



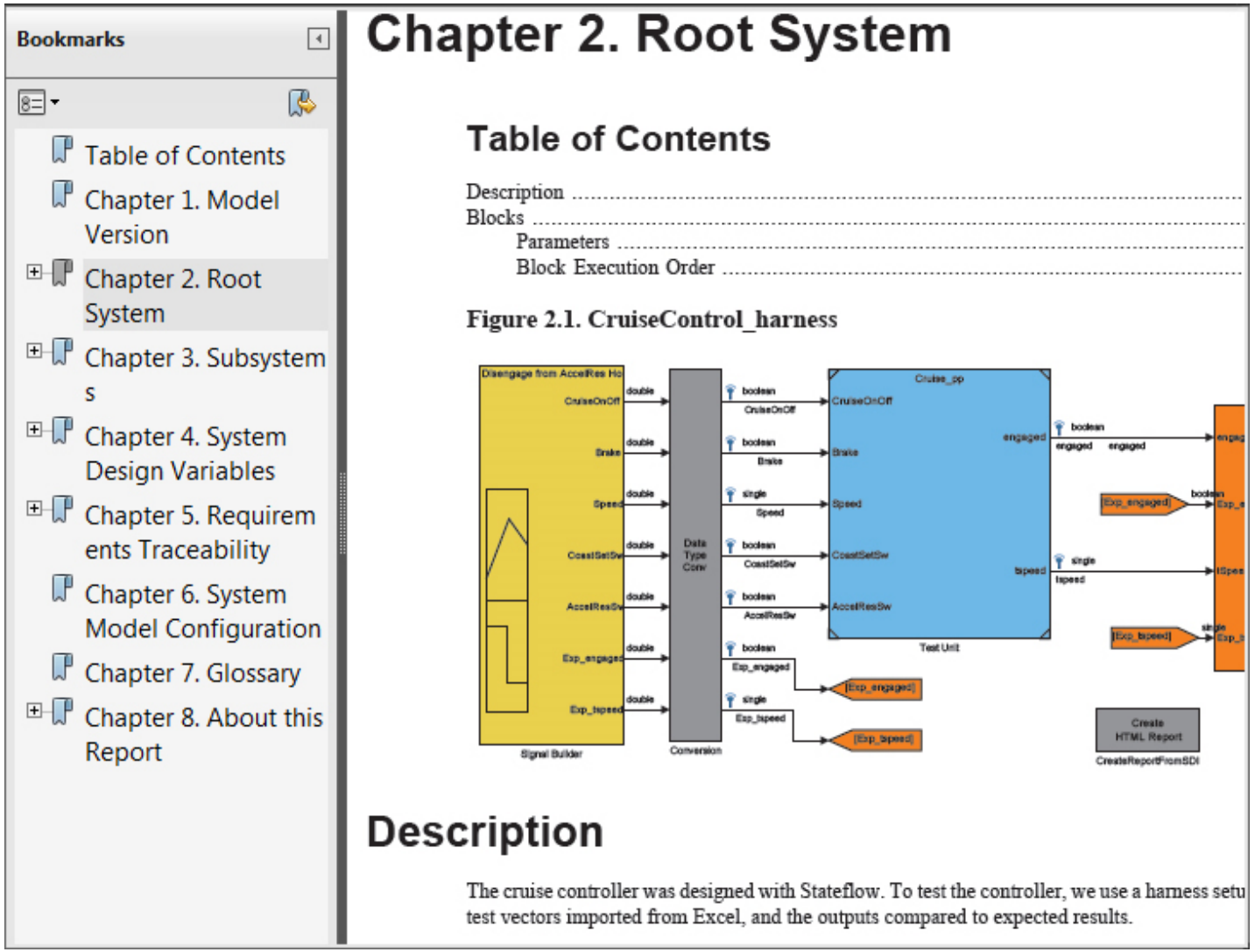
Model-Based Design Workflow



Three-Way Model Merge



Report Generation



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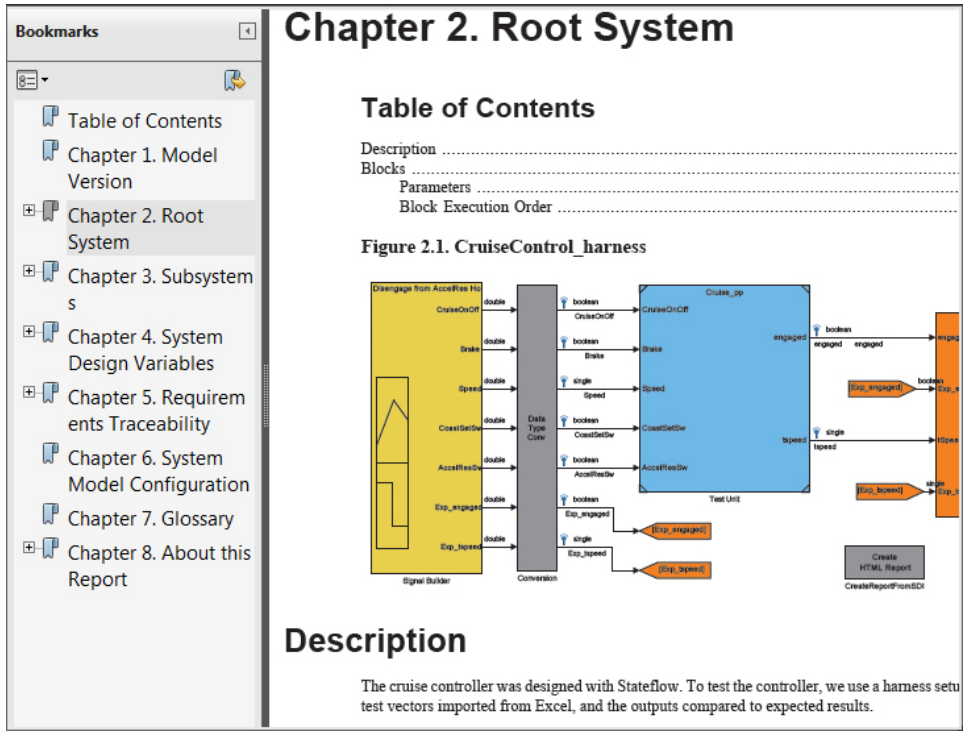

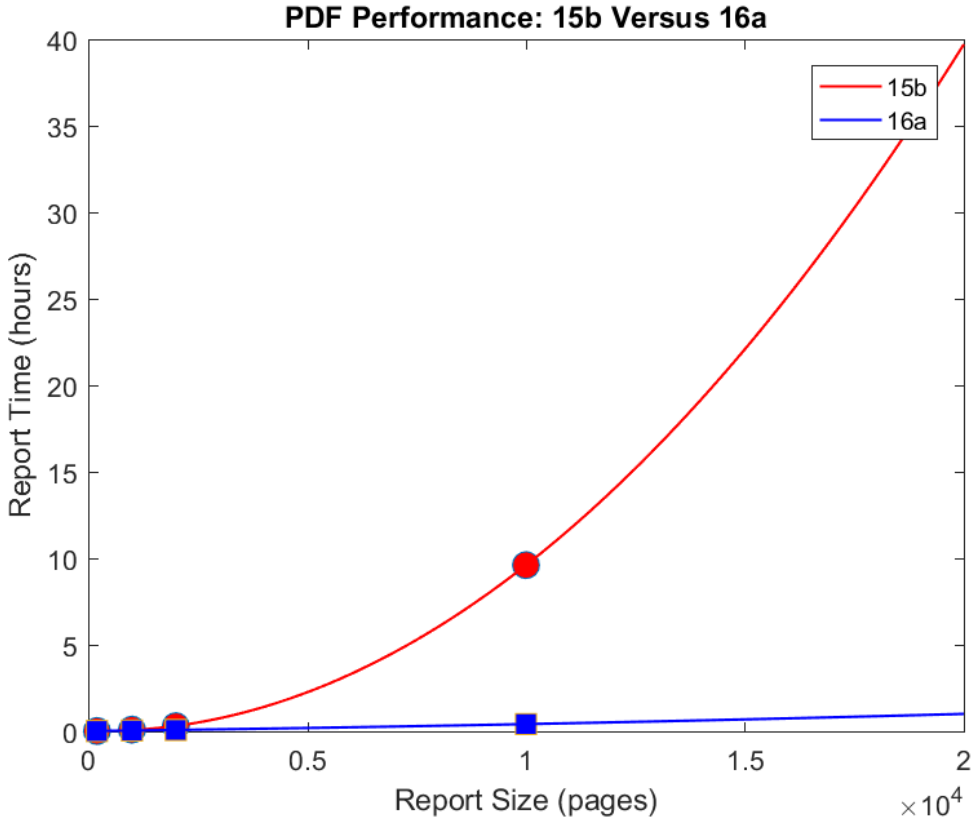

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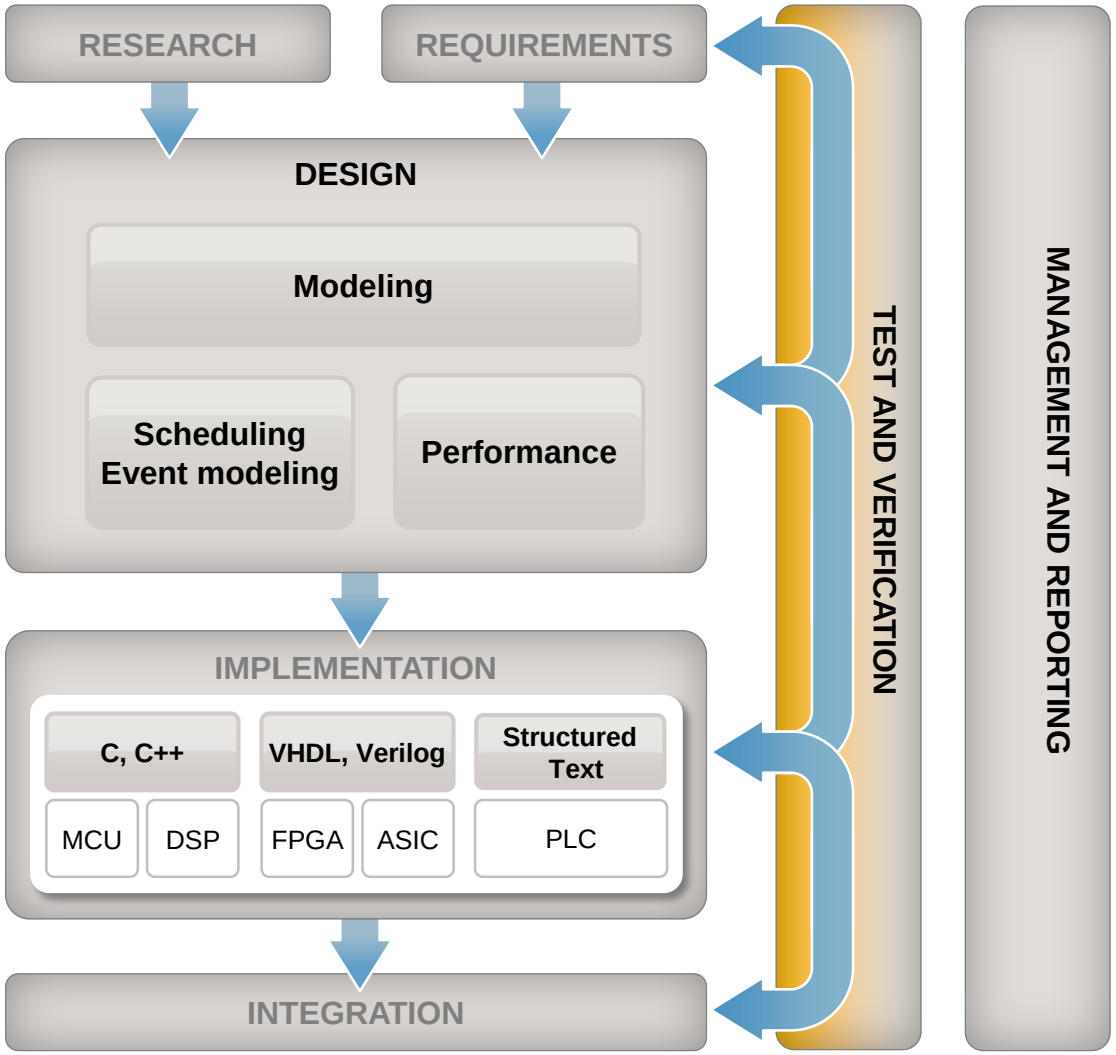
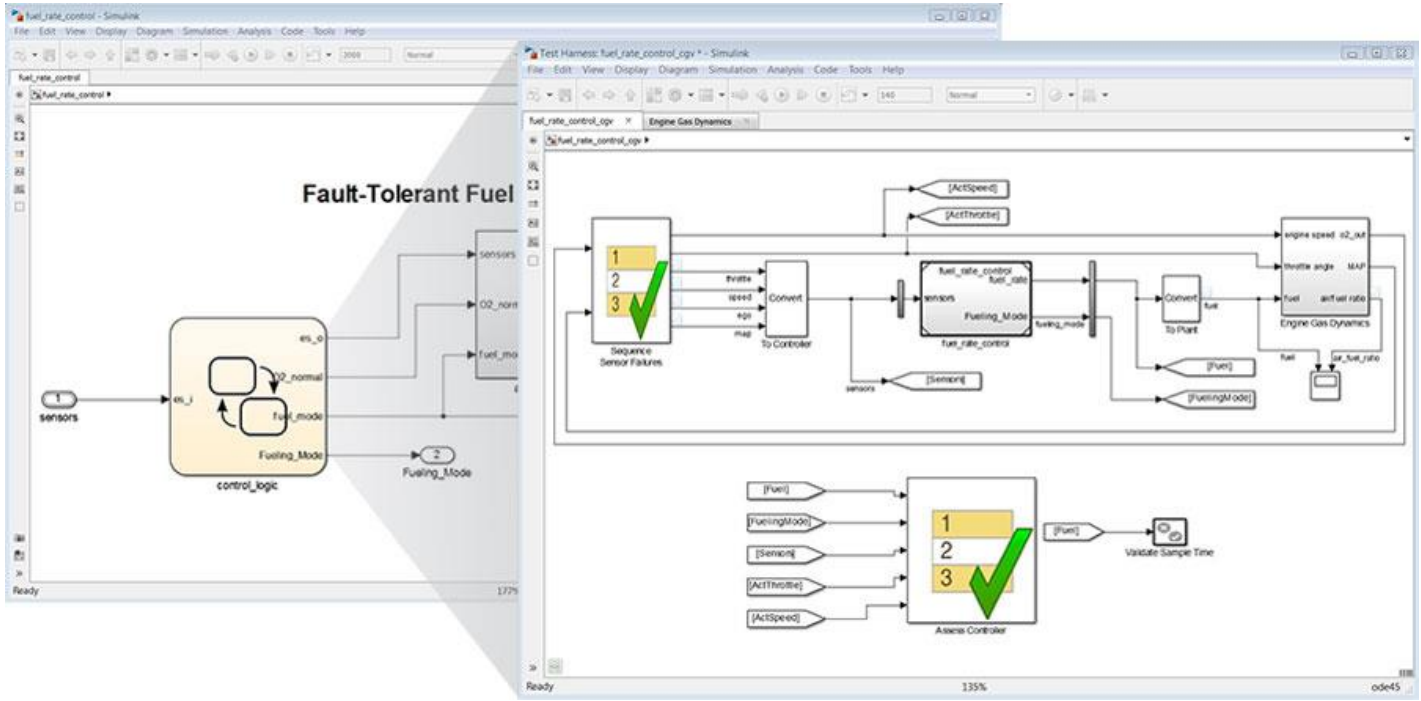
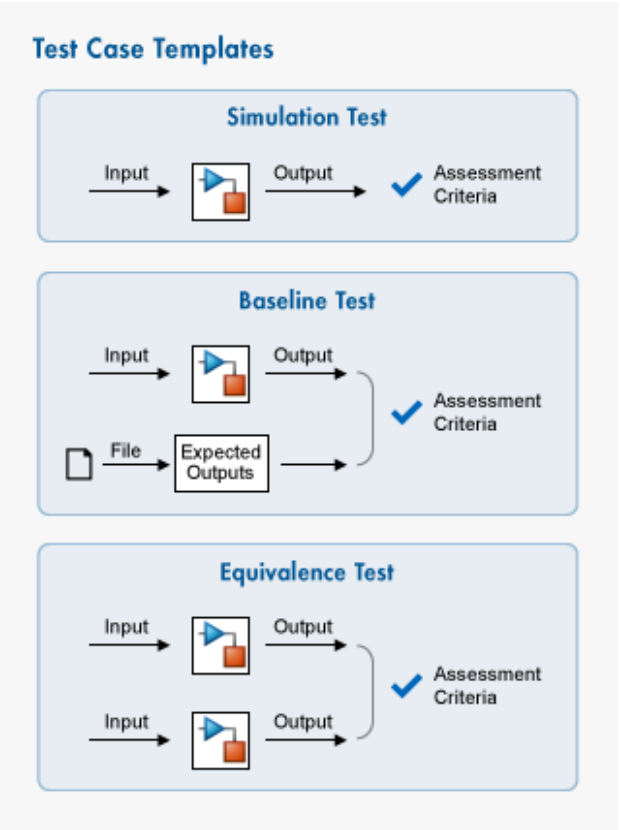


New Product! Simulink Test

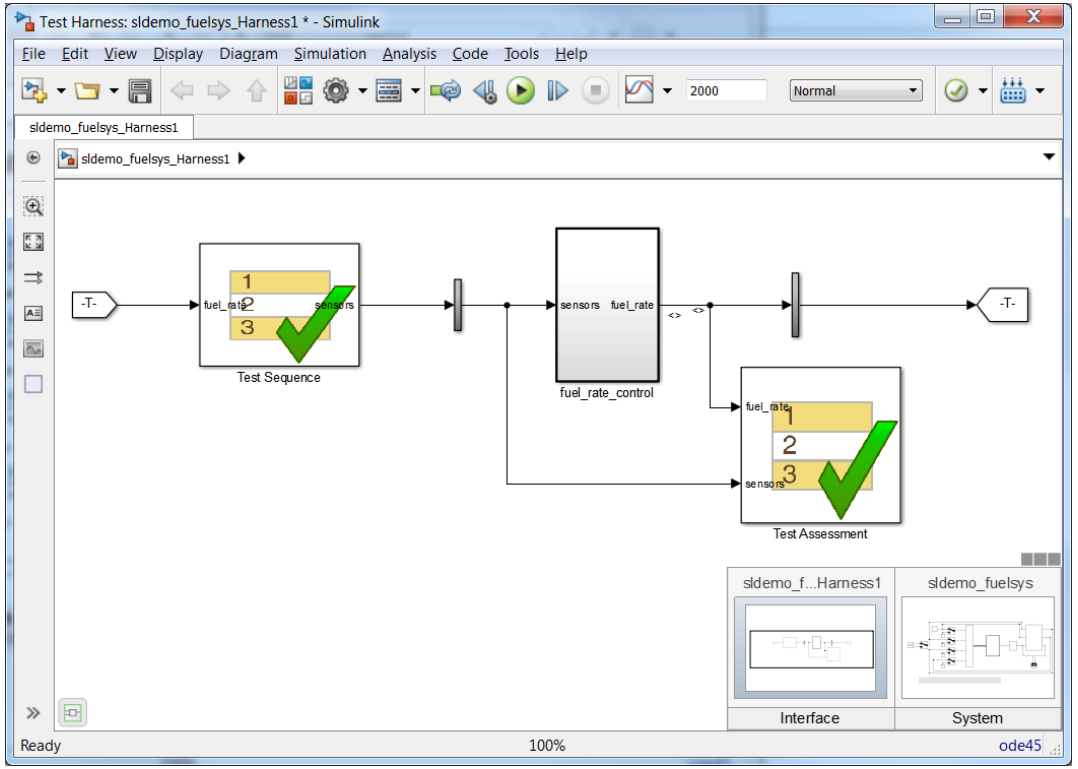
Develop, Manage, and execute simulation-based tests





New Product! Simulink Test

- Automatically generate Test Harness



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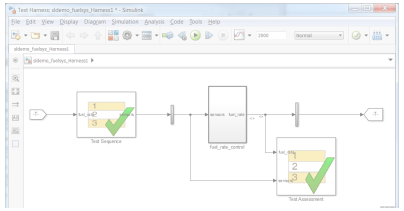
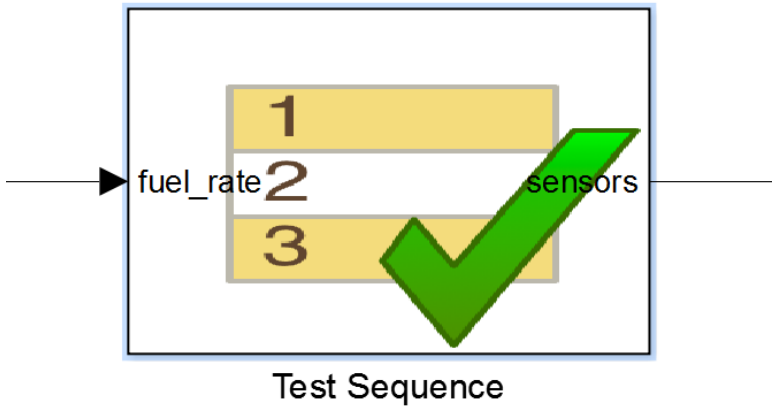


- Test Sequence block

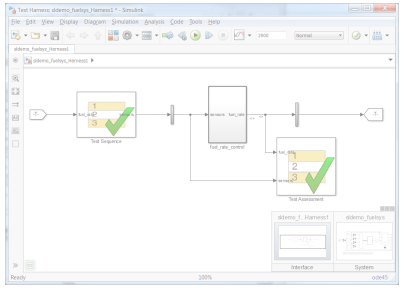


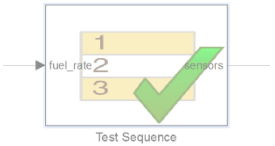
Step	Transition	Next Step
initialize on_off = false; Tproj = single(0);	1. true	Normal_on_off
Normal_on_off end_test = 0;		
On on_off = true;	1. FanOn == true	Wait
Wait on_off = false; verify(FanOn == true,... 'Simulink:verify_scenario1',... 'Fan should be active');	1. after(20,sec)	Off
Off on_off = true;	1. FanOn == false	End

End
on_off = false;
end_test = 1;		

New Product! Simulink Test

- Automatically generate Test Harness
- Create Test Sequences
- Manage and Reporting





Test Sequence

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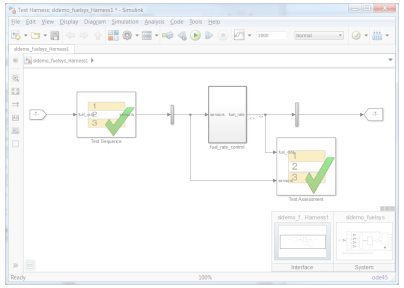
Off on_off = true;	1. FanOn == false	End

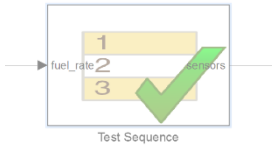
End
on_off = false;
end_test = 1;		

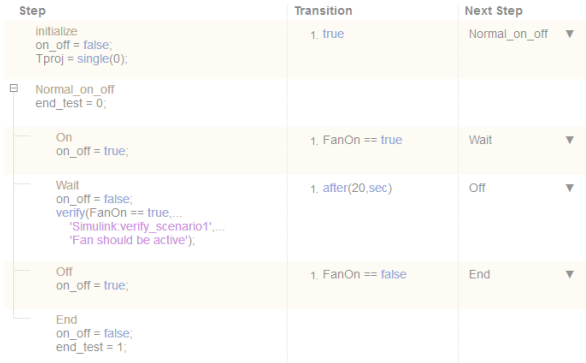
NAME	STATUS
Results : 2014-Dec-10 10:41:08	1 1
Test File	1 1
Test Suite	1 1
Baseline Test Case	
Baseline Criteria Result	

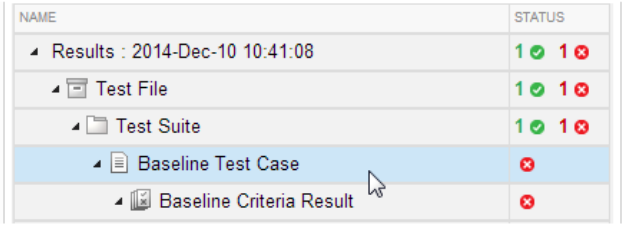
New Product! Simulink Test

- Automatically generate Test Harness
- Create Test Sequences
- Manage and Reporting



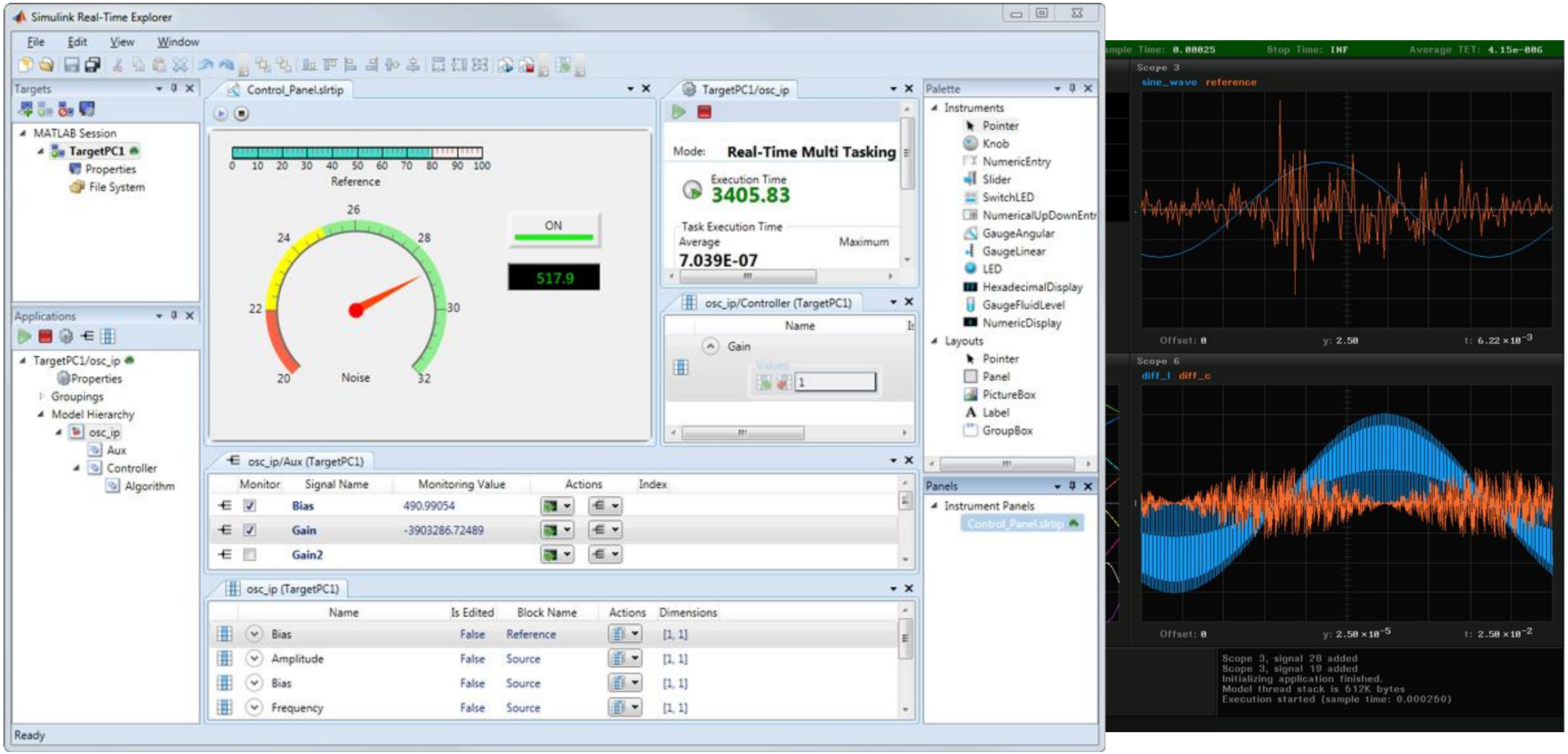




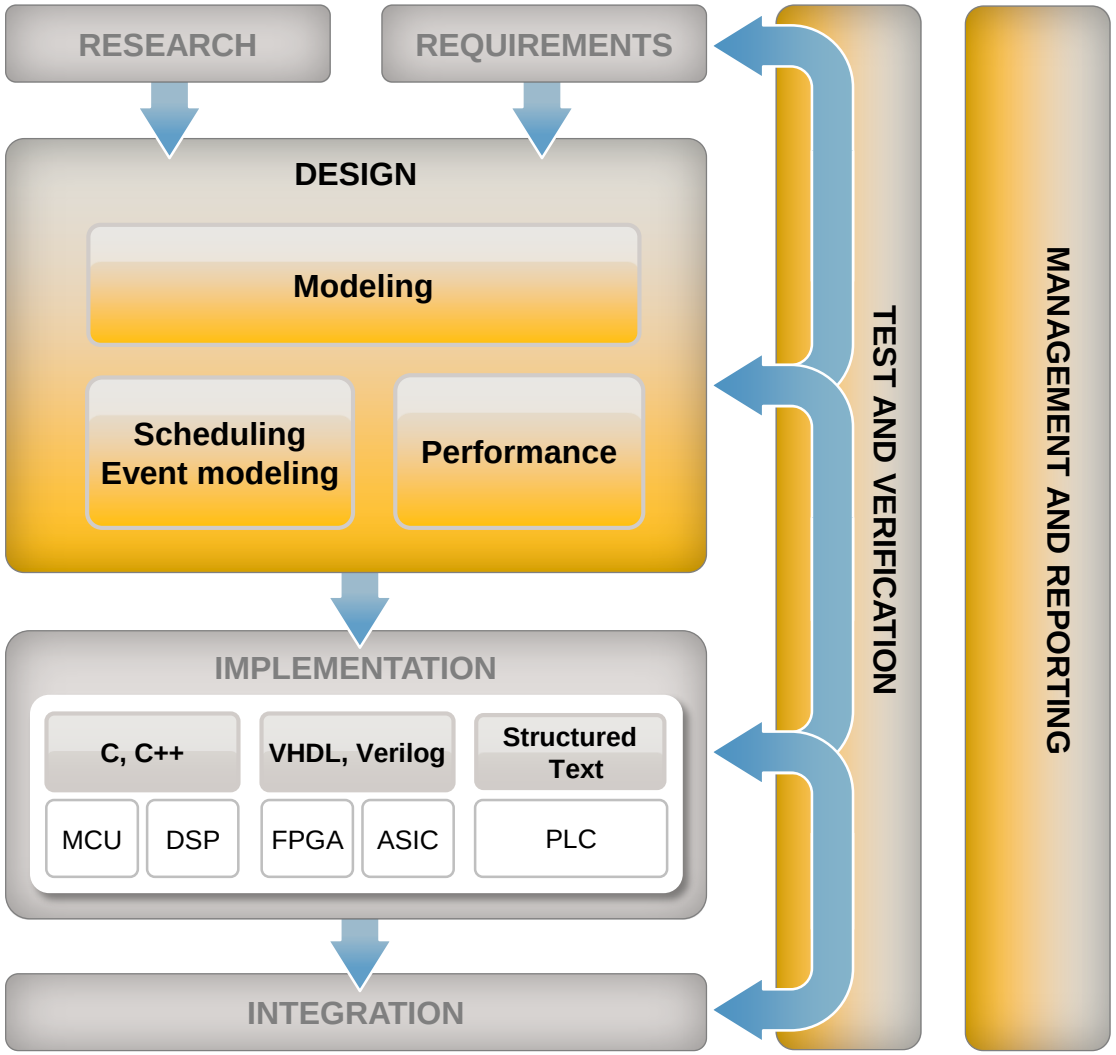


Real-Time testing with Simulink Real-Time

Real-Time testing with Simulink Real-Time



Model-Based Design Workflow



Questions!

Thanks!