

Latest Features in Embedded Coder

September 2016



Cross-Release Code Integration

Model code generated from earlier releases

- Model code that you generated from previous releases (R2010a and later)
- Avoid reverification cost due to the reuse of unmodified code

```
void AutonomousSystem_step(void)
{
    Sensor_SFcn( ... )      /* R2015b */
    Guidance( ... )          /* R2016b */
    Autopilot_SFcn( ... )    /* R2013a */
}
```

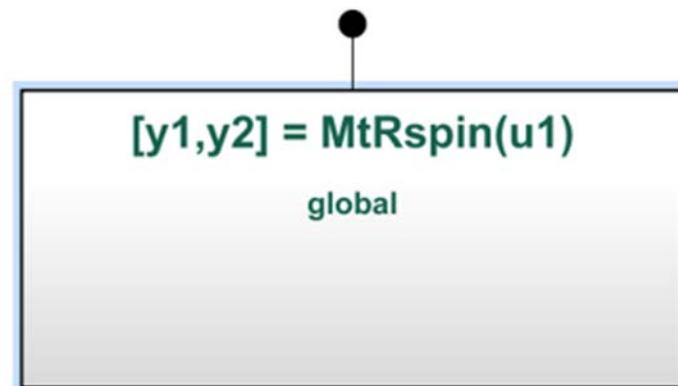


Simulink Function Code Interface

Configure generated C/C++ function interfaces for Simulink Function and Function Caller blocks

- Easier integration of generated code with function calls in external code and customizations for coding standards or design requirements

```
real_T MtRspin(const real_T *rtu_u1, real_T *rty_y2)
```

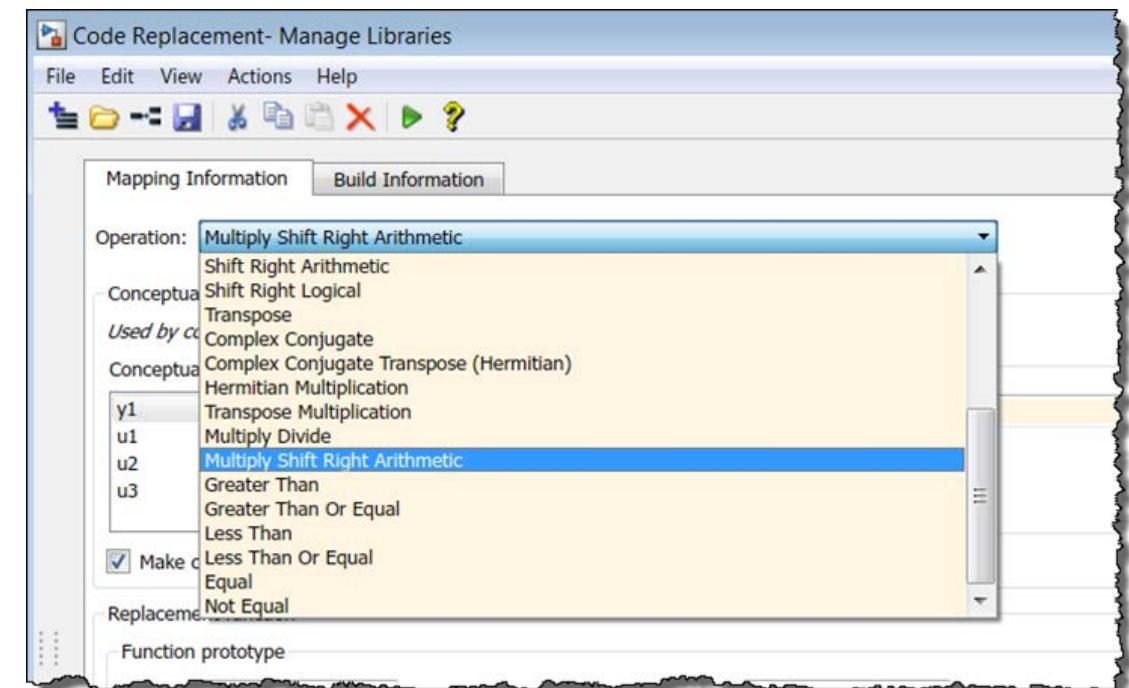


Simulink Function

Compound Operation Code Replacement

Replace with a single custom operation

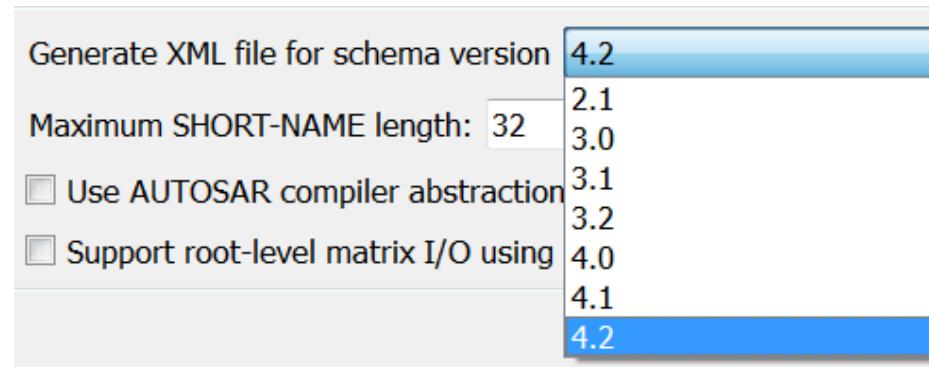
- Single operation replacement of scalar multiplication followed by
 - a shift/right arithmetic operation (RTW_OP_MUL_SRA)
 - a division operation (RTW_OP_MULDIV)



Support for AUTOSAR Schema Versions 3.2.2 and 4.2.2

Seamless support for AUTOSAR releases

- Import detects AUTOSAR 2.x – 4.x release from arxml file
- User selects AUTOSAR release from configuration set options for code generation and arxml export

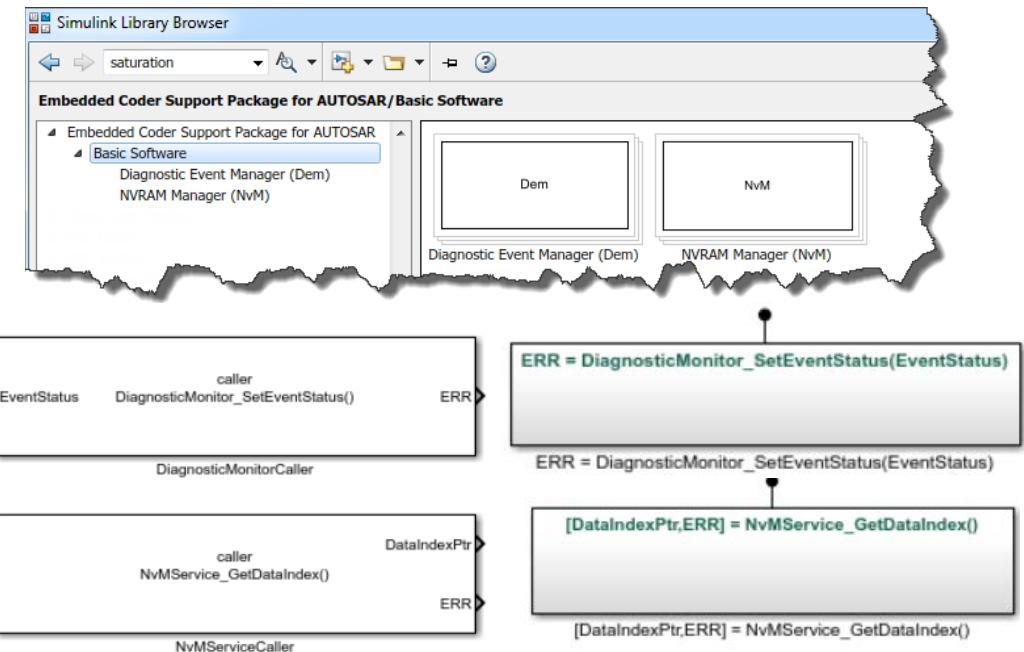


MATLAB Release	AUTOSAR Release
R2015b/R2016a/R2016b	2.1, 3.0, 3.1, <u>3.2</u> (Rev 3.2.2), 4.0, 4.1, <u>4.2</u> (Rev 4.2.1, 4.2.2)
R2014b, R2015a	2.1, 3.0, 3.1, 3.2, 4.0, <u>4.1</u> (Rev 4.1.1)
R2012a/b, R2013a/b, R2014a	2.1, 3.0, 3.1, 3.2, <u>4.0</u> (Rev 4.0.2)
R2011b	2.0, 2.1, 3.0, 3.1, 3.2
R2010a/b, R2011a	2.0, 2.1, 3.0, 3.1
R2009a/b	2.0, 2.1, 3.0
R2008a/b	2.0, 2.1

AUTOSAR Basic Software (BSW) Block Library

Simulate BSW including Diagnostic Event Manager (DEM) and NVRAM Manager (NvM)

- Out-of-the box solution for calls to AUTOSAR BSW services
 - Drag and drop DEM/NvM blocks for basic software simulation
 - Everything is preconfigured



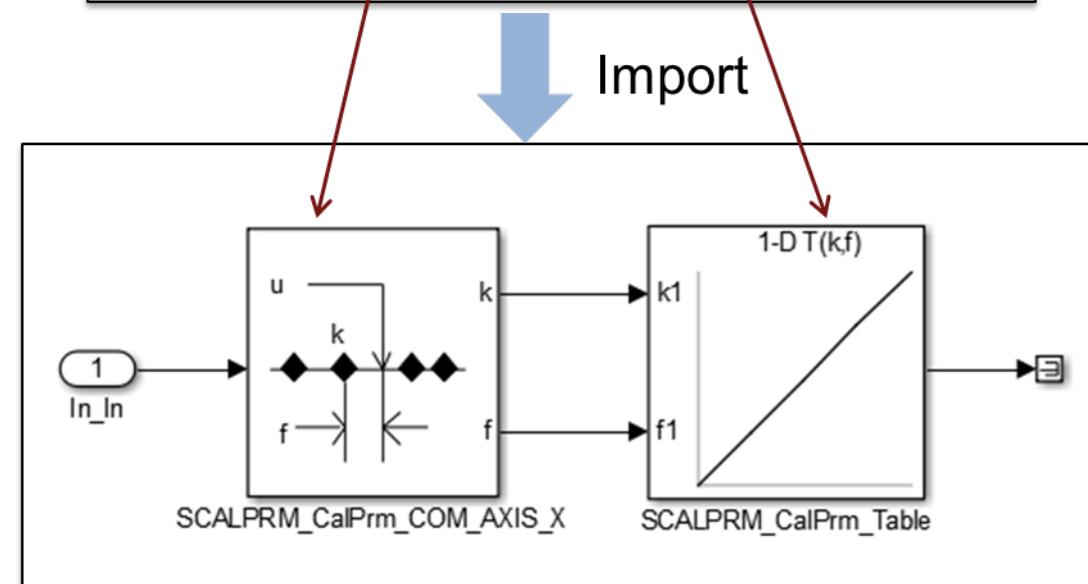
» `rtwdemo_autosar_nvm_emulation`

Lookup Table Import Enhancements

Support round-trip workflows by importing lookup tables

- Importer configures Lookup Table blocks with new classes
 - Simulink.LookupTable
 - Simulink.Breakpoint
- Supports integrated (STD_AXIS) and distributed(COM_AXIS) lookups

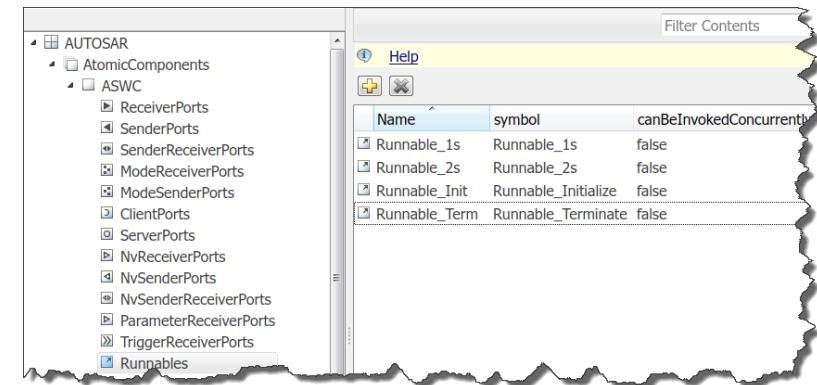
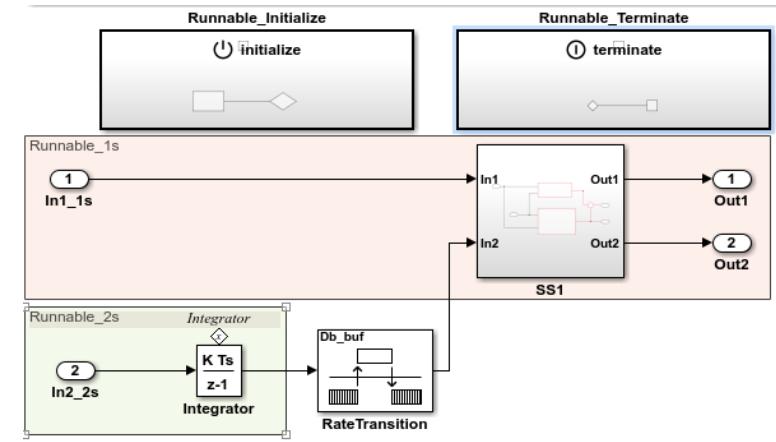
```
<SHARED-PARAMETERS>
  <PARAMETER-DATA-PROTOTYPE>
    <SHORT-NAME>CalPrm_COM_AXIS_X</SHORT-NAME>
    <CATEGORY>COM_AXIS</CATEGORY>
    ...
  </PARAMETER-DATA-PROTOTYPE>
  <PARAMETER-DATA-PROTOTYPE>
    <SHORT-NAME>CalPrm_Table</SHORT-NAME>
    <CATEGORY>CURVE</CATEGORY>
    ...
  </PARAMETER-DATA-PROTOTYPE>
</SHARED-PARAMETERS>
```



AUTOSAR Startup, Reset, and Shutdown Modeling

New Simulink blocks for Initialize and Terminate function

- You can map each Simulink initialize, reset, or terminate entry-point function to an AUTOSAR runnable
- All modeling styles are supported



Embedded Coder Support for STM32F746G Discovery Board

Generate optimized code for STM32F746G discovery board

- Provides blocks for audio I/O, analog input, PWM output, SPI master transfer, SPIL read/write, digital read/write, PWM output, I2C master read/write

