

RL78/F24

Motor Control IP BlockSet

(UNDER DEVELOPMENT)

07/2023

HIGH PERFORMANCE COMPUTING, ANALOG AND
POWER SOLUTIONS GROUP

REV. 1.0

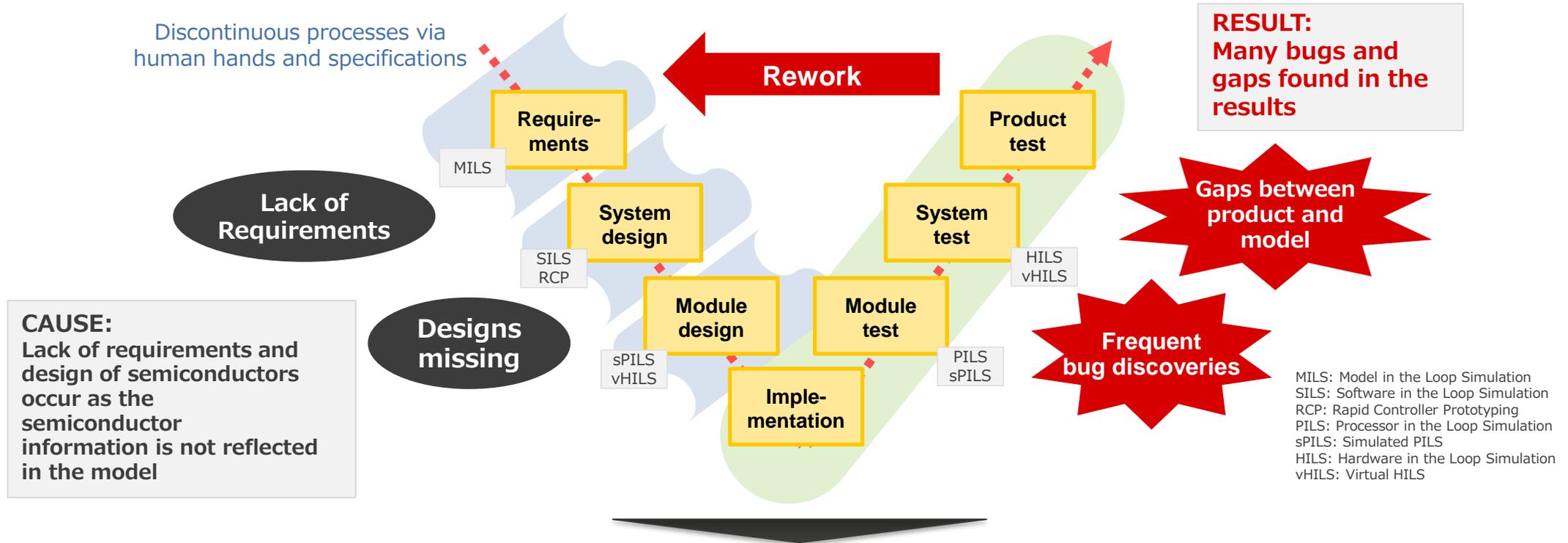
RENESAS ELECTRONICS

This material includes information under development and consideration.
The information on this material is subject to change without notice.
This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior consent of the issuer.

MATLAB®, Simulink® are trademarks or registered trademarks of The MathWorks, Inc.

ISSUES REGARDING V-MODEL FOR MANUFACTURING

On the left side of the V-model, information on semiconductor assets are not used. Therefore, frequent bugs and gaps will be discovered on the right side of the V-model



Apply information on semiconductor(*) to the left side of the V-model and solve issues

*) Function and performance of IP, Software execution time.

RENESAS MODEL BASED DEVELOPMENT SOLUTION

Design process utilizing MBD methodology is getting attention to improve efficiency.

Renesas MBD Solution

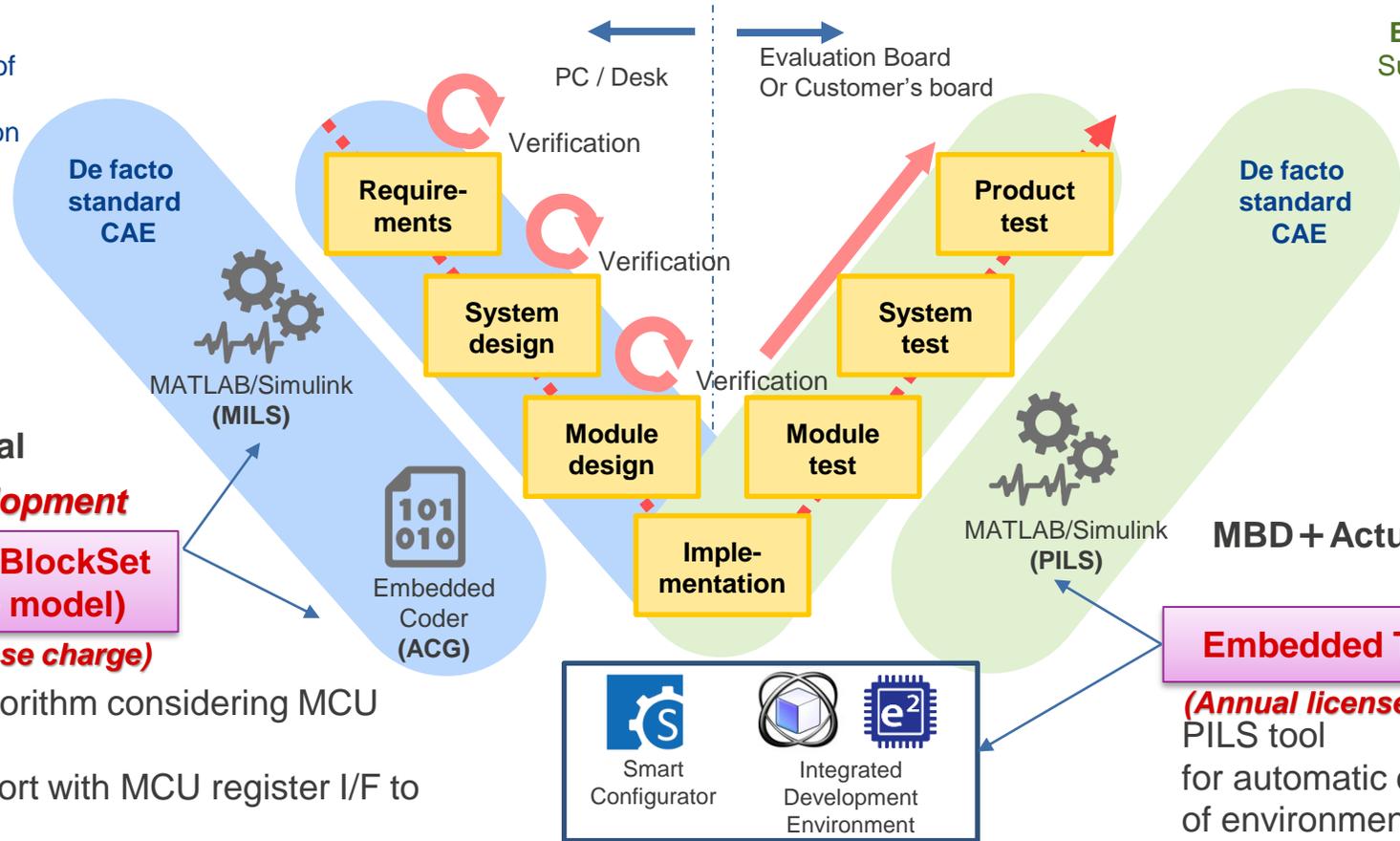
IP BlockSet:
Implementation of Genuine MCU peripheral function

Embedded Target:
Support verification of CPU performance/real world

MBD New proposal
Under Development
Renesas IP BlockSet (Hardware model)
(Annual license charge)

Embedded Target
(Annual license charge)
PILS tool for automatic configuration of environments

- Developing control algorithm considering MCU behavior
- Generating code support with MCU register I/F to build the program



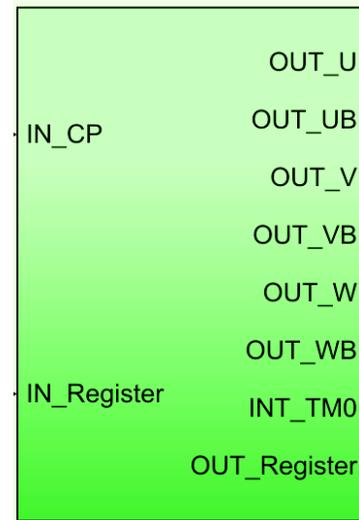
MODEL BASED DEVELOPMENT SOLUTION USING THE ACCURATE SEMICONDUCTOR MODEL

CONCEPT OF RL78/F24 IP BlockSet

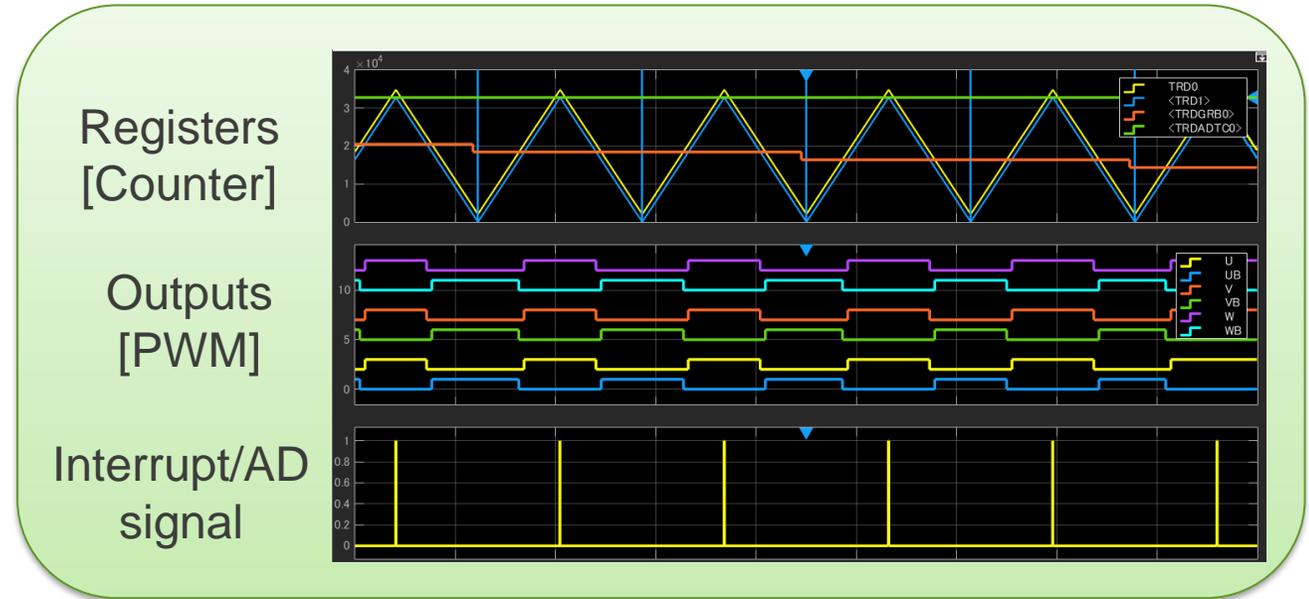
Offer the Simulink® model with the same functional behavior of target MCU



Renesas
Internal
Design
Information



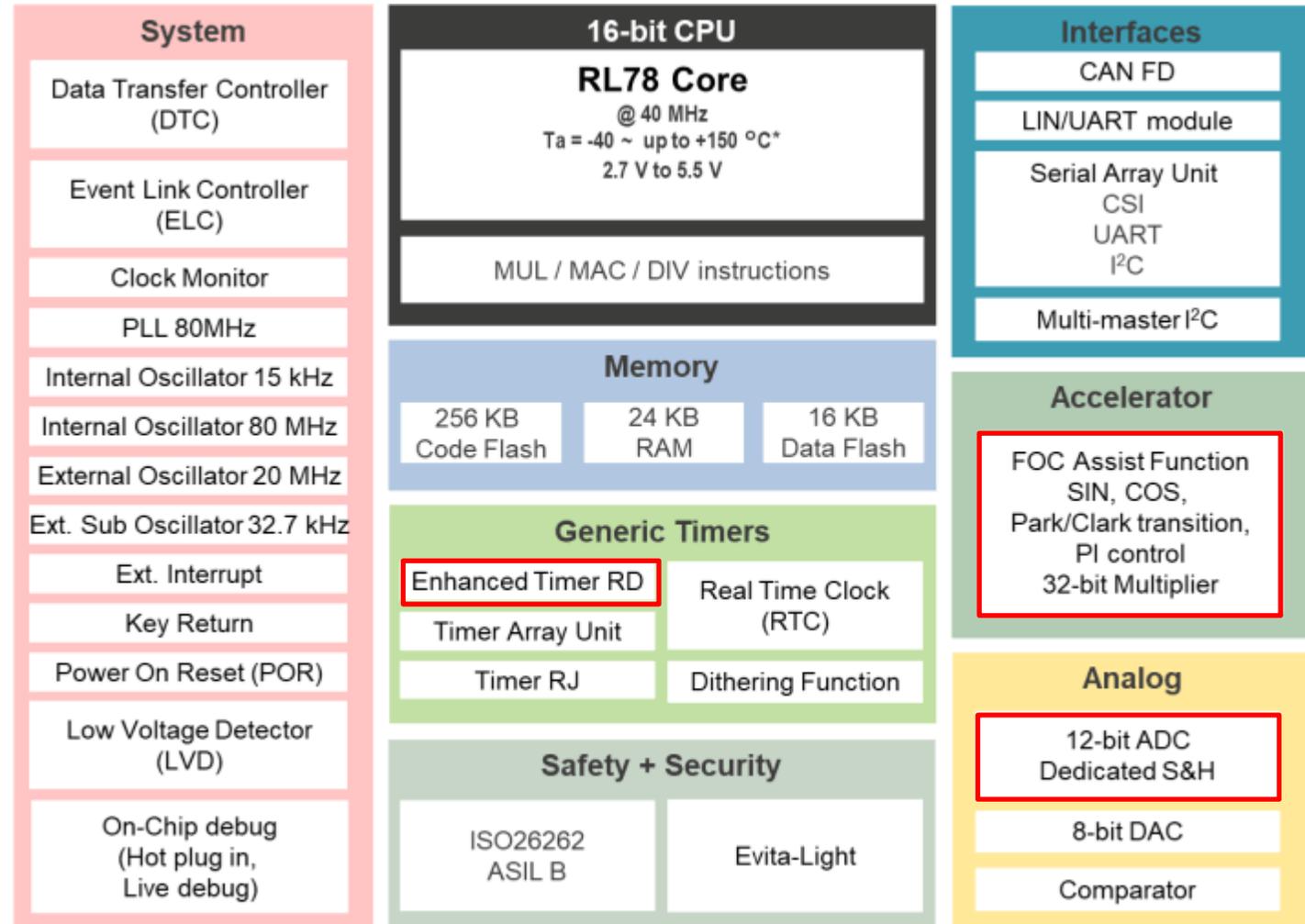
IP BlockSet
(Simulink® Model)



Achieve accurate function and behavior

RL78/F24 IP BlockSet

- Fundamental motor/inverter control IPs
 - Timers
 - Timer RDe (TRD)
 - Analog
 - 12-BIT A/D CONVERTER (AD)
 - Accelerator
 - APPLICATION ACCELERATOR UNIT (AAU)

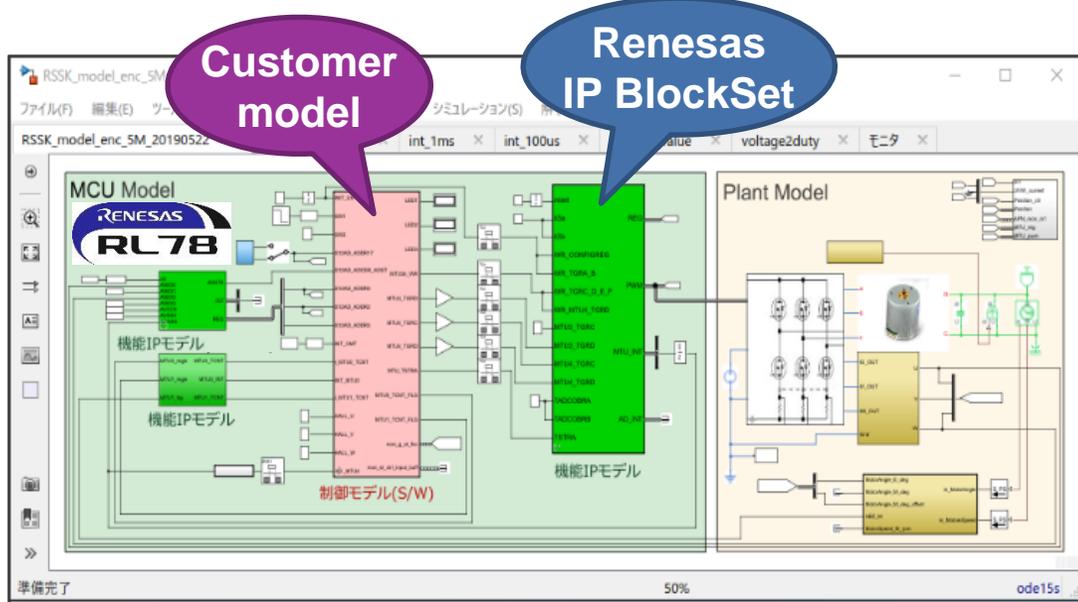


RL78/F24 IP BlockSet FEATURE : IMPROVING CONTROL MODEL DESIGN EFFICIENCY USING IP BlockSet FOR MILS

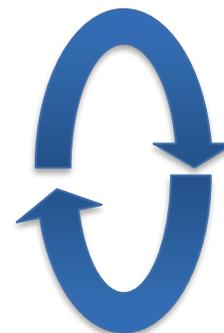
Enable to handle design iteration in model world with applicable MCU behavior

- Build a virtual system quickly by connecting with the user model.
- Examine and confirm the operation assuming an actual MCU behavior on the model.

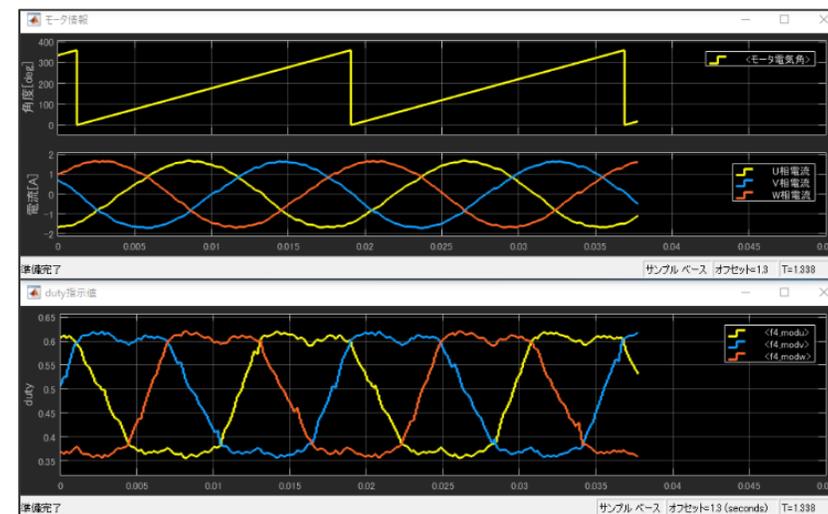
MATLAB/Simulink



Controller model design



Simulation w/o device



DEVELOPMENT ENVIRONMENT

OS

Windows platform

Operation Environment
MathWorks tool version
R2018b

● Model Development Environment

MATLAB®

Simulink®

● Simulation Execution Environment (Sample Model*)

Simscape™

*Required for motor control sample model. Not required for IP BlockSet.

[Renesas.com](https://www.renesas.com)