



PRESS CONFERENCE SPS IPC DRIVES 2017

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RENESAS ELECTRONICS EUROPE
RAMONA MAURER, EMTRION GMBH
DIETMAR FRANKE, PORT GMBH

BIG IDEAS
FOR EVERY SPACE

AGENDA

Industrial Solution Enhancements

- Synergy Platform supports Functional Safety
- RZ/T1 supports digital encoder interface HIPERFACE DSL
- RZ/N1 swiss knife for industrial Ethernet
- RZ/N1 demonstrates TSN capabilities

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RZ/N1 New Product Designs

- Industrial Switch from port
- Single Board Computer from Emtrion

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INDUSTRIAL SOLUTIONS ENHANCEMENTS

MICROCONTROLLERS & MICROPROCESSORS

RENESAS MCU/MPU OVERVIEW

NEW SOLUTION ENHANCEMENTS

Customer Application			
Customer Middleware, Stacks, Drivers		Renesas Qualified SW & EcoSystem ENHANCEMENTS	ARM EcoSystem ENHANCEMENTS
			
Smart Low Power	One Core Countless Options	Complete Platform	Simply Performance
<ul style="list-style-type: none"> ▪ 0.13u ultra low power ▪ 0.2µA standby current ▪ 500+ devices 	<ul style="list-style-type: none"> ▪ 1000+ device family ▪ To 4 MByte Flash/ 512 KByte RAM ▪ >4.25 Coremark/MHz 	<ul style="list-style-type: none"> ▪ Scalable MCU & Software ▪ Product quality Software ▪ RTOS & Comms stacks ▪ Warranted & supported 	<ul style="list-style-type: none"> ▪ Cortex A and R series core ▪ Up to 10MB SRAM ▪ HMI, Driv & PLC eApplications ▪ Linux-based platform
RL78 Core	RX Core	ARM M-Series	ARM A, R-Series

INDUSTRIAL SOLUTIONS ENHANCEMENTS

SYNERGY PLATFORM SUPPORTS FUNCTIONAL SAFETY

New Press Release

FUNCTIONAL SAFETY SOLUTION

SYNERGY PLATFORM FASTENS CERTIFICATION



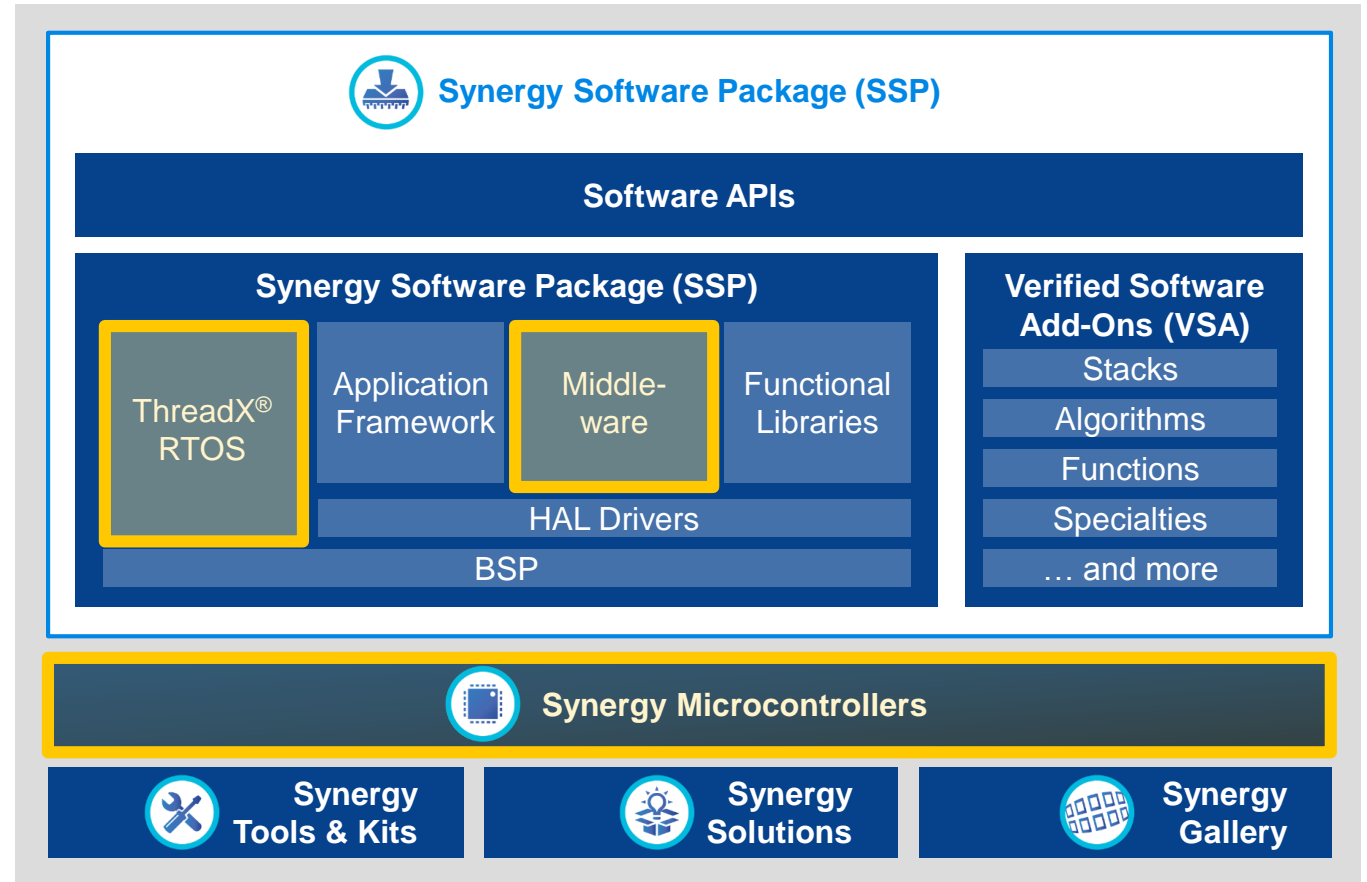
High quality MCU Self-Test Library

- Saves customer's development efforts
- Enables a faster time to market

Bundled with software certification packages from Express Logic (RTOS, X-Ware)

TUV certificates reduces risk for system certification

 IEC61508 certification packages





IEC61508 FUNCTIONAL SAFETY

SYNERGY PLATFORM CERTIFICATION PACKAGE BUNDLES

New

MCU Safety Packages



S7
S7G2

S5
S5D9

S3
S3A7

Safety Manual	Quick Starter Guide
Diagnostic Software Library	TUV Certificate
Diagnostic SW User Guide	TUV Assessment Report
Safety Application note*	

SW Certification Packages



THREAD X

NET X

FILE X

Express Logic Certification Packs

*Renesas add-on, non-certified

FIRST SYNERGY FUNCTIONAL SAFETY DESIGN ENABLES FASTER TIME TO MARKET

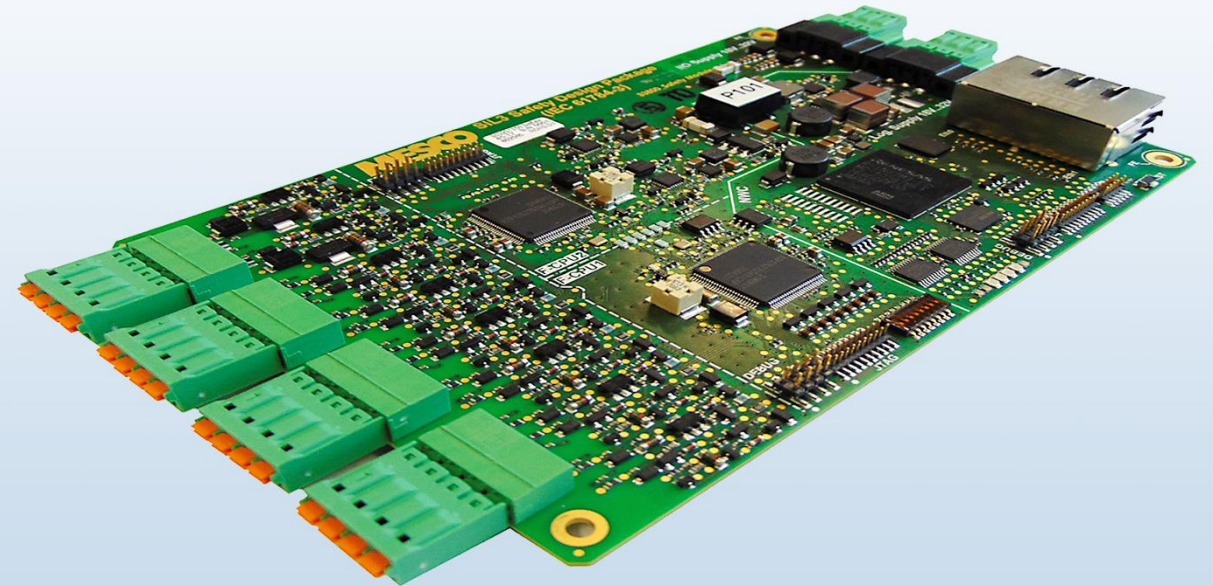
Reference Application: Safe I/O with Safety Communication (SIL3 Applications)

- Design Package from MESCO
- 2 Synergy S7 MCUs & R-IN32M3 MCU

Customer Benefits

- Speeds up safety development
- Faster time-to-market through MESCO development service
- Reduced development risk & certification time

Developed by Partner



INDUSTRIAL SOLUTIONS ENHANCEMENTS

RZ/T ENHANCED DIGITAL ENCODER INTERFACE


New Press Release

RZ/T1 PRODUCT LINE-UP OVERVIEW

ENHANCEMENTS FOR HIPERFACE DSL® ENCODER SUPPORT



CPU		TCM	exRAM							
R-IN engine integrated	600MHz + R-IN engine (150MHz)	512KB +32KB	- (1MB for R-IN)						R7S910017	R7S910018
	450MHz + R-IN engine (150MHz)	512KB +32KB	- (1MB for R-IN)						R7S910015	R7S910016
Single Core	600MHz	512KB +32KB	1MB		R7S910007	R7S910013	R7S910027	R7S910028		
	450MHz	512KB +32KB	1MB		R7S910006		R7S910025	R7S910026		
			0KB	R7S910001	R7S910002	R7S910011				
	300MHz	512KB +32KB	0KB				R7S910035	R7S910036		
Package				176QFP	320BGA	320BGA	320BGA	320BGA	320BGA	320BGA
Encoder Interface				-	-	Yes	-	Yes	-	Yes
Industrial Ethernet				-			EtherCAT		Multiprotocol support	

 HIPERFACE DSL® Digital Encoder Interface now supported by 7 RZ/T1 devices

 HIPERFACE DSL

DIGITAL ENCODER INTERFACE HIPERFACE DSL®

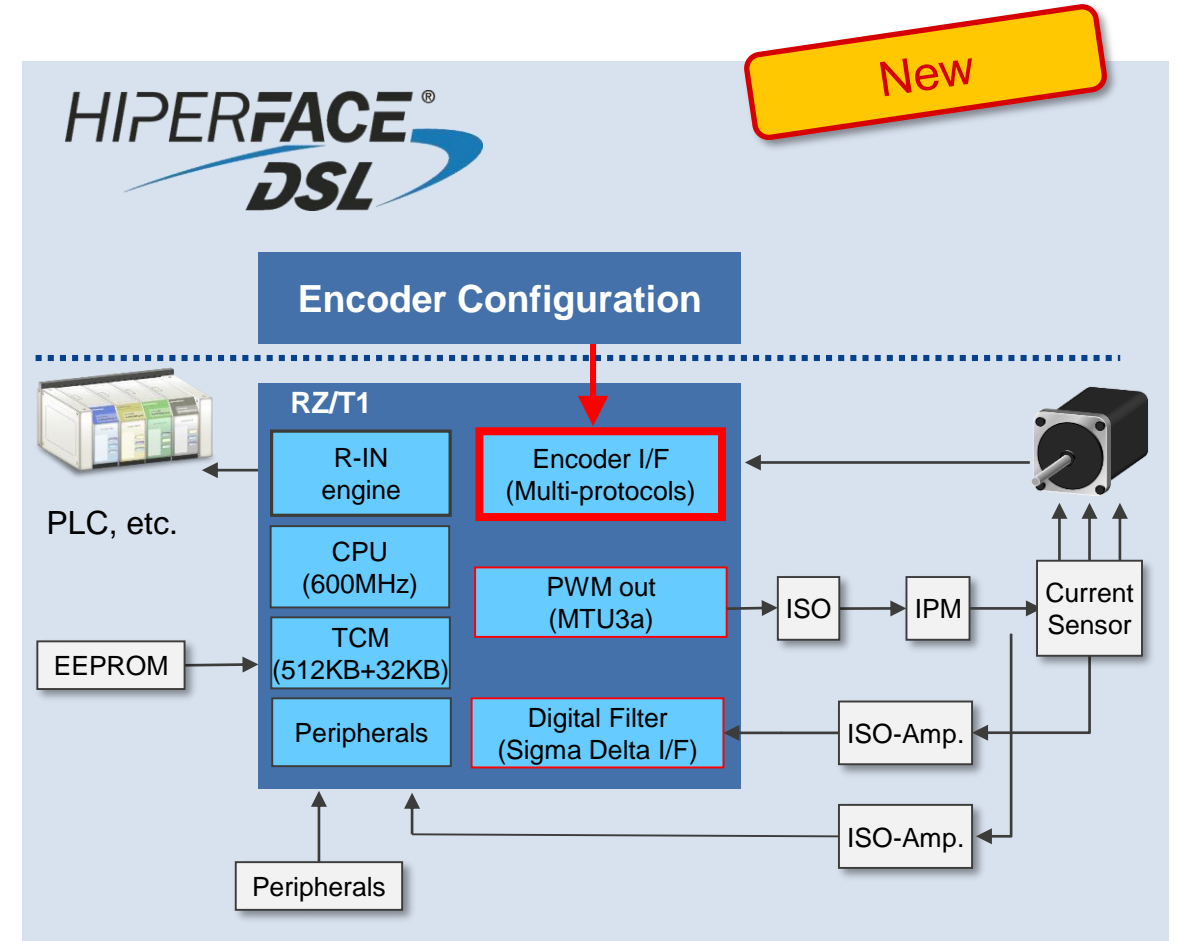
SIMPLIFIES AC SERVO APPLICATIONS & REDUCES SYSTEM COST

Solution Enhancement

- HIPERFACE DSL® is a digital, bidirectional interface providing precise position values from absolute encoders
- Solution contains encoder interface configuration data, sample driver code & documentation package

Customer Benefits

- Reduces component count and cuts system costs (no separate FPGA)
- Flexible support of multiple encoder standards (e.g. BiSS, EnDat 2.2) without need of changing the HW



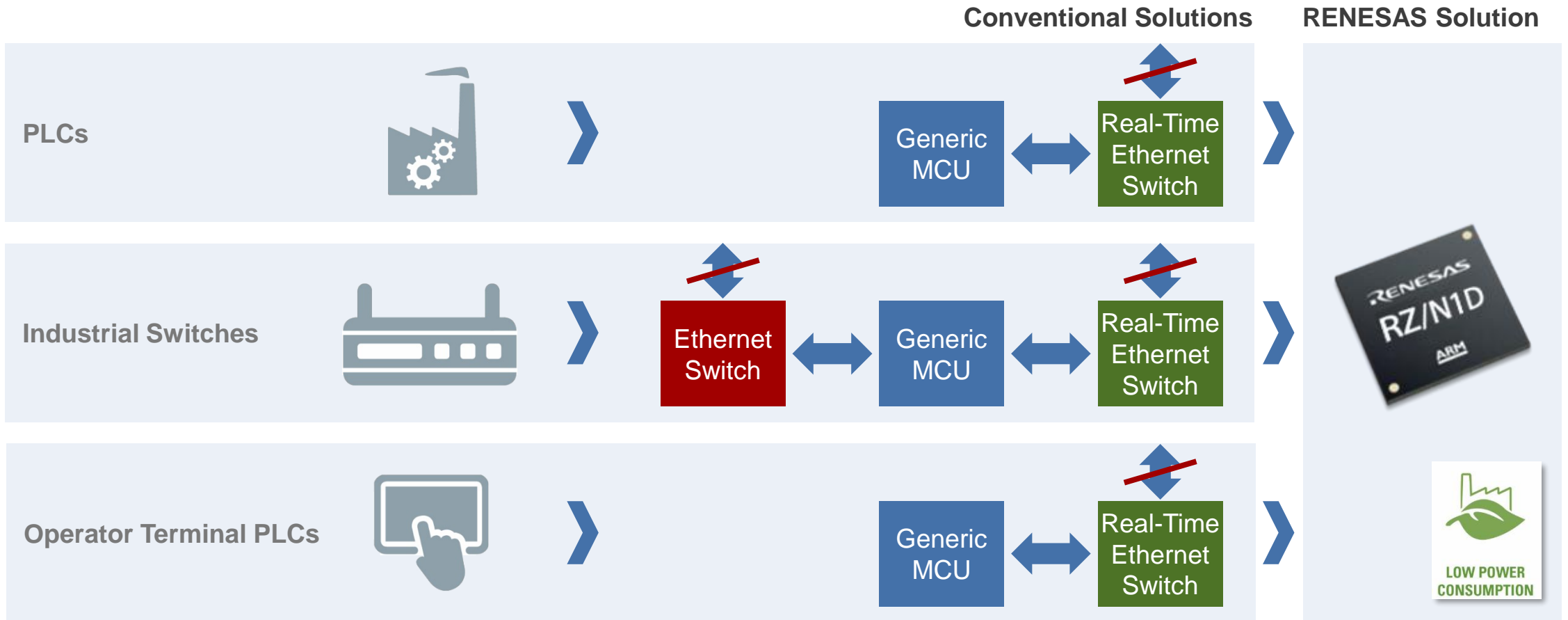
RZ/N1 INDUSTRIAL SOLUTIONS ENHANCEMENTS

THE SOFTWARE MAKES THE DIFFERENCE

New Press Release

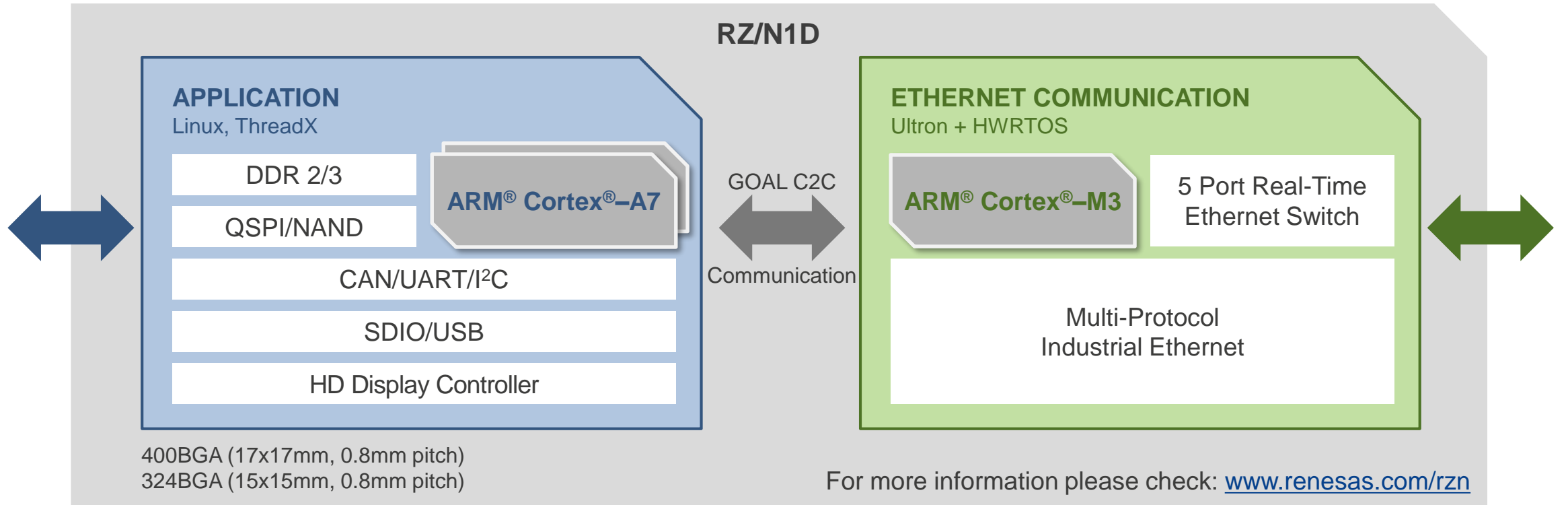
RZ/N1 OVERVIEW

SINGLE CHIP SOLUTION



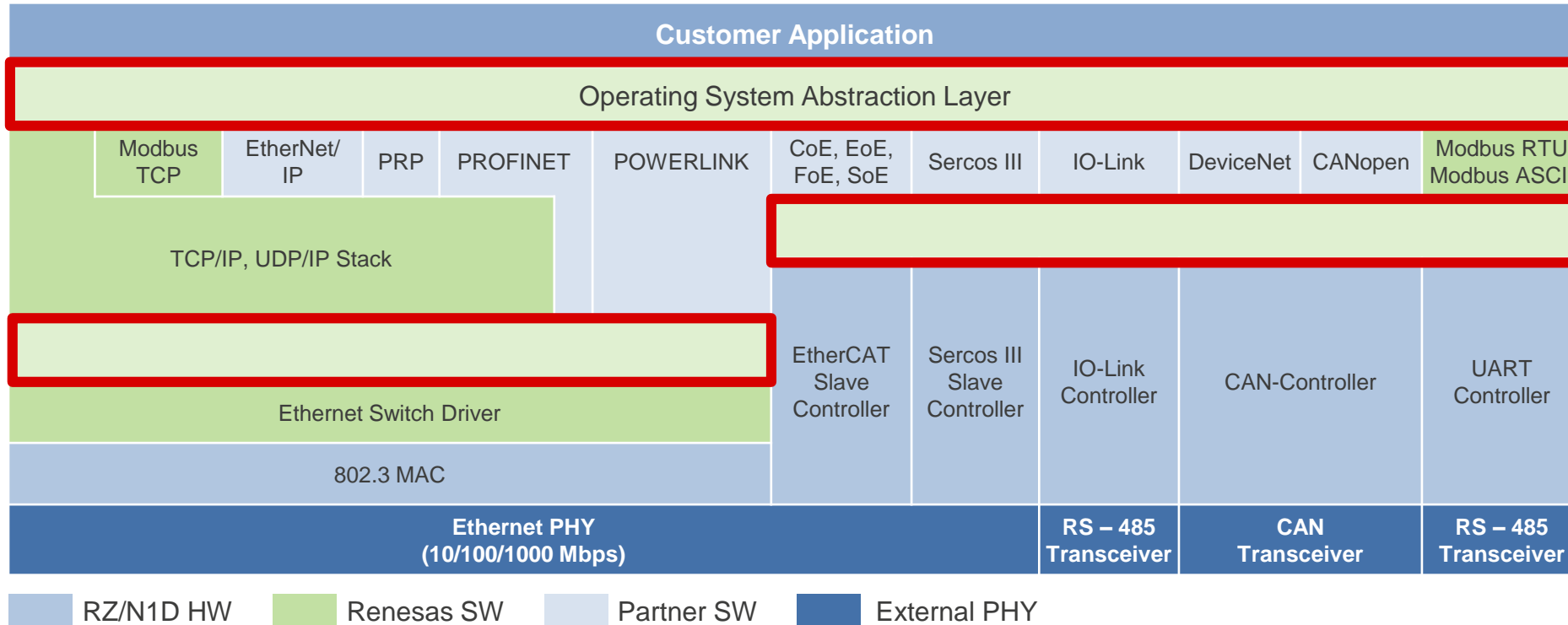
RZ/N1 – THREE CORES IN ONE MCU

PERFORMANCE MEETS MULTI-PROTOCOL



RZ/N1 NETWORK INFRASTRUCTURE MODEL

UNIFIED API FOR ALL STACK PARTNERS



Reusability of the application software even if the protocols or operating systems changes

RZ/N1 INFRASTRUCTURE UPDATE

MORE FLEXIBILITY WITH NEW OPERATING SYSTEM

Multi-protocol regardless of the operating system

- Communication and application with two OSs running concurrently

Linux – Open Source OS

ThreadX – Advanced Real-Time Operating System (RTOS)

- Lean, embedded operating system for industrial applications
- Additional Operating Systems support is in the works



RZ/N1 INFRASTRUCTURE UPDATE

ONE HARDWARE FOR SLAVE AND MASTER IMPLEMENTATIONS

CODESYS® - leading hardware independent, IEC61131-3 development environment for PLC programming

- Supports Industrial Ethernet Master stacks for EtherCAT, EtherNet/IP, Sercos, CANOpen and PROFINET
- CODESYS® Target Visualisation tool for product development with graphical visualization screens





RZ/N1 DEMONSTRATES TSN CAPABILITIES

FUTURE-PROOF CONTROLLER

TSN DEMONSTRATOR AT RENESAS BOOTH RZ/N1D WITH TSN ENDPOINT FUNCTION

Demonstrator Highlights

- Communication between OPC-UA client & server applications
- Shows advantages of scheduled Ethernet traffic (TSN)
 - TSN isolates OPC-UA traffic from best effort traffic
 - Interfering best effort traffic on same network

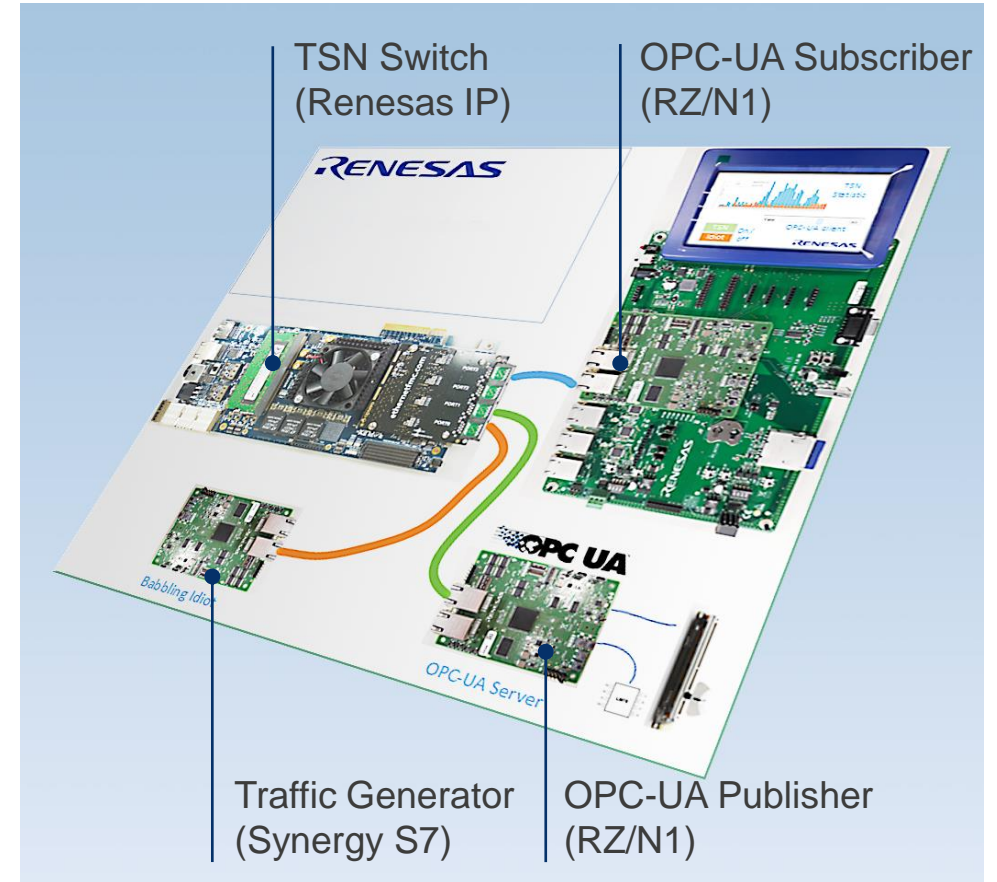
Time Synchronization

- IEEE 802.1AS and IEEE 1588

Traffic Scheduling

- IEEE 802.1Qav + TDMA

New



SIMPLE EVALUATION & FAST PROTOTYPING

RZ/N1 NEW PRODUCT DESIGNS

PORT – COMPANY OVERVIEW

RELIABLE REAL-TIME COMMUNICATION IN INDUSTRIAL AUTOMATION



Port GmbH

- Founded in 1990
- Broad products and services portfolio
 - Protocol libraries, communication stacks, drivers and tools for industrial real time communication
 - GOAL – real time communication middleware (multi protocol solutions)
 - OEM and customized hardware and software development
- References
 - More than 500 customers worldwide and thousands of devices using PORT's real time technology



NEW PRODUCT DEVELOPMENT

MULTI-PROTOCOL INDUSTRIAL GATEWAY/SWITCH – PLATFORM

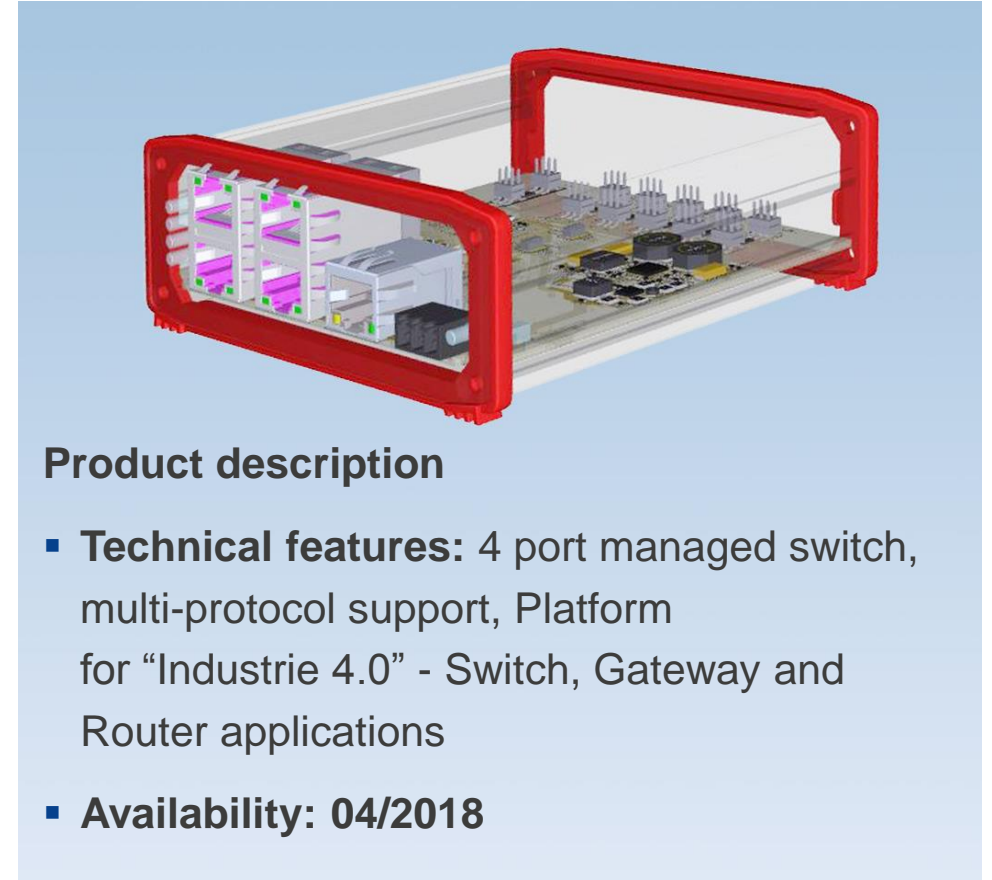


Key selling points

- 4 Fieldbussystems on Board (Profinet, EthernetIP, EtherCAT & CANopen), optional PROFIBUS, MODBUS and DLR
- Enough & scalable space for customized application

Advantage of Renesas RZ/N1

- Rich feature set of RZ/N1
 - Performance and communication on a single chip
 - Multi-protocol availability under Linux (GOAL)
 - Development tools for real time communication
- Fast time to market in less than 4 months
 - Simple implementation and exchange of protocols
 - Renesas personal and direct support



Product description

- **Technical features:** 4 port managed switch, multi-protocol support, Platform for “Industrie 4.0” - Switch, Gateway and Router applications
- **Availability:** 04/2018

EMTRION – COMPANY OVERVIEW

EMBEDDED DEVELOPMENT



Emtrion GmbH

- More than 20 years in the market
- Providing embedded development services
- Manufacturing own developed System on Module (SOM/COM) and Single Board Computer (SBC) with own board support packages (BSPs)
- A long term availability of up to 15 years and focus on industrial, medical and railway applications



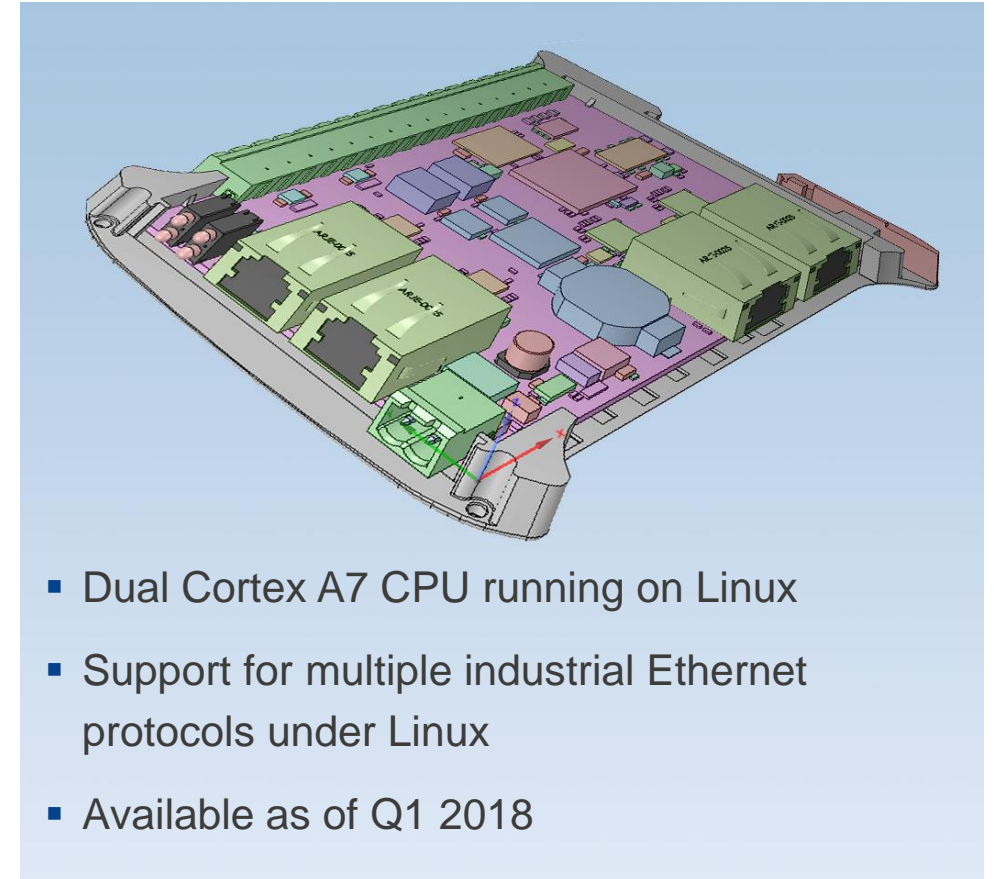
NEW PRODUCT INTRODUCTION

SINGLE BOARD COMPUTER WITH 4 PORT SWITCH



Advantage of Renesas RZ/N1

- Linux support for multiple industrial protocols
- Fast time to market through support and partner network
 - Direct support from Renesas
 - Partnership with Port for the industrial communication
- Commitment for long term availability



- Dual Cortex A7 CPU running on Linux
- Support for multiple industrial Ethernet protocols under Linux
- Available as of Q1 2018

SUMMARY

CONNECTED SOLUTIONS FOR INDUSTRIE 4.0

NEW key products and solution enhancements

- Synergy™ Platform supports Functional Safety standard IEC61508
- RZ/T1 Digital Encoder Interface support for HIPERFACE DSL
- RZ/N1 – THE Swiss Knife for industrial Ethernet
 - Scalable device family for broad target applications
 - Available software ecosystem for simple evaluation and quick prototyping of the target applications
 - Available partner network for design support
 - Future-proof controller with TSN capability



THANK YOU

Meet us at:

Renesas Booth: Hall 101K – 130

and ...

Profinet Booth: Hall 2 – 539

EtherCAT Booth: Hall 2 – 639

