

BASICS OF THE RENESAS SYNERGY™ PLATFORM

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CHAPTER 12

WHERE TO GO FROM HERE

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12 WHERE TO GO FROM HERE

What you will learn in this chapter:

- What Renesas Synergy™ Solutions' Product Examples (PEs) and Application Examples (AEs) are and how they can help you.
- Which additional software packages and frameworks for the Renesas Synergy™ Platform are available.
- Where to go for additional training resources.

Now that you have learned what the Renesas Synergy™ Platform consists of and how useful the different parts are for a speedy development, you might ask "Is there more"? The answer is yes! In the past chapters we covered most parts of the three key elements of the Renesas Synergy Platform:

- **Synergy Software**
- **Synergy Hardware**
- **Synergy Solutions Gallery**

Now in this chapter we will provide more details. We will give a quick insight into Verified Software Add-Ons (VSAs), the Partner Profiles and additional add-ons provided by Renesas. Most of these solutions go beyond what typical embedded product development kits offer. They are actual products examples and bundle different technologies, including working examples of Synergy Software, to give you a head start on your own hardware designs. And last but not least, we will talk about the online trainings available from Renesas and its partners.

12.1 Product Examples

Product Examples (PEs) offer a unique insight into a “design instance” of a particular end product, closely representing how the actual end product would be designed. To enable fast development of feature-rich applications, portions of the Product Examples design can be re-used in real end-products.

They come with the required hardware, Synergy Software and complete documentation, including the schematics, layouts and Gerber files, the bill of material (BOM) and special “design journey documents” describing the methodology of how and why design choices were made and the reasoning behind the selection of different components during the design process. This gives you the opportunity to modify the PE design to meet the particular needs of your application without having to re-invent the wheel.

Right now, a couple of PEs are available / planned. One of the examples is the PE-HMI1, a development board for evaluating the Synergy S7G2 Group Microcontroller (MCU) in a Human-Machine Interface (HMI) application. With its TFT LCD display and communication features like Wi-Fi 802.11a/b/g, BLE, Ethernet, USB and CAN, it closely matches the functionality and appearance of a real HMI end-product, allowing a rapid development of such products. Components included are an integrated 7-inch wide-format WVGA (800 x 480 pixels) display with a capacitive touch screen overlay, a J-Link® Lite ARM® debug probe, a universal Power over Ethernet (PoE) power injector and the necessary cabling and documentation.



Figure 12-2: The PE-HMI1 provides everything needed to develop a feature rich HMI application

Another PE is the PE-DAQ1 data acquisition example based on the Synergy S3 Series MCU representing a commercial or consumer data acquisition product. It is taking advantage of the S37A’s large memory and its precision analogue interfaces. Multiple sensors for motion, pressure, temperature or ambient light, together with a custom segment display and capacitive touch buttons provide a head start for your own application. For updated information about other PEs, please check out the *Kits* section of the Solutions Gallery.

12.2 Application Examples

The intention of Application Examples (AEs) is to demonstrate complete applications and to provide technology building-block examples that you can use to build your application upon. They include multiple components, creating a showcase of the use of multiple technologies surrounding and including the Synergy Platform.

For example, the AE of a cloud connected system for the Internet of Things (IoT) would demonstrate the use of different wireless networks like Wi-Fi, Bluetooth® low energy (BLE) Low Energy and an IEEE-802.15.4 6 LoW-PAN mesh network, as well as a HMI and cloud connectivity and services.

Another example, which is already available, is the AE-CAP1 for capacitive touch. It comes with two CPU boards, one with an Synergy S124 Group MCU and one with an S3A7, and three touch sensor boards. All three will work with both CPU boards. It is certified to IEC 61000 and is delivered with the Capacitive Touch Workbench software to tune the sensitivity of the touch sensors.



Figure 12-3: The AE-CAP1 provides everything needed to develop a touch sensor application

AEs are fully documented with an application note and include the related SSP-based e² studio software projects. All this provides you with the information required to jump-start your own application. Up-to-date information about the latest AEs can be found in the *Kits* section of the Solutions Gallery.

12.3 More Details on the Synergy Solutions Gallery

While we talked about the Synergy Solutions Gallery already quite a bit, there is still more to it. Remember that Renesas is your point of contact for everything inside the Synergy Platform. Under *Support* on the Synergy Platform website you will find all that is needed: Access to the Knowledge Base, which is the home for all Synergy Platform-related design help content and the Synergy Forum hosted on Renesas Rulz. Links to other support options like the Renesas Academy or the Synergy Platform YouTube channel are provided there as well.

Two other possibilities to speed up your design can be found under *Software Add-Ons* on the Synergy Platform website. The Software Add-On program provides a variety of speciality software components for developers using the Synergy Platform. These components cover multiple technology areas including extended security and functional safety, cloud services and specialized control algorithms. There are two different flavours of add-ons: Verified Software Add-Ons provided by 3rd-parties and SSP Supplemental Add-Ons like self-test libraries provided by Renesas.

Both types of add-ons can also be accessed through the Solutions Gallery, where additional application projects created by Renesas can be found as well. Software and hardware solutions from Renesas partners are accessible under *Partner Projects* and *Partner Profiles* on the Solution Gallery. All these different add-ons, packages and projects bring even more ease of use to the Renesas Synergy™ Platform. They will help you to accelerate your development, to reduce your cost of ownership and to reduce the barriers to entry. Simply put: They will help you to start ahead!

12.3.1 Verified Software Add-Ons

Verified Software Add-On (VSA) components are sold and serviced by third parties as part of the Synergy ecosystem and they are available through the Solutions Gallery. VSAs include a selection of pre-integrated specialized software components, for example for industrial communication protocol stacks, audio codecs, motor control applications and more.

They are verified by Renesas to ensure the compatibility with the SSP and evaluation versions can be downloaded from the Solutions Gallery free of charge. Commercial licenses have to be acquired from the VSA software vendor directly.

12.3.2 Synergy Partner Projects

The Partner Projects (PP) section of the Solutions Gallery contains projects developed by Renesas partner companies. They represent a wide range of solutions offered by and supported through the partners, providing quick and easy evaluation projects for developers to build on.

Examples for PPs are a DLMS/COSEM protocol stack, Wi-Fi module drivers or an IoT Gateway. Demonstration or evaluation projects for the different solutions can be directly accessed from the Solutions Gallery.

12.3.3 Additional Software from Renesas

Not only Renesas' partner companies provide additional software for the Synergy Platform, but also Renesas itself does with the so called Applications Projects, which can be accessed from the Solutions Gallery and which make a developers life much easier.

They feature application software that illustrates solution demos on Synergy Kits or hardware modules and are bundled with application notes. Examples are the UART Communication Framework Application Project or a GUIX™ "Hello World" for the SK-S7G2 and PK-S5D9 kits.

12.4 Online Trainings

With this book coming slowly to its end, the question “Where can I learn more about the Synergy Platform?” may come up. If you want to dive further into this topic, there is a plethora of information, trainings and tutorials available for your personal education. The following sections of this chapter will highlight a few of them, but there are others as well and most of them can be found on the Synergy Platform website (<http://www.renesassynergy.com/>) in the *Interested to Learn More* section of the page under *Support*.

12.4.1 Renesas Academy

The Renesas Academy is an online learning platform that brings all our learning materials together in one place, providing the convenience of learning what you want, when you want, and at your own pace. The courses provided there are not only covering the Synergy platform, but also the other product families like RX, RL78 or analogue and power products.

You can go online and quickly find the courses you need, and every course is broken down into short modules that you can fit into your schedule. All that is needed is a simple one-time registration on the Renesas Academy site (<https://academy.renesas.com>) and you are ready to take whatever training you want. Current courses include topics like introductions to the Synergy SSP 1.7.0, the Synergy Enterprise Cloud Toolbox or to the X-Ware™ components, and new and updated courses, content and features are added continuously, so be sure to keep checking back.

12.4.2 Synergy Platform Channel on YouTube

Renesas’ official Synergy Platform channel on YouTube (https://www.youtube.com/playlist?list=PLgUXqPkOStPu_uZCwn_1tM2QZIRDhcbCR) provides you with tutorials and training videos for the Synergy Platform. Topics include introductions to the Synergy Microcontrollers, tools & kits, as well as “How To Videos” explaining the usage of the Application Frameworks or how to install the tools. Right now, there are over 35 videos available, with additional content added continuously.

And last but not least, most exercises of this book are available as video tutorial on this channel as well. So, if you want to watch the video before doing the exercises yourself, this is the place to start! And you do not need to remember the YouTube link: The channel is also accessible from the Synergy Platform website (<http://www.renesassynergy.com/>) under *Support*.

12.4.3 Deep-Dive Online Courses

These deep-dive online courses are provided by Renesas’ Certified Training Partner MicroConsult and mix theory and hands-on experience. They cover topics like “One Hour to RTOS” or “One Hour to the Cloud” and are aimed at getting you up and running direct from your own PC. These courses are open to any engineer wishing to participate, anywhere in the world, but are fee-based.

These trainings are based on the SK-S7G2 Starter Kit, which will be supplied after registration and payment. The list of available courses can be accessed through MicroConsult’s website at <https://www.microconsult.de/1418-1-Renesas-Synergy-Online-Training.html>.

The future will bring more additions to the platform, so check out the Solutions Gallery often!

Points to take away from this chapter:

- Product Examples are representations of how an actual end product would be designed.
- Application Examples are technology building-block examples you can use to build your application.
- The Synergy Solutions Gallery is your single point of access for support for all components of the Synergy Platform.
- VSAs are additional and specialized software components created, licensed and supported by the third parties, which are verified by Renesas to work with the SSP.
- Even more software is provided by Renesas and their partner companies as add-ons or Synergy Partner Projects.

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