Technical Article

Simplified Software Development with TI's CC2640R2F Wireless MCU

Casey O'Grady

It's called a SimpleLink™ microcontroller (MCU), but is it really simple to use? The answer is yes. The CC2640R2F is part of the SimpleLink MCU platform, which fosters unified software development with rich documentation and fast evaluation in a cloud-based integrated development environment (IDE). Building on that foundation, a plethora of sample applications make Bluetooth® low energy software development as easy as 1, 2, 3 – literally:

1. Begin with TI's Software Development Kit (SDK).

The SimpleLink CC2640R2 SDK packages the TI real-time operating system (TI-RTOS), peripheral drivers and sample applications all in one. Beginning with the documentation overview, the SDK provides a quick start guide, migration and porting guides, and release notes (Figure 1). After downloading the SDK, you can leverage starter applications such as peripheral, central, broadcaster, observer and network processor. These fundamental projects are templates for you to begin developing and customizing your own Bluetooth low energy applications.

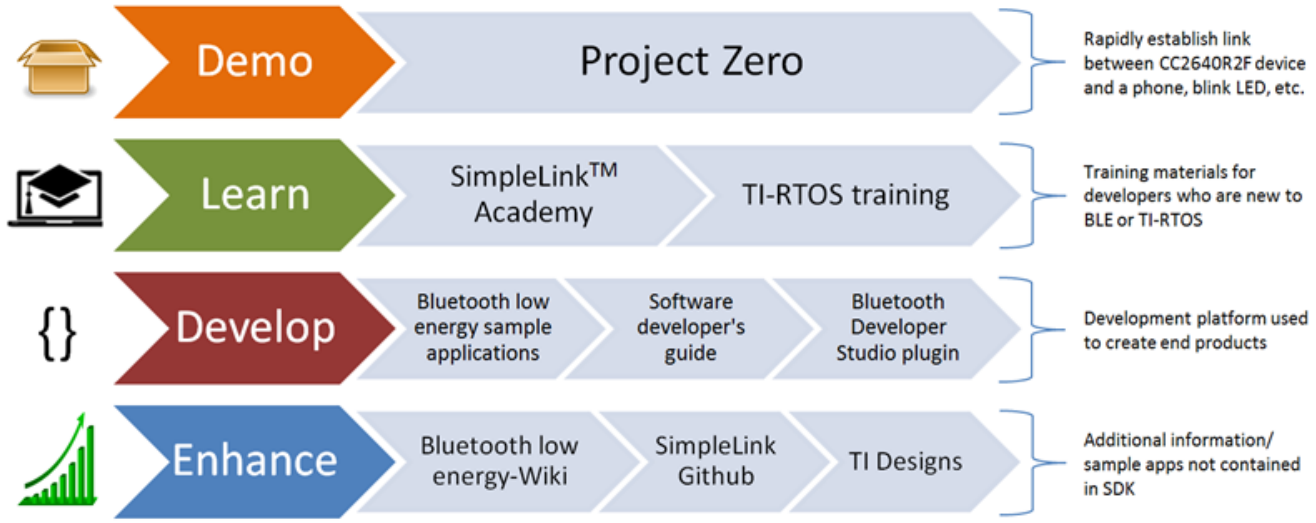

Figure 1. Suggested Workflow for Getting Started with TI's SimpleLink Bluetooth Low Energy Development Environment

There is also support for more advanced projects such as multirole, over-the-air download (OAD), and Eddystone, an open Bluetooth low energy beacon format from Google. After downloading the SDK, you can leverage the feature-rich desktop-based IDE Code Composer Studio™ software. Or you can begin without downloading the SDK using Code Composer Studio Cloud, a browser-based IDE. Integrated Resource Explorer helps you easily find the necessary documentation for even faster evaluation.

Copyright © 2023 Texas Instruments Incorporated

2. Check Out the Bluetooth Low Energy Example Pack.

As an expansion to the SDK, the example pack supports example projects for a glucose sensor, heart-rate monitor, human interface device (HID) keyboard and voice-enabled remote control (Figure 2). This is a valuable repository of models that are easy to adapt and lay the foundation for developing a unique application.

Figure 2. Sample Application Projects Included in the Example Pack

3. Harness the Bluetooth Developer Studio TI plugin.

Beyond the generated applications included in the SDK and example pack, TI supports the Bluetooth Special Interest Group's (SIG) Bluetooth Developer Studio. This is a graphical user interface (GUI)-based environment that can help you quickly build any Bluetooth low energy profile. For example, if you're looking to generate a weight scale profile, you can leverage the TI code generator plugin within Bluetooth Developer Studio to generate buildable source code that accelerates development time. New users can explore TI's SimpleLink Academy training to learn how to use the TI plugin for Bluetooth Developer Studio (Figure 3).

Copyright © 2023 Texas Instruments Incorporated

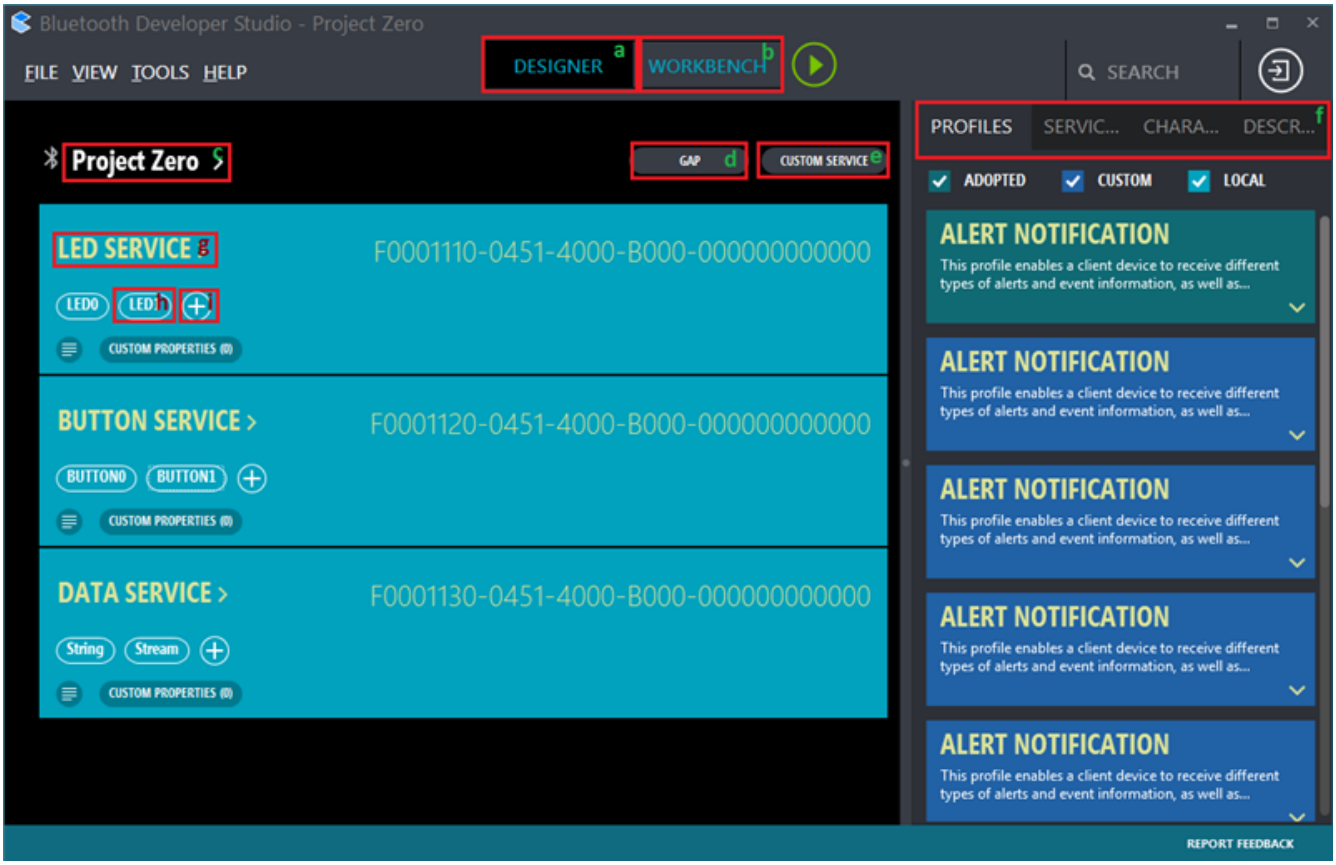

Figure 3. Implementing Project Zero Services Using Bluetooth Developer Studio

Following TI's three-step process makes Bluetooth low energy software development streamlined and simple. Ready to start? Download the SimpleLink CC2640R2 SDK today.

Additional resources:

- Start evaluating with the SimpleLink Bluetooth low energy CC2640R2F LaunchPad development kit.
- Begin with Project Zero and propel your first Bluetooth low energy application.

Copyright © 2023 Texas Instruments Incorporated

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2023, Texas Instruments Incorporated