

# Rapidly Scale Your Connected Solutions with the New SimpleLink™ MCU Platform

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Dung Dang

As the world becomes more connected, embedded systems continue to add new connectivity options, along with advanced sensing capabilities and local analytics. And a rapidly expanding list of functionalities drives the need for new protocol stacks, sophisticated algorithms and comprehensive software frameworks to schedule and manage system complexity.

Even software development is facing the pressures of shrinking timelines and a constant need to adapt products for different markets – all while incorporating a variety of connectivity standards or meeting other requirements. For embedded projects, these obstacles often also include fragmented hardware platforms, software incompatibility and different connectivity standards. But while companies continue to invest heavily in software engineering resources, the process remains a lengthy and challenging cycle.

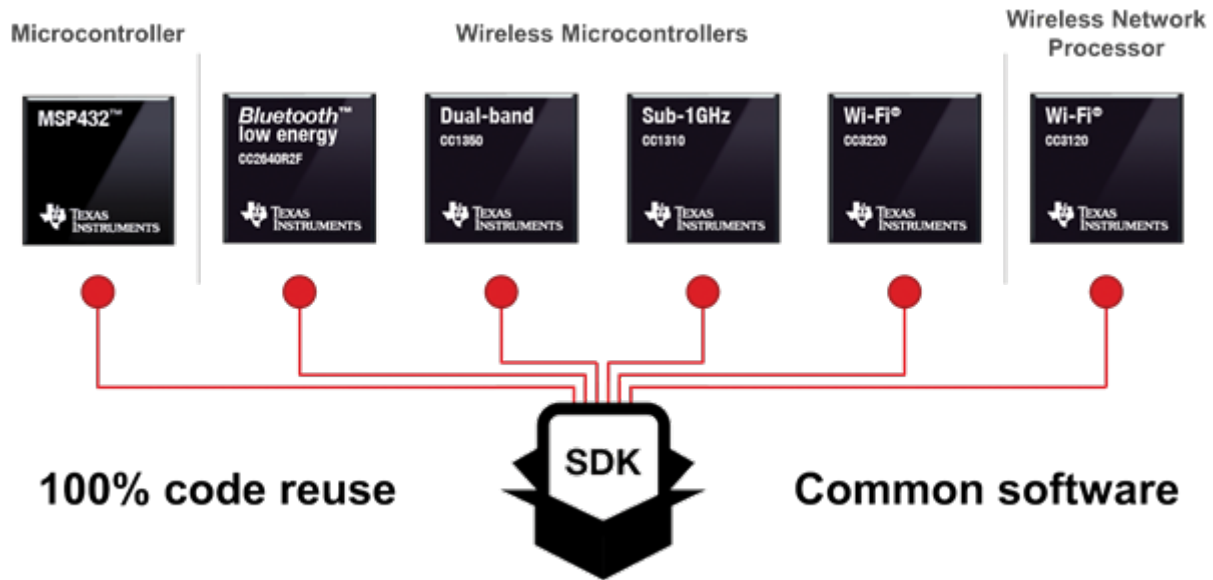
To help solve these issues, TI announced the release of its new [SimpleLink™ MCU platform](#). Created for developers, this platform brings together the industry's broadest portfolio of connected hardware, a unified software solution and immersive resources within one environment. This approach will ultimately expedite development time and help future-proof product designs.

## Broadest Portfolio of 32-Bit ARM-based Microcontrollers (MCU)

To be successful in different markets, all with constantly evolving requirements, it is critical to design within a platform that can scale across multiple connectivity standards and quickly adapt to a base product. The SimpleLink MCU portfolio of devices offers a broad range of wired and wireless MCUs that all share industry-leading features important to connected applications: ultra-low power, robustness, advanced security and analog integration, and support for a wide range of differentiated wired and wireless protocols.

Built on a common foundation, each device within the SimpleLink MCU portfolio integrates a number of features such as acquiring and processing high-precision analog signals, fortifying systems with more security, increasing long-range communication or squeezing several more years of life out of a coin cell in a sensor node. The devices can be classified into three categories, as illustrated in [Figure 1](#):

- MSP432™ host microcontrollers offer advanced analog capabilities and a wide range of memory scalability to run multiple wireless protocols – typically used to drive wireless network processors.
- Wireless microcontrollers include full system-on-chip (SoC) solutions that incorporate a wireless network processor with a microcontroller, covering a wide range of wireless connectivity and standards that include: Wi-Fi®, Bluetooth® low energy, Sub-1 GHz and dual-band (Sub-1 GHz and 2.4GHz).
- Wireless network processors offer an integrated radio and network processor to run the network stack, connecting to a host microcontroller to run the top-level application.



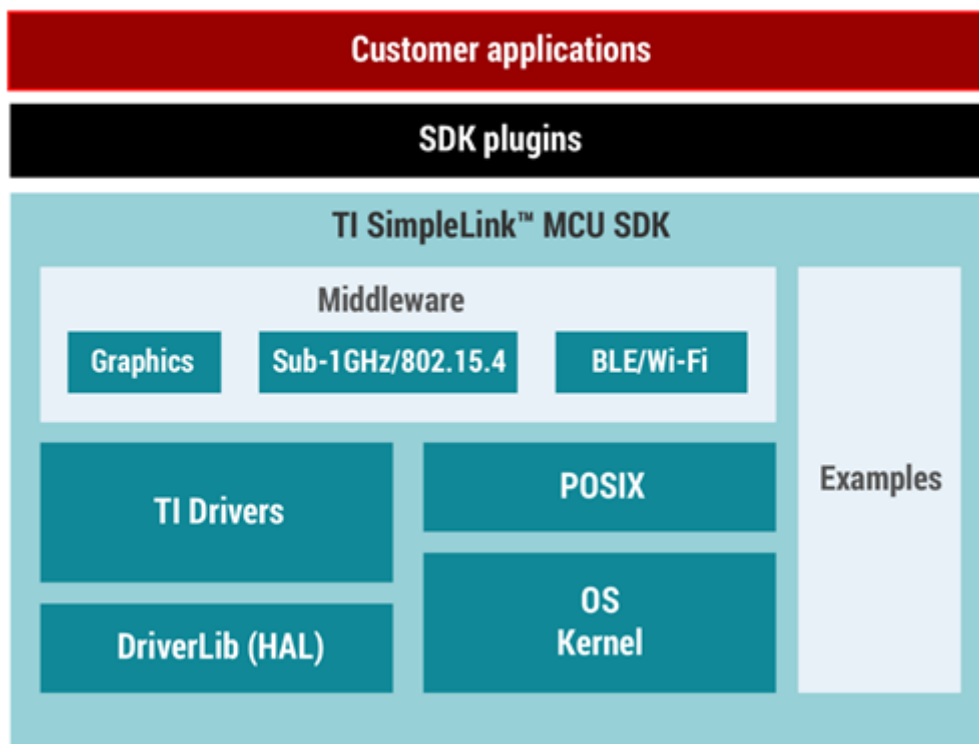
**Figure 1. SimpleLink microcontrollers supported by one software platform**

### SimpleLink MCU SDK

TI developed SimpleLink MCUs around a single software foundation. The SimpleLink software development kits (SDKs) are based on common drivers, frameworks and libraries that ensure 100 percent code compatibility across the platform. This device-agnostic approach provides easy portability of application code across SimpleLink devices now and in the future. Platform-level software portability allows you to invest in software development once and reuse it across multiple products and applications.

[https://youtu.be/YqdDBrEI\\_kQ](https://youtu.be/YqdDBrEI_kQ)

With the SimpleLink SDK, you can use TI Drivers and functional APIs to gain access to portable and intuitive peripheral drivers, or opt to peel back into the hardware abstraction layer (HAL) for greater control of your applications with low-level optimization. The integrated TI-real-time operating system (RTOS) kernel helps solve the scheduling of multiple tasks or sophisticated algorithms in real time, while Portable Operating System Interface (POSIX)-compliant application programming interfaces (APIs) open the door for working with third-party OS/kernels and software components. A wide range of SDK plug-ins help you attach additional connectivity and external functionalities to your SimpleLink application.

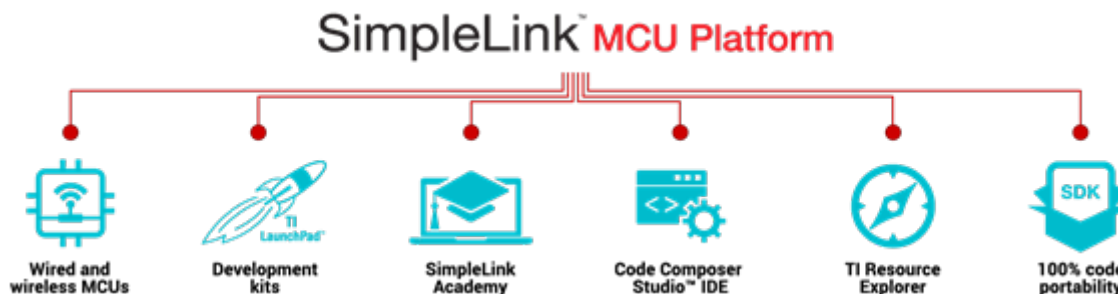


**Figure 2. TI’s unified tool chain, training and resources deliver accelerated development path, from entry to production**

TI’s SimpleLink platform offers simple, powerful hardware and software tools that enable you to ramp up quickly based on customer needs. From evaluating the SDK and demos with TI’s cloud-enabled repository, [TI Resource Explorer](#), to digging deep into SimpleLink MCU development with [SimpleLink Academy](#)’s curated and interactive trainings, you can become an expert and hit the ground running when your SimpleLink [LaunchPad™ development kit](#) arrives.

[Code Composer Studio™](#) software also delivers a feature-rich development environment for the SimpleLink devices with advanced debugging capabilities. And you have the option to use a number of third-party integrated development environments (IDEs) or tools such as IAR Embedded Workbench or Segger.

Additionally, many configuration and advanced debugging tools simplify your development and debugging experience. The breadth of the SimpleLink platform is illustrated in [Figure 3](#) including silicon, development kits, training, tools and software.



**Figure 3. One platform. Unlimited potential**

In short, TI’s SimpleLink MCU platform offers a comprehensive, unified software and hardware solution to help you tackle tough challenges for embedded products.

To dive deeper into all platform offerings, be sure to check out our resources below.

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Additional resources:

- Get started with the SimpleLink MCU platform: [www.ti.com/simplelink](http://www.ti.com/simplelink)
- Read more about the SimpleLink SDK and tool ecosystem in these new white papers:
  - [“Simplifying software development to maximize return on investment”](#)
  - [“Deep dive into the tools and development kits of the SimpleLink™ MCU platform”](#)
- See how the SimpleLink platform can help address building automation systems:
  - [“Connected microcontrollers essential to automation in buildings”](#)

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