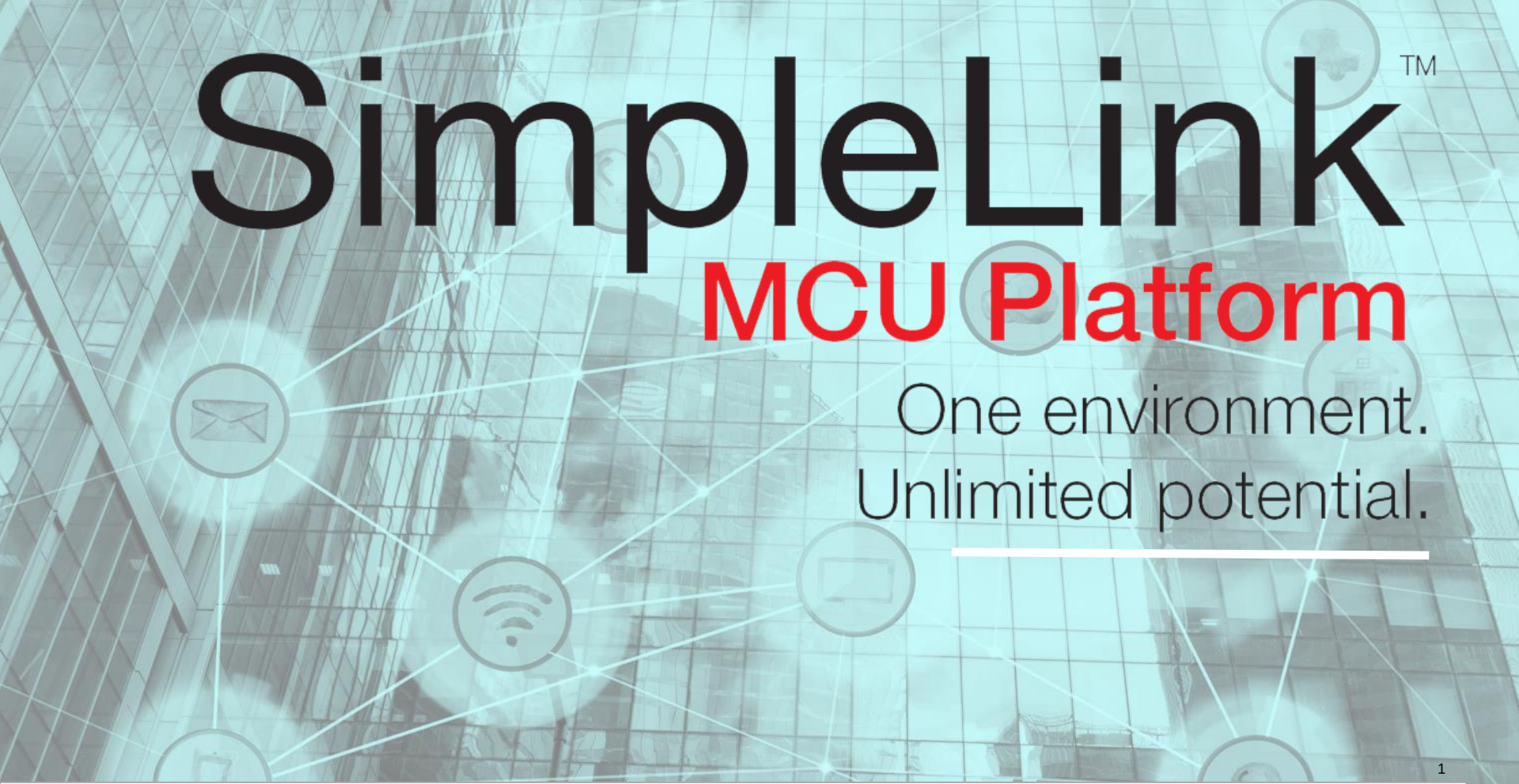

SimpleLink™
MCU Platform
One environment.
Unlimited potential.

Top IoT concerns…

***30.7B** connected devices by 2020,*
***75.4B** by 2025*

Sources: IHS Markit and Bain & Company

SimpleLink™ MCU Platform Overview

The Problem

Developing connected applications is challenging, time-consuming and expensive.

How we're solving it

A unified software solution with hardware and resources that will both decrease our customers' development investment and future proof their design.

Ecosystem & SDK

A powerful, intuitive & comprehensive development environment to create the next generation of connected products. It's a new standard for development, allowing our customers flexibility of hardware, software and tools. The SDK allows for 100% code reuse with simple migration, so developers are no longer limited to one MCU or connectivity standard. When combined with the common TI LaunchPad™ development platform, online training and support available through Resource Explorer and SimpleLink Academy, it is easier than ever to go to market.

Portfolio

Industry's broadest portfolio of wired and wireless ultra-low-power microcontrollers with advanced analog integration and security features.

Available now

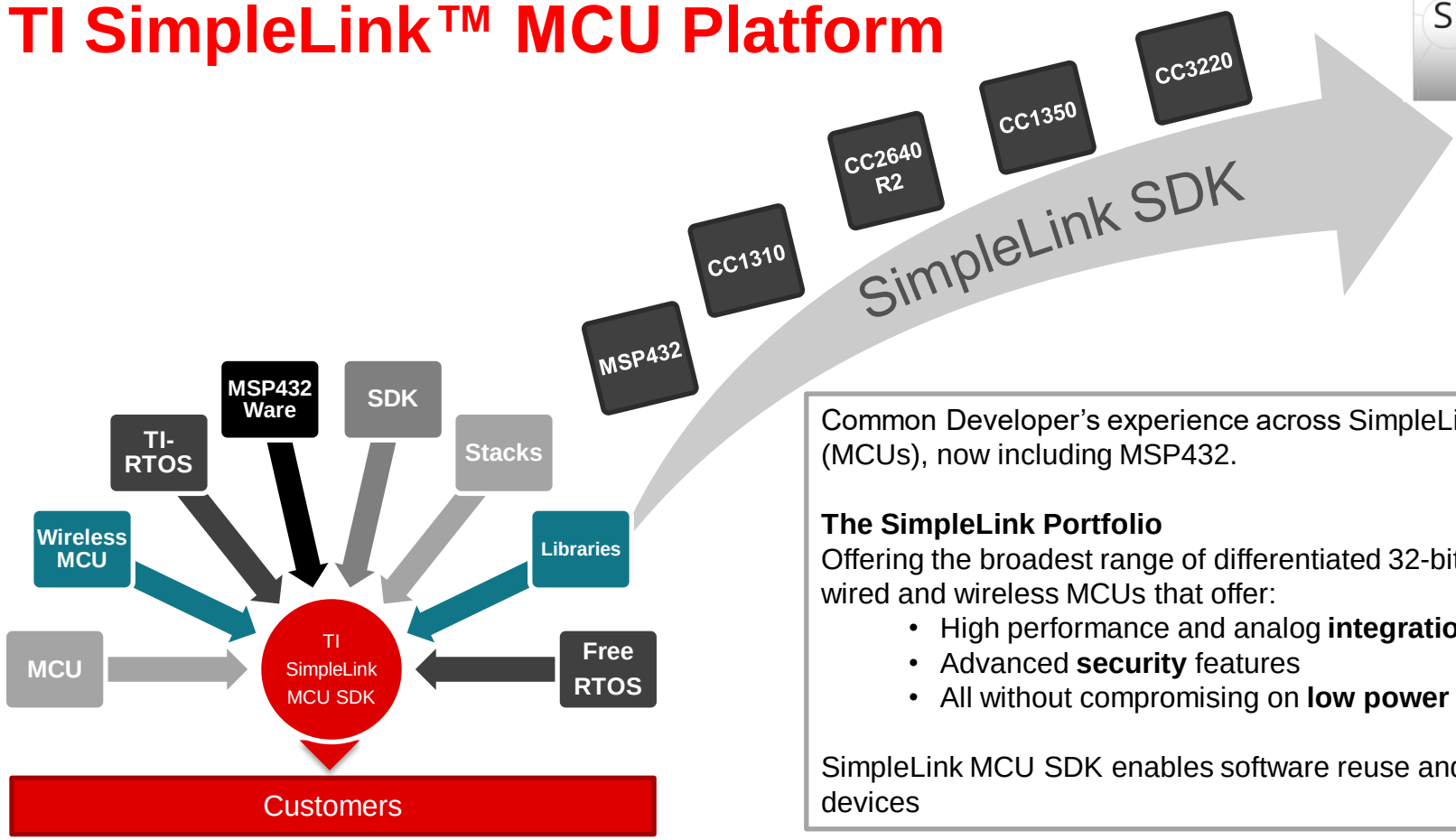
Coming March 15, 2017

New
BLE
Multi-standard
Sub-1
Dual-band

MSP432
2MB

Coming in 2017

TI SimpleLink™ MCU Platform



Common Developer's experience across SimpleLink microcontrollers (MCUs), now including MSP432.

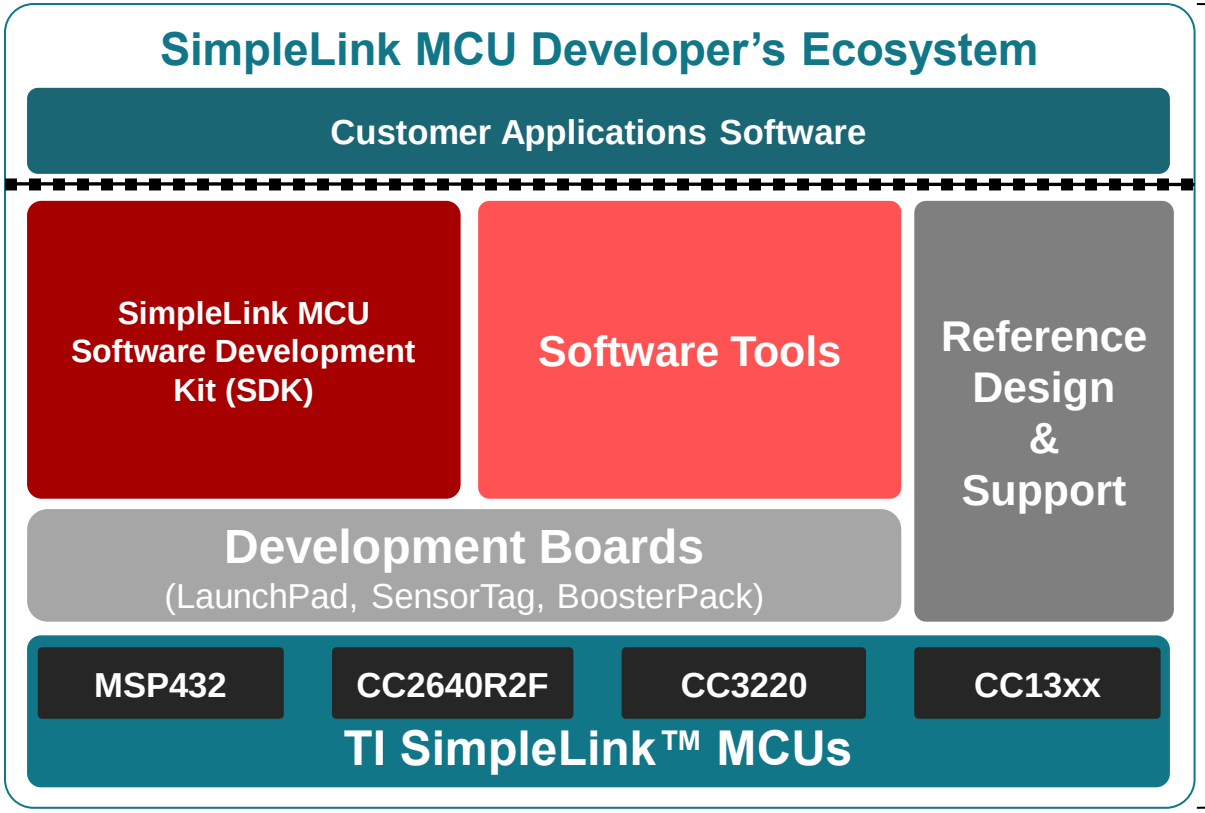
The SimpleLink Portfolio
Offering the broadest range of differentiated 32-bit ARM® based wired and wireless MCUs that offer:

- High performance and analog **integration**
- Advanced **security** features
- All without compromising on **low power**

SimpleLink MCU SDK enables software reuse and portability across devices

SimpleLink MCU Platform

Consistent Developer's experience across SimpleLink portfolio

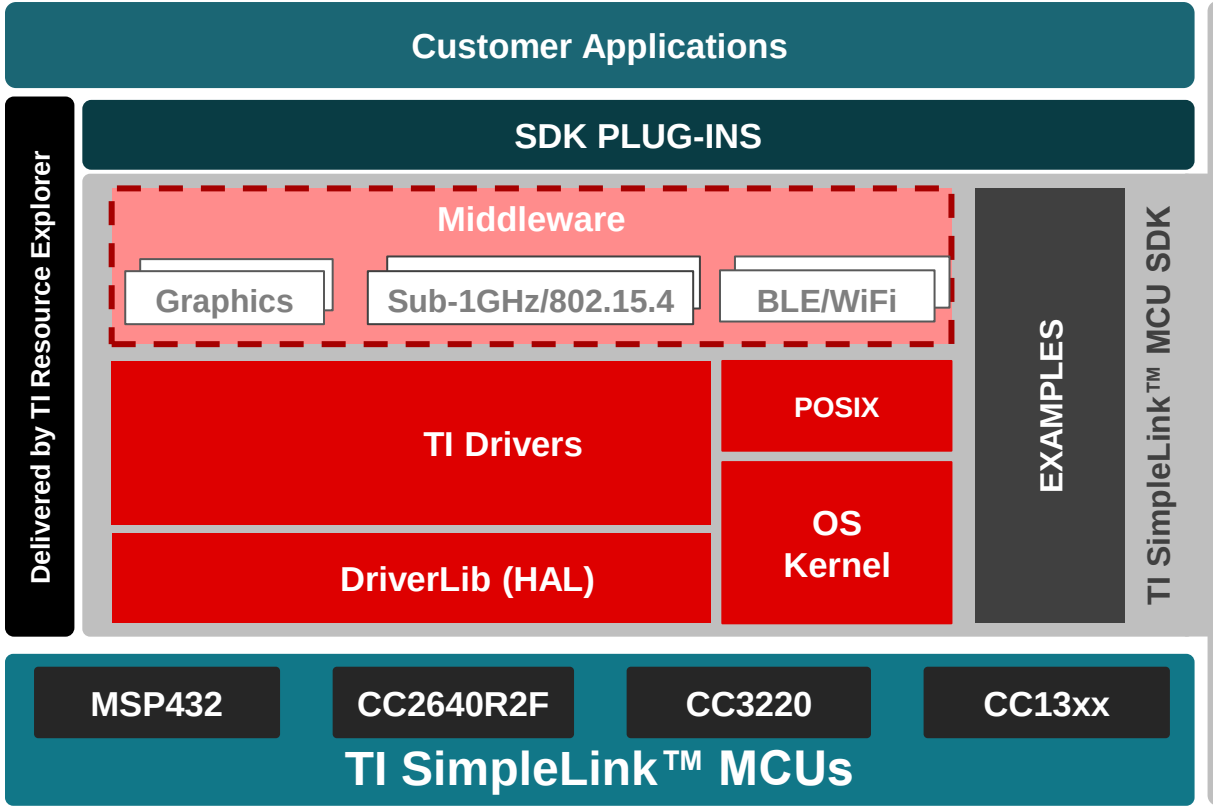


Multiple SimpleLink Devices with

- Uniform LaunchPad hardware
- Uniform Software tools suite
- Uniform SimpleLink SDK

… and comprehensive design & support

SimpleLink™ MCU SDK



SDK Components

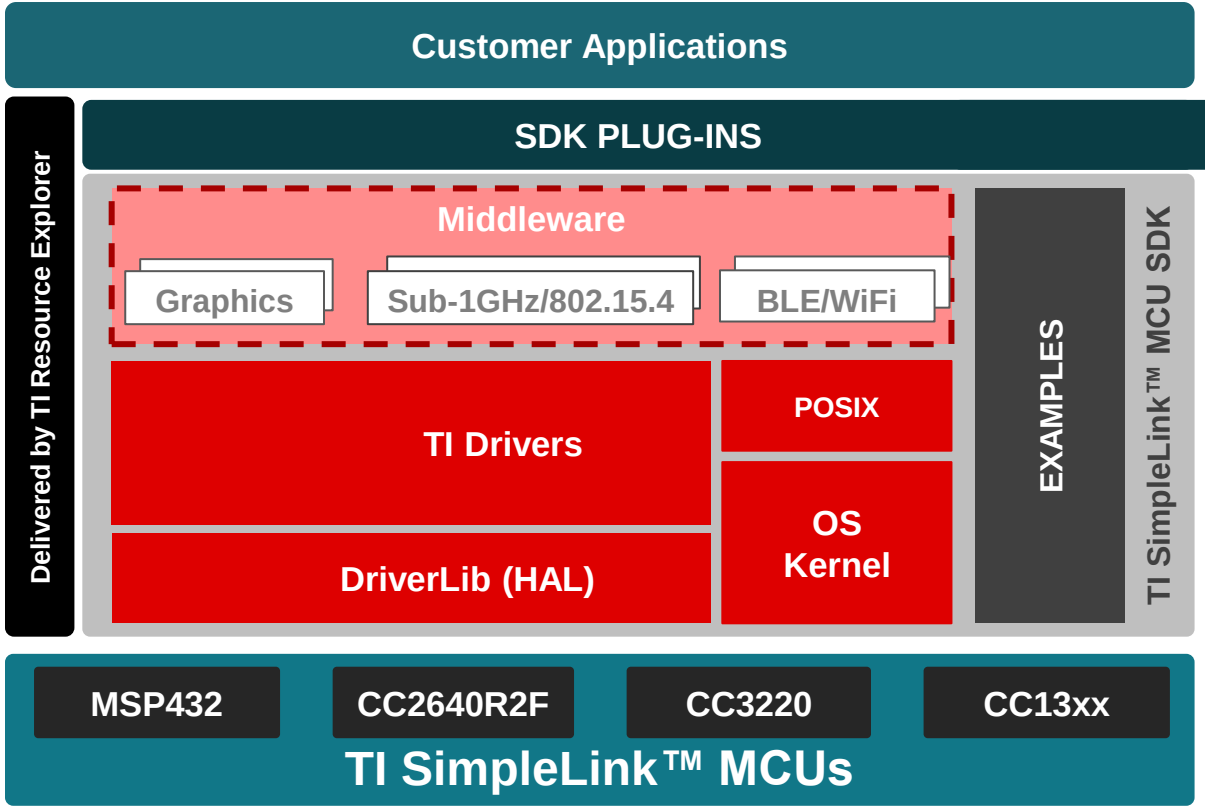
Drivers
- **TI Drivers** portable, feature-rich access to peripherals
- **DriverLib** hardware abstraction layer (HAL) access for device specific optimization
- Support for TI Drivers without kernel coming soon

OS/Kernel
- Real-time Multi-tasking operating system
- POSIX compliant API enables use of a variety of RTOS kernels – validated with TI-RTOS & FreeRTOS

Middleware
- Communication stacks
- Common libraries (i.e. graphics, CapTouch, FatFs)

Examples and documentation
- Large number of examples, documentation and training make it easy to start developing applications

SimpleLink™ MCU SDK



SDK Plugins

Extends functionalities with external components and software

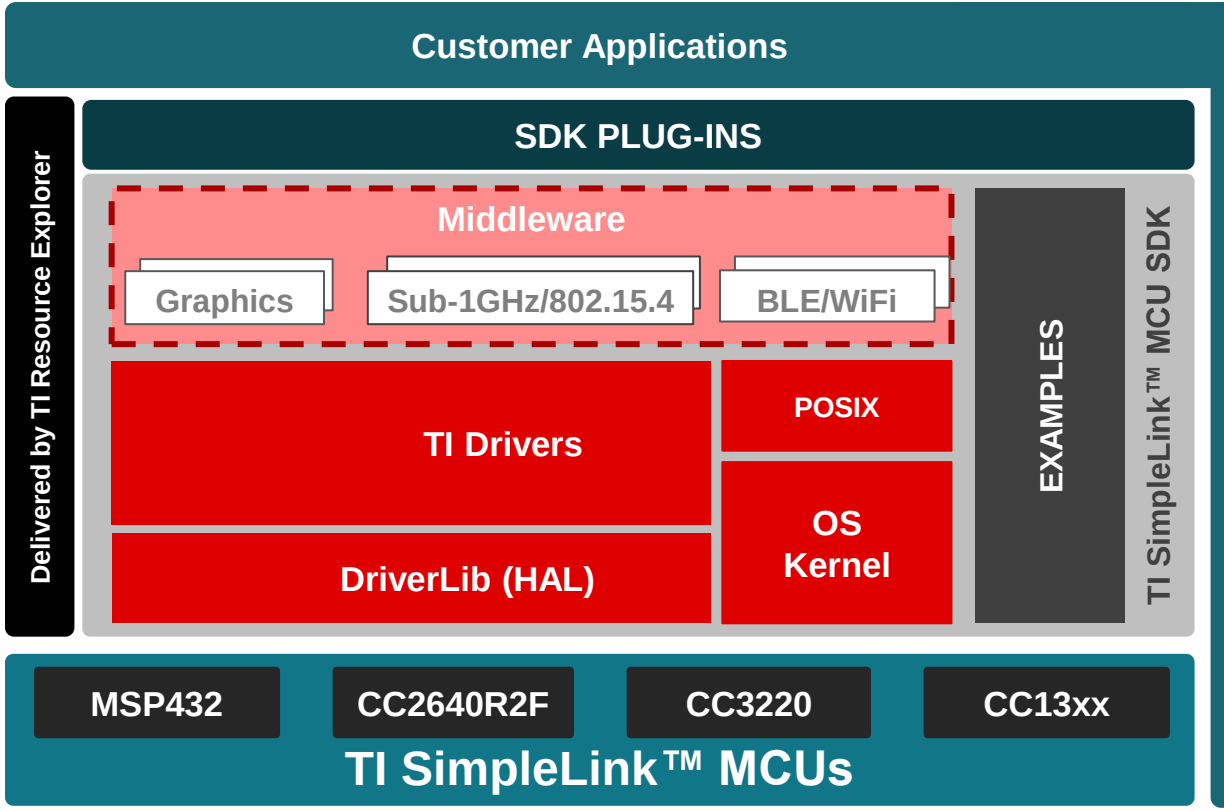
- **Connectivity stacks on external components:**
  - BLE with MSP432+CC2640,
  - Wi-Fi with MSP432 + CC3120
- **Sensors**: temperature, motion, ambient light, ultrasonic & more
- **Actuators:** LCD, DAC, LED drivers, & more
- **More**: cloud/IoT services, algorithms, etc. …

Code portability across SimpleLink MCU devices.

- Built on top of **TI Drivers**
- Available from **TI and 3rd parties**.

SimpleLink™ MCU SDK Customer Benefits

Same getting-started experience across all SimpleLink MCUs with 100% application code portability



Benefits

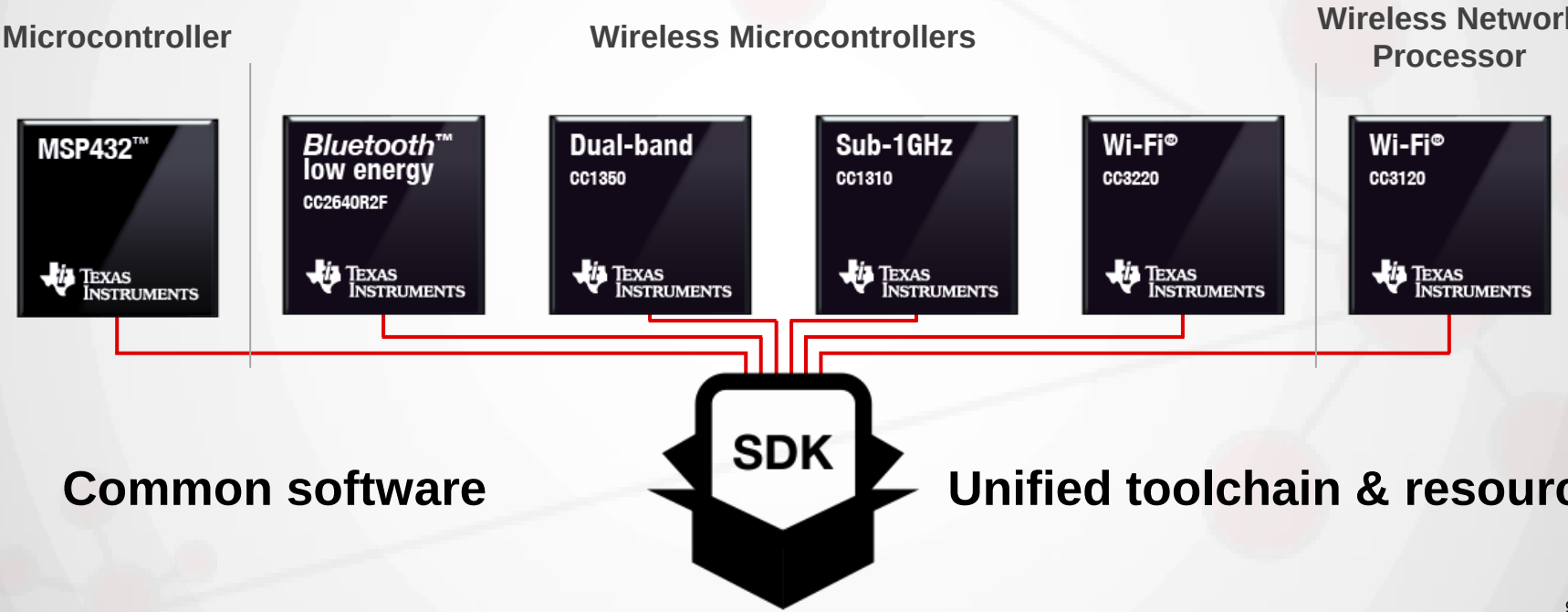
Cohesive experience across SimpleLink MCU products
- Foundation for a common software architecture
- Maximizes reuse & portability

Saves time & money
- Reduces TTM by focusing on your application's differentiation.
- Life cycle, reuse, future proofing
- Expand and add functionality easily. HMI, LCD, etc features leverage lower core-compatible layers

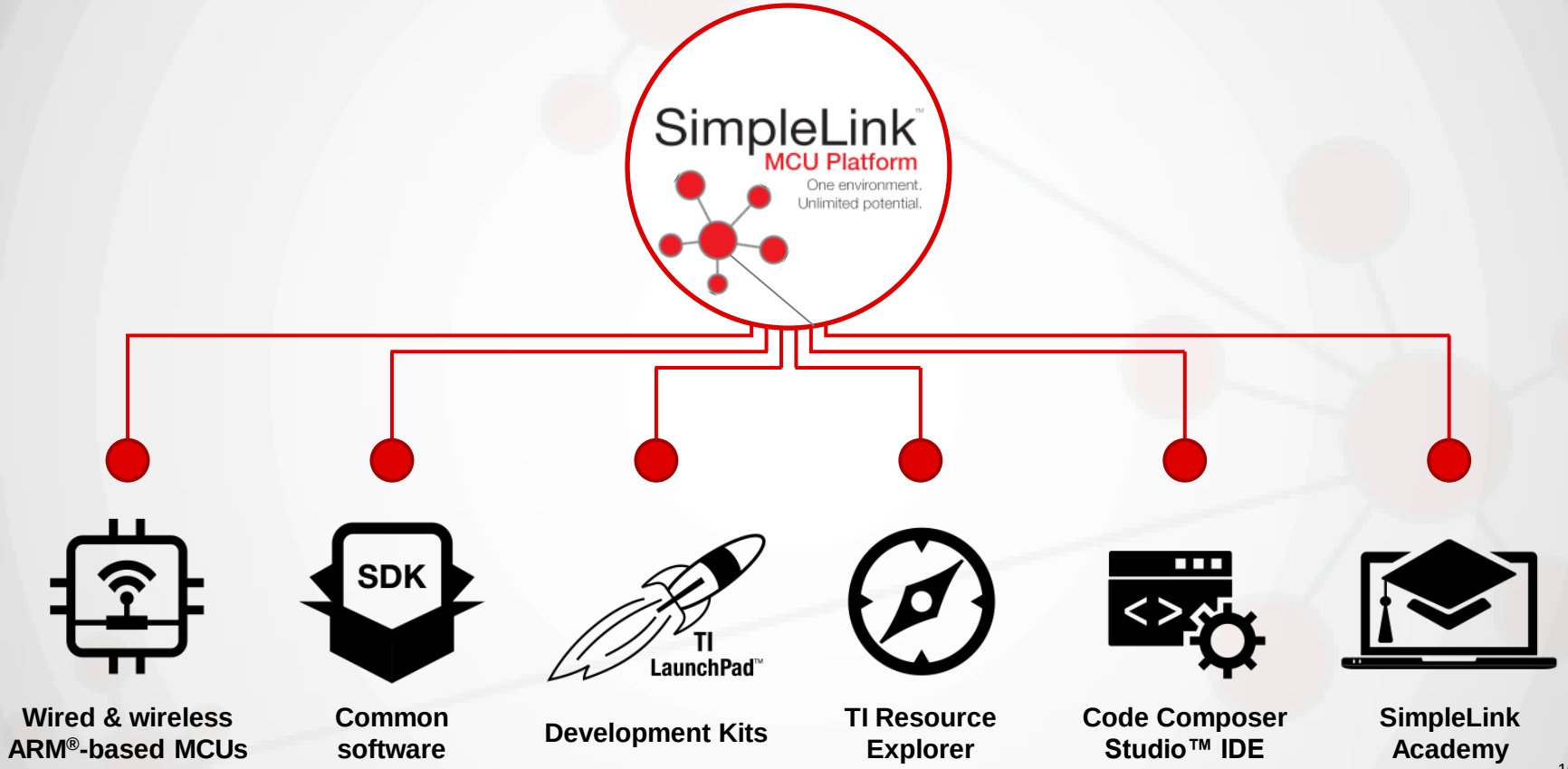
Establishes/Leverages standards
- Know what to expect, where to find things, every time on every device
- Industry-standard POSIX to lower barrier to entry

Single-source
- Greatly simplifies multi-library use more reliable, predictable revisions
- Register-level header files now in SDK- provides users revision control for these resources

New SimpleLink™ MCU platform

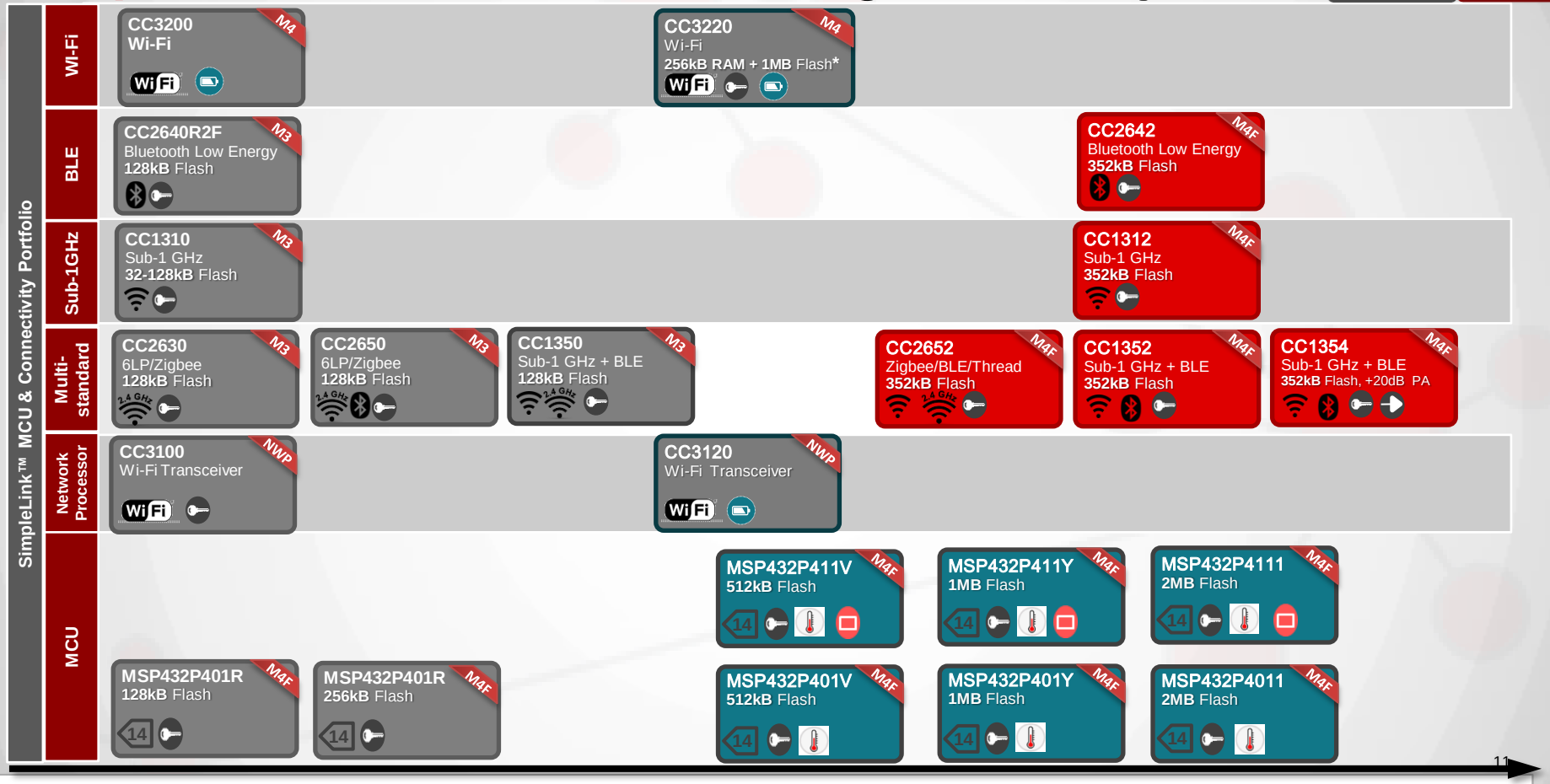


End-to-end development resources



SimpleLink™ Portfolio Redefining Scalability

Sampling | Concept
Production | Development



Texas Instruments

SimpleLink™ Redefining Scalability – Bluetooth low energy

BLE Selection Guide	CC2640 R2F	CC2642	CC2640 NWP + MSP432
Memory	128kB Flash 32kB RAM	352kB Flash 64kB RAM	384kB - 2.2MB Flash 96kB - 288kB RAM
IOs	30 Pins	30 Pins	108 Pins
Analog	12-bit ADC	12-bit ADC	14-bit ADC @ 1Msps
Stacks	BLE	BLE	BLE, BLE HomeKit, GrLib, Voice Recognizer
Applications	Sensors, e-lock	Sensors, e-lock	Glass Breakage, Gas Monitors, Digital Multimeters, Access Panels
Software	**100% code compatibility with SimpleLink MCU SDK**		

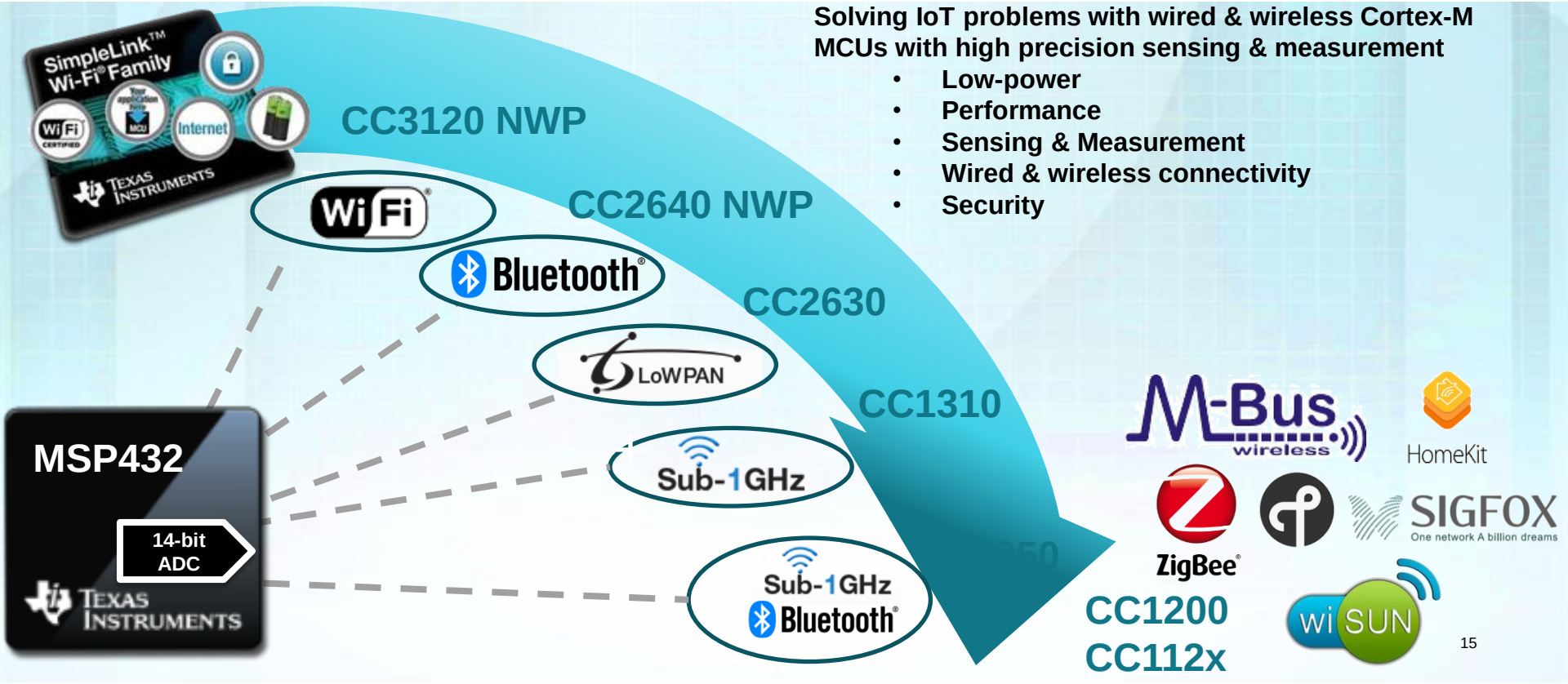
SimpleLink™ Redefining Scalability – Sub-1 GHz

Sub-1 GHz Selection Guide	CC1350	CC1352	CC13xx NWP + MSP432
Memory	128kB Flash 32kB RAM	352kB Flash 64kB RAM	384kB - 2.2MB Flash 96kB - 288kB RAM
IOs	30 Pins	30 Pins	108 Pins
Analog	12-bit ADC	12-bit ADC	14-bit ADC @ 1Msps
Stacks	802.15.4 Sub-1GHz + BLE	Thread, 802.15.4 Sub-1GHz + BLE	Thread, 802.15.4, Sub-1GHz + BLE Ultra-Sonic Scan (ADC14); LCD
Applications	Security Sensors;	Building Automation	Flow Meters, Security Panel
Software	**100% code compatibility with SimpleLink MCU SDK**		

SimpleLink™ Redefining Scalability – Wi-Fi

Wi-Fi Selection Guide	CC3220	CC3120 NWP + MSP432
Memory	256kB – 1MB Flash 256kB RAM	256kB - 2MB Flash 256kB dedicated MCU RAM
IOs	30 Pins	108 Pins
Analog	12-bit ADC	14-bit ADC @ 1Msps
Stacks	Wi-Fi	Wi-Fi Plugin, GrLib, Voice Recognizer
Applications	Sensors, Thermostats	Glass Break, Gas Monitors, Thermostat, Gateway,
Software	**100% code compatibility with SimpleLink MCU SDK**	

SimpleLink SDK Wireless Scalability



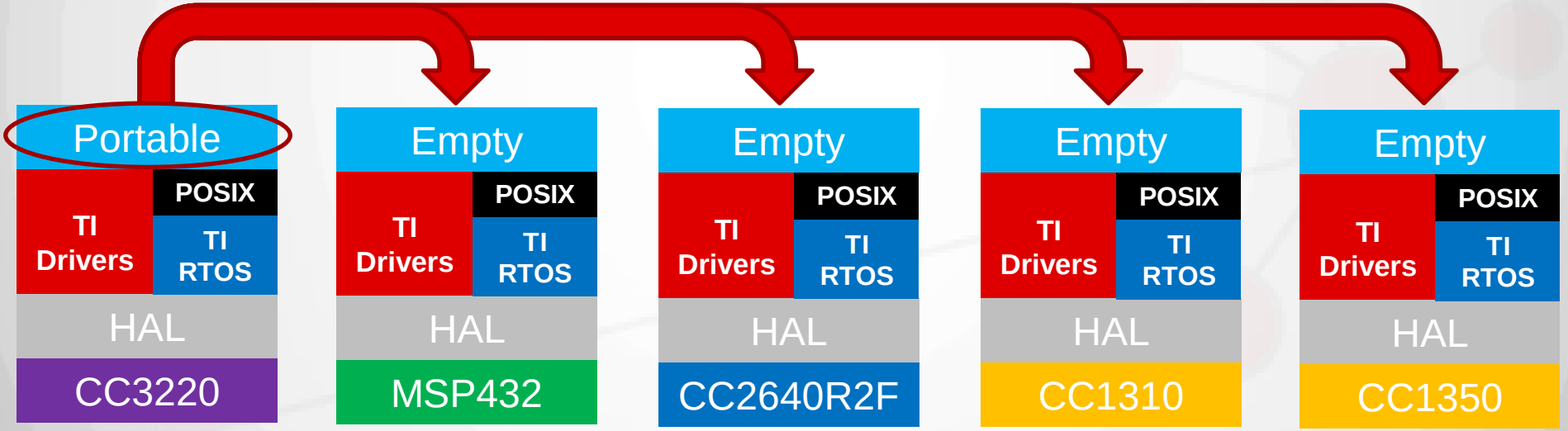
Solving IoT problems with wired & wireless Cortex-M MCUs with high precision sensing & measurement

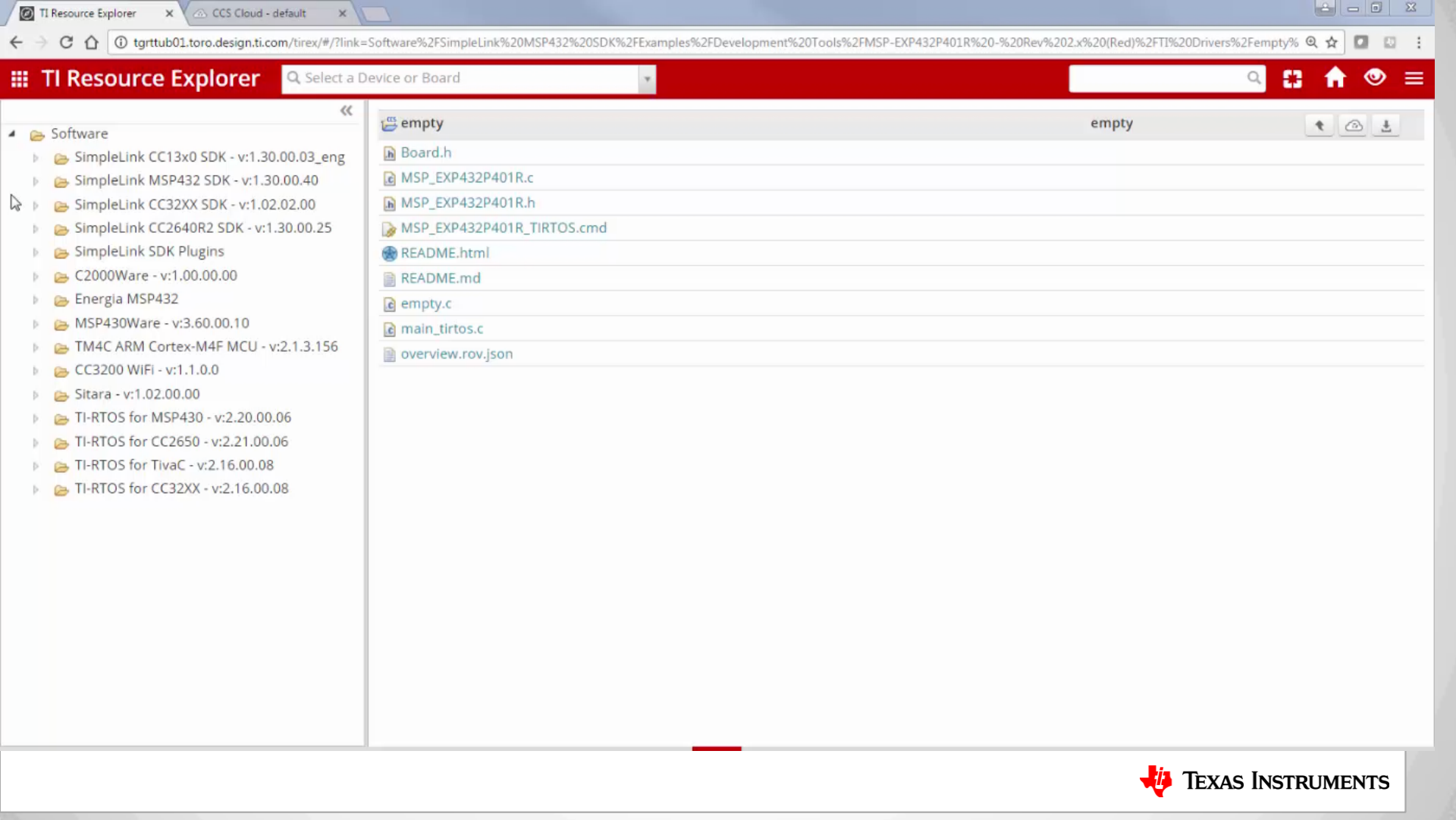
- Low-power
- Performance
- Sensing & Measurement
- Wired & wireless connectivity
- Security

100% Code Portability In Action

Live demo to port a **CC3220** example project on to **MSP432**, **CC2640R2**, **CC1310**, and **CC1350**.

All done with the **SimpleLink SDKs** and **CCS Cloud** with a few clicks!




TI Resource Explorer
CCS Cloud - default
tgrttub01.toro.design.ti.com/tirex/#/?link=Software%2FSimpleLink%20MSP432%20SDK%2FExamples%2FDevelopment%20Tools%2FMSP-EXP432P401R%20-%20Rev%202.x%20(Red)%2FTI%20Drivers%2Fempty%
TI Resource Explorer
Select a Device or Board
Software
SimpleLink CC13x0 SDK - v:1.30.00.03_eng
SimpleLink MSP432 SDK - v:1.30.00.40
SimpleLink CC32XX SDK - v:1.02.02.00
SimpleLink CC2640R2 SDK - v:1.30.00.25
SimpleLink SDK Plugins
C2000Ware - v:1.00.00.00
Energia MSP432
MSP430Ware - v:3.60.00.10
TM4C ARM Cortex-M4F MCU - v:2.1.3.156
CC3200 WiFi - v:1.1.0.0
Sitara - v:1.02.00.00
TI-RTOS for MSP430 - v:2.20.00.06
TI-RTOS for CC2650 - v:2.21.00.06
TI-RTOS for TivaC - v:2.16.00.08
TI-RTOS for CC32XX - v:2.16.00.08
empty
empty
Board.h
MSP_EXP432P401R.c
MSP_EXP432P401R.h
MSP_EXP432P401R_TIRTOS.cmd
README.html
README.md
empty.c
main_tirtos.c
overview.rov.json
Texas Instruments

Security system example

SimpleLink™
MCU Platform
One environment.
Unlimited potential.

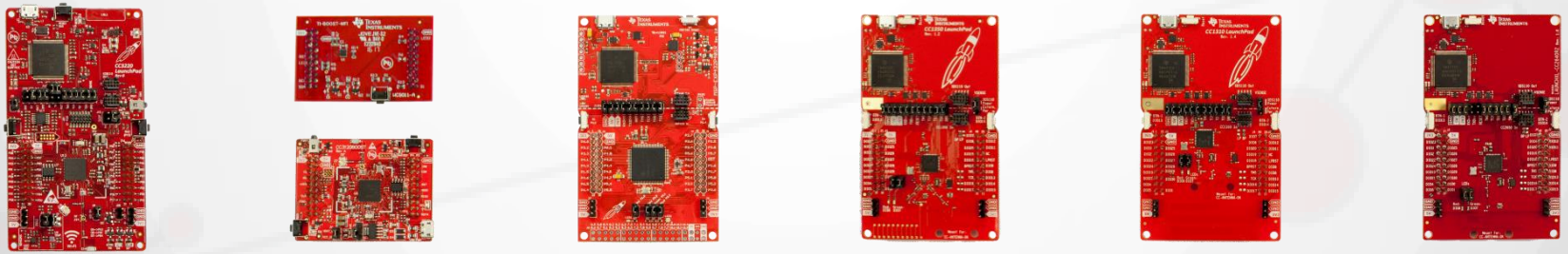
AVAILABLE TODAY

Hundreds of hardware choices & development resources

SDK

TI LaunchPad™

ti.com/simplelink | ti.com/simplelinksdk | ti.com/launchpad | dev.ti.com/tirex/#/ | ti.com/ccs | ti.com/simplelinkacademy



Simplelink Academy Introduction

http://software-dl.ti.com/lprf/simplelink_academy/overview.html

SimpleLink Academy v1.11

Introduction

This is an overview file for the SimpleLink Academy workshops. Below you can find links to the individual lab instructions.

The projects and instructions can also be found by opening Resource Explorer inside Code Composer Studio when the SimpleLink Academy installer is finished. You may need to restart CCS to see the new contents.

Some of the dynamic content in the instructions will only function correctly when viewed inside Code Composer Studio's Resource Explorer, with Chrome or with Firefox.

Introduction
Getting started
Labs
Videos
Changelog

Getting started

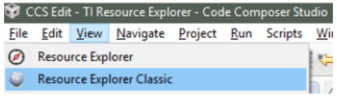
Download SimpleLink Academy installer for Windows and install to browse and import projects into Code Composer Studio via the Resource Explorer.

Every lab assignment will tell you what you need to do and install, but Code Composer Studio `6.1.3+` must in any case be installed to do the code assignments.

It is also recommended to install the latest TI BLE SDK v2.x as that also includes a compatible TI-RTOS package.

Use Resource Explorer 'Classic' for SimpleLink Academy material

If you are using Code Composer Studio 6.2.x it is necessary to use the 'Classic' version of Resource Explorer to view the training material and import the projects.



Labs

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