CEC Continuing Education Center

DesignNews

Getting Started with the Raspberry Pi Pico

DAY 1 : Introduction to the Raspberry Pi Pico

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THE SPEAKER

Jacob Beningo

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Beningo Embedded Group - President

Focus: Embedded Software Consulting

An independent consultant who specializes in the design of real-time, microcontroller based embedded software.
He has published two books:

- Reusable Firmware Development
- MicroPython Projects

Writes a weekly blog for DesignNews.com focused on embedded system design techniques and challenges.

Visit www.beningo.com to learn more …

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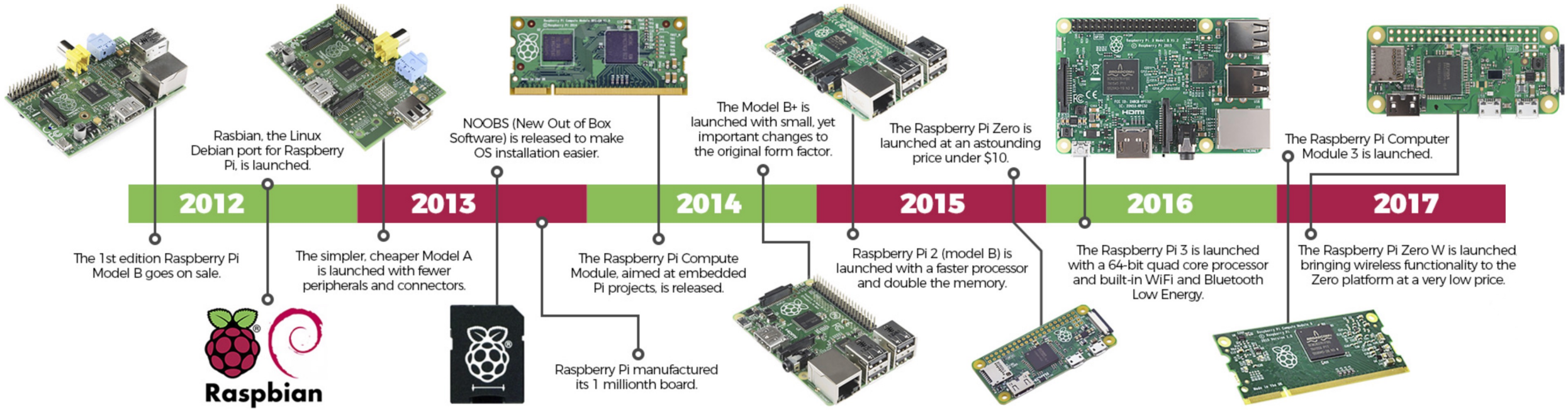
Course Sessions

- Introduction to the Raspberry Pi Pico
- Writing your First Raspberry Pi Pico Application
- Interfacing with Raspberry Pi Pico Peripherals
- Designing Multicore Raspberry Pi Pico Applications
- Using MicroPython on the Raspberry Pi Pico

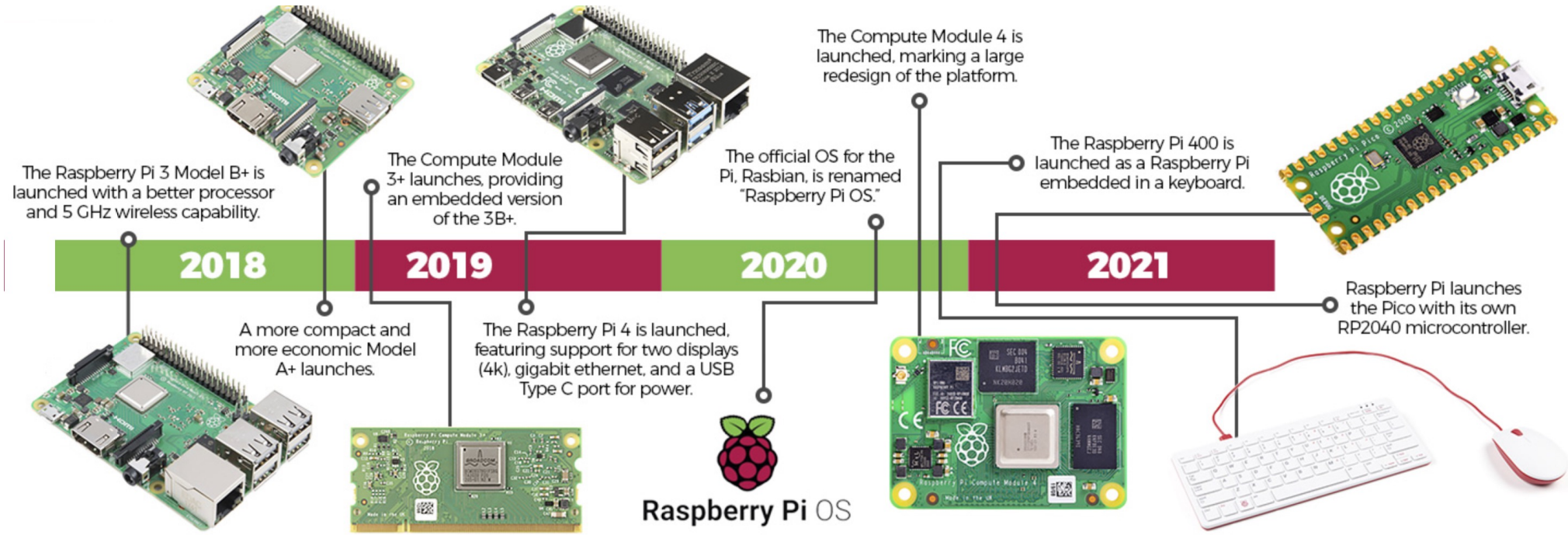
1 The Raspberry Pi

The Raspberry Pi's



Source: https://www.sparkfun.com/raspberry_pi

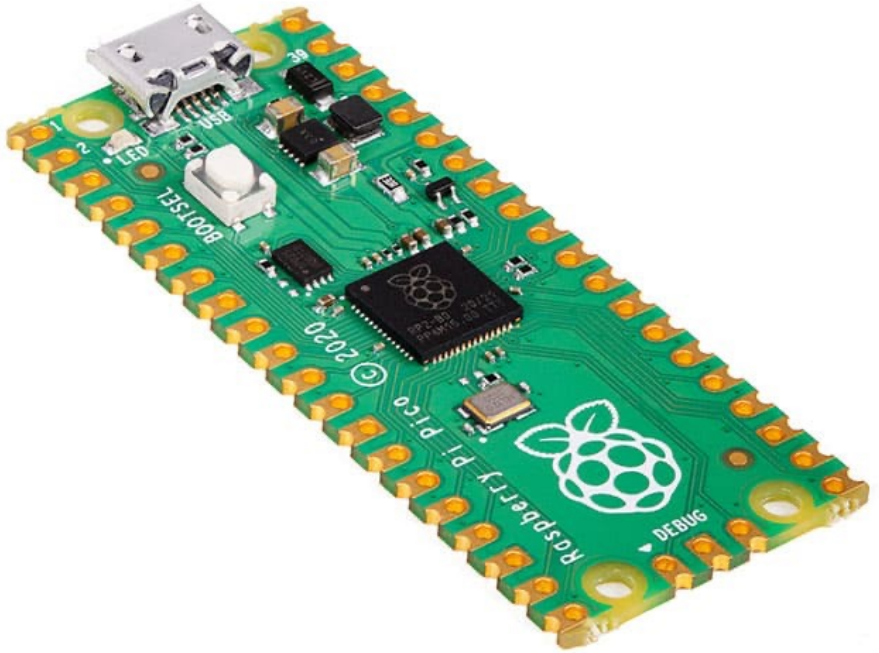
The Raspberry Pi's



Source: https://www.sparkfun.com/raspberry_pi

The Raspberry Pi Pico

- A $4 MCU board
  - RP2040
    - Dual Core
- SDK's
  - C
  - MicroPython



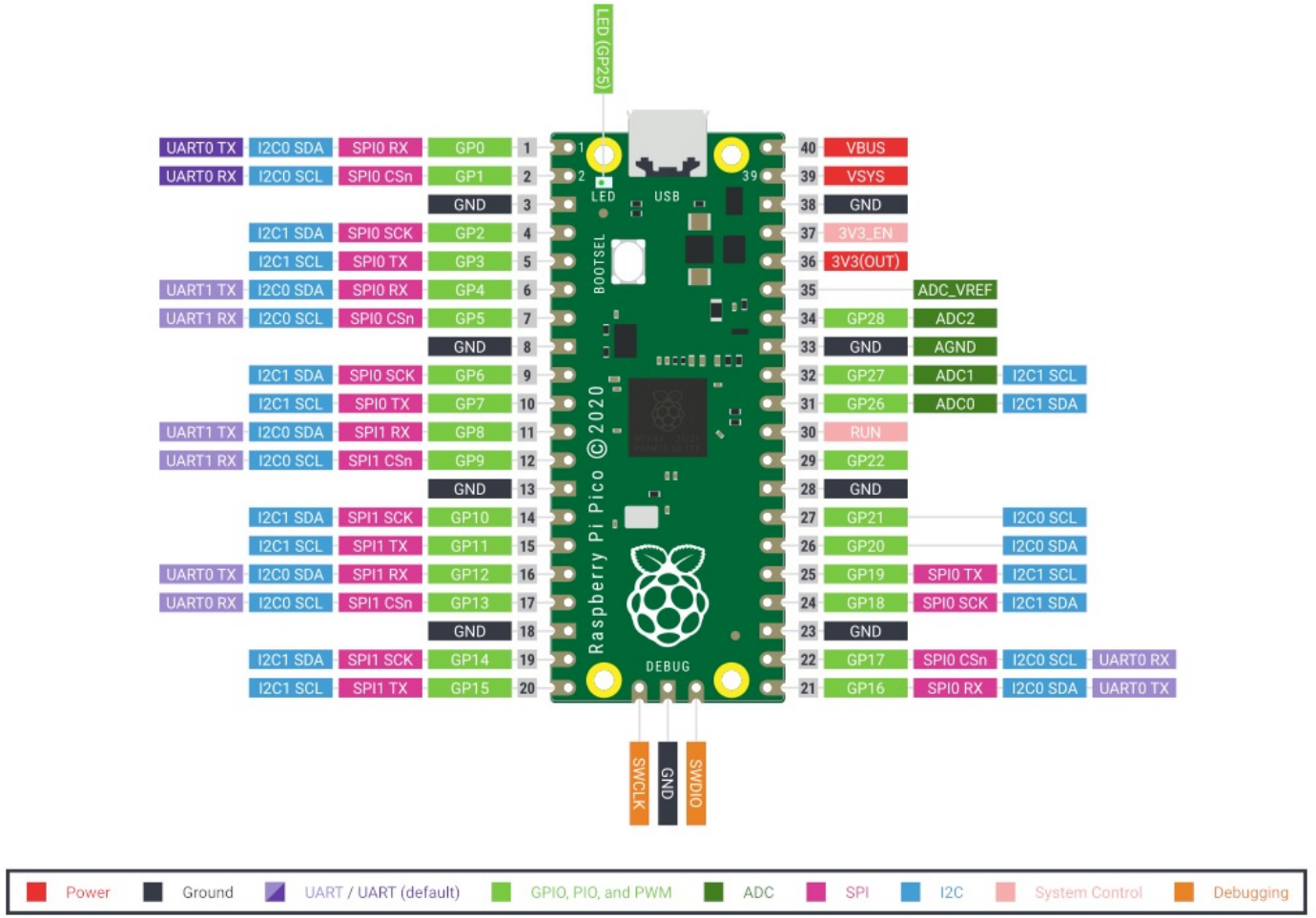
Are you planning to follow along with a Raspberry Pi Pico?

- Yes
- No
- Not sure

2 The Raspberry Pi Pico Hardware

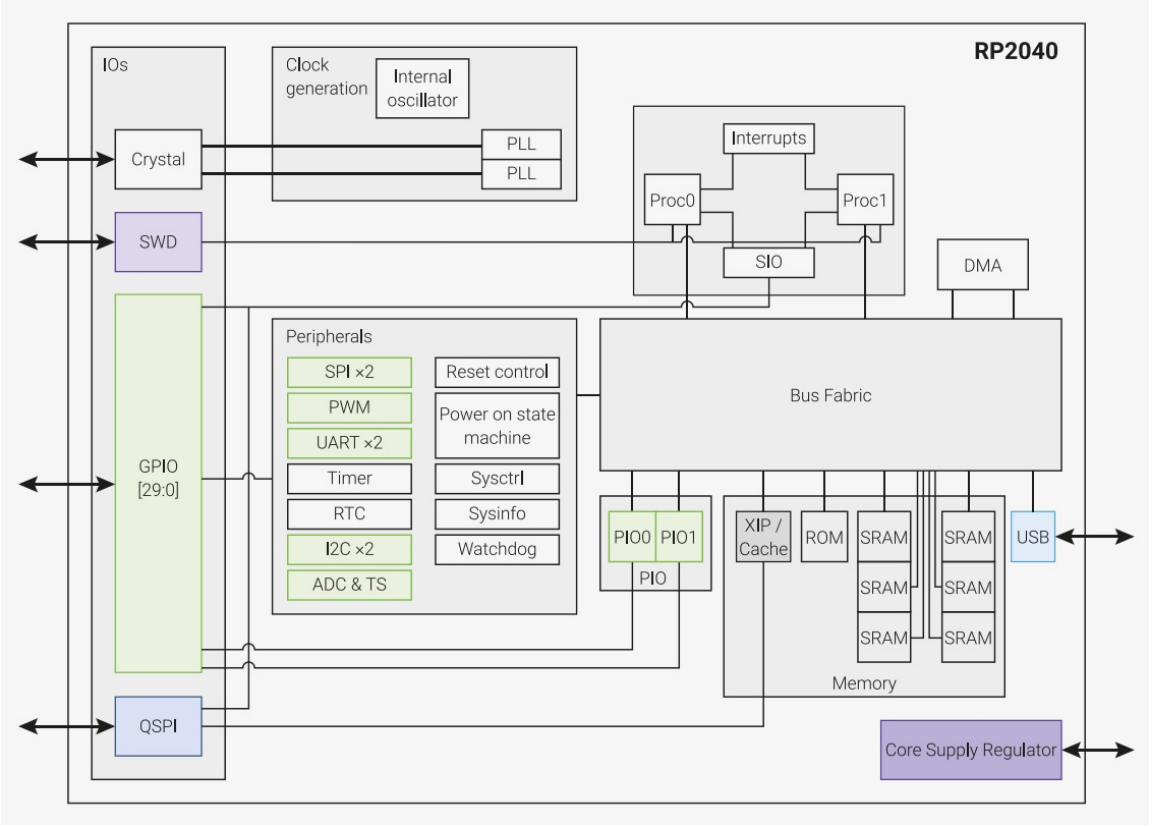
The Module Overview

- GPIO (28)
  - Any GPIO can be PWM
- UART (2)
- I2C (2)
- SPI(2)
- Analog (3)

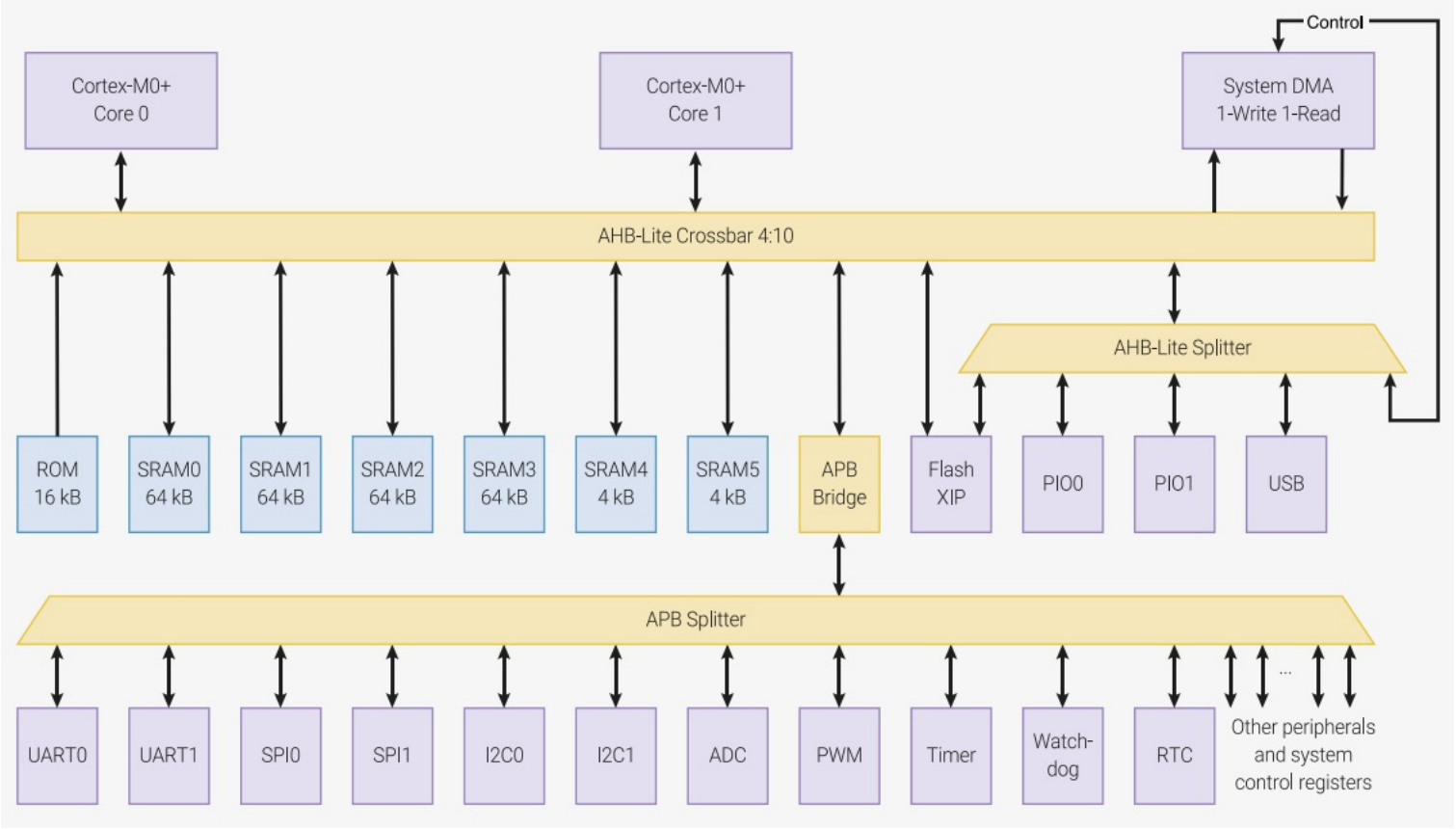


The RP2040 Microcontroller

- Dual ARM Cortex-M0+ @ 133MHz
- 264kB on-chip SRAM
- Support for up to 16MB of off-chip Flash
- DMA controller
- Interpolator and integer divider peripherals

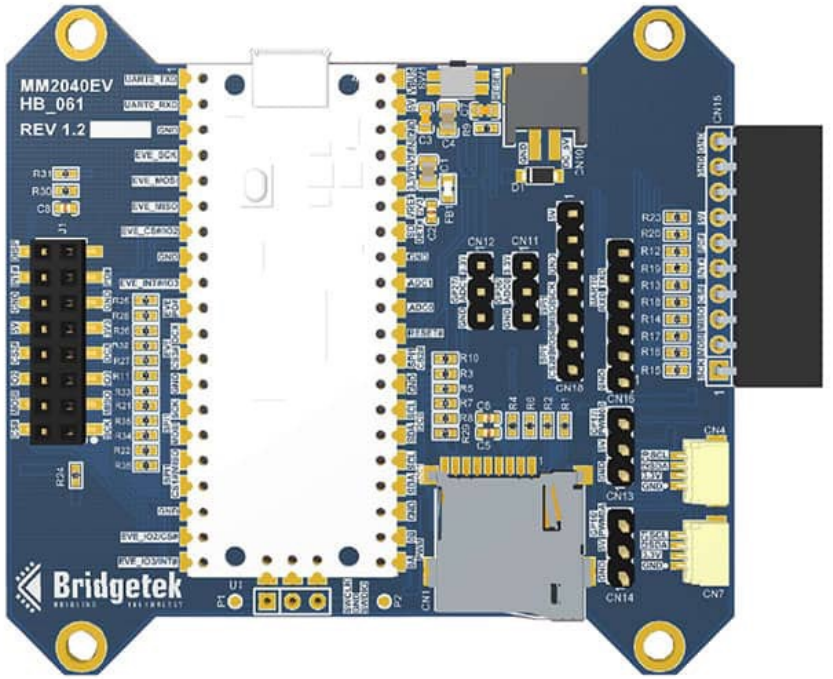


The RP2040 Microcontroller



Raspberry Pi Pico Expander

- SWD / JTAG connector
- uSD card slot
- GPIO expansion



What do you think is the most interested feature of the Raspberry Pi Pico?

- Dual Core Microcontroller
- MicroPython Support
- I/O Capabilities
- Cost
- Other

3 The Software Toolchains

C SDK

- Git Repo
  - https://github.com/raspberrypi/pico-sdk
- Git Examples
  - https://github.com/raspberrypi/pico-examples
- Getting Started Guide
  - https://datasheets.raspberrypi.com/pico/getting-started-with-pico.pdf

C SDK

- adc
- blink
- clocks
- cmake
- divider
- dma
- flash
- gpio
- hello_world
- i2c
- ide/vscode
- interp
- multicore
- picoboard
- pio
- pwm
- reset
- rtc
- spi
- system
- timer
- uart
- usb
- watchdog

MicroPython SDK

- Python interpreter for Python 3.5 that runs on MCU's
- Getting Started Guide
  - https://datasheets.raspberrypi.com/pico/raspberry-pi-pico-python-sdk.pdf
- Reference
  - https://docs.micropython.org/en/latest/rp2/quickref.html
- Library
  - https://docs.micropython.org/en/latest/library/rp2.html

Which SDK are you most interested in using?

- C language
- MicroPython

4 Going Further

Thank you for attending

Please consider the resources below:

- www.beningo.com
  - Blog, White Papers, Courses
  - Embedded Bytes Newsletter
    - http://bit.ly/1BAHYXm

From www.beningo.com under

- Blog > CEC – Getting Started with the Raspberry Pi Pico

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