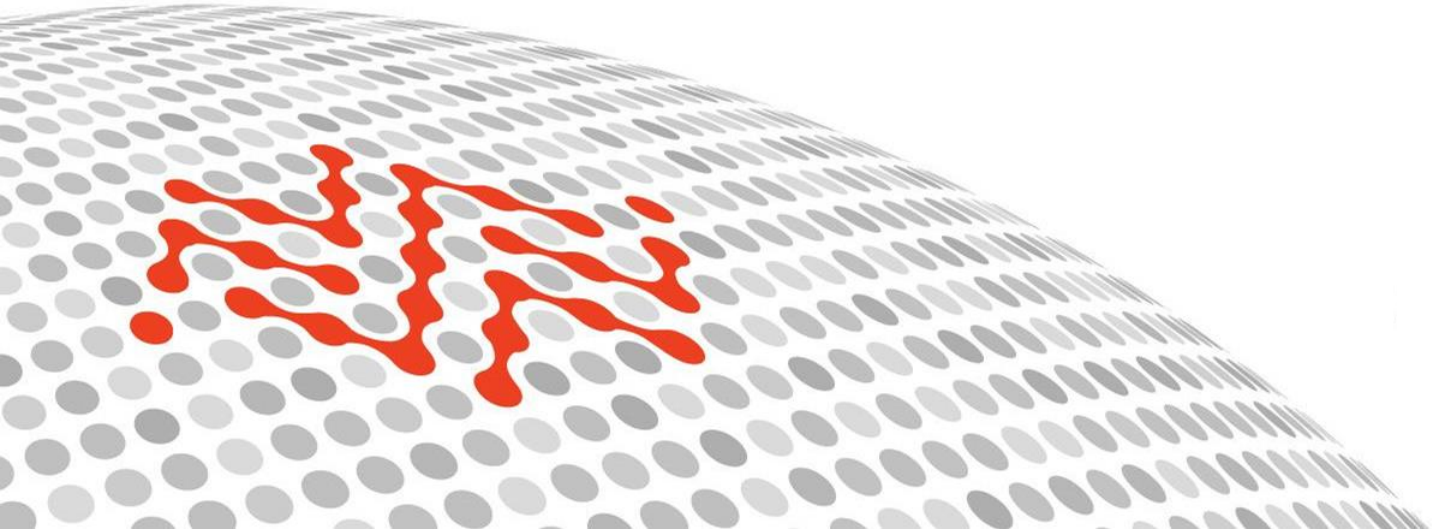
A new kind of open source hardware for IoT industrial-grade products



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What is IoT Open Source Hardware for industry?

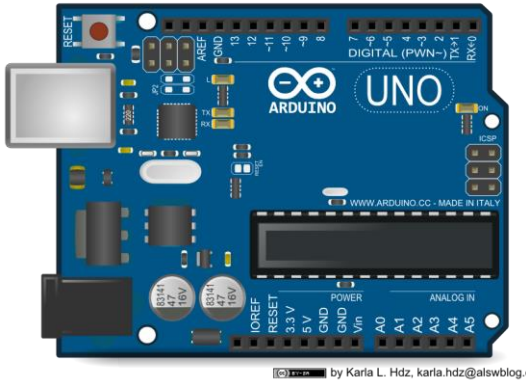
- Design is publicly available (including source files)
- Business-friendly Open Source License (e.g. 

CC attribution")
  - Freely available to share, copy and modify
  - Freely available to use for building products for any purpose, including commercial, with no restrictions
  - Non-revocable license
- IoT needs: highly expandable, versatile connectivity (native connectors to expand it without needing to modify the design)

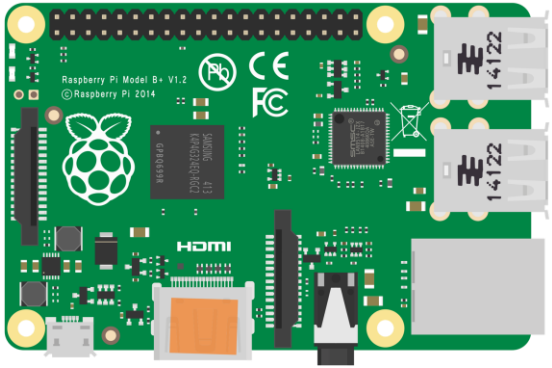
Goals

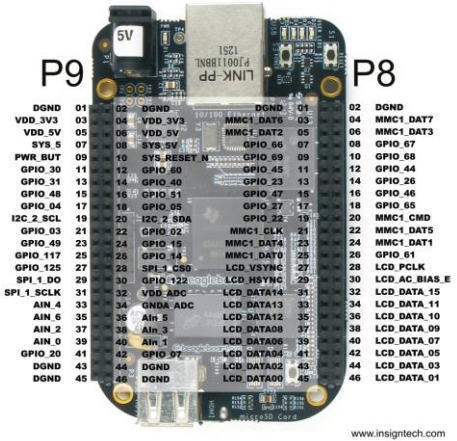
- Encourage copies, derivatives, new hardware designs, business models
- Build a developer community & a business ecosystem

How open are they?

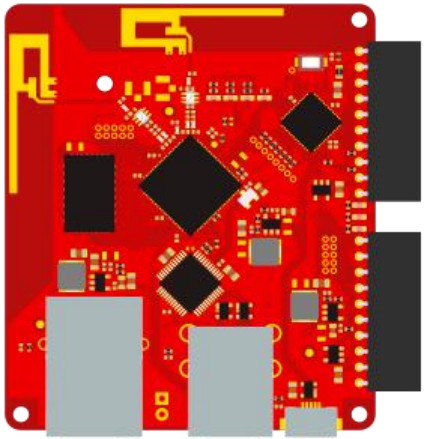


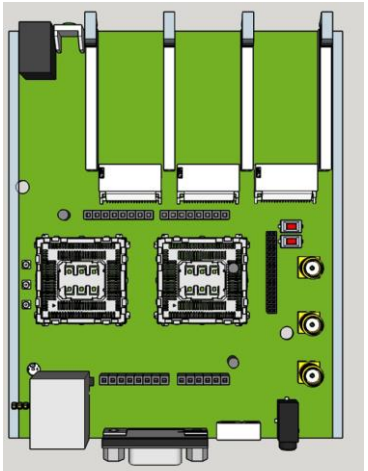
by Karla L. Hdz, karla.hdz@alswblog.org

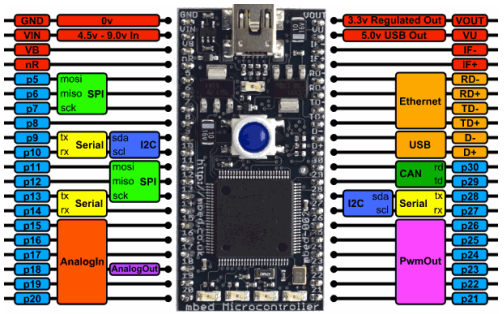




www.insigntech.com







How open are they?

	Schematics & gerber published	Free to copy & modify	Business friendly license	Open processor & drivers	Industry Usage
Raspberry Pi	YES	NO – Proprietary	NO – Proprietary	Proprietary (Broadcom)	Demos & technology testing
mBed HDK	YES	NO – Proprietary	NO – Proprietary	Proprietary (ARM)	ARM dev kit
Arduino	YES	YES	CC share-alike*	Atmel + Arduino certified procs	Build open source product upon it
BeagleBoard	YES	YES	CC share-alike*	Proprietary (TI)	Build open source product upon it
Particule (Spark)	YES	YES	CC share-alike*	Proprietary variants (TI, …)	Build open source product upon it
Tessel	YES	YES	CC share-alike*	Proprietary (ARM)	Build open source product upon it
openPicus	Partly (no gerbers)	YES	Yes – CC attribution	FlyPort interface OSS framework	Build commercial product upon it
mangOH	YES	YES	Yes – CC attribution	CF3 socket OSS framework	Build commercial product upon it

Disclaimer: Your choice should not be based on this criterion alone, even though it is an important one for your business.
Other important criteria include processor/micro-controller, HW features, extensions, O/S, tooling, code samples, community, …
*: viral license: the resulting product must use the same license.

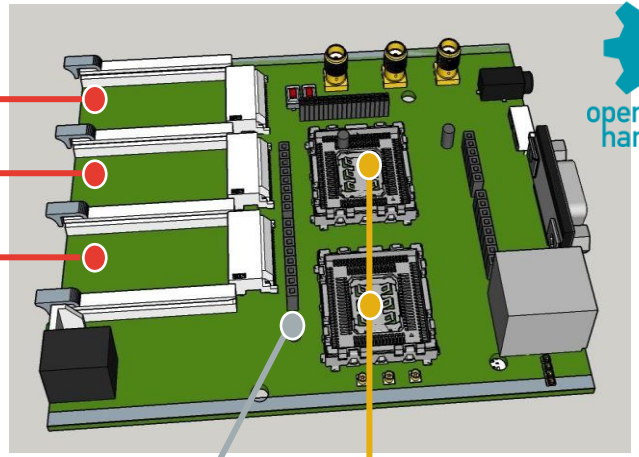
Requirement #1: Easy to prototype with

- **Highly Flexible**
  - application processor choice
  - tooling / language choice
- **Highly Expandable**
  - Accept multiple sensors & networks
  - Extension boards
  - 3D printable and modifiable files

Project mangOH

open source hardware

IoT Connectors provide a new IO interface to add industrialized short range wireless, sensor, or application processing modules



Arduino Connector enables developers to incorporate any 3rd party Arduino shield with full software support through Legato open source framework

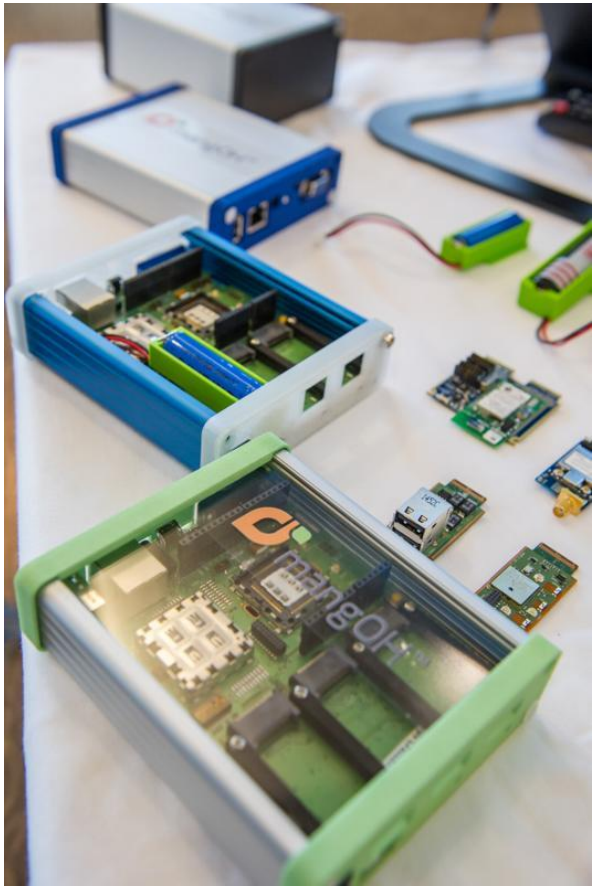
CF3 Connectors support any compatible application processor supporting Legato open source framework, or wireless module

Industry requirement: Ease the productization

Your prototype worked great? Cool, but now you have to build a real product!

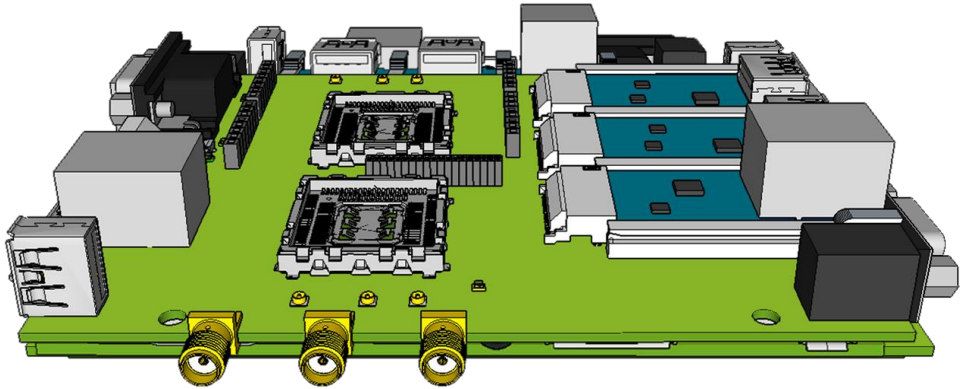
Here's what you need in order to **avoid a complete redesign**:

- **Industry standard casing**
  - (eg. mangOH is Eurocard format 100mm*120mm)
- **Industrial grade connectors**
  - (eg. mangOH: QSFP+ IoT connectors)
- **Industrial grade on-board components** or footprint compatible options
- **Modular design** which allows you to select components that will be populated on board



Introducing Project mangOH™

Open hardware reference design from Sierra Wireless



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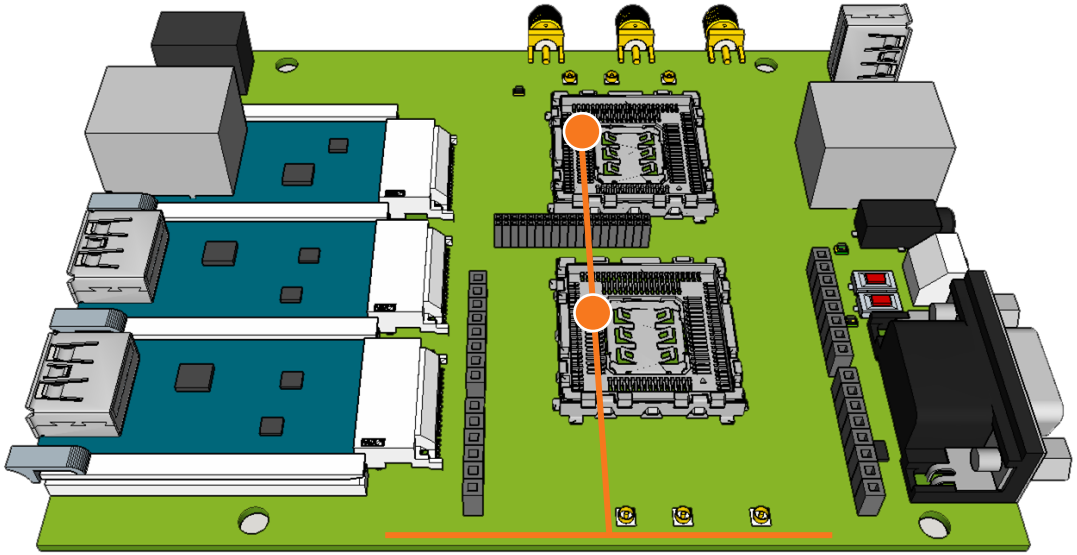
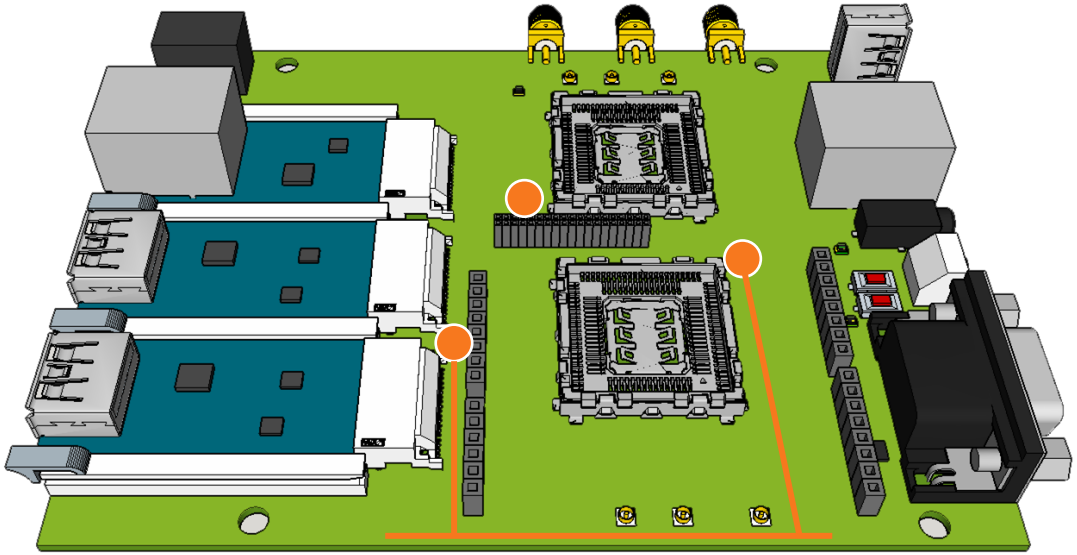
What is Project mangOH™



Project mangOH

What is Project mangOH™



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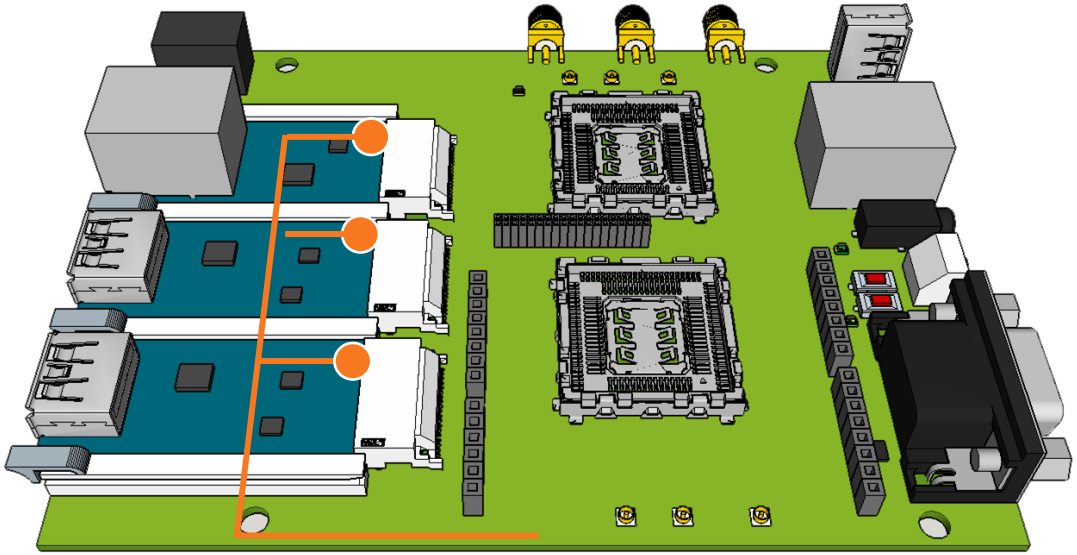
What is Project mangOH™



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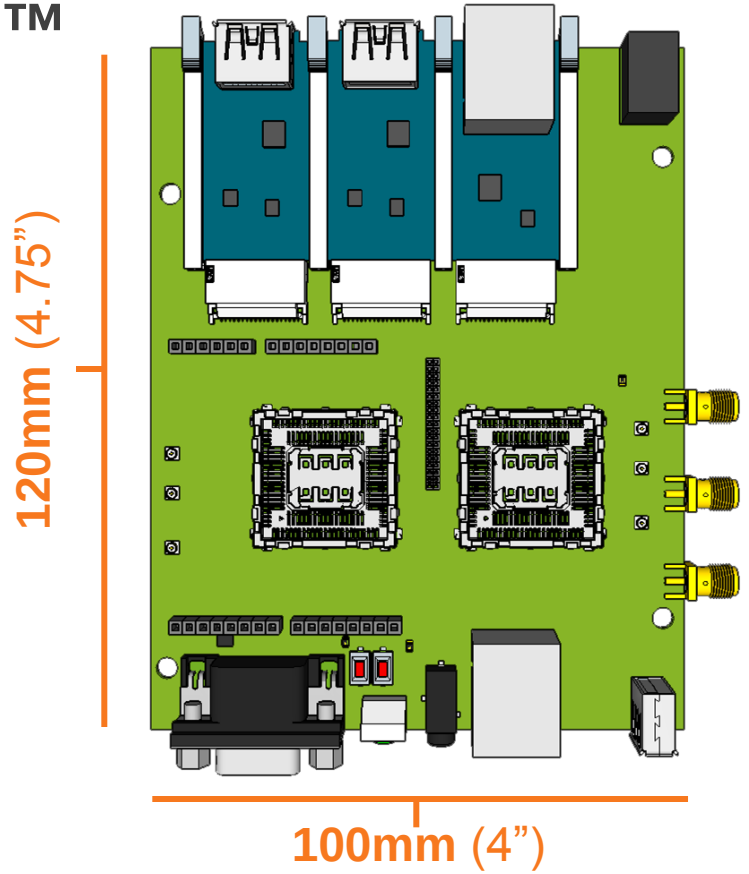
What is Project mangOH™

- 1 USB 2.0 OTG
- 1 USB 2.0 Host
- 1 RS232/Serial
- 1 RJ45/Ethernet
- Audio Jack
- SD card
- 3 SMA antenna connectors
  (Primary, Secondary/Diversity, GPS)
- Accelerometer, Gyroscope
- Battery/Battery Charging



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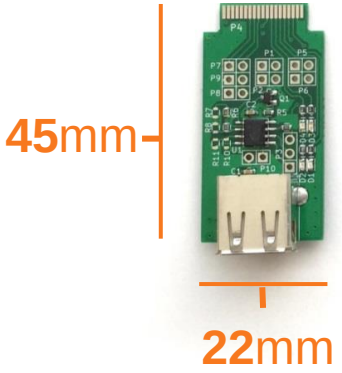
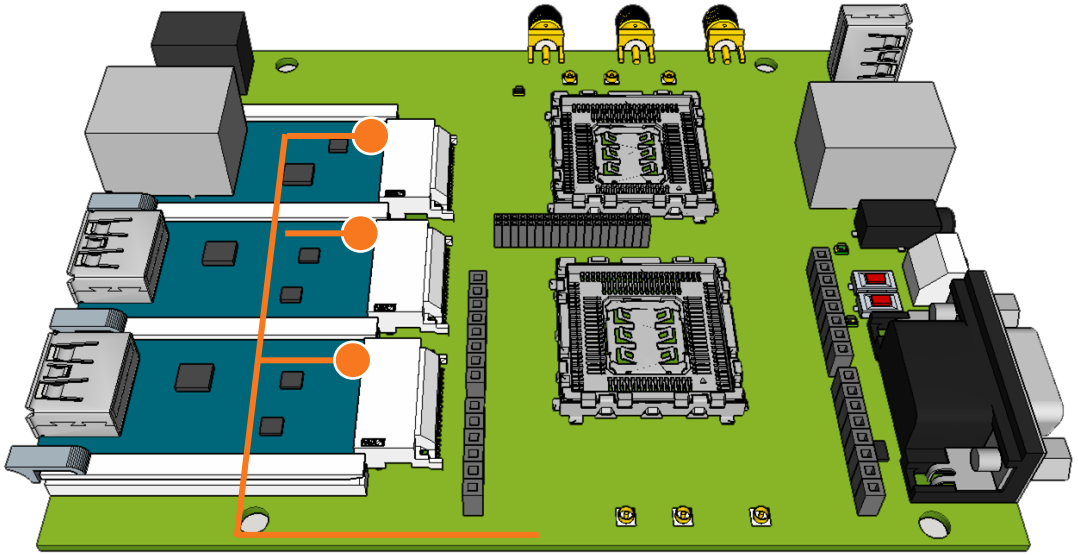
Introducing the IoT Module





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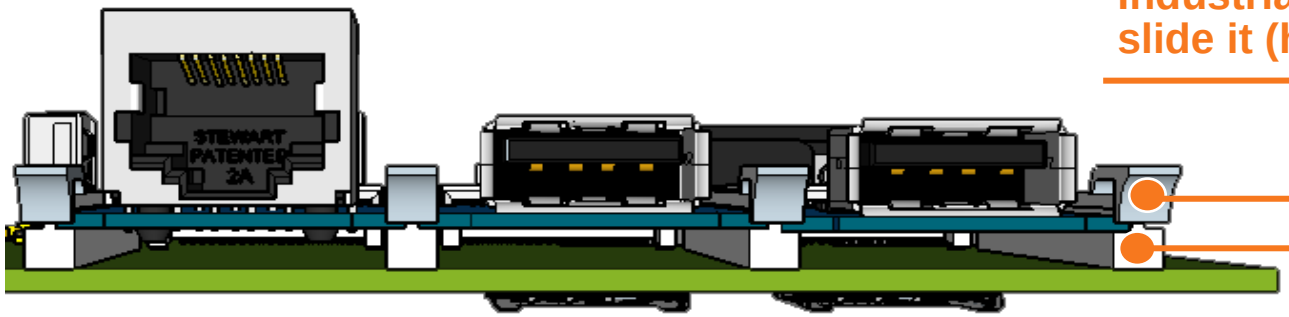
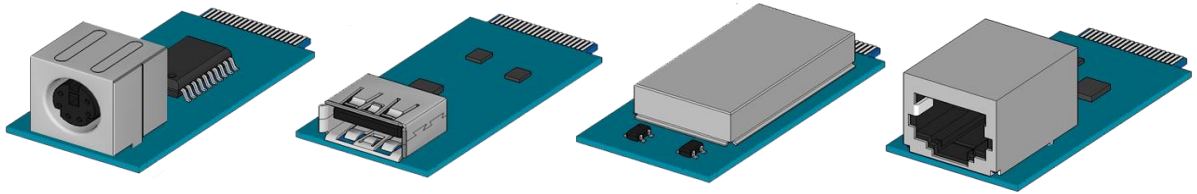
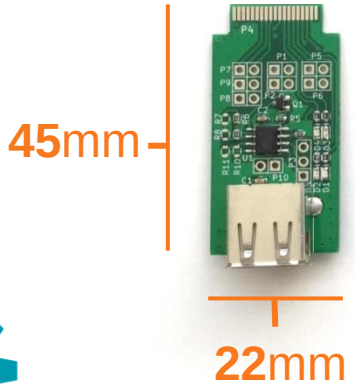
mangOH: Industrial grade connectors



Industrial-grade locking system: slide it (hot plug) or screw it





Project mangOH

open source hardware

A word on Project mangOH…

Current phase: manufacturing & distribution setup of the board, a few IoT modules, accessories, code samples & tutorials

➢estimated time of availability: next month

Current project members:

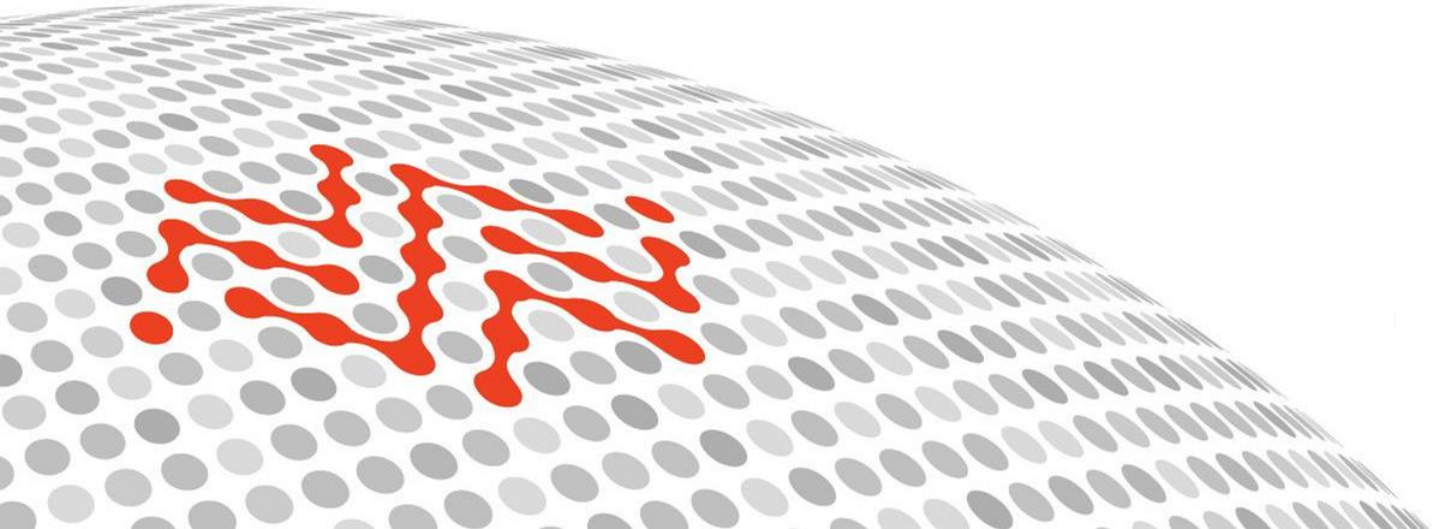
element14 LINEAR TECHNOLOGY TALON COMMUNICATIONS ELECTRONIC DESIGN AND MANUFACTURING

freescale semiconductor SIERRA WIRELESS Texas Instruments

Sign up to get notified or join the project on http://mangoh.io

Thanks! Questions?

Feel free to contact:
tcantegrel@sierrawireless.com ; @sierradeveloper ; LinkedIn



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