



DIGI

**BUILD VS BUY?
THE CHOICE... IS YOURS!**

RON SINGH

DIR. DISTN – DIGI INTERNATIONAL

WHERE DOES YOUR IP TRULY LIE?



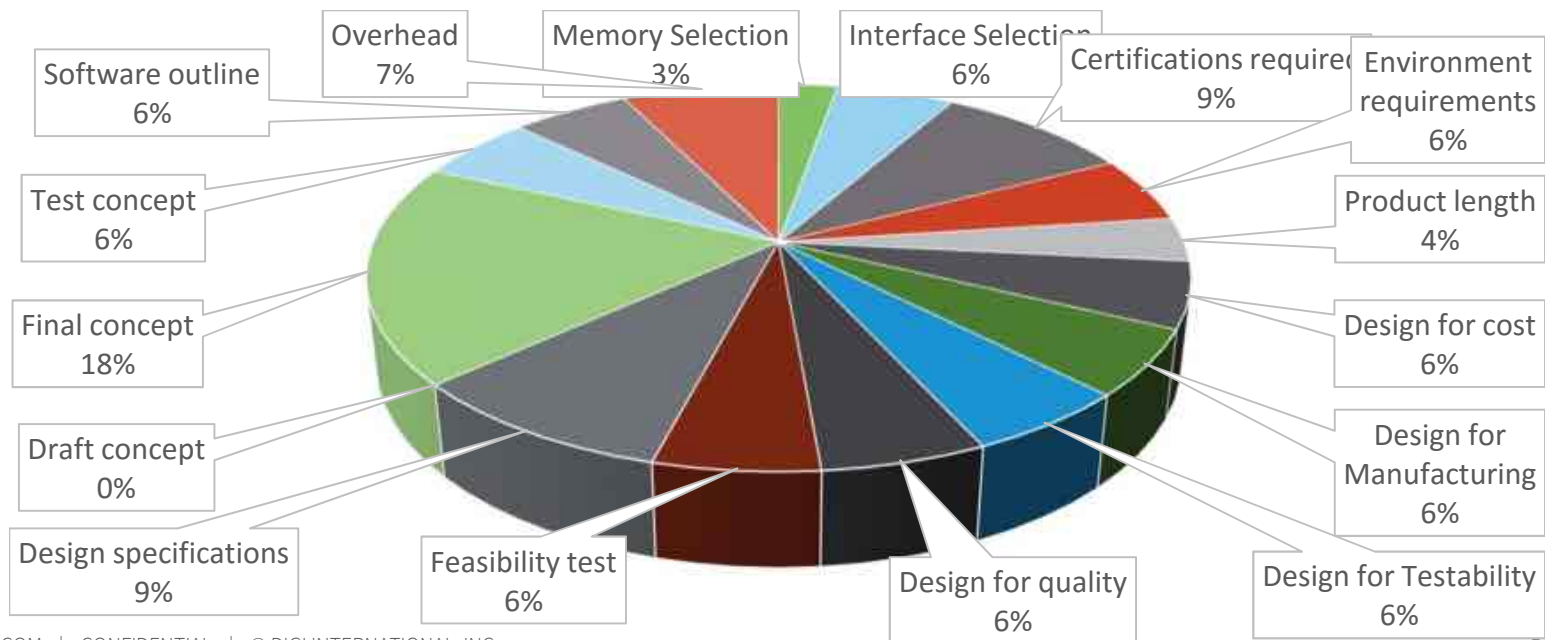
BUILD VS BUY: SELECTING MODULAR OVER INTEGRATED DESIGNS

- Engineering opportunity cost: if your team is building a custom product, maybe they're not working on another project that could be driving your business?
- Technology Debt: you are responsible for your bespoke product - if it needs change or the outside environment evolves, it will cost (several) development cycles: that means your team's time & company's cash



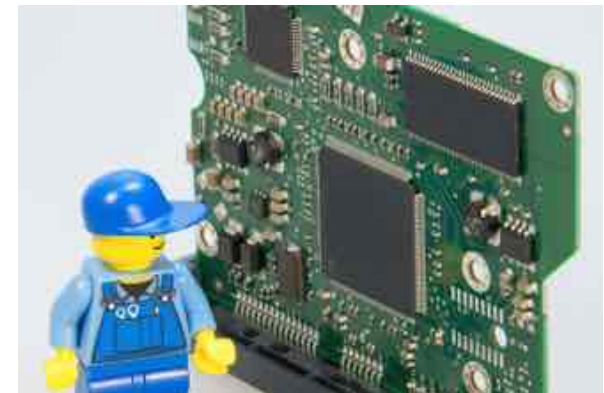
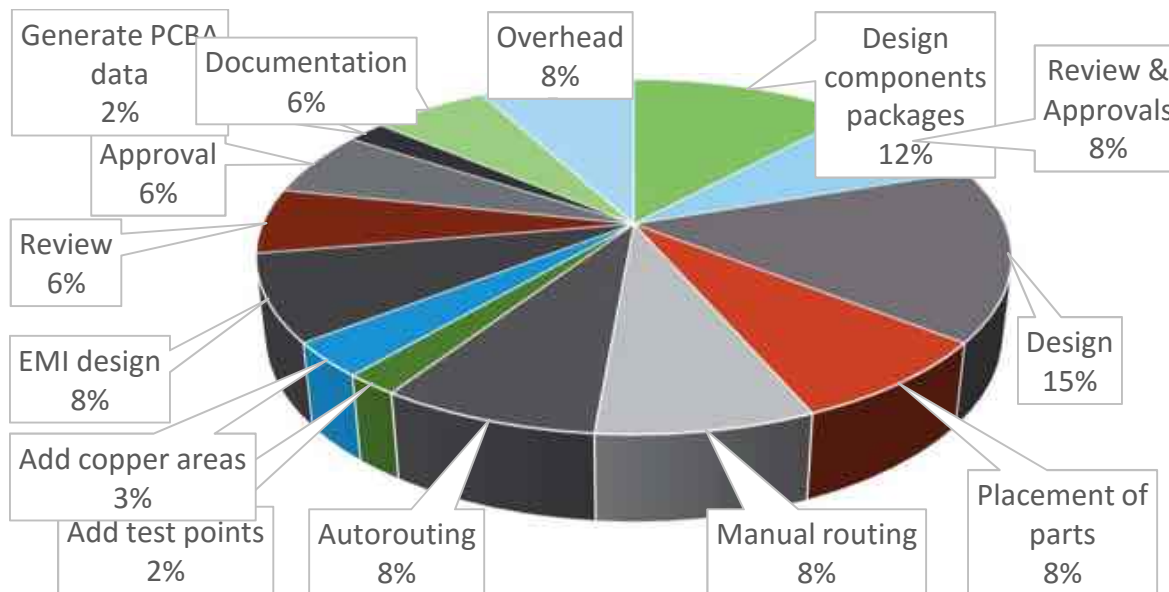
BUILD VS BUY: HARDWARE AND SOFTWARE TIME SAVINGS ADD UP

- Direct cost: Engineering time - your engineering team will have to design, test & verify your hardware design, and write some code



BUILD VS BUY: SAVING MONEY IN CIRCUIT BOARD DESIGN FOR MANUFACTURE

- Production & QA: you have to ensure manufacturing with the minimum of flow disruption - the last item off the production line needs to work identically to the first, and that'll take some time



BUILD VS BUY: INTEREST ON INVESTMENTS

- Negotiating on price with economies of scale



BUILD VS BUY: RISK MINIMIZATION

- Upgradeability: is your design flexible enough to meet future needs? In a diverse & constantly evolving world, as your customers & customers' needs change, is your solution flexible enough to stay relevant?
- Application board is easier to redesign
- Module changes seldom force a redesign
- Contributes to a product's commercial success

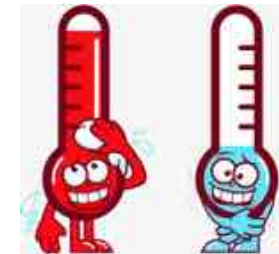


E.G. IOT IN THE TRANSPORT INDUSTRY

- Wireless Pre-Certification: e.g. Bluetooth
- Endless Automotive & Railway Approvals Required... Even for the “Add-on” market
- Longevity of Supply... Signing up to some Long Term Commitments for 7 years & beyond
- Higher than Normal Test & Approval: min i-Temperature, Shock & Vibration



Long Term Supply Agreement

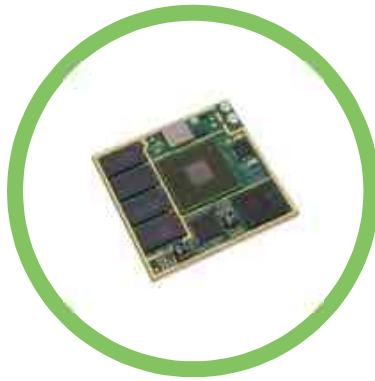
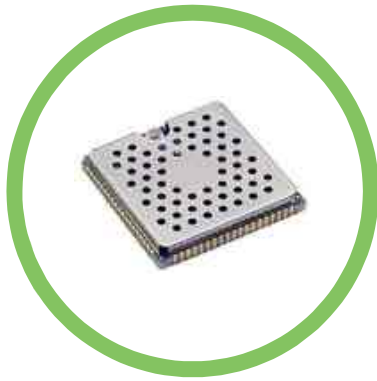


CHECK OUT OUR BUILD VS BUY CALCULATOR

- Interactive *Build vs. Buy Calculator* for SOMs
- Provides graphical estimates for year-to-cost and year-to-profit parity
- Visualizes bar graphs with revenue, average cost-per-unit, and time-to-market timeline estimates
- Offers full explanation of data and textual summary
- <https://www.digi.com/calculators/buildvbuy?type=som>



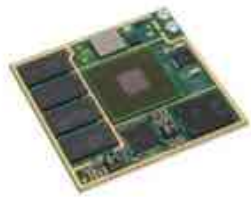
EMBEDDED MODULES AND SBCs



Industrial grade ARM-based wireless SoMs and SBCs

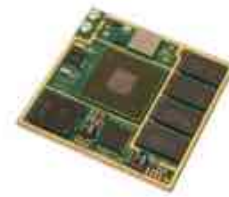
- ✓ Pre-certified Wi-Fi & Bluetooth capability
- ✓ Designed long-term availability
- ✓ Scalable architectures
- ✓ AWS, Linux, Android, Windows CE, and Dynamic C
- ✓ Low-profile and cost-effective ARM solutions
- ✓ On module power management

CONNECTCORE I.MX SOM FAMILY



CONNECTCORE for i.MX6

- Single to Quad core Cortex A9 (1.2 GHz)
- 802.11 a/b/g/n + Bluetooth 4.0
- Ruggedized low-profile SMT design



CONNECTCORE for i.MX6PLUS

- Dual and Quad Cortex A9 (1 GHz)
- Improved graphics performance
- 802.11a/b/g/n/ac + Bluetooth 4.2
- Pin- / footprint compatible with CC6



CONNECTCORE for i.MX6UL

- Power-efficient ARM Cortex A7 performance
- 802.11 a/b/g/n/ac + Bluetooth 4.2
- Ruggedized low-profile SMTplus design



CONNECTCORE FOR i.MX8X

- Dual or Quad Cortex A35 + Cortex M4
- Single to quad GPU with 4k video support
- Integrated 802.11a/b/g/n/ac 2x2 with BT4.2
- Ruggedized low-profile SMTplus design



CONNECTCORE I.MX SBC FAMILY



CONNECTCORE 6 SBC

- Built on ConnectCore 6
- Additional XBee and cellular options
- Multiple display and camera interfaces
- Production-ready SBC with ind. grade options



CONNECTCORE 6 Plus SBC

- Built on ConnectCore 6 QuadPlus
- Additional XBee and cellular options
- Multiple display and camera interfaces
- Production-ready industrial grade SBC



CONNECTCORE 6UL SBC PRO

- Build on ConnectCore 6UL
- Dual Ethernet, XBee and cellular options
- LVDS and parallel display options
- Production-ready industrial grade Single Board Computer (SBC)



CONNECTCORE 6UL SBC Express

- Build on ConnectCore 6UL
- Multiple expansion connectors incl. Grove sensor interfaces
- Limited 8-bit parallel LCD option
- Production-ready industrial grade SBC



CONNECTCORE I.MX SBC FAMILY



CONNECTCORE 8X SBC Express

- Build on ConnectCore 8X
- Ethernet, XBee and expansion connectors
- Selected display options
- Production-ready industrial grade SBCs

MAY 2019



CONNECTCORE 8X SBC PRO

- Build on ConnectCore 8X
- Dual Ethernet, XBee and PCIe cellular options
- Multiple display / multimedia connectors
- Production-ready industrial grade SBCs

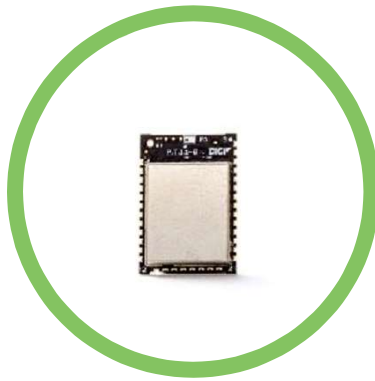
MAY 2019



SCHEMATICS, GERBERS, BOM Details for ALL SBCs Free Available on the Web

STARTER KITS ARE THE SBCs WITHOUT THE 5 YEAR WARRANTY

RF MODULES AND GATEWAYS










World's #1 selling RF module and gateway solution

- ✓ Over 10 million modules shipped globally
- ✓ Best-in-class range at over 100 miles
- ✓ More than 20,000 customers
- ✓ Large family of pin-compatible modules
- ✓ Easy to integrate
- ✓ Secure and scalable remote management

DIGI XBee³

NEW!

FAMILY	FREQUENCY/ BAND	PROTOCOL	DESCRIPTION	RF LINE OF SIGHT RANGE	FORM FACTOR	DEVELOPMENT KIT PART NUMBERS	RF DATA RATE	CURRENT DRAW TX/RX	CERTIFIED REGIONS
Digi XBee3™ ZigBee 3.0	2.4 GHz	ZigBee® Pro 	ZigBee mesh networking, low-cost, low-power	Standard Version 4000 ft (1200 m) PRO Version 2 Miles (3200 m)	Micro 	XX3-ZBS-WZM	250 Kbps	Standard Version 40 mA @ 8 dBm / 15 mA PRO Version 135 mA @ 19 dBm / 15 mA	US, Canada and Europe
Digi XBee3™ DigiMesh		DigiMesh® 	DigiMesh networking, low-cost, low-power		Surface Mount 	XX3-DM5-WZM			
Digi XBee3™ 802.15.4					Through-Hole 				
Digi XBee3™ Cellular Cat-1	LTE Bands 2,4,5,12 Verizon Band 13 (Coming Soon)	Verizon, AT&T, Canadian Carriers	Digi XBee3 Cellular Smart Modem, LTE-CAT 1	Cellular Network Coverage	Through-Hole 	XX3-C-A1-UT-U (AT&T)	10 Mbps Downlink / 5 Mbps Uplink	1Amp / 10uA (Low Power Mode) @3.3V	US and Canada
Digi XBee3™ Cellular LTE-M	Verizon Bands: 4 and 12 AT&T Bands: 2, 4 and 12	AT&T, Verizon, Telus	Digi XBee3 Cellular Smart Modem, LTE-M			XX3-C-A2-UT-U (AT&T)	Up to 375 kbps Uplink and Downlink	550mA / 20uA (Power Save Mode) @3.3V	
Digi XBee3™ Cellular NB-IoT		Vodafone, Deutsche	e3 Cellular Smart Modem, NB-IOT			XX3-C-N1-UT-E	Up to 27.2 kbps Downlink, 62.5 kbps Uplink		Europe

BT Enabled for sensors, remote config & maintenance – Beacons to come

NEW!

Released Oct 2018

XBEE3 BLUETOOTH 5.0 ENHANCEMENT

Beaconing –
coming soon



Based on the SiLabs EF32M



Monitoring & Maintenance



Remote Configuration



Sensor Connection



DIGI XBEE® CONFIGURATION & TEST UTILITY “XCTU”



IOT DEVICE SECURITY

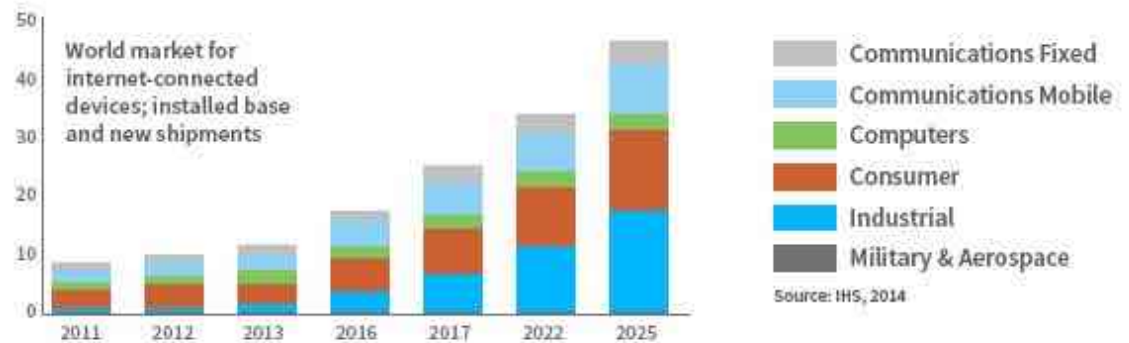
ARE YOU CONCERNED ABOUT CONNECTED DEVICE SECURITY?

70%

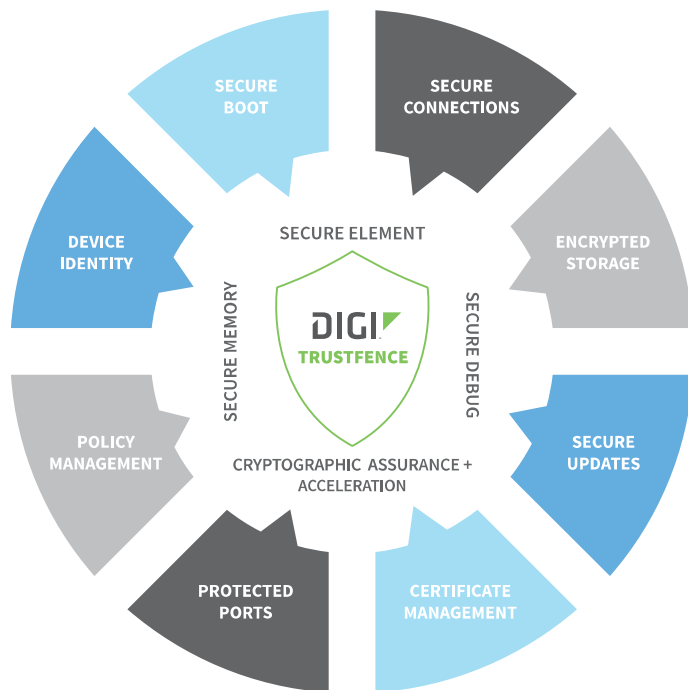
of IoT devices are vulnerable to attack

Source: HP Security Research

Non-consumer sectors will account for the majority of connected devices by 2025.



BUILD SECURE CONNECTED EMBEDDED DEVICES POWERED BY DIGI TRUSTFENCE™ AND NXP



- Complete device security framework
 - Validated, optimized, and easy-to-use
 - Zero implementation effort
- Seamless software integration
 - U-Boot bootloader
 - Yocto Project Linux
 - APIs and tools
- Future-proof platform architecture
 - Scalability and upgradability
 - Designed for long product lifecycles
 - Ongoing roadmap and maintenance

BUILD SECURE CONNECTED DEVICES



- **System architecture and software platform integration framework**
 - U-Boot
 - Yocto Linux
 - Tools
 - Documentation
- **Customer configures level of device security through device personalities**
 - No implementation effort
- **Distributed in binary only**
 - Source code available to customers

DIGI REMOTE MANAGER



Device Remote Manager is a platform-as-a-service offering that reduces complexity of connecting and managing remote critical systems. Device Cloud can scale from single units to millions globally.

- ✓ Access machine data from edge devices and enable two-way communications and control
- ✓ Integrate device data from any device through open APIs and Cloud Connector software
- ✓ Know your data is secure with over 175 security controls
- ✓ Scale with confidence - from one to over a million devices