

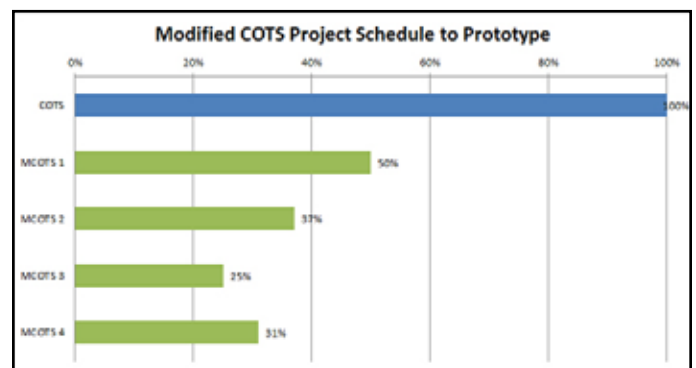
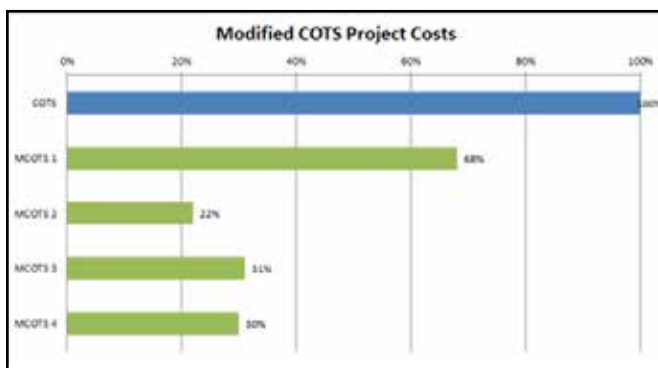
# InHand Medical Modified COTS Design Services: Embedded Circuit Design and Full Device Development with Lower Risk, Cost, and Time-to-Market



*InHand Fury, COTS board (above)  
MCOTS boards based on Fury (right)*

InHand offers medical modified COTS (commercial off-the-shelf) design services that minimize cost, shorten schedule, and reduce risk while optimizing recurring cost of the product. The use of commercial off-the-shelf, or COTS, product has become the standard in military and government system design and procurement since the 1990s. The goal of COTS product is to reduce engineering development costs of larger systems through the purchase of existing components that meet system requirements. This includes electronics such as embedded processor circuitry and software.

Medical modified COTS takes the COTS concept a step further, where a COTS device design (meaning the electronics, software, and even packaging) is leveraged for specific application design in a medical device. A completed and validated COTS design is utilized as a starting point and modified to meet specific requirements. Medical modified COTS options include the design of the main embedded computer engine, front-end display assembly, or an entire device. InHand's core competencies in rugged electronics driven by the latest embedded microprocessors enable quicker time to market with lower cost and risk. With the complexity of the design and regulatory environments of medical markets, medical modified COTS provides the product path of least resistance.



## InHand Modified COTS Technology Expertise

<b>Systems</b>	Product requirements analysis and prioritization, use case definition, compliance criteria
<b>Low-Power CPUs</b>	InHand COTS boards, featuring ARM Cortex-A and Cortex-M series, Intel x86
<b>Memory/Storage</b>	DRAM, NAND, NOR, eMMC, SD, MMC, SSD
<b>Network Interfaces</b>	Ethernet, Wi-Fi (802.11), Bluetooth, PAN (802.15.4), LTE/cellular, CAN
<b>High Speed Interfaces</b>	PCIe, SATA, USB, LVDS
<b>Serial Interfaces</b>	USB, UART, SPI, I2C, RS-232, RS-422, RS-485, SMBus
<b>Sensing</b>	GPS, ADC, DAC, sensors with serial interfaces
<b>Display Devices</b>	LCD, analog displays, LVDS, MIPI-DSI, HDMI, CMOS, display enhancements, sunlight readable
<b>Touch Screens</b>	Resistive and capacitive touch controllers
<b>Camera</b>	Video camera, still camera, MIPI-CSI, S-video, composite/component video
<b>Audio</b>	Line and/or microphone inputs; Line or speaker outputs; Bluetooth headsets
<b>Special Peripherals</b>	Credit card reader, CAC card reader, RFID, NFC, barcode scanner, biometrics
<b>Power Supply</b>	Switching power supplies (buck, boost, SEPIC), LDO, battery charging/management, peripheral power gating, low noise, wireless power, power optimization
<b>PCB Design</b>	High speed digital (>5 GHz), analog, signal integrity, power integrity, low EMI (MIL-STD-461), thermal management, fine pitch devices, complex stack-ups including micro-via and blind/buried via, Package-on-Package (PoP), custom shapes, RoHS
<b>Software</b>	Boot loader, kernel, BSP, drivers, Linux, Android, Windows, custom OS configuration, lockdown
<b>Security</b>	Security enhanced OS (SE Linux and SE Android), high assurance boot, tamper detection
<b>Mechanical Engineering</b>	Thermal management, MIL-STD-810 shock/vibe/thermals, package design
<b>Enclosure</b>	Size, shape, color, materials, ergonomics, external connections, logo, stenciling, private labeling
<b>Certification</b>	MIL-STD-810, MIL-STD-461, FCC, CE and IC, LTE/cellular, intrinsically safe/ATEX



MCOTS Project Example: Medical device project: Mobile HPV Test Controller

### The InHand Advantage

- ◆ Accelerated time-to-market (3-4 month prototype)
- ◆ Regulatory certification and qualification testing
- ◆ Turn-key manufacturing
- ◆ Life-cycle and obsolescence management
- ◆ Long product life support
- ◆ In-house manufacturing test development
- ◆ Program management
- ◆ ITAR and US classified design

### Core Competencies

- ◆ Embedded device design: hardware, software, mechanical
- ◆ Design for low power operation
- ◆ MIL-SPEC/Rugged device design
- ◆ Program management
- ◆ Product life cycle management
- ◆ Security
- ◆ Real-time system updates

InHand Electronics, Inc. is an original design manufacturer of single board computers and rugged handhelds for original equipment manufacturers. InHand's products are used in a variety of markets including: military, medical, industrial, entertainment, and instrumentation. Products feature industry-leading technologies comprising the Internet of Things (IoT) such as: Freescale, Texas Instruments, ARM, Intel and Marvell processors, Android, Linux, Ubuntu, and Microsoft operating systems, and communications technologies such as cellular, Wi-Fi, personal area network, and Ethernet. InHand offers engineering design services (system, hardware, software, and packaging) along with support services (product manufacturing, program management, manufacturing test development, and supply chain) to assure on-time and on-quality product delivery. InHand offers commercial off-the-shelf (COTS) computing platforms, as well as modified COTS design services to customize electronic product solutions. InHand is an ITAR registered company. InHand products are designed and assembled in the USA. The company's headquarters are located along the I-270 Technology Corridor in Rockville, Maryland.



Designed & Assembled  
in the USA