



Business & Technical Update

February, 2015



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Shenzhen Fuwit Technology Co., Ltd

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服务热线
 400-0581-580

ThingMagic Profile



- Established in 2000, now a Division of Trimble
- Headquartered in Woburn, Massachusetts
- Leading provider of UHF RFID solutions: RFID readers, system design tools, architectural and implementation services
- Products available worldwide from OEM partners, resellers, integrators, and directly



M6e

A History of Firsts

- Developed the 1st software defined radio (SDR) for RFID
- Embedded RFID into world leading RFID barcode printers
- Partnered to design Gen2 RFID reader chips
- Partnership with Ford Motor Company results in first RFID enabled trucks
- The first >1W, 4 port UHF RFID module with multi-protocol support

Trimble Corporate Overview



- Founded in 1978
- Market Focus
 - Construction and Surveying
 - Agriculture, Mapping and GIS
 - Mobile Workers
- Leader in positioning, alignment and control solutions
 - GPS positioning technology
 - Robotic optical total stations
 - Task focused field software
 - 3D machine control
 - Lasers for leveling and alignment
- Annual Revenue >\$2.5B
- Number of Employees ~6,000
- Publicly traded on NASDAQ (TRMB)



ThingMagic Products & Development Tools

UHF RFID Reader Modules

Embedded applications

- M5e, 5e-Compact, M6e, Micro, Micro-LTE



Fixed Readers

RFID applications and solutions

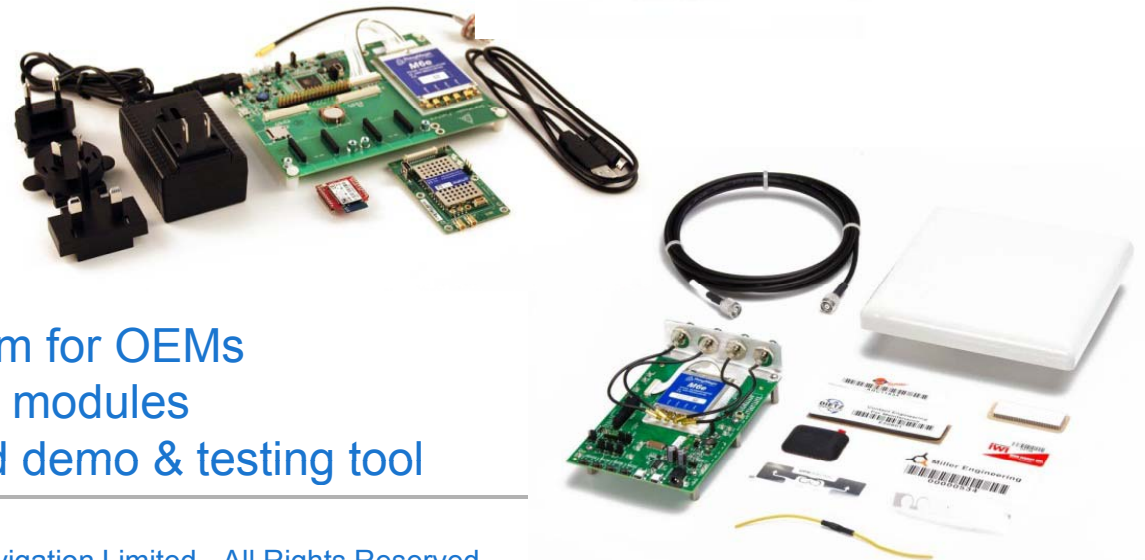
- Desktop: USB *Plus+*
- Integrated: Astra-EX
- Multiport: Mercury6
- Ruggedized: Vega



Development & Testing Tools

We Make RFID Easy to Use!

- **Mature feature-rich Firmware**
- Developer Kits & Accessories
- Mercury xPRESS Sensor Hub
 - RFID Reader development platform for OEMs
- MercuryAPI - Supports all readers and modules
- Universal Reader Assistant – Advanced demo & testing tool





Products

ThingMagic Products & Development Tools

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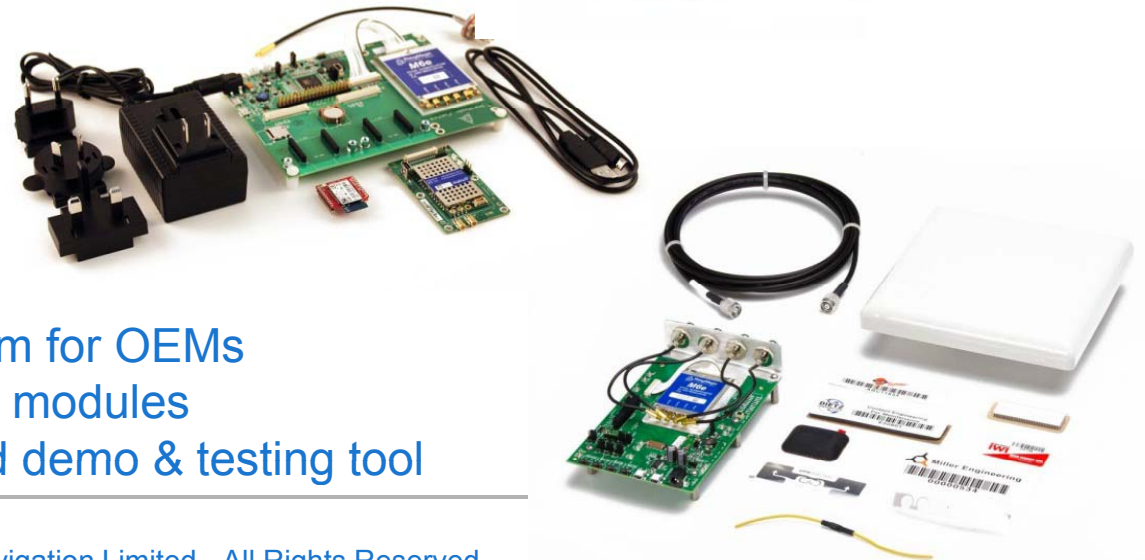
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ThingMagic Mercury®6e RFID Module Series

World's highest performance, small form factor UHF RFID modules	M6e 	Micro 	Micro-LTE 
Size (L x W x H mm)	69 x 43 x 7.5	46 x 26 x 4	46 x 26 x 4
Antenna Ports	4	2	2
Interface	UART USB	UART USB	UART USB
Power (dBm)	31.5	30	30
Read Rate (tags/sec)	750*	750*	50
Read Range	30 ft	30 ft	30 ft
Protocol Support	Multiprotocol	Multiprotocol	Multiprotocol

* With high-performance settings

ThingMagic Mercury®5e RFID Module Series

ThingMagic Mercury5e UHF RFID Module Series	M5e 	Compact 
Size (L x W x H mm)	82 x 54 x 5	56 x 36 x 5
Antenna Ports	2	1
Interface	Serial	Serial
Power (dBm)	30	23
Read Rate (tags/sec)	200	200
Read Range	30 ft	13 ft
Protocol Support	Gen 2	Gen 2

Powered by ThingMagic



Hundreds of companies - from printer and handheld manufacturers to asset tracking, supply chain, healthcare and transportation organizations – are using ThingMagic embedded RFID modules to drive innovation and benefit from business process improvement.

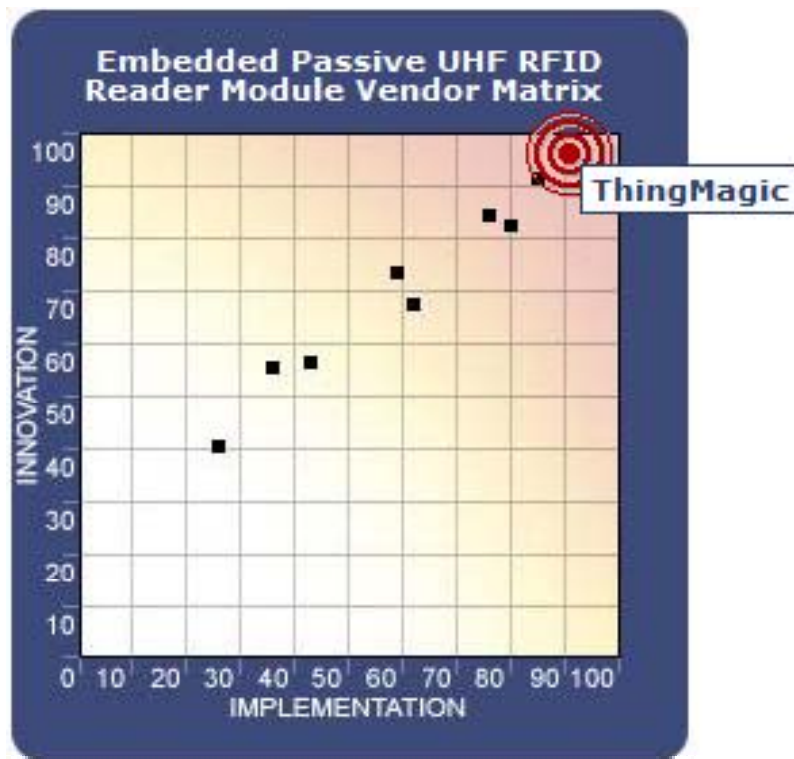


ThingMagic Modules - Value Proposition

- **Breadth of Product Offering** - ThingMagic RFID modules are available in multiple configurations, providing the greatest number of options for adding RFID to your product or solution.
- **Ease of Use** - Our development tools include Developer Kits, a common API across all products, and a Universal Reader Assistant utility for advanced demo, testing, and tuning of all ThingMagic readers.
- **ThingMagic Firmware Advantage** - ThingMagic firmware adds valuable real-world features to the primary functions delivered by RF chips, giving customers an enhanced set of tools to develop innovative and customized RFID solutions for worldwide deployment.
- **Faster Time to Market at a Lower Cost** - Using an RFID module and the *Mercury xPRESS Platform*, as opposed to discrete components or a chip and reference design, reduces time to market and overall system costs.
- **Regulatory Certifications** – All modules carry FCC and ETSI certifications, and are pre-screened for other regions where modular certification is not available
- **Manufacturing Strength** - As a Division of Trimble, ThingMagic is capable of producing high volumes of product with highly predictable quality.

Highest Industry Recognition

ABIresearch®
what's next in connectivity



#1 IN INNOVATION

“Strong combination of RFID reader module **design competence, RF engineering and customization experience**”

- “Very high” scores for **Industry Leadership**, Influence Factor and Knowledge Transfer
- “...**broad application and vertical market focus** is considered a competitive advantage”

#1 IN IMPLEMENTATION

“The company has a **strong base of OEM customers** representing all vertical markets and industries”

- “... solid industry experience... **strong revenue growth and financial stability**”
- Implementation score bolstered by **Design & Development Services**



Recent Product Enhancements

Software

- **iOS & Android Support**
 - C API enhanced for building iOS apps
 - Java API enhanced for building Android apps
 - Sample native apps included with Mercury API, includes project and source
- **Japan Region for Micro**
- **Bluetooth Interface Support for Java API**
 - Java API includes built-in support for BT connections to M6e and M5e modules
- **Monza 4/5 FastID Sample Code**
 - New sample codelet
 - For implementation of the Monza 4 and Monza 5 FastID feature to return the EPC+TID concatenated during normal inventory application

Vendor-Specific Custom Capabilities

– Alien Higgs-3

- Ability to configure all memory and lock tag with one command, security features

– Impinj Monza 4

- Security and performance features

– NXP G2X* and G2i* series

- EAS alarm features, tamper detect, security features, data transfer

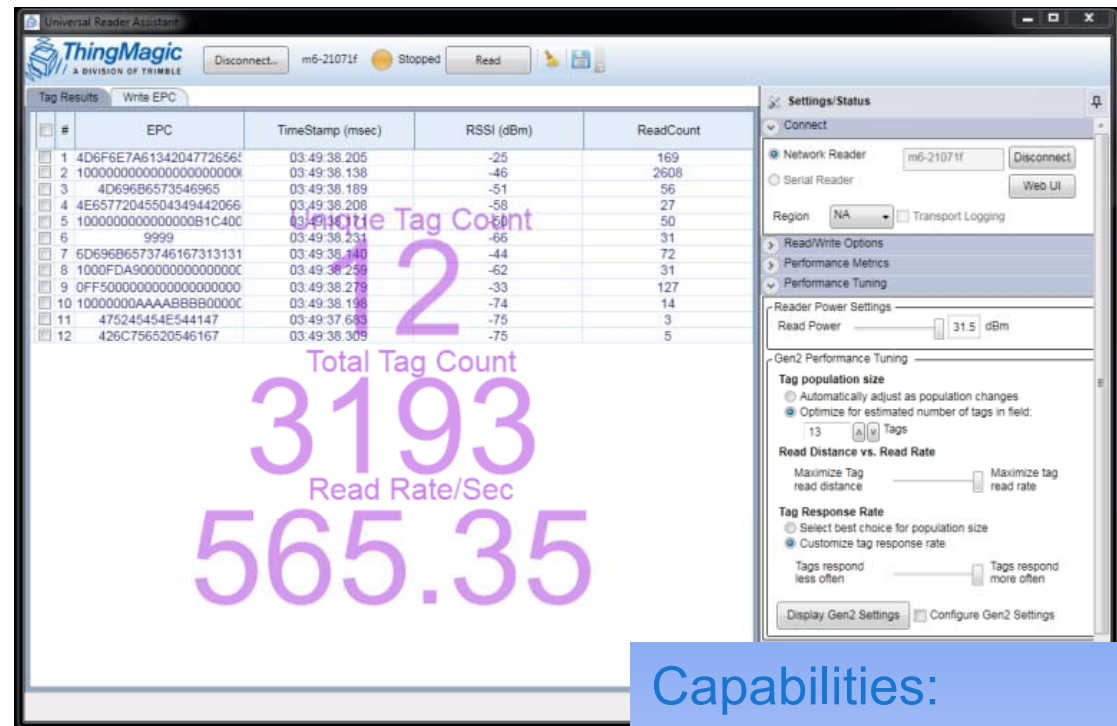
– IDS CoolLog

- Sensing, threshold detection and reporting, data logging, data transfer
- Currently available for Vega, USB Reader and Modules

Universal Reader Assistant (All ThingMagic readers)

Demo, Testing and Tuning tool written using our MercuryAPI

- Initialize readers and perform common tasks
- Runs on Windows platform
- Based on .NET API, so provides complex example of API functionality
- Allows users to determine best performance settings for their application
- Screens organized to accommodate normal user workflow
- Settings hide Gen2 complexity for novice users, permit low-level control for advanced users
- Full source and project files included in Mercury API SDK



Capabilities:

- Read & write tags
- Inventory
- Lock
- Session settings
- RSSI, Phase
- Antennas control

Mercury xPRESS Sensor Hub Development Platform



Key Components

Hardware

- Microcontroller based motherboard with Integrated ThingMagic RFID module (Micro, Micro-LTE, M6e),
- USB interface and ports for up to 2 additional plug-in sensor/ data transport modules
- 2 USB cables, antenna adapter cable and universal power adapter
- **Bluetooth, Wi-Fi, PoE and GPS plug-in modules**
- Pre-screened for regulatory compliance

Software

- Integrated software development environment built on ThingMagic Mercury C API and open source toolkits
- Sample applications (e.g. Keyboard wedge)

Documentation & Design Files

- Quick Start Guide – detailed links to access reference design H/W S/W files
- Schematics, layout files, Gerber files
- BOM, component data sheets

*Leverage **ThingMagic's expertise** to get to market faster and more cost effectively with an extensible, compliance-ready prototyping and solution development platform*



Embedded RFID *Simplified!*



Overcoming historical challenges

- ✓ Need for RFID domain expertise
- ✓ Lack of design and development time and skill
- ✓ Regulatory compliance expertise

Micro Autonomous Operation

- **Autonomous Mode Firmware - Savable configuration settings**
 - Region
 - Baud rate
 - RF power
 - Antennas to search on
 - Auto-read on GPI (holding GPI will cause read on boot)*
 - Gen2 settings
 - Miller
 - BLF (auto adjust Tari based on BLF)
 - Session
 - Target
 - Metadata selection
 - embedded tagOp
 - **Read On GPI Trigger**
- **Autonomous Configuration Tool**
- **Sample “Listen and Parse” Code**



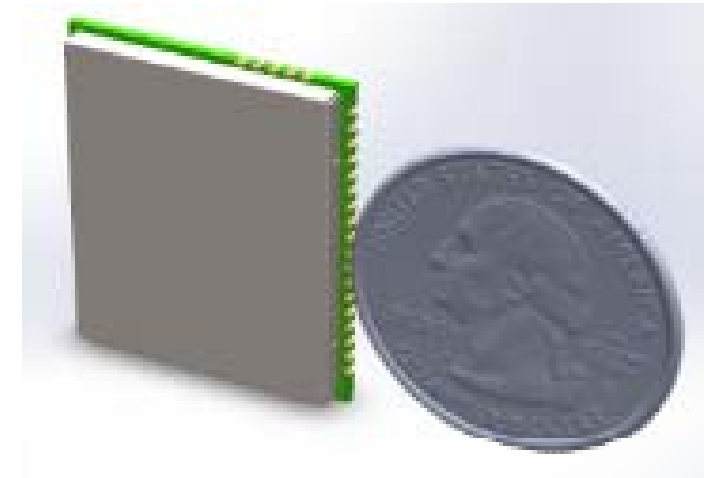
Roadmap

Company Confidential

ThingMagic Nano (M6e-Nano)




ThingMagic Nano is targeted at applications requiring

- Very small form factor
- Reliable and consistent performance
- Mature & Feature-Rich FW, API, Tools
- Low power consumption
- Low price point



ThingMagic Nano

Company Confidential

World's highest performance small form factor UHF RFID modules	M6e 	Micro/Micro-LTE 	Nano 
Size (L x W x H mm)	69 x 43 x 7.5	46 x 26 x 4	22 x 26 x 3
Antenna Ports	4	2	1
Interface control	UART USB	UART USB	UART
RF Power	+5 to +31.5 dBm	-5 to +30 dBm	0 to +27 dBm
Read Rate	750* tags/sec	750*/50 tags/sec	150 tags/sec
Read Range	10m (with 4m cable)	10m	TBD
Protocol Support	Gen2, IP-X, ISO 18K-6B	Gen2, IP-X, ISO 18K-6B	Gen2
Regions	NA/SA, EU, PRC, IN, KR, AU	NA/SA, EU, PRC, IN, KR, AU, JP	NA/SA, EU, PRC, IN, KR, AU, JP

ThingMagic Products/MercuryAPI

Common API supports all ThingMagic Products on multiple platforms:

- C# (.NET)
- Java
- “C”



Embedded
Module
Family



Universal
M6



Enterprise
Astra-EX



Rugged/In-Vehicle
Vega



Desktop
USB *Plus+*
reader

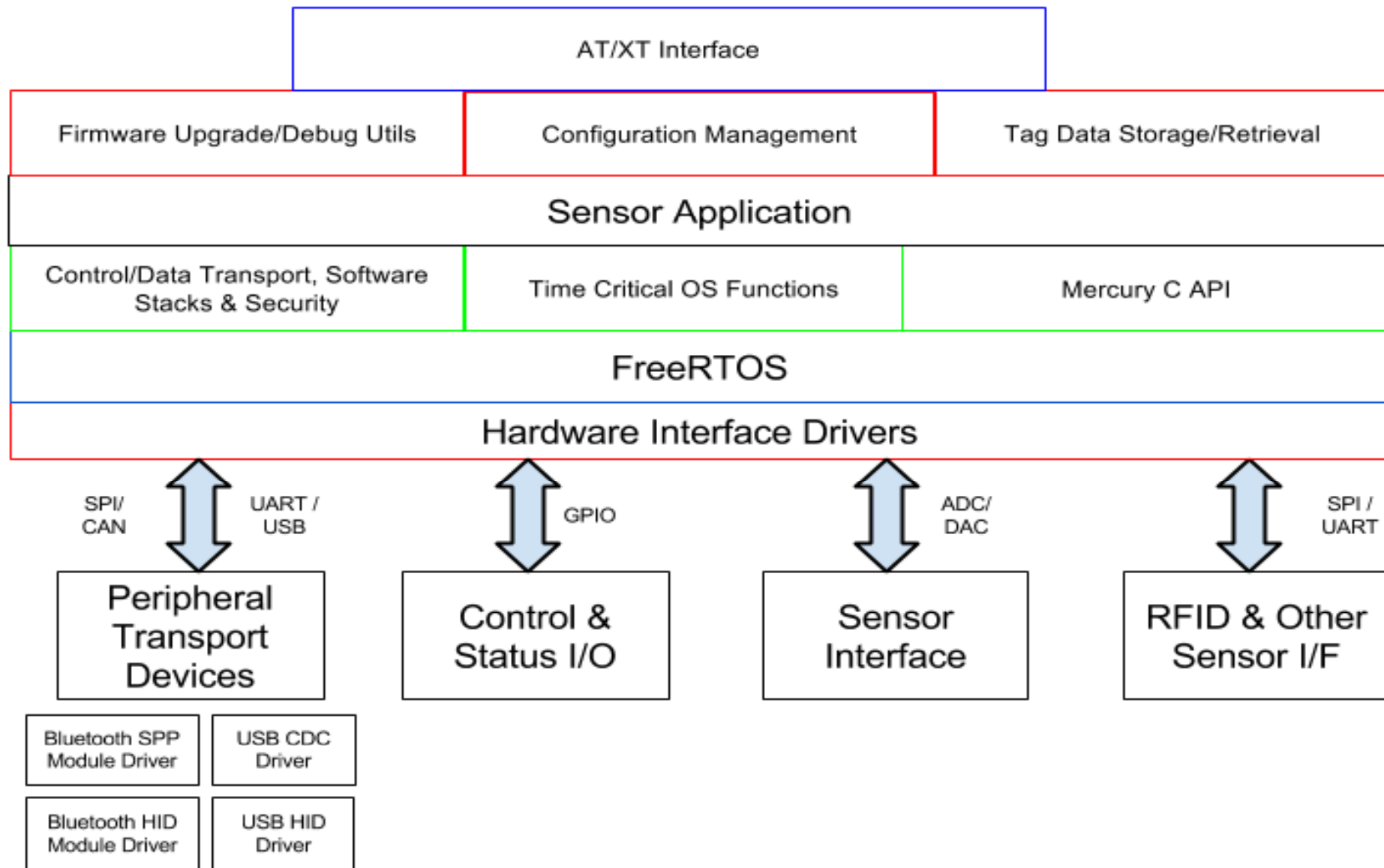


About: xPRESS Sensor Hub

Need for xPRESS Sensor Hub

- Reduced design cycle for faster time to market
- Up Integration of sensors to provide more value to customers
- Easily integrates into customer infrastructure
- Reduced need for sensor domain expertise
- Regional compliance and certification risk Mitigation
- Reduced overall cost of ownership for solution providers
- Supports industry standard transport and protocol interfaces
- Easy setup with auto configuration and autonomous operation
- Allows persistent config and data storage

Mercury xPRESS S/W Architecture

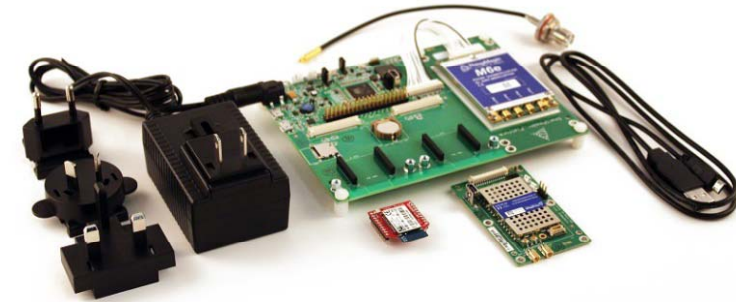


Creating an finished device using Mercury xPRESS



1

- Prototype hardware with desired components
- Develops software using xPRESS SDK



2



- Modify schematics and Gerber layouts to use only the desired components
- Layout board for desired physical dimensions

3

- Select antenna
- Complete enclosure
- Leverage ThingMagic pre-screening for regional compliance

