



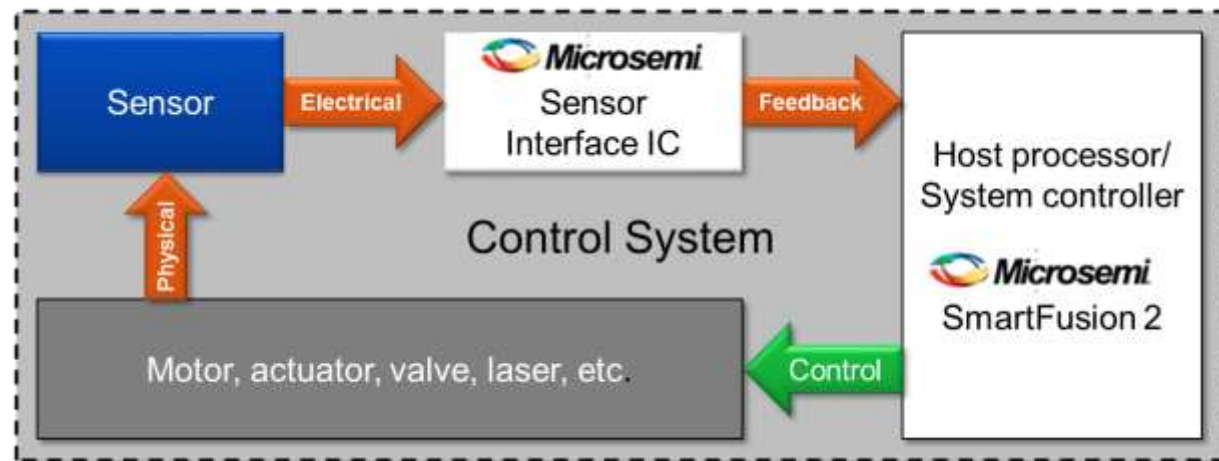
Microsemi Innovation Lab Grand Opening

Microsemi IoT Portfolio

November 3rd, 2015
Jim Aralis
MSCC CTO

IoT at Microsemi

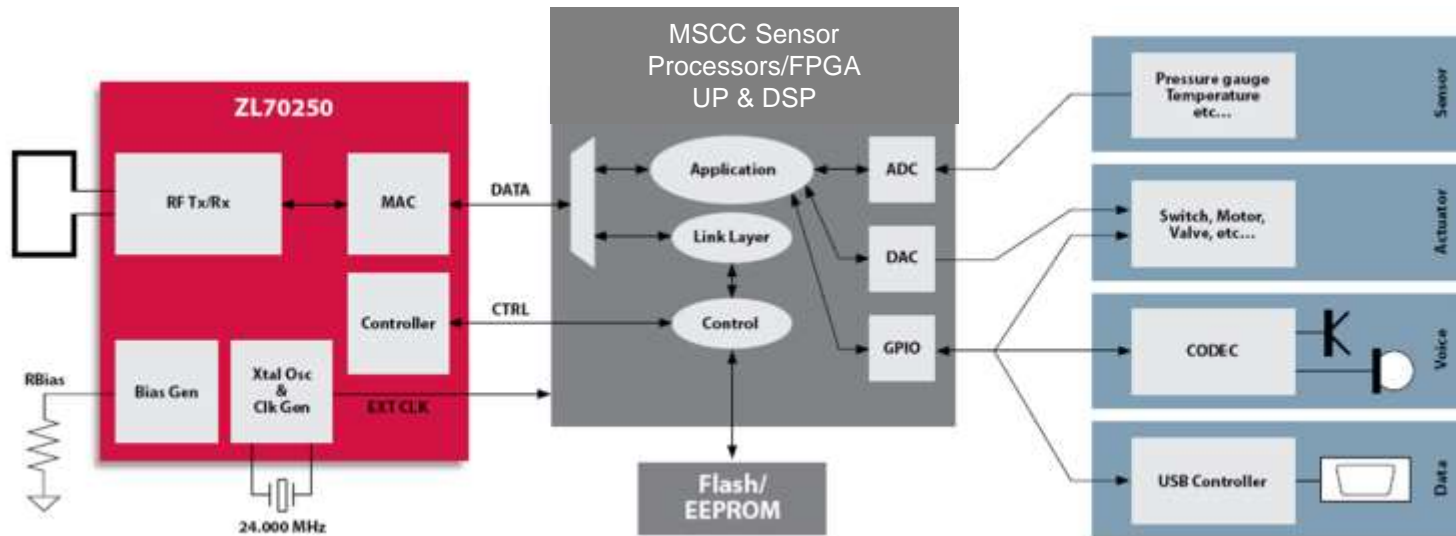
- From Sensors to Networks MSCC has a broad portfolio of products and capability
- Microsemi offers products that enable the building and the using of IoT devices
 - “Internet” (classifying, processing, routing, aggregating, storage, and timing data)
 - “Things” (capturing, reduction, securing, and transmission of data and control)
- MSCC base technology enablers
 - Low Power
 - Security
 - Reliability
 - Programmability
 - Real word connection
 - Sensors
 - Drivers
 - Power
 - Time



IoT at Microsemi

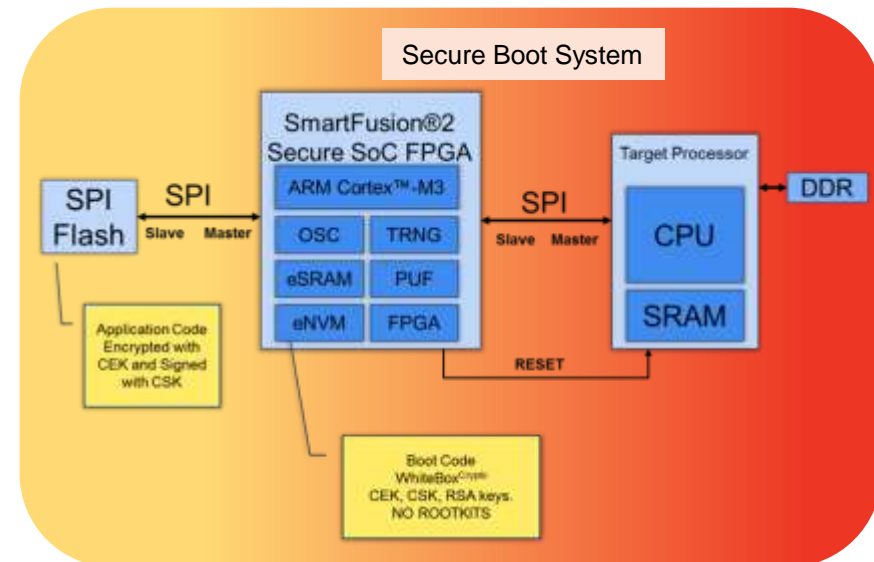
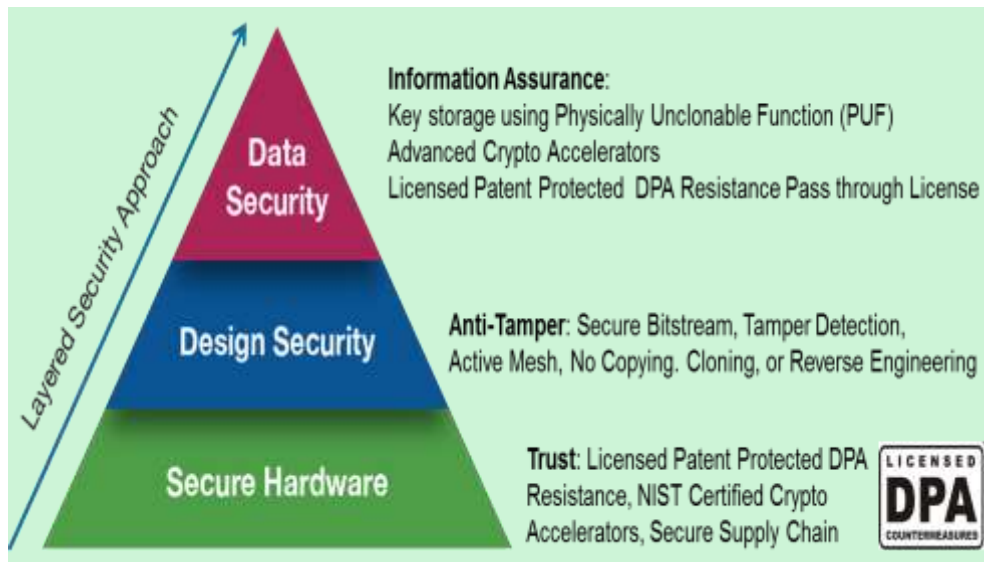
From Sense to Control

- Sensor Processors (light, inductance, magnetic, ...)
- Power delivery, harvesting, and management (PoE, ULP regulation, switching ...)



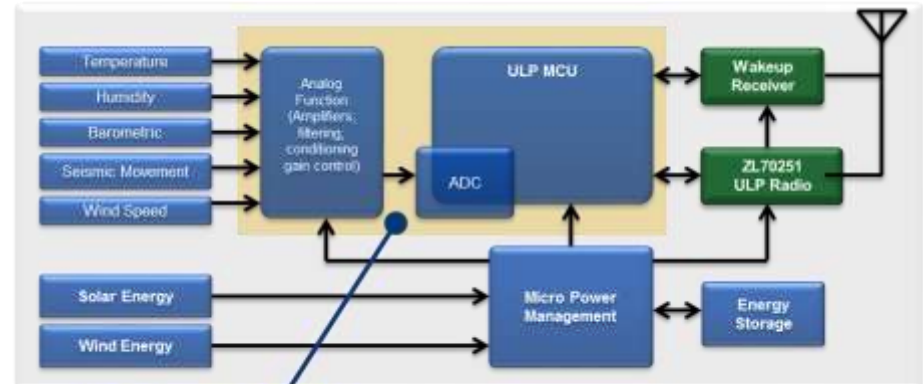
IoT at Microsemi

- Security (system, software, firmware, hardware)
 - Data in motion (Crypto, keys, ...)
 - Data at rest (Obfuscation, Anti-Tamper, DPA, PUF)



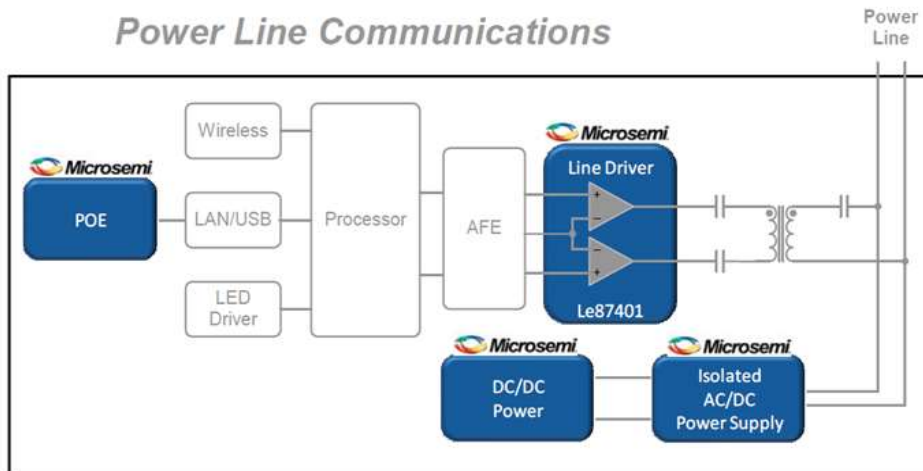
IoT at Microsemi

- Communications (wireless and wired)
 - Wi-Fi
 - Switching and routing
 - Security and time sensitive
 - Targeted for applications
 - ULP Radios (Star and Mesh networks)
 - Powerline



In Development: LX3300

Power Line Communications

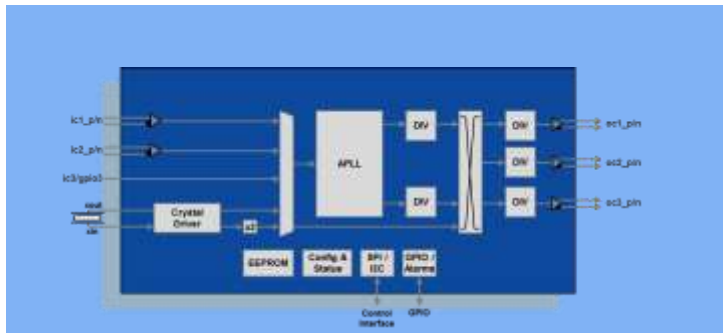


VERITIME	intellisec	ViSAA
Implements IEEE 1588v2 packet timing protocol for IP/Ethernet Networks	Enables end-to-end IEEE 802.1AE AES 256-bit network encryption	Implements MEF CE 2.0 features and services

Transportation Infrastructure • Vehicles • Rail • Aerospace	Consumer Infotainment • Communications
Energy Generation • T&D	Buildings Access Control • Lighting
Industrial Manufacturing • Processing	Security Surveillance • Detection
Retail & Commercial	Healthcare Patient Monitoring

IoT at Microsemi

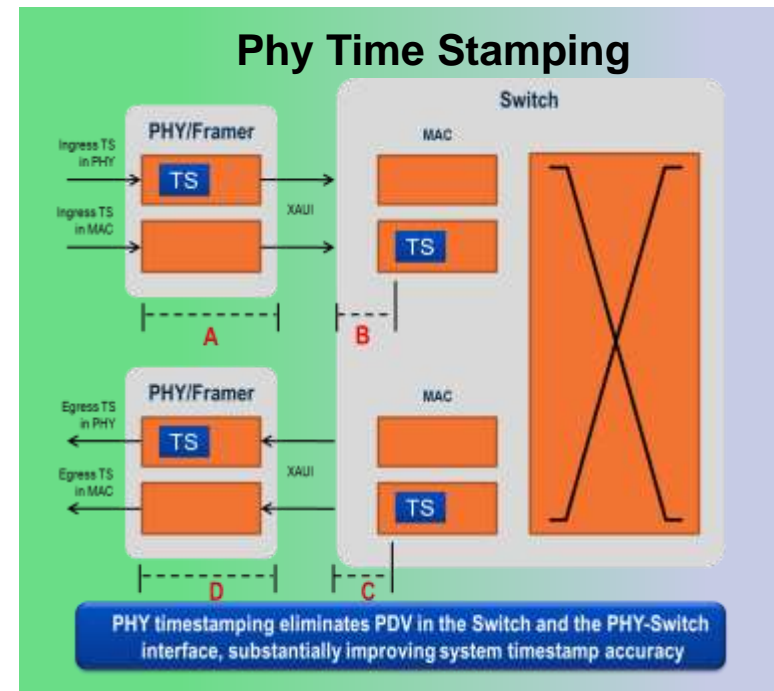
- Time
 - IEEE 1588 (Jitter as low as 130fS)
 - TSN (Time Sensitive Networking)
 - Phy time stamping
 - 5-10e-11 accuracy
 - Low Power distribution



Key Specifications

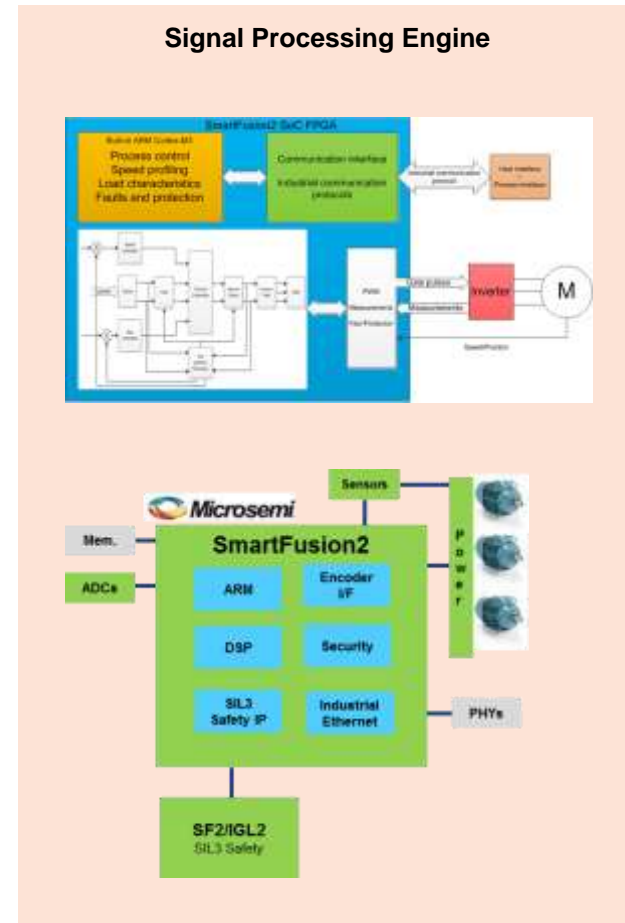
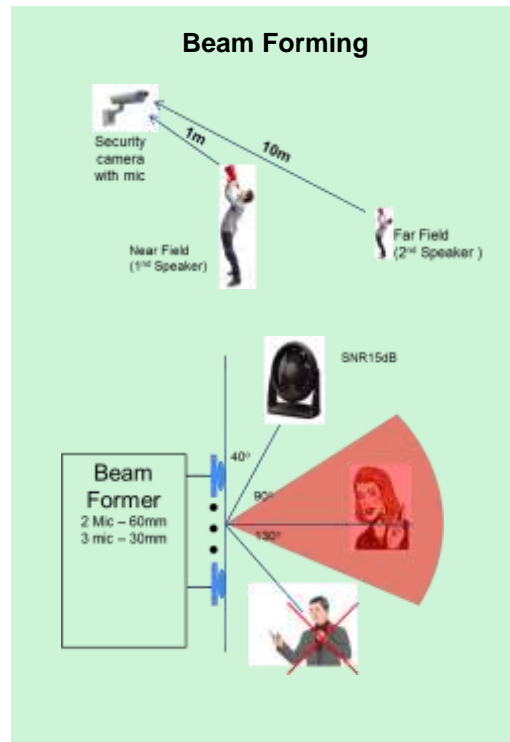
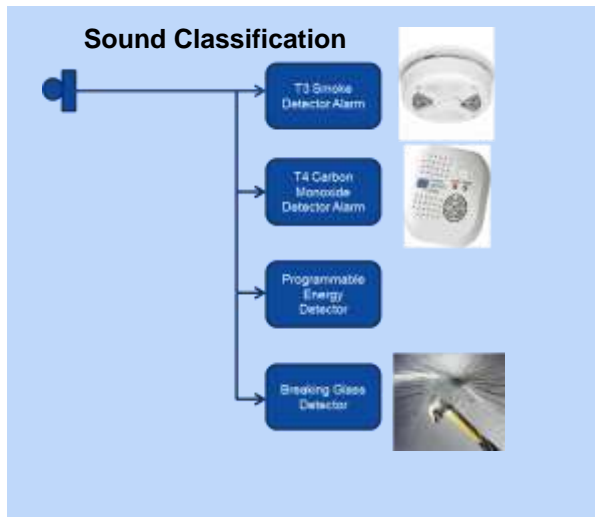
- $\pm 5.0E-11$ accuracy at shipment
- $< 1.0E-10$ month aging rate
- 5 W Power Consumption
- 47 cc in Volume

Atomic Clocks



IoT at Microsemi

- Signal processing
 - FPGAs (Low Power, high security)
 - Audio and Video signal processors
 - Beam Forming
 - Audio Classification
 - Near Field Rejection



IoT Related Products at Microsemi

Audio Processing

Ethernet PHYs

Clock Management

Ethernet Switches

Microphone Pre-amplifiers

Network Synchronization

Optical Drivers

Power over Ethernet (PoE)

Reverse Power Feed (RPF)

Signal Processing

Switches (Crosspoint and TDM/TSI)

T1/E1 Interfaces

Ultra Low-Power Wireless

Voice Echo Cancellation

WLAN RFICs

Drivers and Interfaces

A/D & D/A Converters

Line Drivers

Optical Drivers

Sensor Interface

Signal Integrity

FPGA & SoC

Memory, Processors & Storage

Solid State Drives

Power Discrettes & Modules

Silicon Carbide (SiC)

Rectifier Modules

Power Management

Battery Chargers

Drivers, High-Side

FET Drivers, Low-Side

Linear Regulators

Motor and Fan Controllers

Resonant Mode (LLC) Controllers

Supervisory Circuits and Voltage References

Switching Regulators

Relays & Contactors

RF, Microwave & Millimeter Wave

RF/Microwave Subsystems (Multi-Function Assemblies to 140 GHz)

RF Modules (Single-Function Assemblies to 140GHz)

RF Discrettes

RF/Microwave Amplifier Systems

RF Transceivers (Sub-GHz)

ASIC

Information Assurance

Mixed-Signal ASIC Design Services

Power Supplies

Security Center of Excellence

Cryptography

Ethernet Software

Forward Error Correction (FEC) Cores

Gigabit Ethernet PHY Cores

Gigabit Ethernet Switch Cores

Hardware Anti-Tamper

Software Anti-Tamper

IEEE 1588 Software

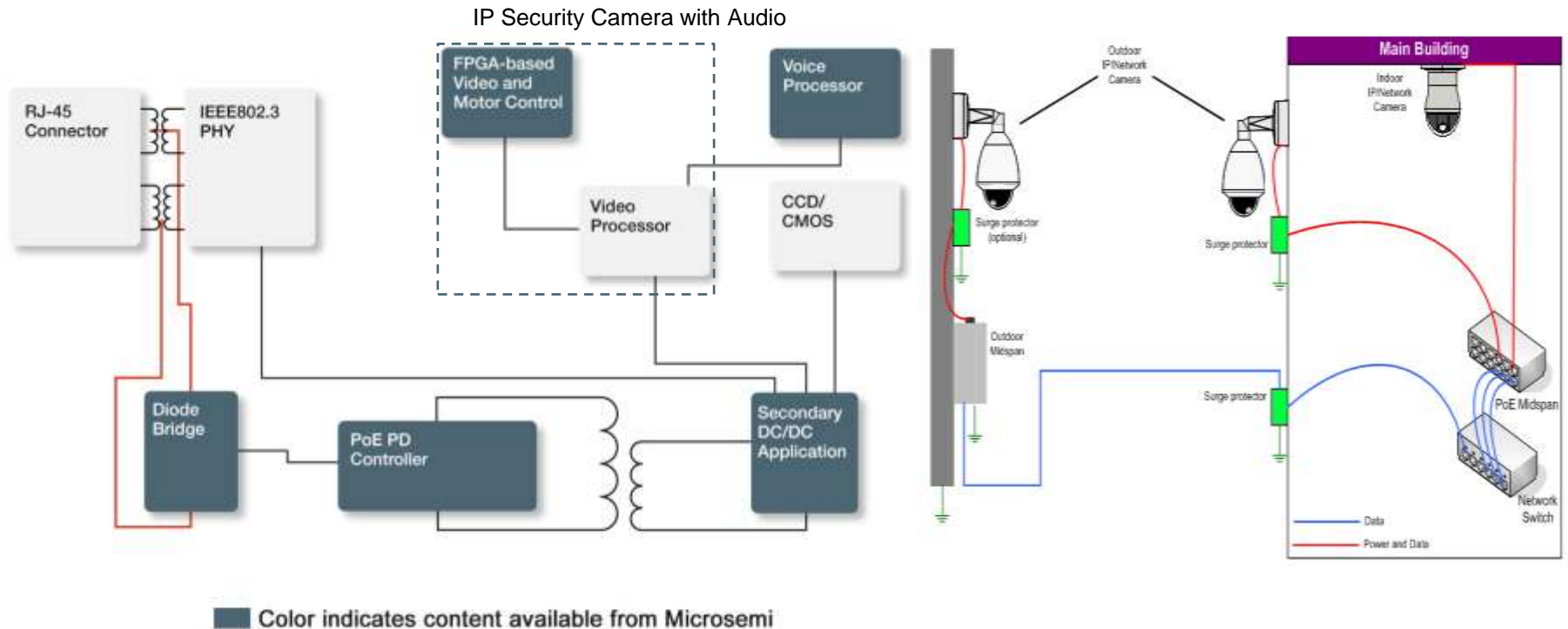
Timing & Synchronization

Clocks and Synchronization ICs

Clocks & Frequency References

Example: IP Security Camera

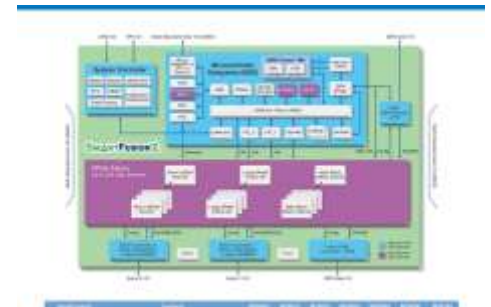
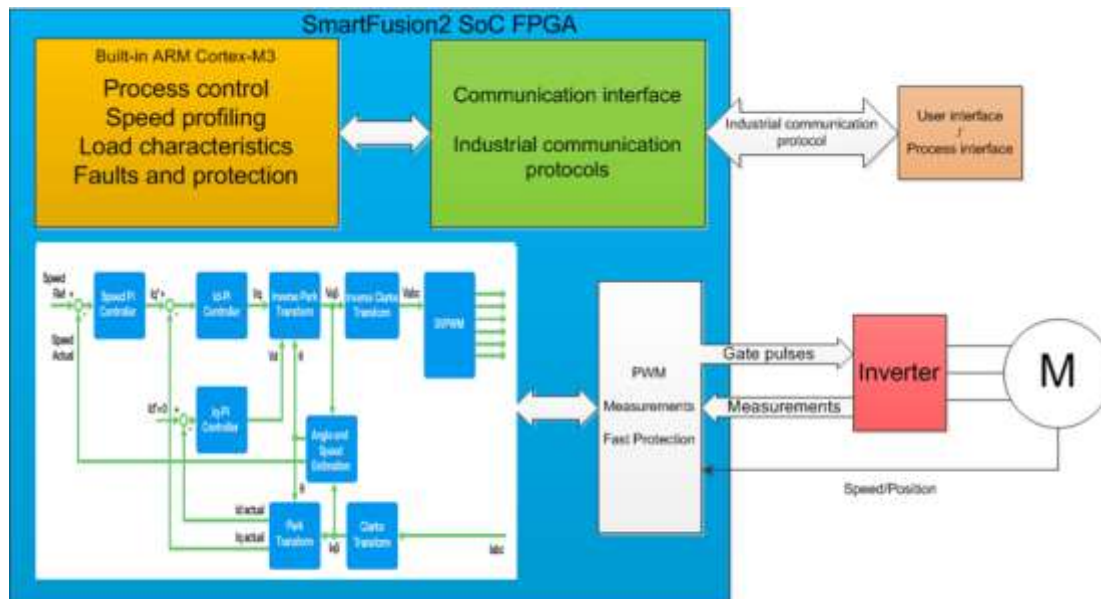
- Timberwolf with AcuEdge technology audio processing
- FPGA for optional video processor offload and motor control
- PoE PD control and discretes, Midspans, switches/PHYs



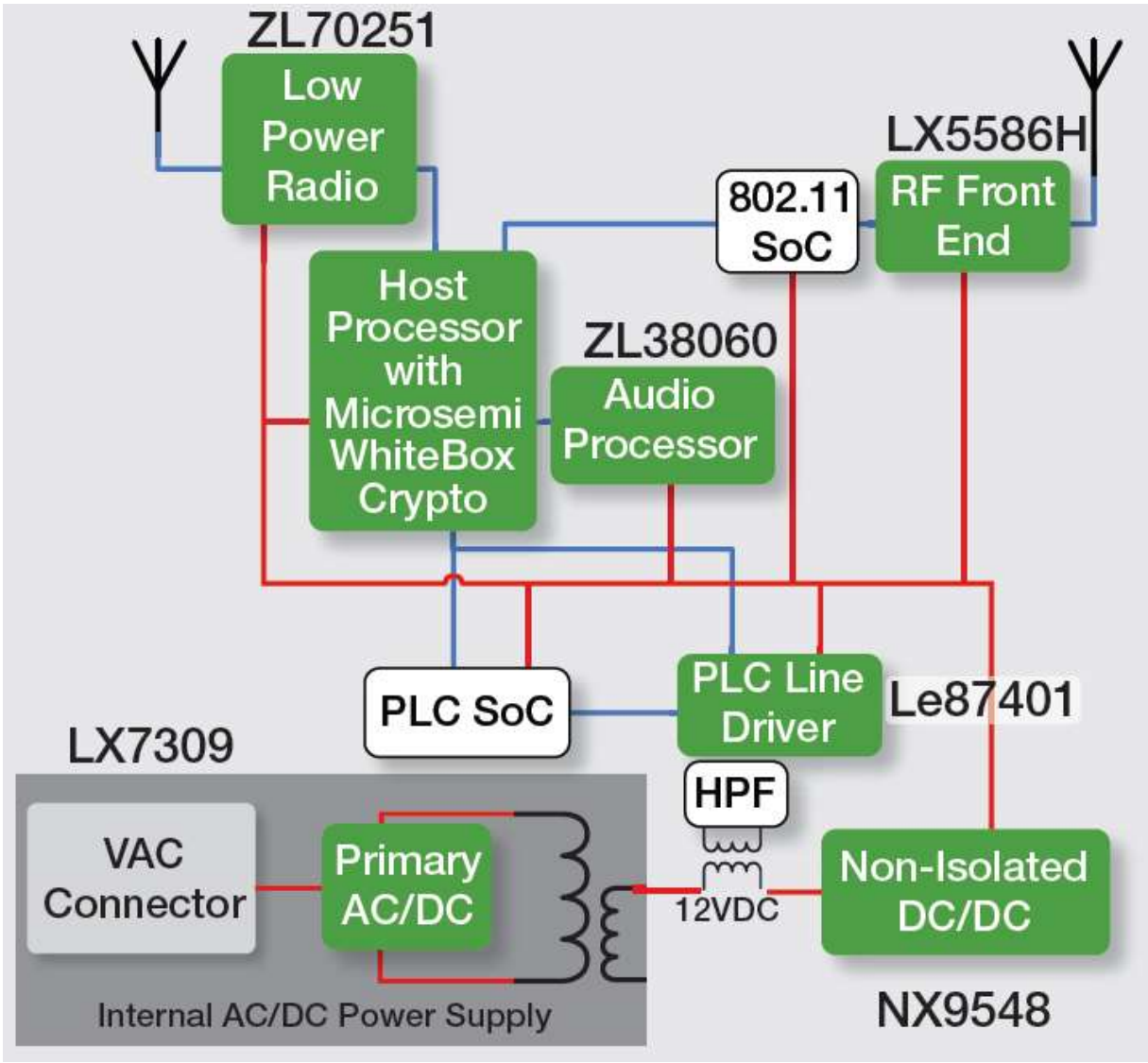
Example: Highly Integrated Solution

Multiple Industrial-drive functions integrated into a single SoC FPGA

- Control algorithm (FOC)
- Communication interfaces and protocols like Industrial Ethernet, USB, CAN
- Safety overcurrent protection, detecting phase-imbalance

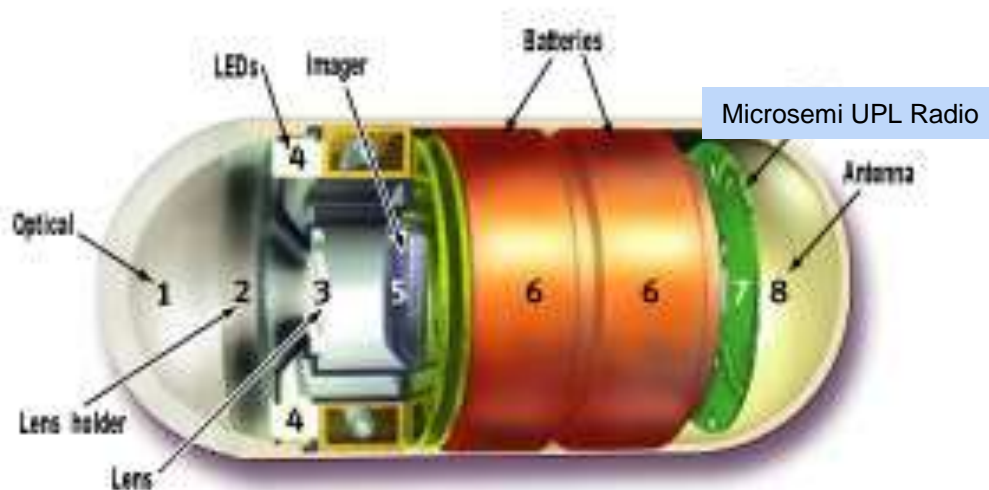


Example: Home Automation Gateway



Example: Wireless Camera Capsule

- World's First **Swallowable** Wireless Camera Capsule



RF IC



- Approximately 57,000 pictures transmitted over 8 hours

Value Proposition

Microsemi technology will enable you to turn your IoT ideas into high performance products.



Thank You