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DesignWare IP for IoT SoC Designs

The Internet of Things (IoT) is connecting billions of intelligent “things” at our fingertips. The ability to sense countless amounts

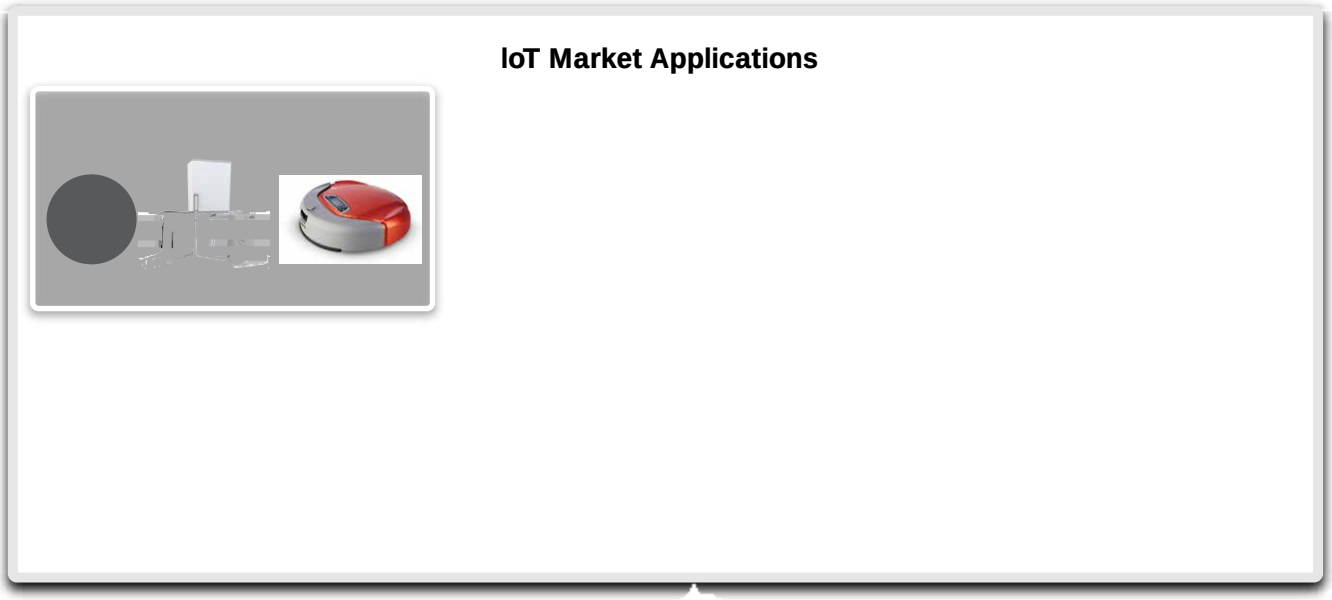
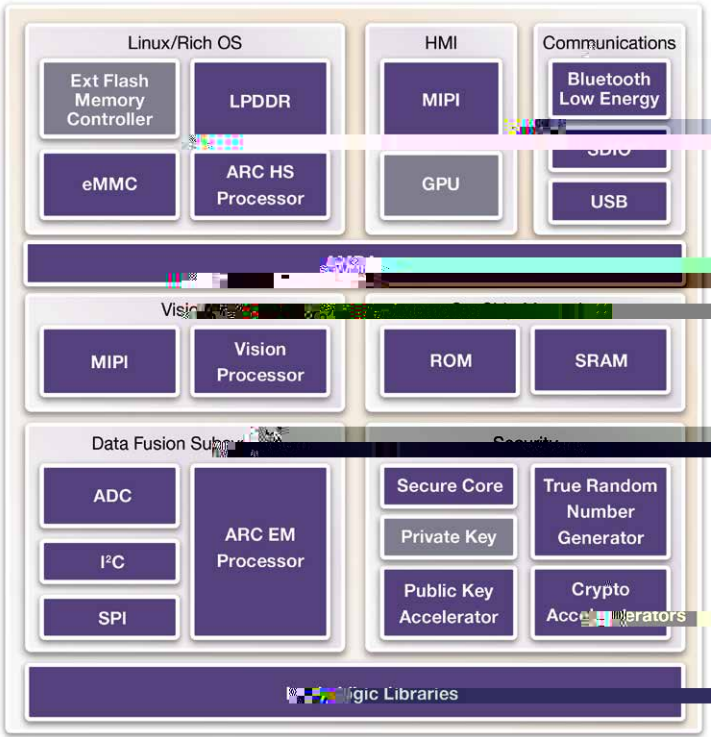


Figure 1: Example of Key IoT Applications for Edge Devices


Linux/Rich OS
Ext Flash Memory Controller
LPDDR
eMMC
ARC HS Processor
HMI
MIPI
GPU
Communications
Bluetooth Low Energy
USB
MIPI
Vision Processor
ROM
SRAM
ADC
I²C
SPI
ARC EM Processor
Secure Core
Private Key
Public Key Accelerator
True Random Number Generator

IoT Architecture Examples

There are three common IoT system architectures including application processors (high-end IoT), microcontrollers (low-end IoT – MCU) and smart analog, each with their own set of IP requirements and functional advantages. These architectures are typically designed on established process technologies to save costs and leverage integration of analog, wireless power management and non-volatile memory integration.

High-end applications include feature rich wearable devices (see Figure 2), where more advanced process technologies such as 16FFC and 28nm are being considered to address power consumption, processing, and costs more effectively.

Many off-the-shelf microcontroller solutions (see Figure 3) are available in 90nm today, but are quickly migrating to 40nm for next-generation solutions. 55nm also remains very popular.

Smart Analog solutions including power management and sensors are currently using 180nm as the process technology of choice, however, will likely migrate to more advanced nodes when it is

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