

Advanced Wireless and Sensing Solutions for IoT

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Presentation summary:

1. Overview: One size does not fit all
2. Connectivity: Ultra low power wireless microcontrollers (MCUs)
3. Sensor
4. Conclusion

1. Overview: One size does not fit all

In the IoT era, there are different connectivity standards in the market, namely bluetooth, BLE, LoRa, Zigbee, Wi-Fi, etc. To save the hassles from having different network system adopted to different application, Johnson Ng introduces two solutions – connectivity and sensor – from Texas Instruments (TI).

2. Connectivity: Ultra low power wireless microcontrollers (MCUs)

2.1. Key benefits

2.1.1. Energy efficiency

2.1.1.1. RF processor

While the MCU is often multi-processing, which integrates the comparatively complicated RF purposes, TI assigns a dedicated RF network processor based on Cortex® MCU to manage RF orders without burdening the CPU power. This exclusive call eventually uplifts the MCU performance with lower power consumption.

2.1.1.2. Sensor controller

As it is energy inefficient to take an entire MCU operation to monitor all events triggered by sensors, TI's sensor controller turns the MCU on sleep mode and only monitors sensor activities with a controlled energy consumption. Users can pre-set the system signal on a simple graphic interface, which only wakes up the MCU and the main CPU for further processing when the signal exceeds a certain level. Therefore, the sensor controller manages monitoring with better energy utilisation.

2.1.2. Multi-standard

While it takes time for users to learn application for different connectivity, the ultra low power wireless MCUs supports five technologies in one architecture, ie user only needs to learn once and adapt the skills and usage to all other connectivity. The multi-standard feature makes it an up-and-coming element for sensor application.

2.1.3. Easy to use

By integrating five technologies into the same architecture, users can migrate different RF technology by one switch of the chip. The simple application saves time and hassles for users to learn to manage different connectivity and worry about RF performance, which ultimately shortens the development cycle and users can focus more on substantial app development.

3. Sensor

TI is expert in providing sensing solutions for IoT. There are 2 advantages mainly. First, they provide higher accuracy of data compare to other solutions available in the market; second, they can be worked alone and users can read data directly without adding other devices.

- TI sensor products:
Temperature and humidity sensor, ambient light sensor, and hall sensor
- TI sensor analog front ends products:
Inductive sensor, capacitive sensor, ultrasonic sensor, heart rate monitoring, and gas sensor

4. Conclusion

All in all, in Industrial 4.0 where customers' needs change every minute, it is crucial to provide low power consuming, easy to use, and small form factor elements for customers' to innovate competitive products and services.

The end

To learn more, please visit the presentation video at [here](#).