CEA TECH SERVICES FOR THE INTERNET OF THINGS (IoT)

Technology for IoT challenges:

- **IoT CHALLENGES**
  - Digital services
    - Management platforms for the home, for industry, and for processes; services for e-healthcare, wellness, and personalized monitoring; geolocation services; ease of implementation; maintenance
  - Miniaturization and integration
    - Portability; integration of new functions; appropriate product packaging for different environments; miniaturization of electronics; embedded systems
  - Communication and infrastructure
    - Communication protocols; connectivity between heterogeneous networks and transmission relays; reliability of connections; physical layers

CEA Tech technology

- **Software**
  - Data analysis and tools
  - Microelectronics and electronics
  - Sensor systems and integration
  - Secure hardware implementation
  - Integrated circuits and architectures
  - Communication and protocols

- **Energy solutions**
- **HMI**

- **Security and privacy**
  - Ensuring information security, privacy, and data protection; secure communication; protecting industrial systems; resilience

- **Data creation and management**
  - Optimizing data flows; analyzing large volumes of data; cyber-physical measurement systems

CEA Tech can help the following businesses:

- IT outsourcers, electronic component and systems manufacturers
- Network administrators
- Companies that integrate internet-enabled solutions into consumer products for transportation, construction, sports, health, wellness, and more
- Companies that integrate internet-enabled solutions into commercial-grade products for the chemical, manufacturing, aerospace, and other industries
Here are some of the ways CEA Tech can support your development:

**Microelectronics and components**
Component miniaturization by vertical, heterogeneous, and multi-functional assembly; high-performance, energy-efficient resistive memory

**Custom sensors and switches**
Multi-parameter, biochemical, MEMS, and NEMS (accelerometers, gyrometers) sensors; imaging (THz, IR) sensors; piezoelectric switches; small form-factor, low-cost solutions

**Integrated circuits and architectures**
Ultra-low-energy architectures for sensors specific to RF applications; components for embedded systems and software; alarms; microservers

**Energy solutions**
Optimal energy conversion and system management; energy recovery and charging; custom batteries; microbatteries

**Communication and protocols**
Reliability of communications and connections; sensor network security; energy-efficient protocols; real-time optimization of network selection

**Sensor systems and integration**
Analysis of movements and activities; manufacturing process tracking; driverless cars; environmental control; cyber-physical systems

**New HMIs and data creation**
Augmented reality glasses; multimedia interfaces; haptic-feedback systems; large-area HMIs; touch-interfaces for the Internet

**Software, big data, and data analysis**
Traffic management; remote coaching; network administrator platforms; geolocation; systems implementation, operation, and maintenance

**Cybersecurity and security**
Sensor network security; secure, effective implementation of cryptography protocols; certification; software reliability and security; homomorphic encryption

**Operating security (real-time requirements)**
System and software reliability; industrial infrastructure control; surveillance of aircraft structures

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