

## 5.5 MIPI—In the Smart City

## USE CASES



Associated MIPI SOFTWARE and DEBUG specifications also available to accelerate design process

Use of MIPI specifications can aid product compliance to functional safety standards such as IEC 61508

### LEGEND

- Functionally safe and secure IoT device that will benefit from MIPI's focus on safety and security
- IoT device with constrained power supply that will benefit from use of MIPI low-power interfaces
- IoT device with wide-area cellular connectivity that will benefit from MIPI's 5G preparedness
- Size-constrained, tightly packaged IoT device, benefiting from MIPI's low pin count, low wire count, low EMI interfaces

### In Smart Lighting:

- I3C to provide a shared, two-wire low-power interface to connect sensors to the application processor and supporting in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required
- RFFE within cellular communications module

### In Environmental Monitoring

- I3C to provide a shared, two-wire low-power interface to connect sensors and actuators to the application processor and supporting in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required (critical for devices powered from constrained power supplies)
- RFFE within cellular communications module

### In Public Safety Surveillance Cameras:

- CSI-2 as a highly scalable interface to connect high-resolution cameras, using CCI for camera command and control over single MIPI C/D/A-PHY interface using USL
- SoundWire to drive high-quality audio components such as multiple microphones and speakers. Enabling advanced noise cancellation
- RFFE within cellular communications module

### In Smart Trams:

- CSI-2 over A-PHY to connect high-resolution cameras, DSI-2 over A-PHY to drive high-resolution displays, and MIPI Touch to enable touchscreen user interfaces
- A-PHY as a ultra-reliable, long reach ( $\leq 15m$ ), EMI hardened physical interface to connect cameras, displays and sensors within the tram to a central control unit
- RFFE within cellular communications module

### In Smart Parking Sensors:

- I3C to provide a shared, two-wire low-power interface to connect sensors to the application processor; in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required (critical for devices powered from solar power)
- RFFE within cellular communications module

### In Smart Waste Bins:

- I3C to provide a shared, two-wire, low-power interface to connect an ultrasonic sensor to the application processor; in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required (critical for devices powered from a constrained power supply such as solar)
- CSI-2 over C/D-PHY to connect a camera to sense waste type and sort into the appropriate receptacle
- RFFE within cellular communications module