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Qualcomm Smart Cities

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Qualcomm
Why Wait
The Internet of Everything is here

25B permanently connected things by 2020*

Media Devices
LED Lighting
White Appliances
Home Automation
Energy Management
Smart Router
Smart Glasses
Smart Watches
Smart Trackers
Body Sensors
Wearable Cameras
Smart Home
Energy & Metering
Infrastructure
Transportation
Industrial/Building
CITIES

BODY
HOME
CITIES
Qualcomm is addressing increasing connectivity demands. Technology and engineering expertise to facilitate present and future wireless services.

- Continuous evolution
- LTE broadcast
- LTE in unlicensed spectrum
- Device-to-device communications
- Extreme densification with small cells

3G/4G & Wi-Fi

Qualcomm Proprietary and Confidential
Smart Cities
Bringing greater intelligence to urban environments

20+ Active engagements across key areas

Engagement Model
• Partner with systems providers to develop HW/SW solutions
• Participate in trials and projects led by cities & municipalities
• Engage in policy and advocacy efforts

Product and Technology differentiation
• Qualcomm Snapdragon processors
• 3G/4G modems
• QCA Wi-Fi, Bluetooth chipsets

Smart Energy
Smart Building
Smart Infrastructure
Smart Transportation
Enabling a smarter grid

3G/4G cellular provides superior performance, reliability, security and scale for smart grid applications.

Grid Routers
Remote Monitoring & Control

Communication Nodes
Transformer Mgmt.
Volt/VAR
Control HEM
Concentrators

Distribution Automation Gear
Fault Detection, Voltage Control, Line Sensors

EVs & Appliances
EV Battery, HEM, Pumps, Warranty Mgmt.

Smart Meters, Energy Mgmt.
Gateways, EV Charging Stations
- AMI, DR Repair, TOU Pricing
- Home Energy Mgmt. Virtual PP
- Transformer, Load Control, Vehicle to Grid
Use Case

Grid Monitoring / Control
Smart Wires
Smart Wires PowerLine Guardian

3G Connectivity
– Real-time status of energy grid / transmission

Power Control
– Incremental line impedance control

Monitoring
– Conductor temperature, vibration, sag, and fault location
Use Case

Asset Monitoring (Facilities)
OSIsoft
IOT Instrumentation for Behind the Meter Visibility

Targeted Use Cases

**Smart Energy**

**Coordination of Local Generation and Load**

- Modular systems that routinely, securely come on/off line to support microgrid
- Access to residential DR resources behind the meter

**Data Harvesting**

- Low cost sensor deployment
- Local & remote data access
- Edge processing and local action

**Smart Building**

**VIDEO**

**VIDEO**
Use Case

Intelligent Energy Management
Qualcomm R&D
Qualcomm approach

Internet / Utilities
- Dynamic Pricing, DR signals
- Weather forecast incl. cloud cover
- Grid Information

Other devices that can be controlled include Electric Vehicles and Electric Water Heater

Solar
- Read Solar Output
- Smart Inverter Function

Battery
- Read Charge Level
- Charge/Discharge

Thermostat
- Read / Set

Smart Meter
- Read Power Consumption
Key Areas of Focus

- **INTELLIGENT SENSORS** - IOT technology is lowering the cost of entry for innovative start-ups; allowing for greater instrumentation and data streaming.

- **WIRELESS TECHNOLOGY EVOLUTION** - Evolution of existing wireless technology protocols will further lower the cost of data.

- **OPEN DATA STANDARDS** - The ability to consume, analyze data and use it to predict asset performance, system health, security threats, etc. – will be critical for operators and policy makers.
BACKUP