Internet of Things
(IoT)

Standards, Risks, & Why we Need to Address Both

November 7, 2017

MARINER
SECURITY SOLUTIONS

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IoT – what is it?

Protect Revenue, Assist Governance and Ensure Business Continuity

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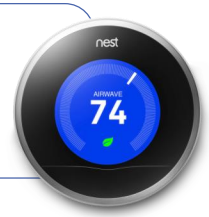
Endpoint Devices

- Cars, farm resources, medical devices, smart TV's, etc.
- Buildings, Infrastructure, Utilities (although typically SCADA)



Gateways

- Short range communication devices such as routers using 802.x, Bluetooth, etc.
- Link from end devices to external networks

Telecomms / Internet links

- Cellular, Fiber, Dedicated links, etc.
- Link gateways to the service level

Service Level

- End user, Big Data, Automation, etc.

IoT – Where is it?

IoT – Medical

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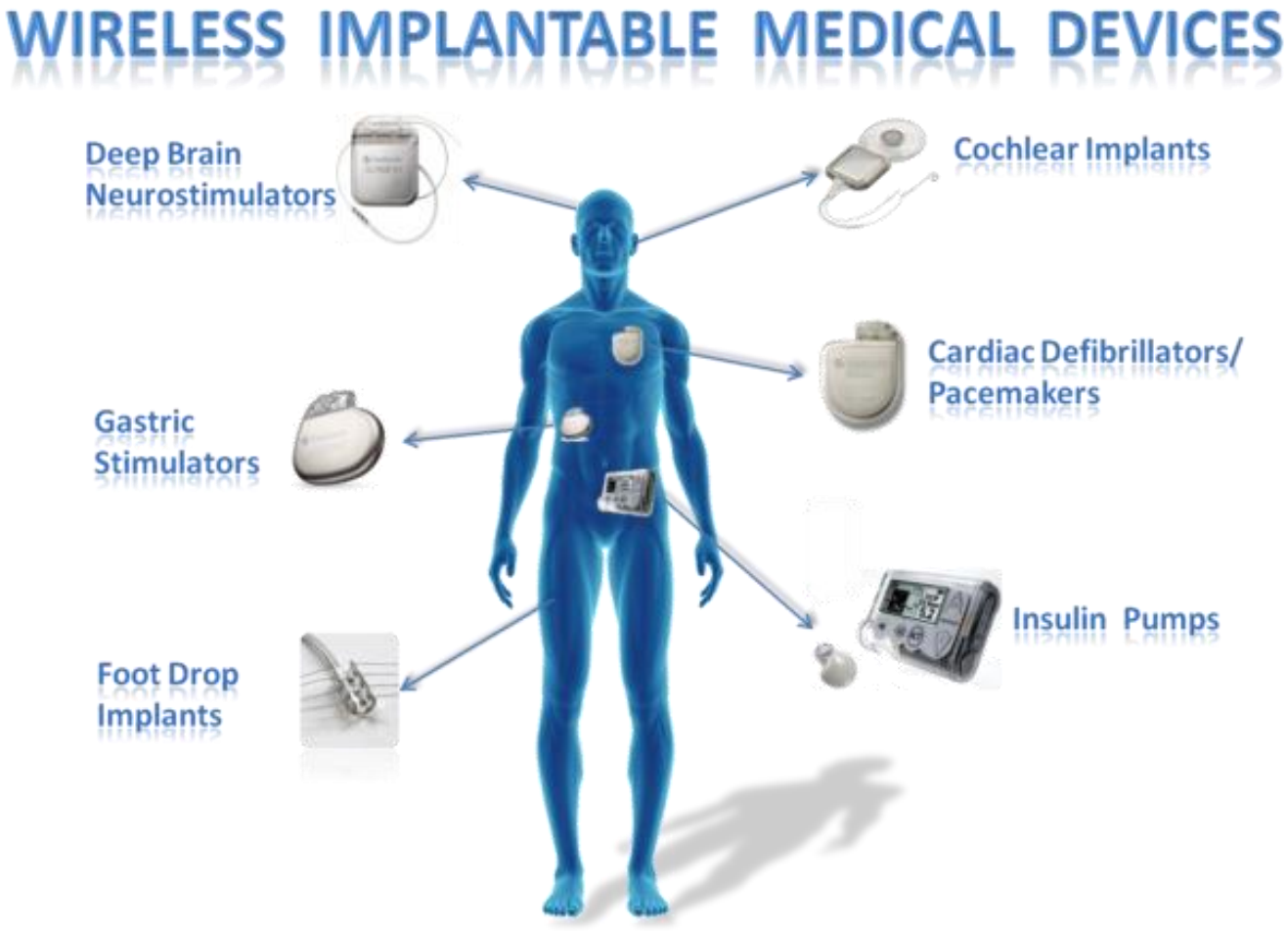

IoT – Medical

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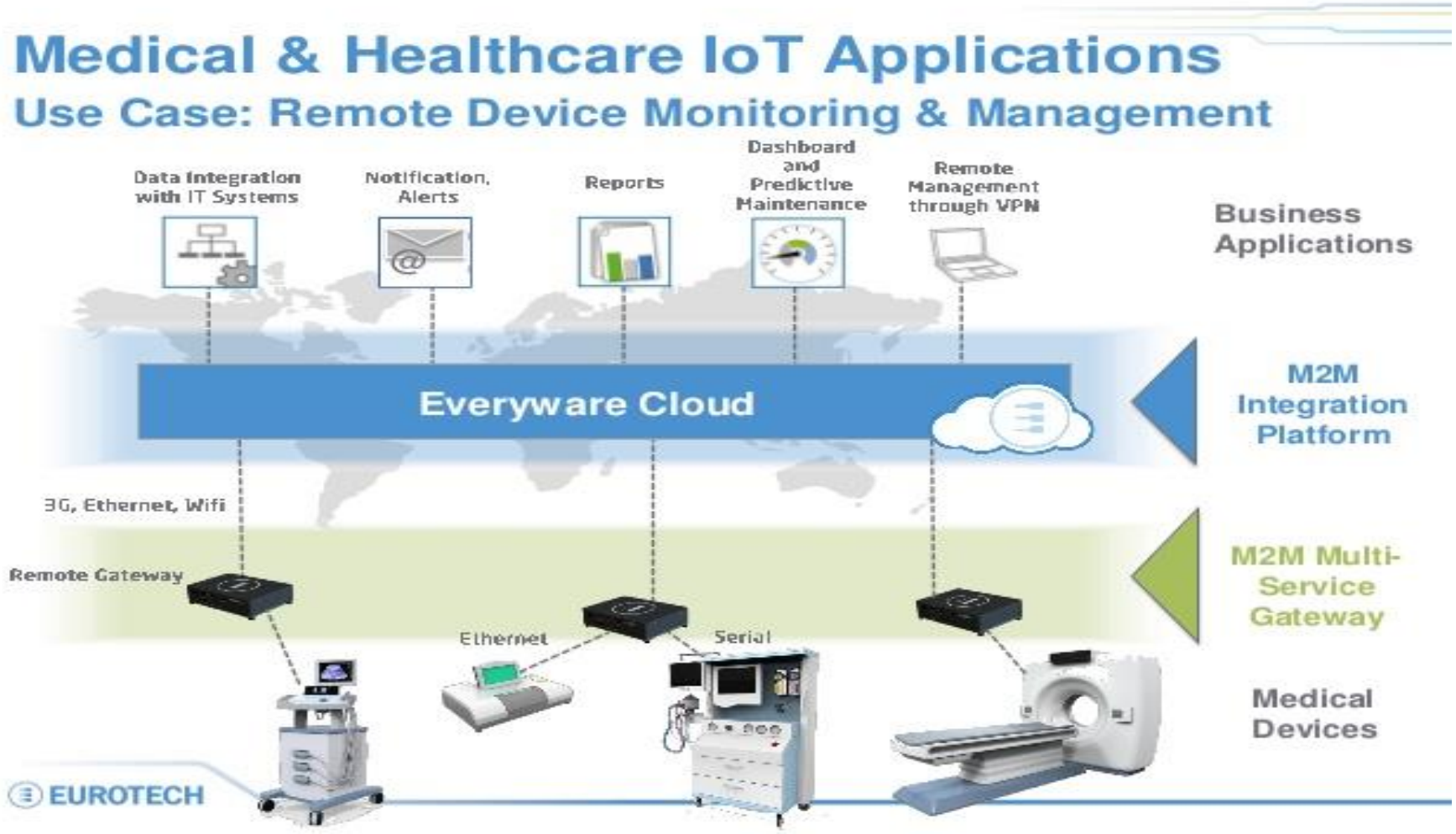

IoT – Automotive

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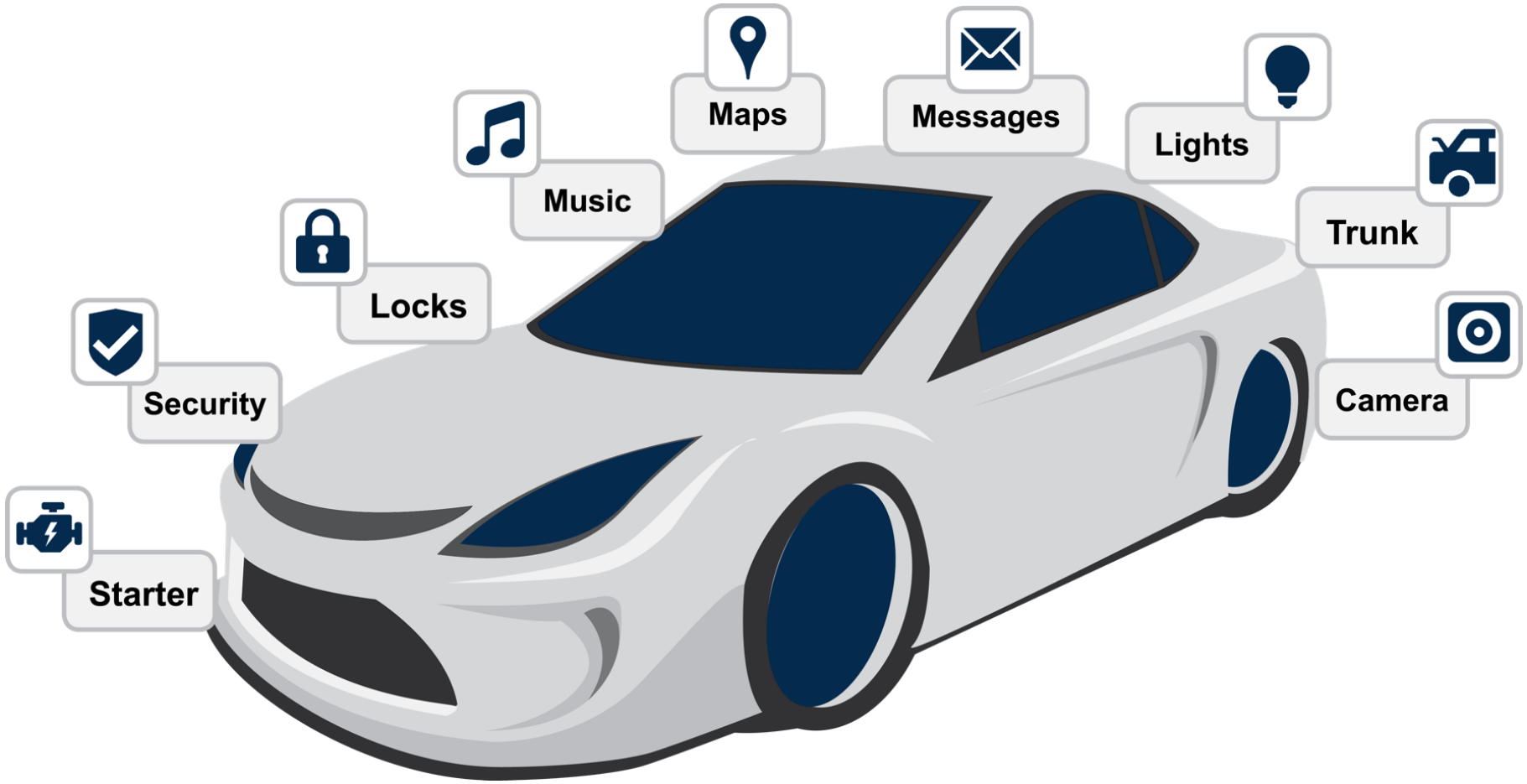

IoT – Smart Cities

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IoT – Food Supply

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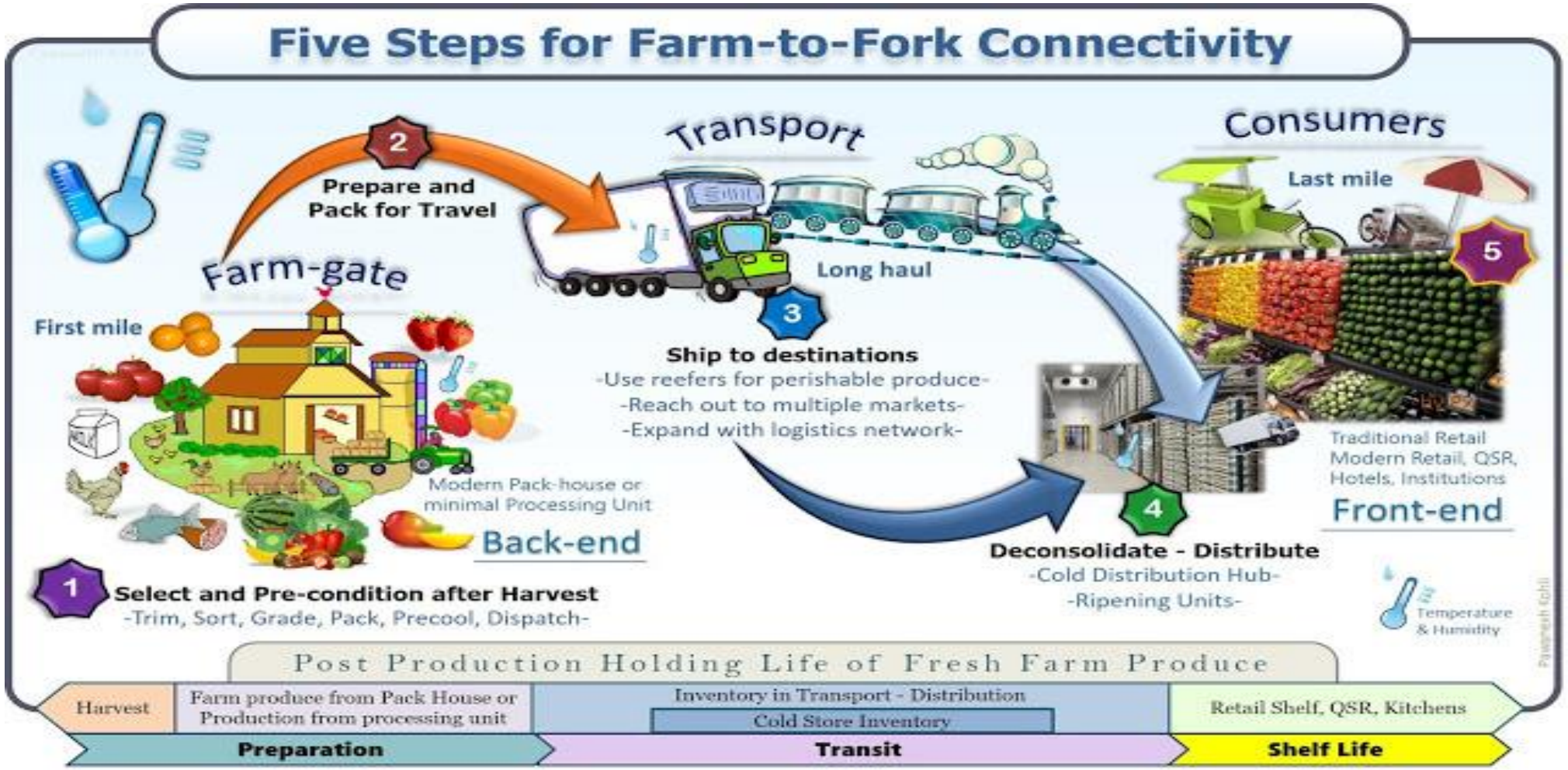

IoT – Utilities

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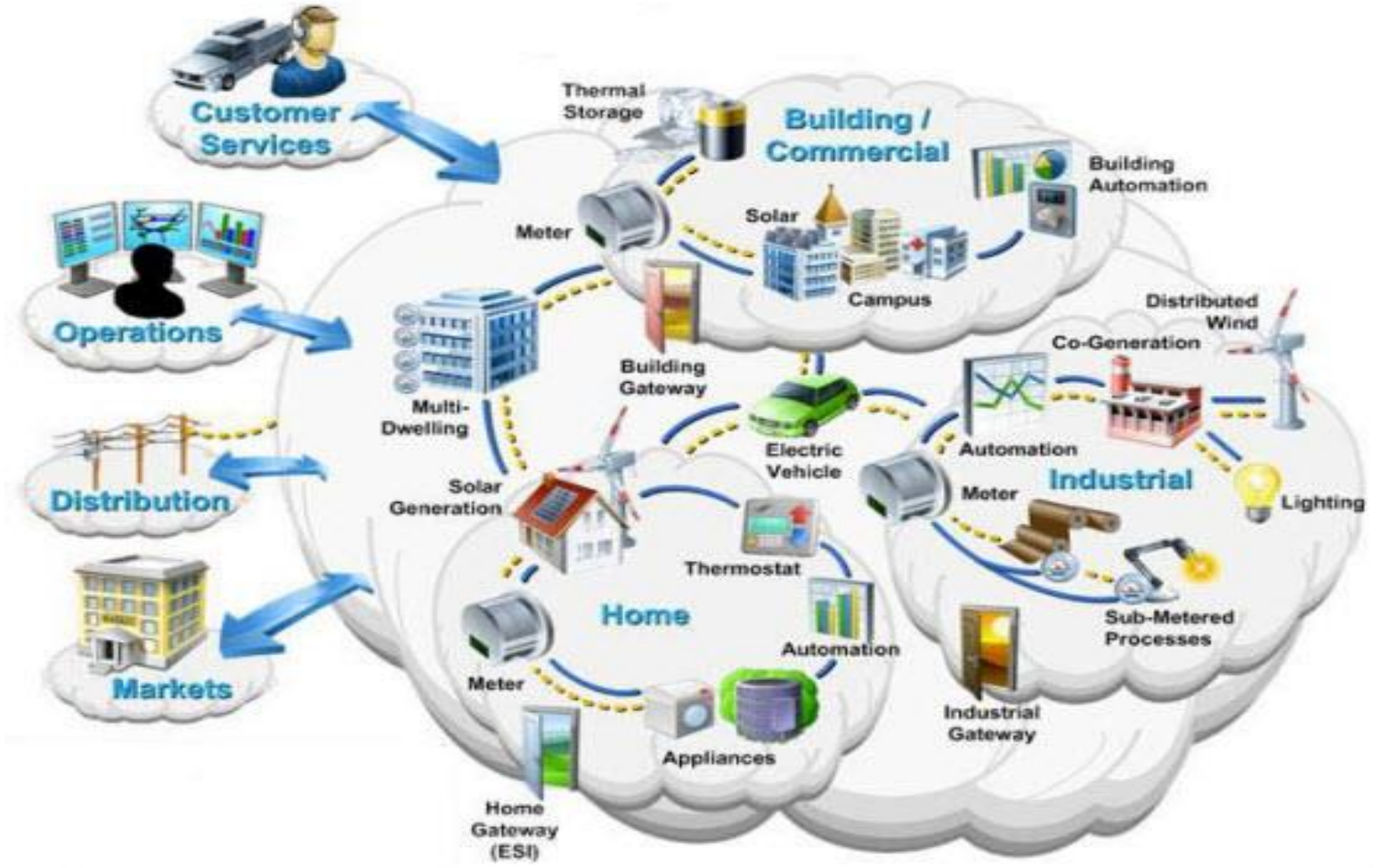

IoT – Manufacturing

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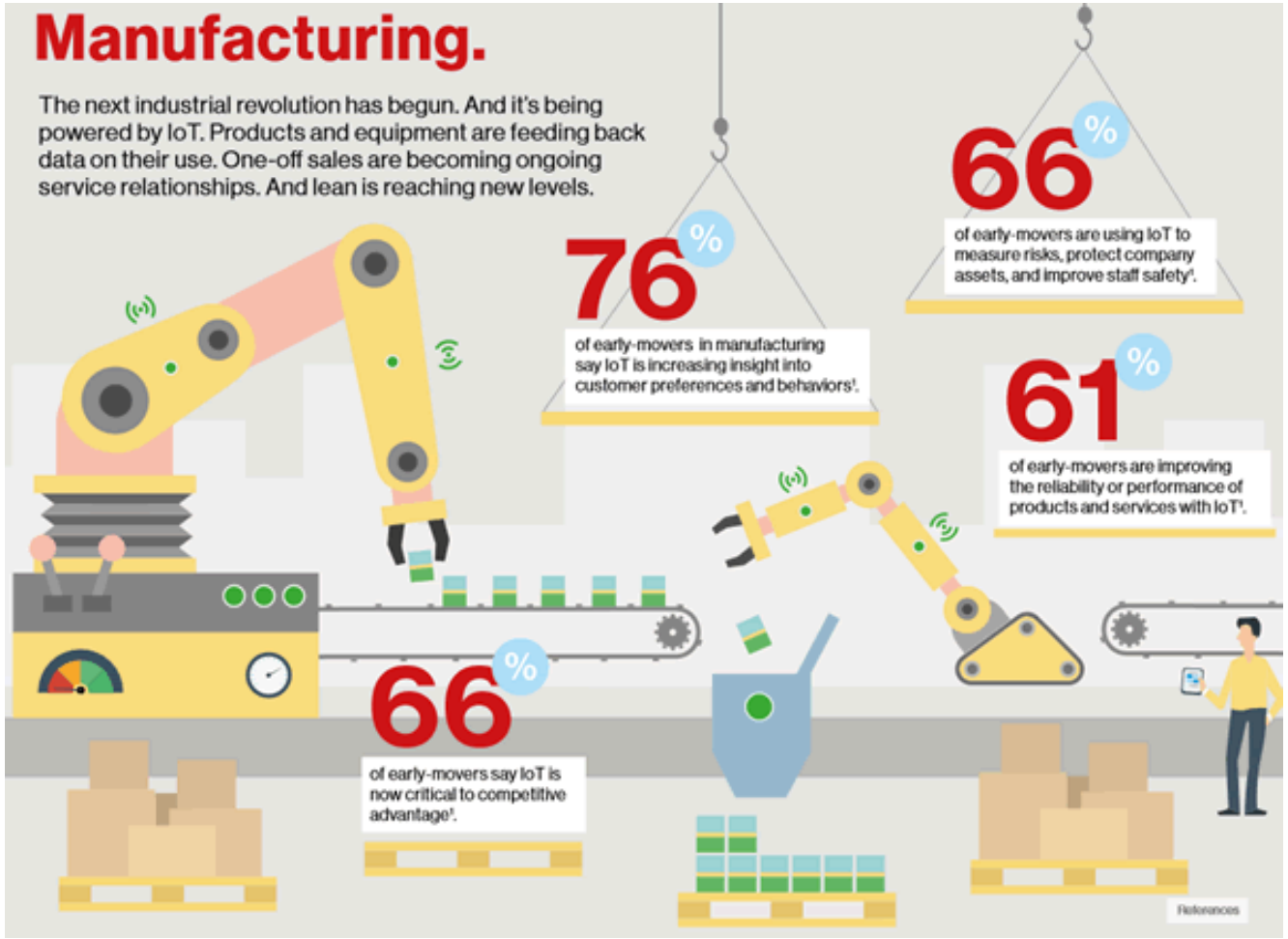

*Source: Verizon

IoT – At Home

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IoT Internals

IoT – What is the Operating System?

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IoT Devices – What else is unique?

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IoT Risks

IoT – So why worry?

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The Hacker News™
Security in a serious way

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New Rapidly-Growing IoT Botnet Threatens to Take Down the Internet

Friday, October 20, 2017 Wang Wei

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Public Service Announcement
FEDERAL BUREAU OF INVESTIGATION

October 17, 2017

Alert Number
I-101717a-PSA

Questions regarding this PSA should be directed to your local **FBI Field Office**.

Local Field Office Locations:
www.fbi.gov/contact-us/field

COMMON INTERNET OF THINGS DEVICES MAY EXPOSE CONSUMERS TO CYBER EXPLOITATION

In conjunction with National Cyber Security Awareness Month, the FBI is re-iterating the growing concern of cyber criminals targeting unsecure Internet of Things (IoT) devices. The number of IoT devices in use is expected to increase from 5 billion in 2016 to an estimated 20 to 50 billion by 2020. Once an IoT device is compromised, cyber criminals can facilitate attacks on other systems or networks, send spam e-mails, steal personal information, interfere with physical safety, and leverage compromised devices for participation in distributed denial of service (DDoS) attacks.

IoT refers to a network of physical devices, vehicles, buildings, and other

IoT – So why worry?

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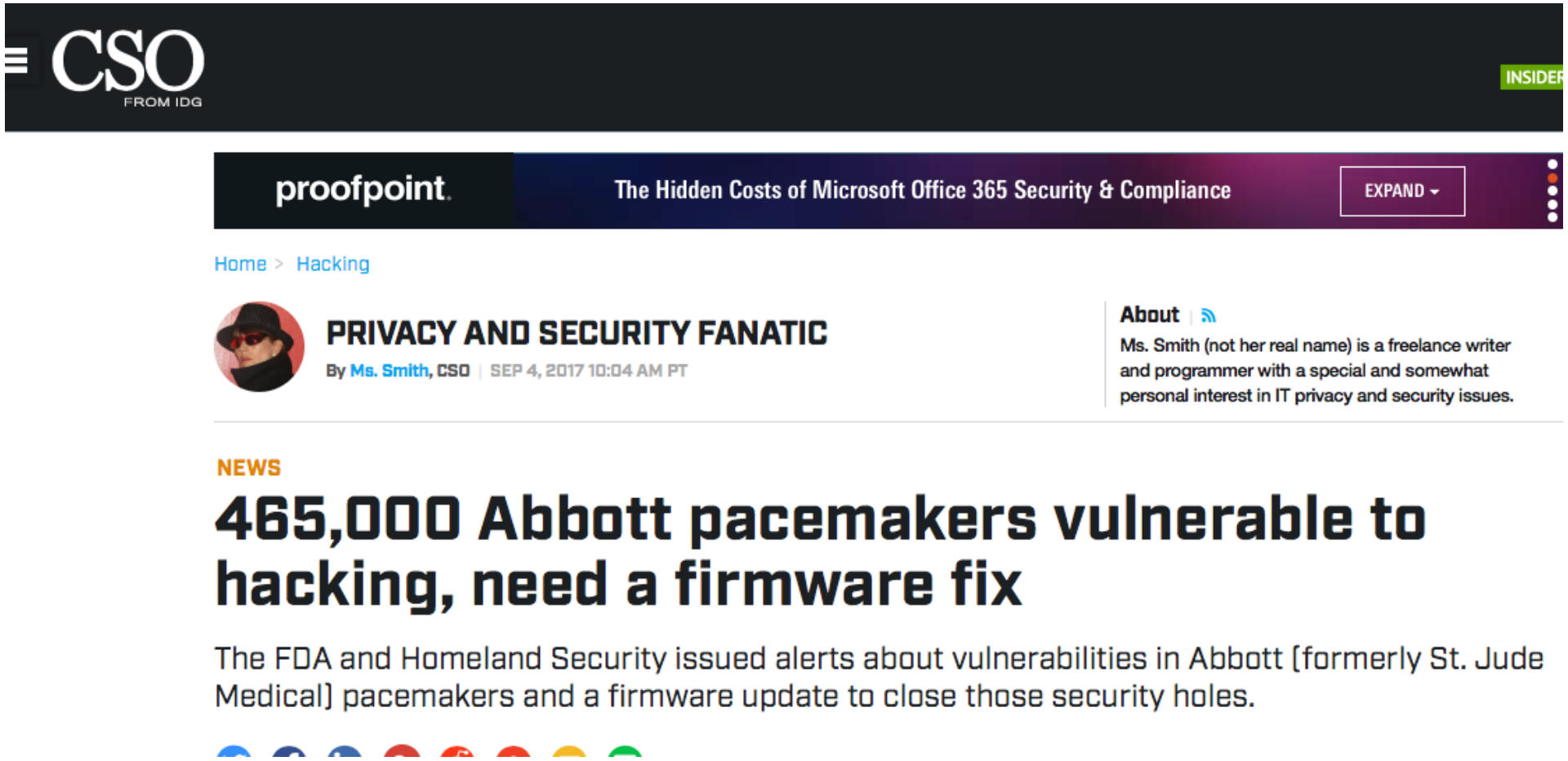

CSO FROM IDG

INSIDER

Home > Hacking

PRIVACY AND SECURITY FANATIC

By Ms. Smith, CSO | SEP 4, 2017 10:04 AM PT

About

Ms. Smith (not her real name) is a freelance writer and programmer with a special and somewhat personal interest in IT privacy and security issues.

NEWS

465,000 Abbott pacemakers vulnerable to hacking, need a firmware fix

The FDA and Homeland Security issued alerts about vulnerabilities in Abbott (formerly St. Jude Medical) pacemakers and a firmware update to close those security holes.

IoT Protocols and Frameworks

IoT – Protocols and Frameworks

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The following is a list of ***some*** of the protocols used by IoT:

1) Infrastructure – RPL, IPv4/IPv6, 6LowPAN
2) Identification – EPC, URIs, IPv6
3) Comms/Transport – Bluetooth, LPWAN, WiFi
4) Discovery – DNS-SD, mDNS
5) Data Protocols – Websocket, AMQP, CoAP, MQTT
6) Device Management – OMA_DM, TR-069
7) Semantic – JSON-LD
8) Multi-layer Frameworks – Weave, Homekit, IoTivity

IoT – Protocols and Frameworks

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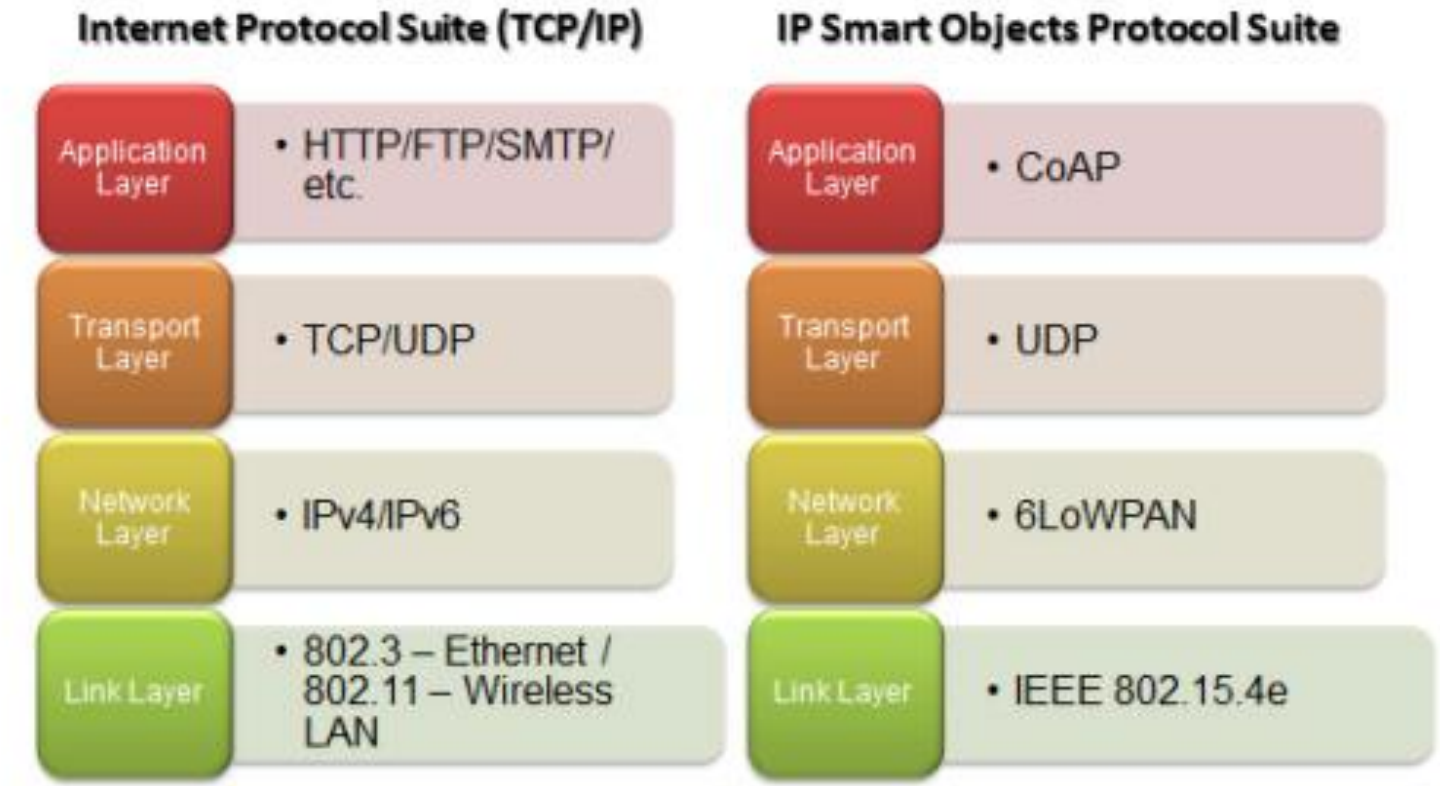

Figure 1 TCP/IP Stack and IP Smart Objects Protocol Stack

*Image from Mindtree Labs.

IoT – Protocols and Frameworks

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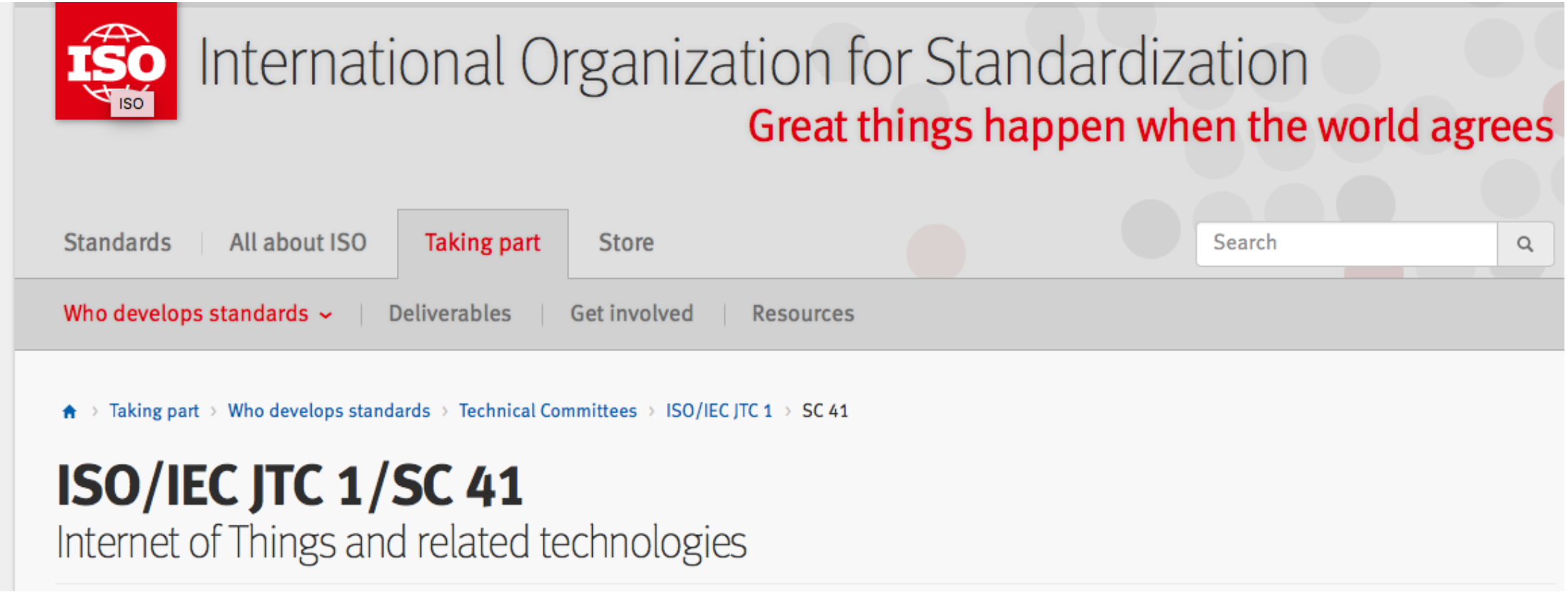

IoT – Protocols and Frameworks

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IoT – Protocols and Frameworks

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IoT – What else can be done?

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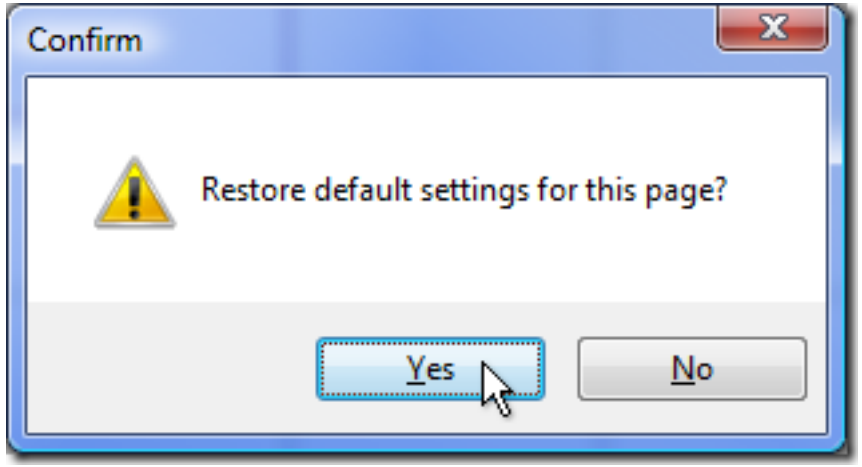

Questions?

Thank you!

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