



IoE & Healthcare

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Hostess: Kara Sullivan

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Welcome to the 6th session of the *Internet of Everything* webinar series!

- 1st Session: IoE & Cloud Mobility
- 2nd Session: IoE & Smart Cities
- 3rd Session: IoE & Education
- 4th Session: IoE & Smart Connected Industries
- 5th Session: IoE & Technology Innovation
- **6th Session: IoE & Healthcare**

All on-demand sessions and presentations can be found [here](#).



Before We Get Started...

- Use the Q and A panel to ask questions.
- Use the Chat panel to communicate with attendees and panelists.
- A link to a recording of the session will be sent to all registered attendees.
- Please take the feedback survey at the end of the webinar.

Digitalization

Going paperless? Just to save trees?





IoT & IoE



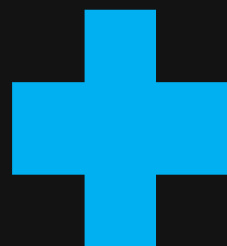
IoT

Physical devices connected to Internet.



IoE

IoT + Big Data + Brain ?



IoT devices act autonomously based on real-time data

Real-world Example of IoE

The IoE is the network of all networks, bringing together people, processes, data, and physical devices to transform the wealth of structured and unstructured data into real-time insights, richer experiences, autonomous behavior, and real, tangible business value.



MEDICAL:

A doctor receives notification that her patient's blood glucose levels are high



TRANSPORTATION:

A driverless car reroutes sensing an accident up ahead



HOME:

A connected home keeps coffee from burning by powering down when you leave



PUBLIC SECTOR:

A connected city adjusts to parking needs, traffic, and utility usage



How large is the IoT Market?

In the not-too-distant future, hundreds of millions, then billions, of individuals and businesses with billions, then trillions, of smart, communicating devices will stretch the boundaries of current systems. Creating the potential to change the way we work, learn, entertain and innovate.

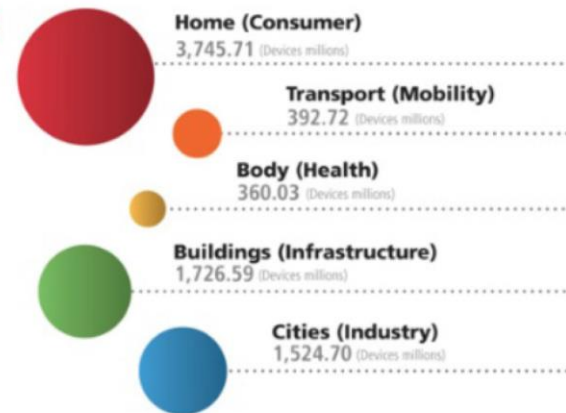
Connected Devices



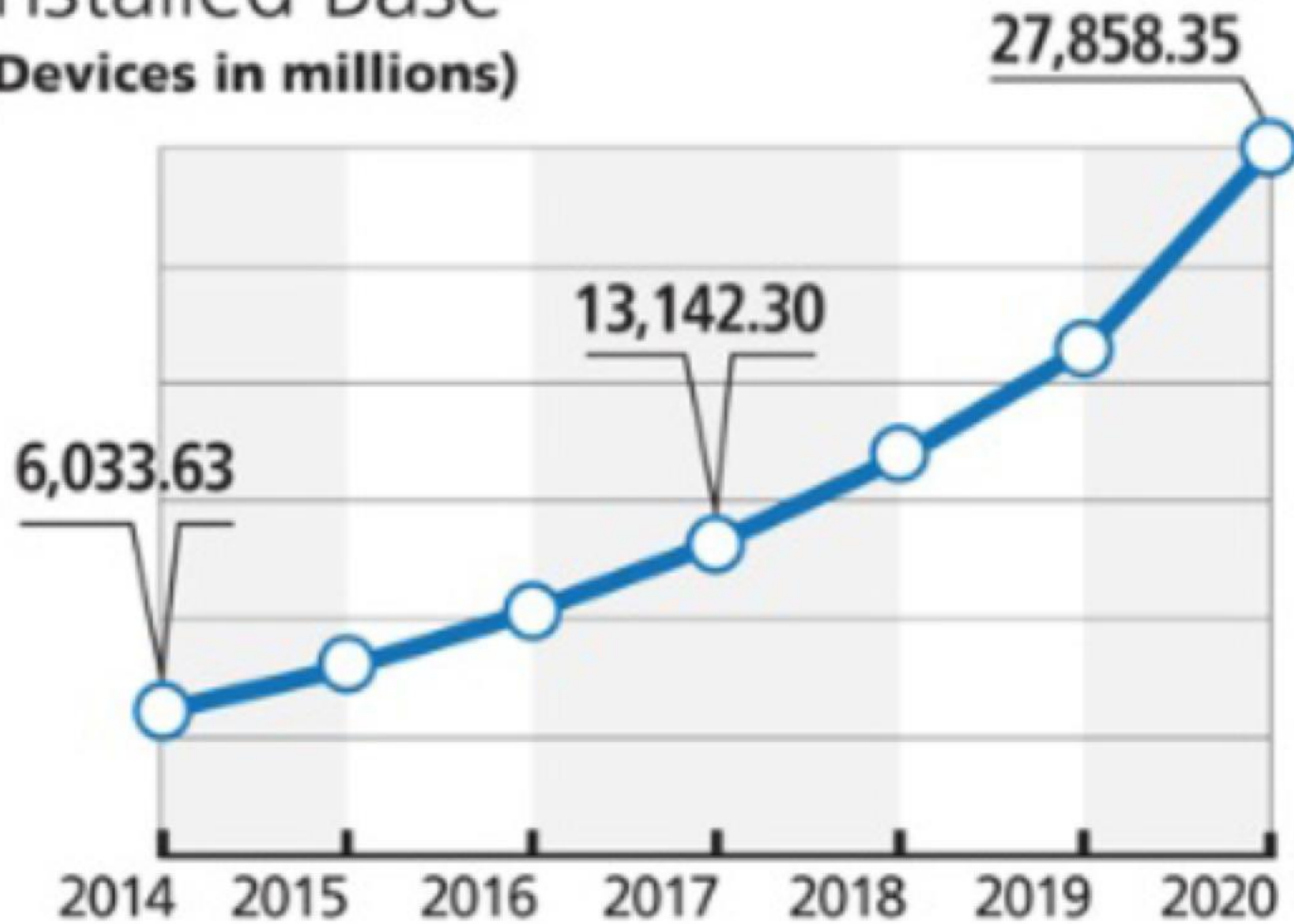
In 2014 nearly **2 billion** connected devices will be shipped

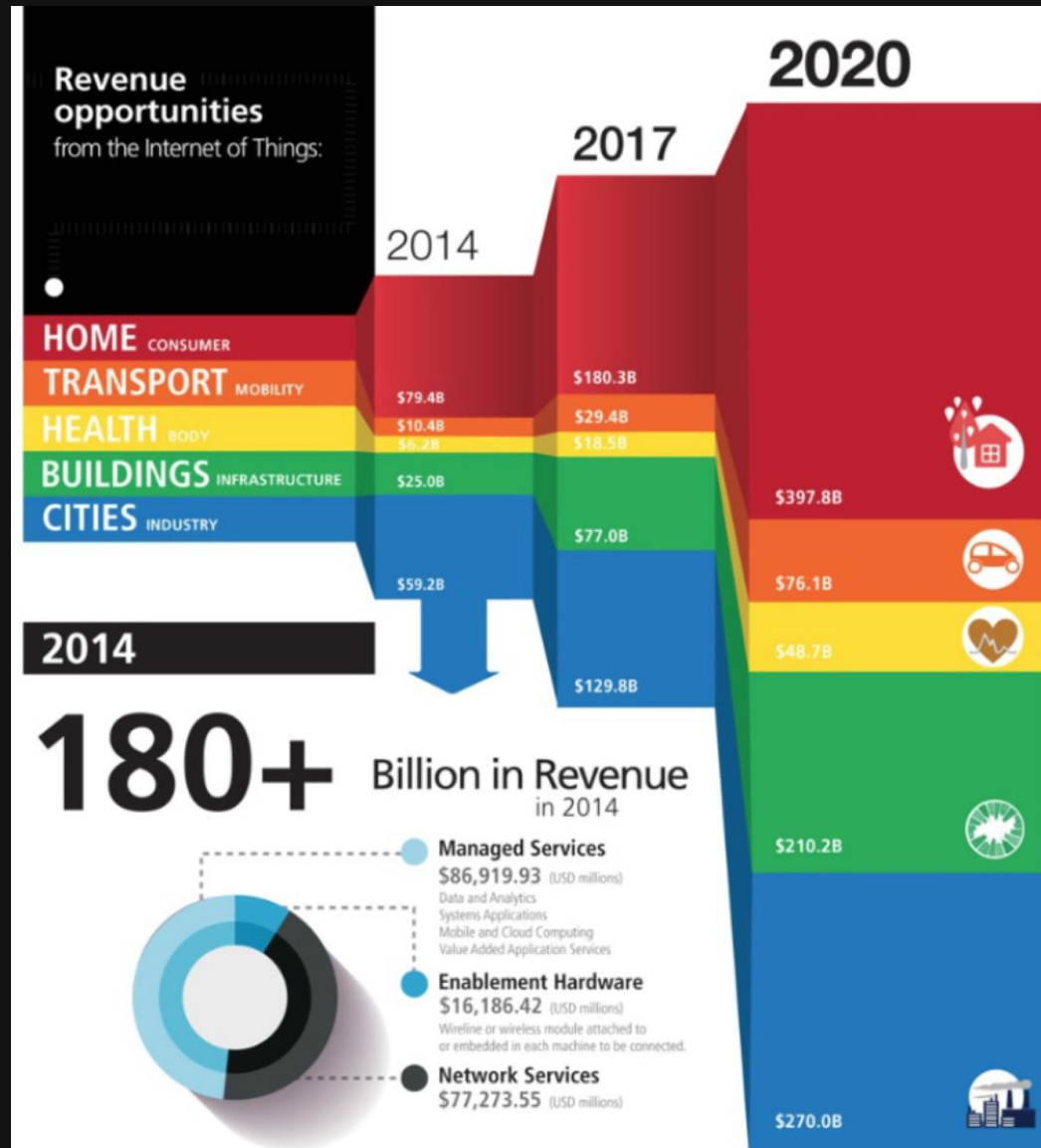
This number will grow to nearly **8 billion** devices for the year 2020

*Not including mobile phones



Installed Base (Devices in millions)





1 **SENSORS**
& ACTUATORS

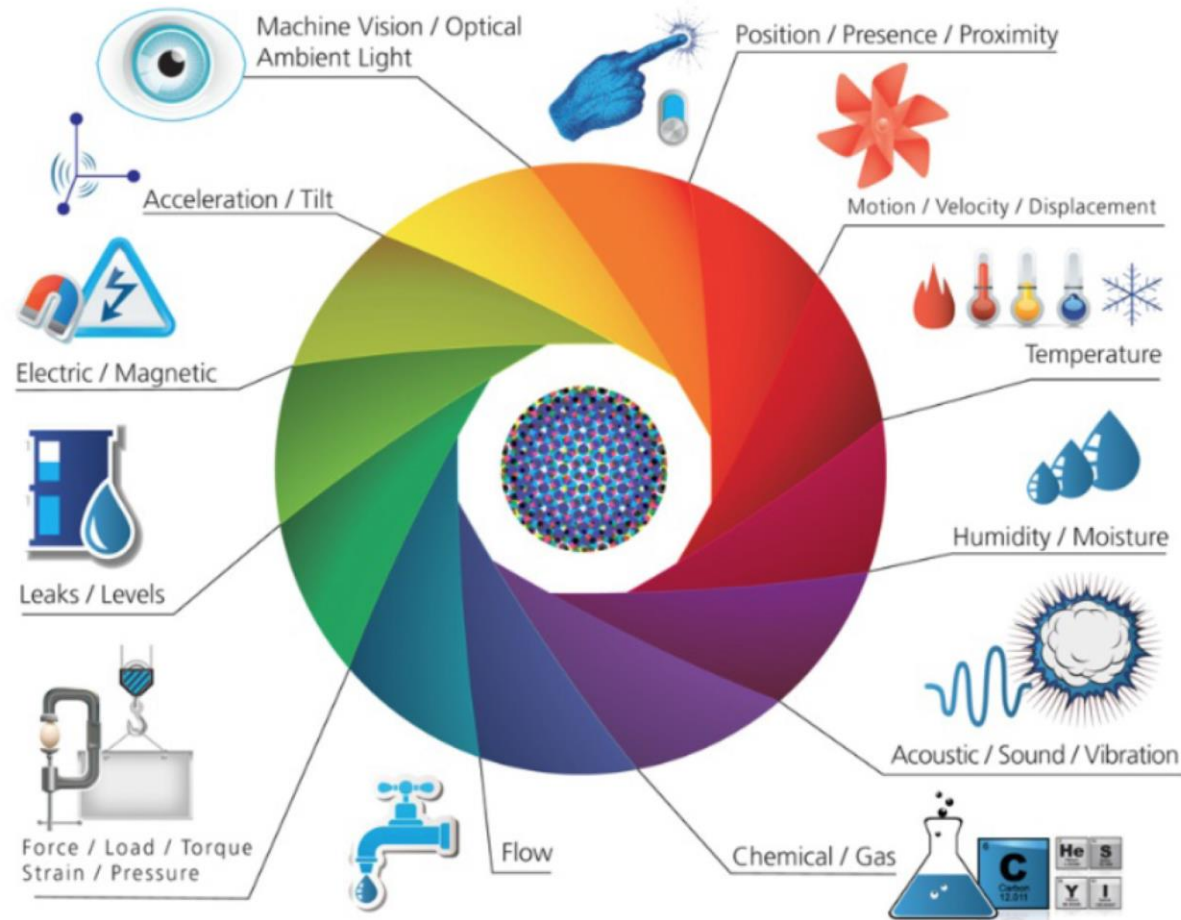
2 **CONNECTIVITY**

3 **PEOPLE &
PROCESSES**



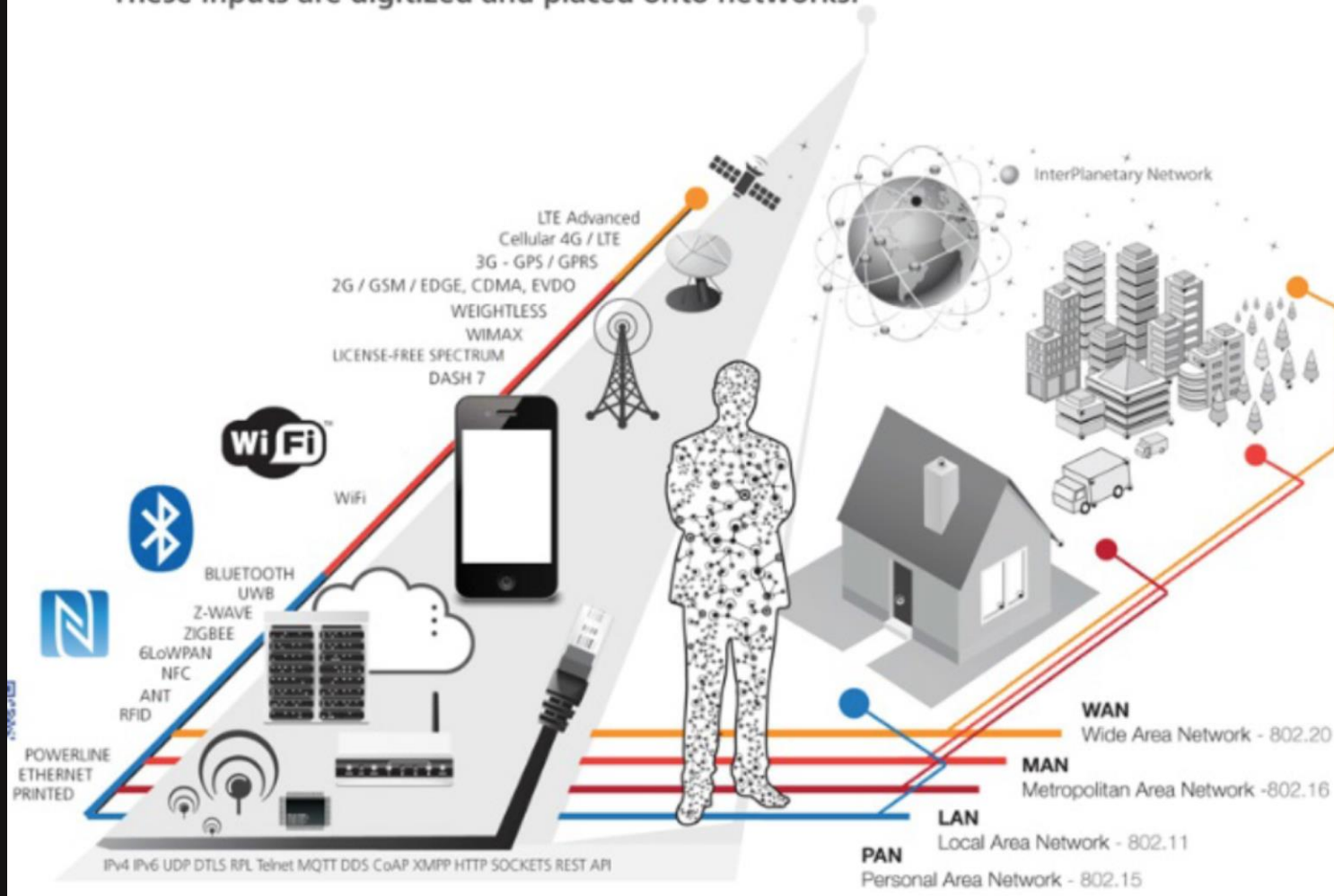
1 SENSORS & ACTUATORS

We are giving our world a digital nervous system. Location data using GPS sensors. Eyes and ears using cameras and microphones, along with sensory organs that can measure everything from temperature to pressure changes.



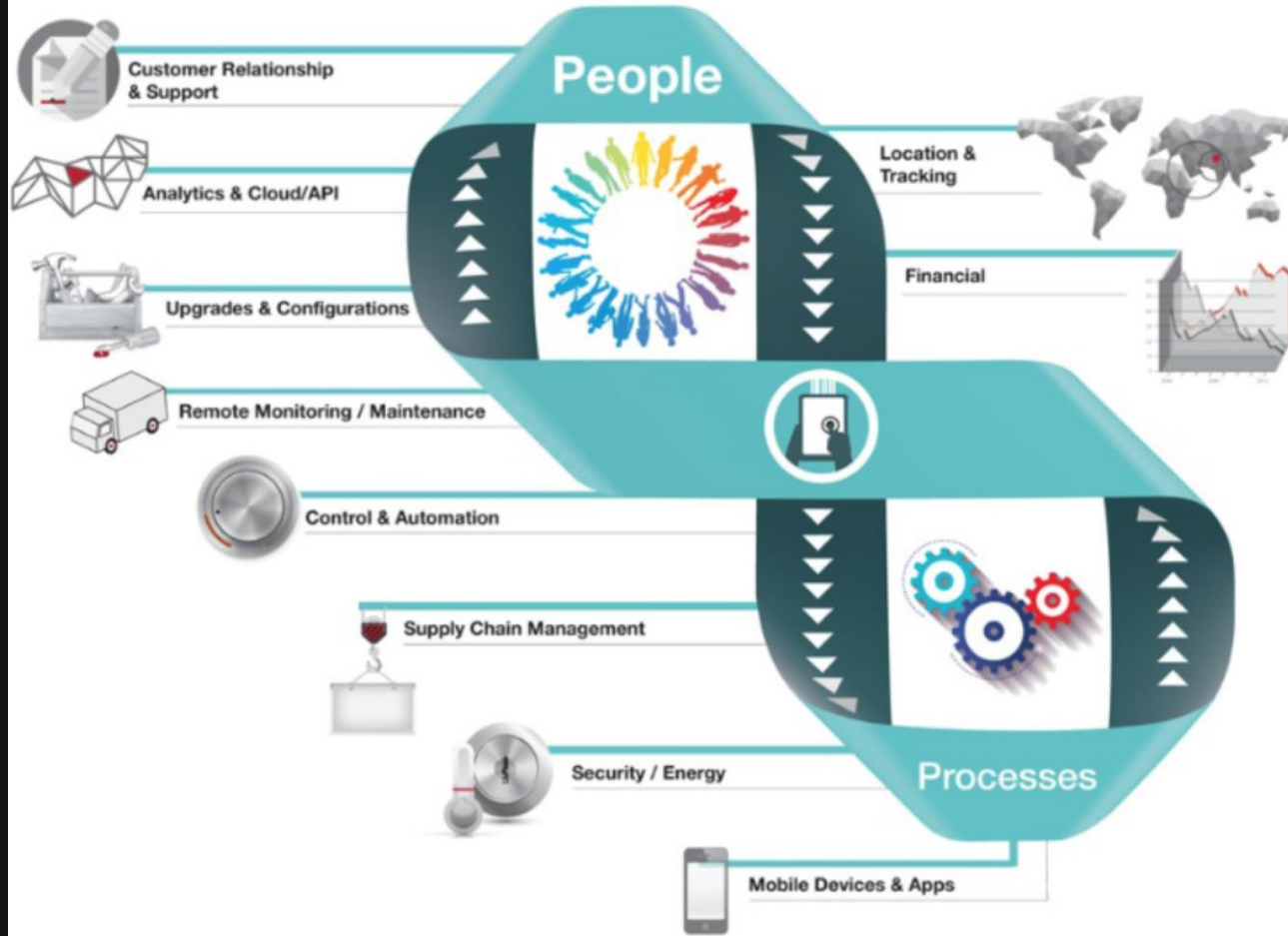
2 CONNECTIVITY

These inputs are digitized and placed onto networks.



3 PEOPLE & PROCESSES

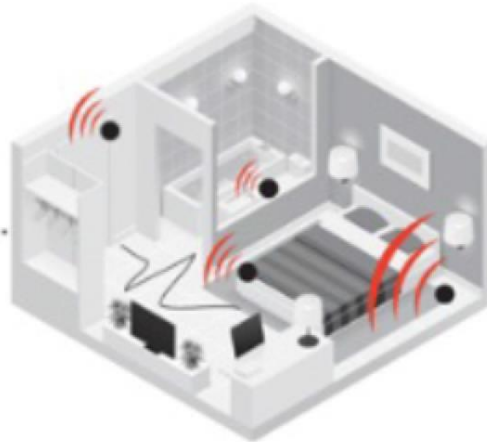
These networked inputs can then be combined into bi-directional systems that integrate data, people, processes and systems for better decision making.



HEALTHCARE + SMART HOME



Aging uncle Earl is still living isolated at his home and you are concerned about his safety.



Wireless sensors throughout his house help measure healthy activity levels, sleeping patterns and medication schedules.



Alerts are automatically sent to health care services and authorized family members if any abnormal activity is detected.

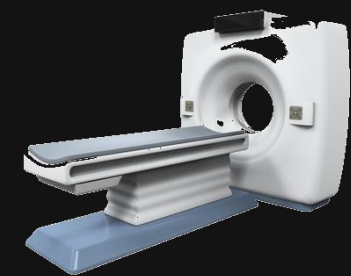
40 million adults age 65 and over will be living alone in the U.S, Canada and Europe.

- U.S. Department of Health and Human Services: Administration for Community Living (ACL)

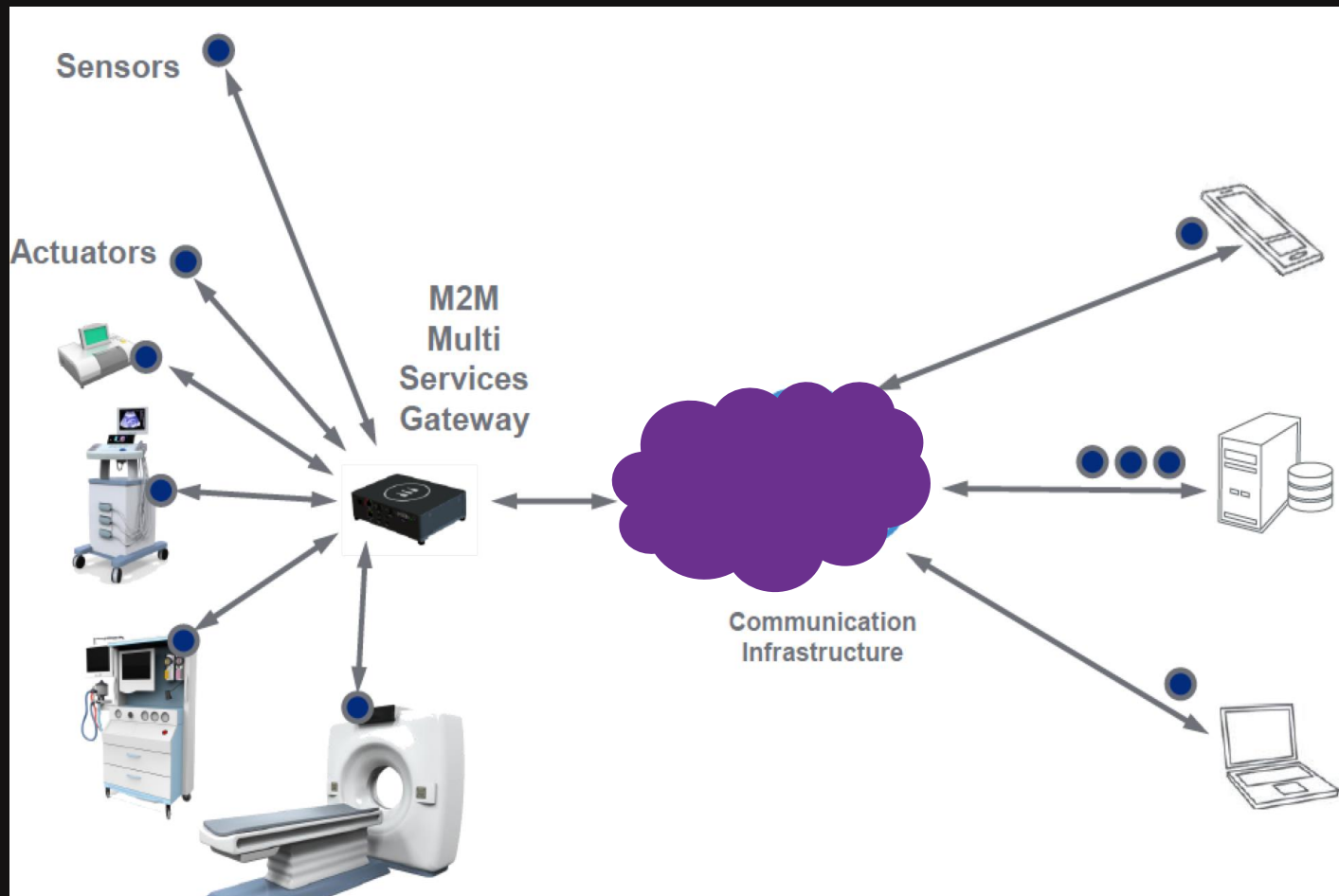


Challenges and Perceived Barriers

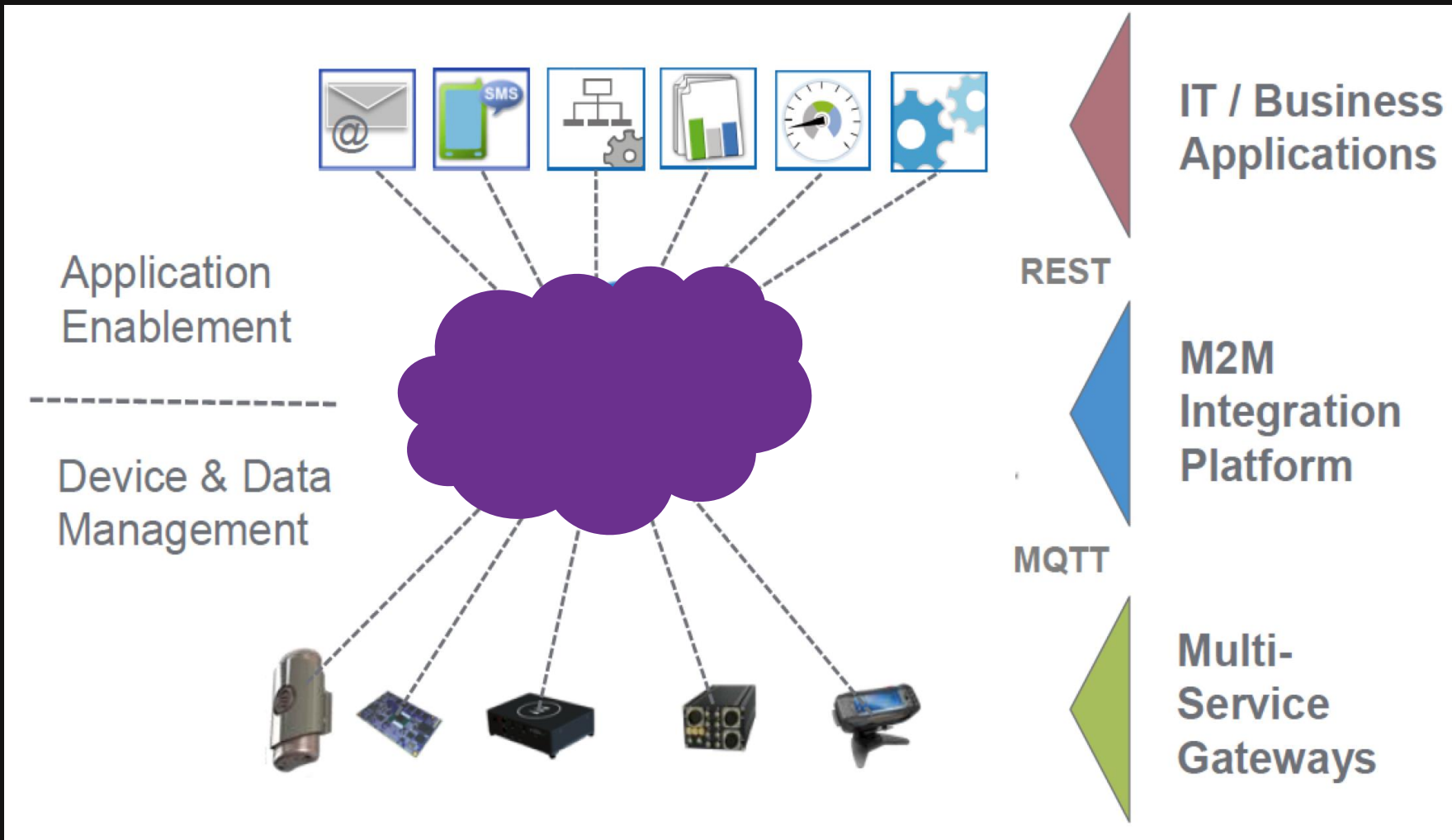
- Different medical devices / protocols / interfaces
- Local intelligence required
- Secure medical device access and configuration
- Aggregation (communication cost reduction)
- Local (remote) processing
- International deployment / customer base
- Carrier certifications for cellular solutions
- Support
- Security
- Integrating into secure hospital networks
- End-to-end
- Infrastructure required
- IT/OT challenges



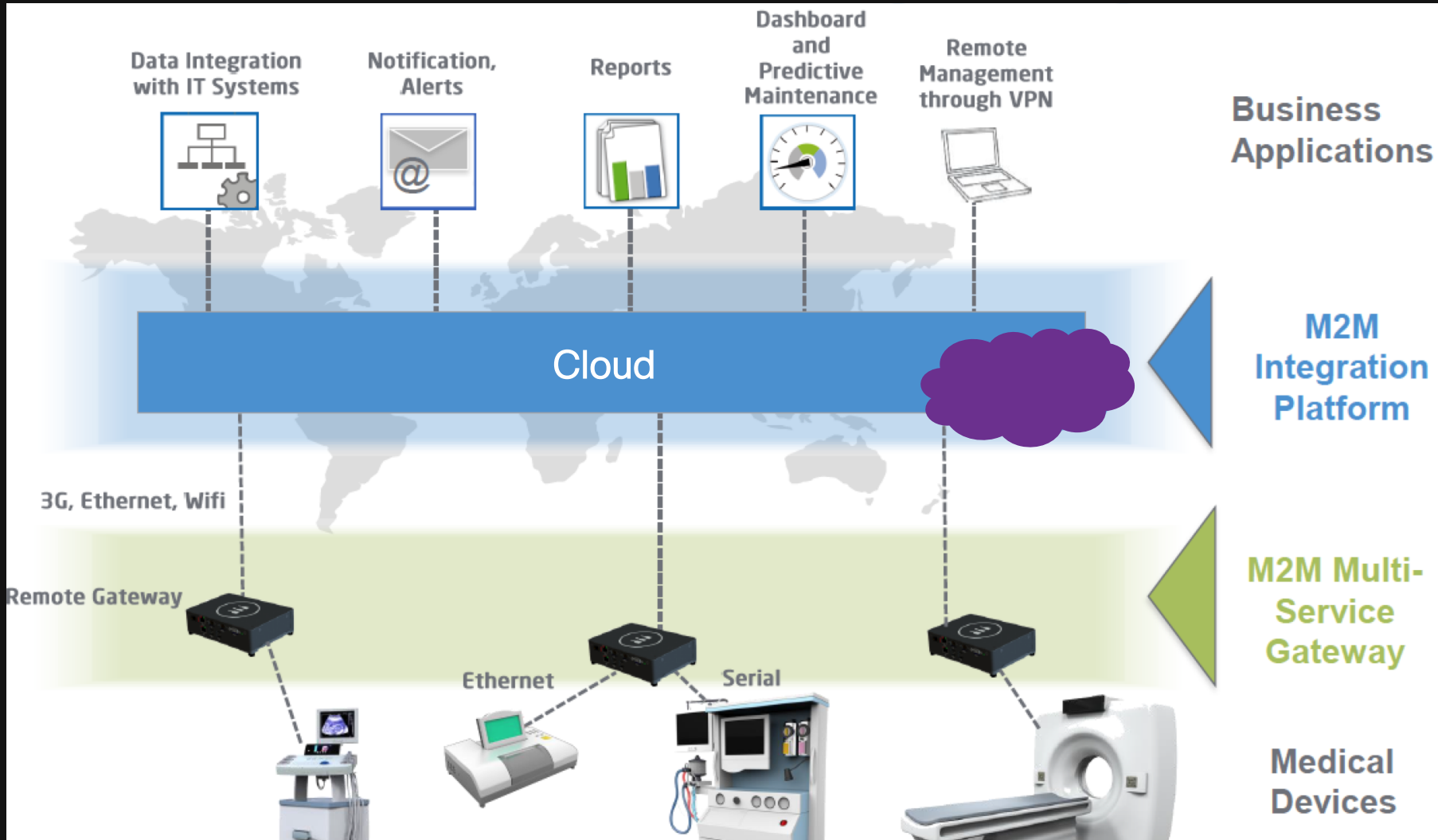
Integration using Gateway



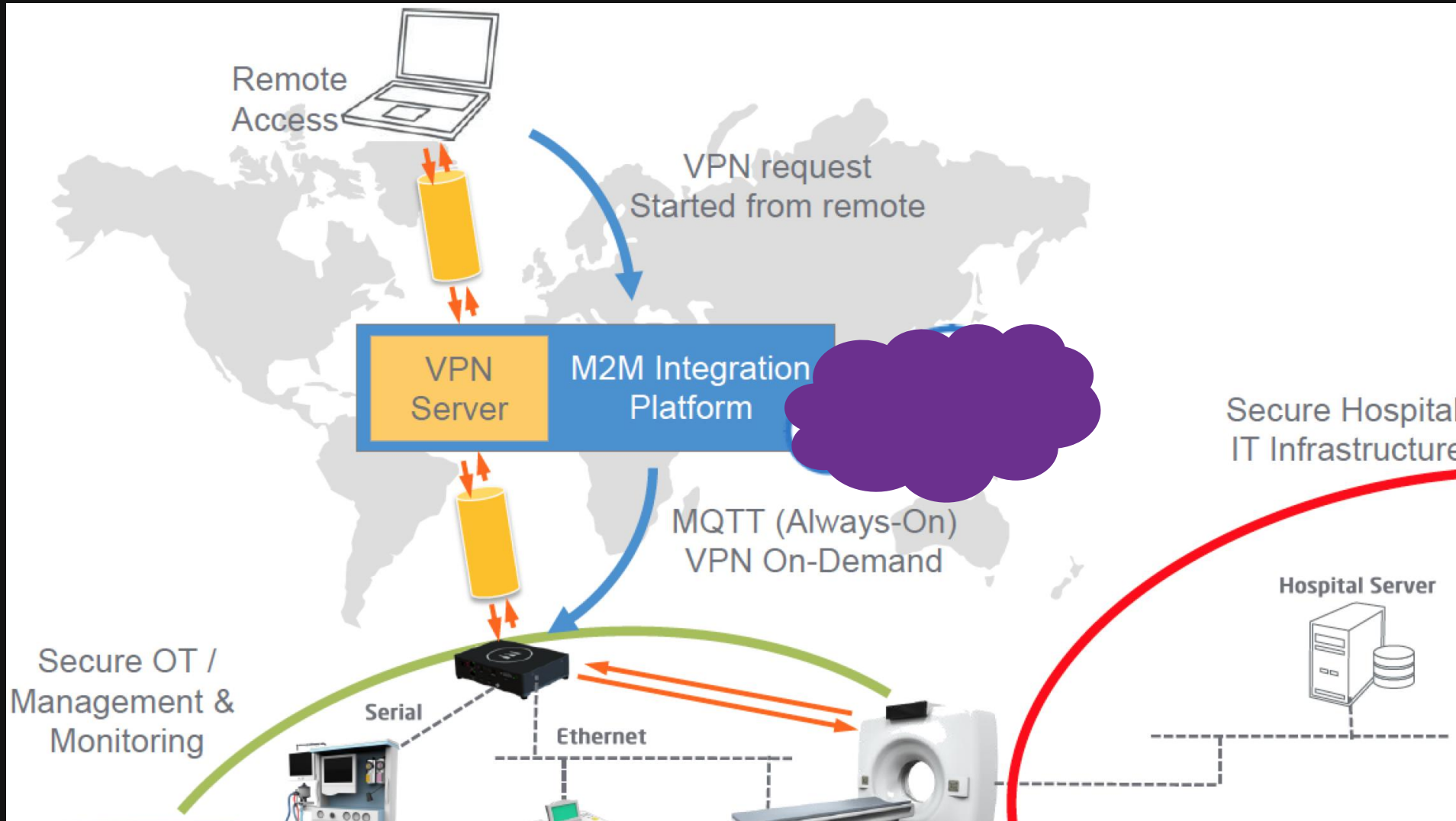
Platform



Remote Monitoring : How it works ?



VPN Driven



IoE HealthCare – Devices?

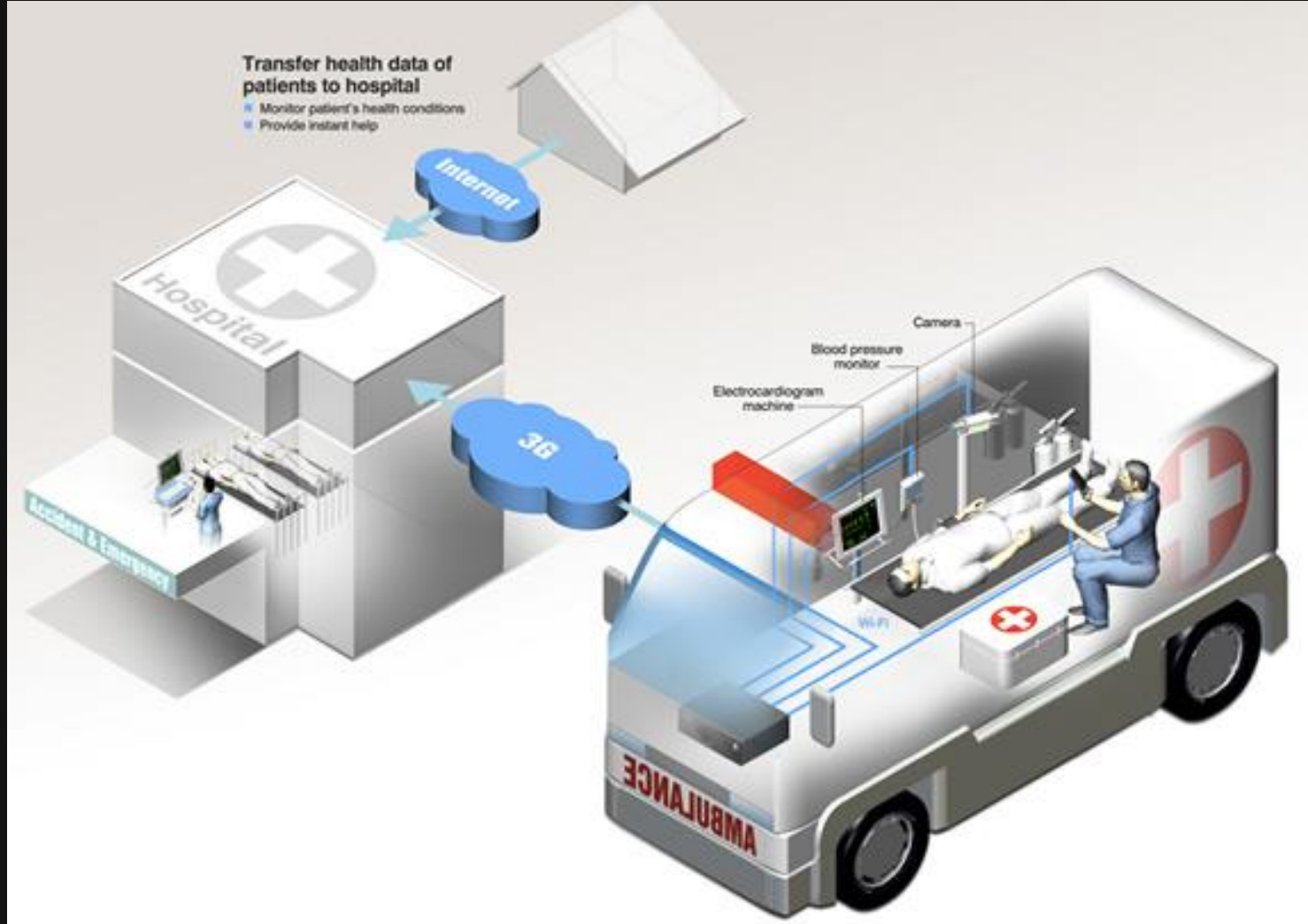
Hospital
Devices

Doctor's
Office Devices

At Home
Devices

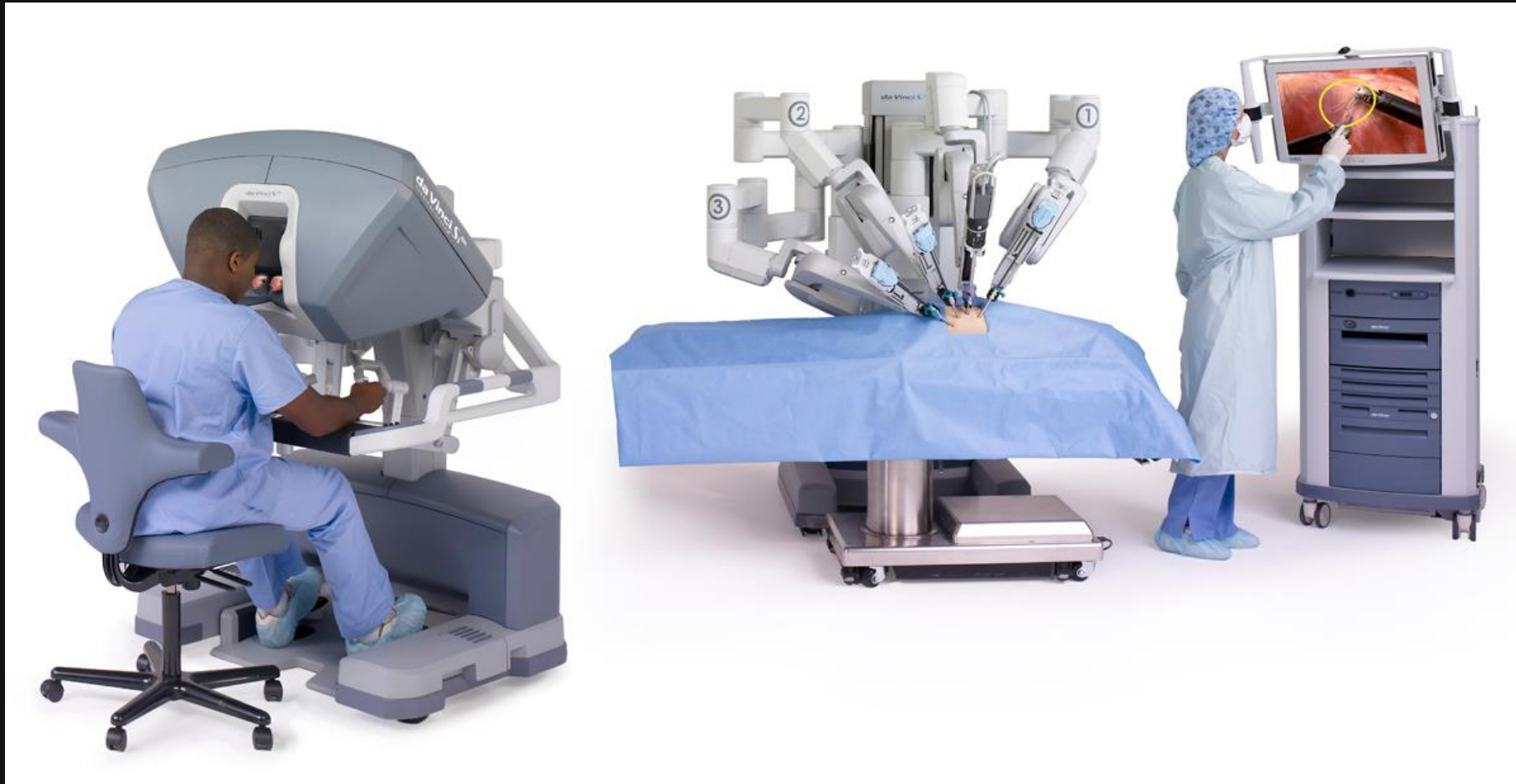


Connected Ambulance





Robotic Surgery



IoE HealthCare – During Emergency / Disaster



Cisco NERV –
Network Emergency Response Vehicle



Tele
Medicin
e

IoT
Devices

3D
Printer



Healing Spell



Telemedicine

Telemedicine is the use of Telecommunication and Information Technologies to provide clinical health care at a distance. It helps eliminate distance barriers and can improve access to medical services that would often not be consistently available in distant rural communities.



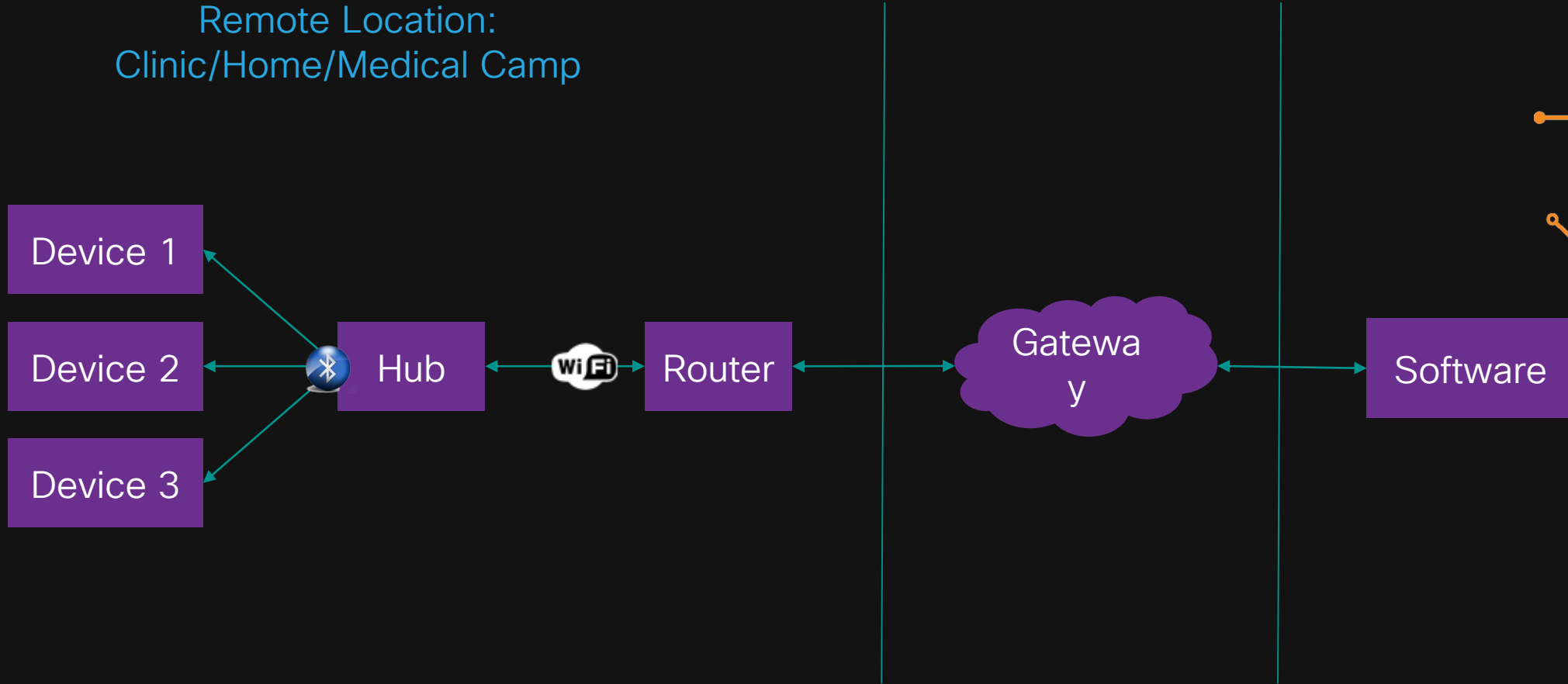
Telemedicine - IoT Devices

- Blood Pressure Monitors
- Oximeters
- Glucometer
- and more



Telemedicine - IoT Devices , How it works ?

Remote Location:
Clinic/Home/Medical Camp





CISCO

Cisco Networking Academy

Telemedicine - IoT Devices : Best Practice / Standards

- HIPPA Complaint
- HL7 Standard
- FHIR Format for Device data
- Continua



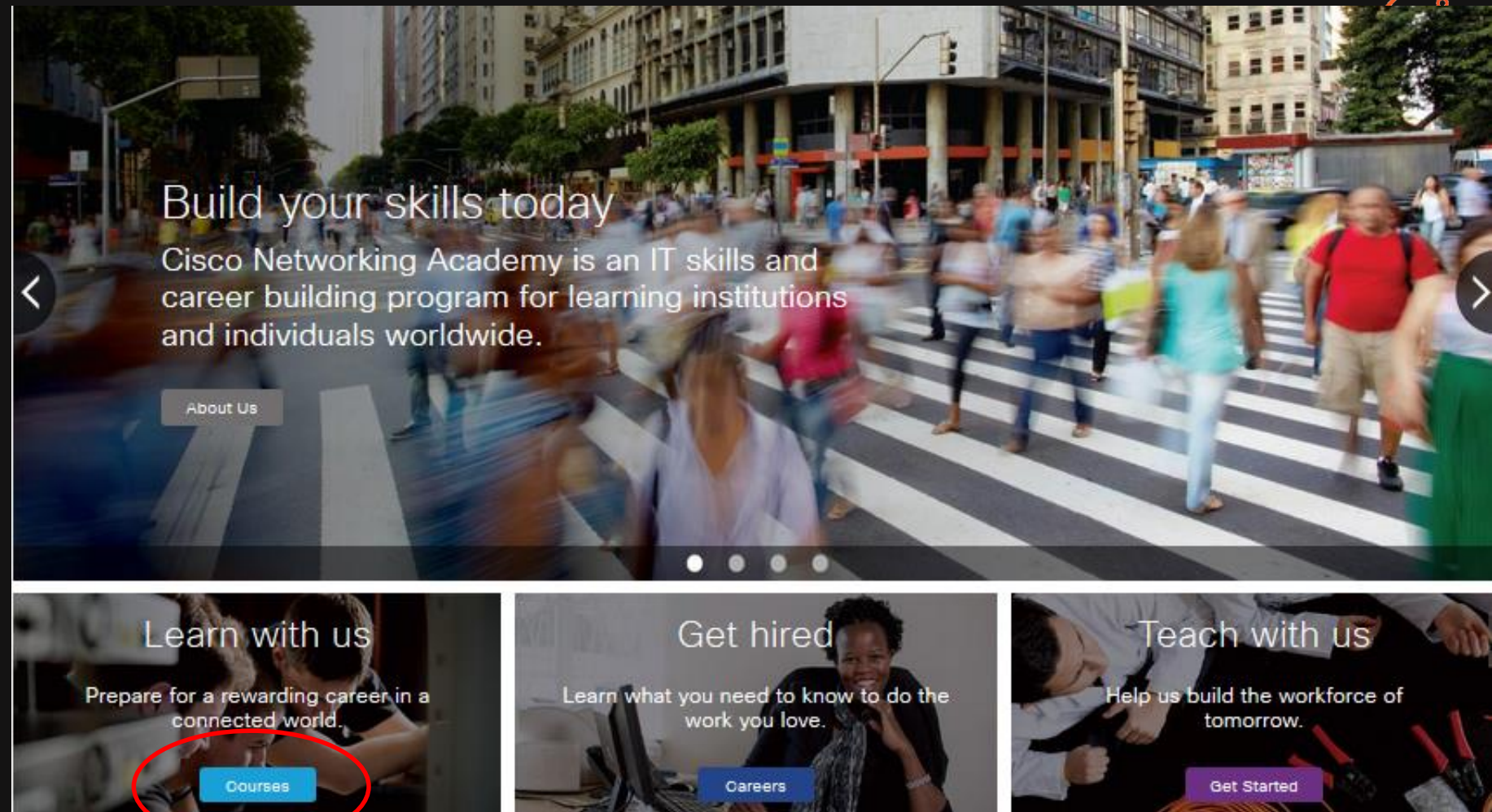


Q&A



Join Cisco Networking Academy

- Go to netacad.com
- Click *Learn with Us*
- karsulli@cisco.com



The screenshot shows the Cisco Networking Academy website landing page. The main banner features a blurred image of a busy city street with pedestrians. The text on the banner reads: "Build your skills today" followed by "Cisco Networking Academy is an IT skills and career building program for learning institutions and individuals worldwide." Below this text is a button labeled "About Us". At the bottom of the banner are four small white circles, with the first one being larger and filled, indicating the current slide. Below the banner are three smaller sections: "Learn with us" with the text "Prepare for a rewarding career in a connected world." and a blue button labeled "Courses" (circled in red); "Get hired" with the text "Learn what you need to know to do the work you love." and a blue button labeled "Careers"; and "Teach with us" with the text "Help us build the workforce of tomorrow." and a purple button labeled "Get Started".