Panel - Timing for the IoT

Wojciech Owczarek, ICE

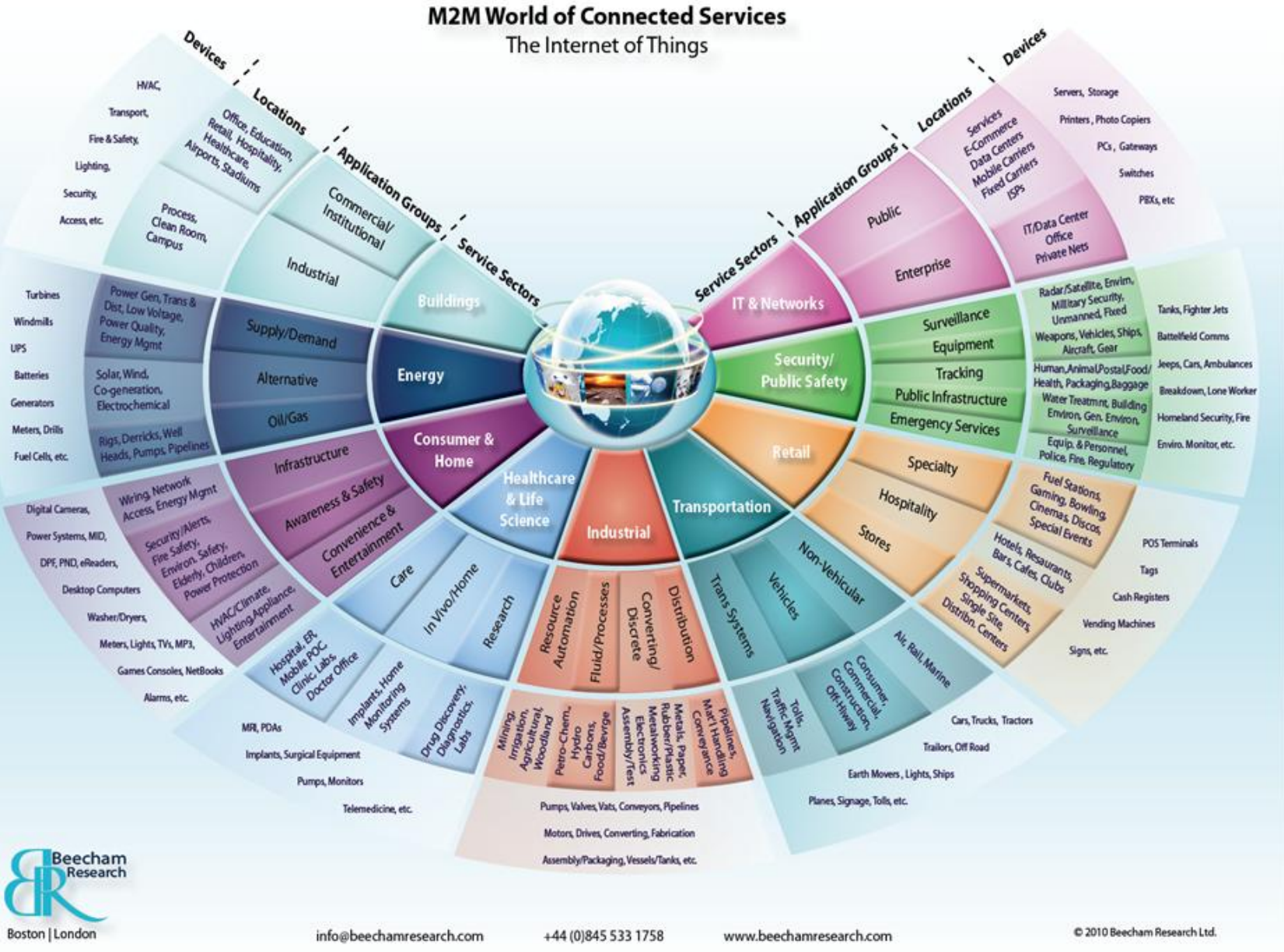
Chris Roberts, Chronos

David Spencer, Semtech

Kevin Stanton, Intel

Moderator: **Anand Ram, Calnex**

WSTS, March 2015


M2M World of Connected Services
The Internet of Things
Devices
Locations
Application Groups
Service Sectors
HVAC,
Transport,
Fire & Safety,
Lighting,
Security,
Access, etc.
Office, Education, Retail, Hospitality, Healthcare, Airports, Stadiums
Process, Clean Room, Campus
Commercial/ Institutional
Industrial
Buildings
Energy
Supply/Demand
Alternative
Oil/Gas
Power Gen, Trans & Dist, Low Voltage, Power Quality, Energy Mgmt
Solar, Wind, Co-generation, Electrochemical
Rigs, Derricks, Well Heads, Pumps, Pipelines
Turbines
Windmills
UPS
Batteries
Generators
Meters, Drills
Fuel Cells, etc.
Consumer & Home
Infrastructure
Awareness & Safety
Convenience & Entertainment
Wiring, Network Access, Energy Mgmt
Security/Alerts, Fire Safety, Environ. Safety, Elderly, Children, Power Protection
HVAC/Climate, Lighting,Appliance, Entertainment
Digital Cameras,
Power Systems, MID,
DPF, PND, eReaders,
Desktop Computers
Washer/Dryers,
Meters, Lights, TVs, MP3,
Games Consoles, NetBooks
Alarms, etc.
Healthcare & Life Science
Care
In Vivo/Home
Research
Hospital, ER, Mobile POC, Clinic, Labs, Doctor Office
Implants, Home Monitoring Systems
Drug Discovery, Diagnostics, Labs
MR, PDAs
Implants, Surgical Equipment
Pumps, Monitors
Telemedicine, etc.
Industrial
Resource Automation
Fluid/Processes
Converting/ Discrete
Distribution
Mining, Irrigation, Agricultural, Woodland
Petro-Chem., Hydro Carbons, Food/Bevrge
Assembly/Test Electronics
Metalworking Rubber/Plastic
Metals, Paper,
Pipelines, Mat'l Handling Conveyance
Pumps, Valves, Vats, Conveyors, Pipelines
Motors, Drives, Converting, Fabrication
Assembly/Packaging, Vessels/Tanks, etc.
Transportation
Trans Systems
Vehicles
Non-Vehicular
Tolls, Traffic Mgmt Navigation
Consumer, Commercial, Construction, Off-Hiway
Air, Rail, Marine
Cars, Trucks, Tractors
Trailors, Off Road
Earth Movers , Lights, Ships
Planes, Signage, Tolls, etc.
Retail
Specialty
Hospitality
Stores
Fuel Stations, Gaming, Bowling, Cinemas, Discos, Special Events
Hotels, Resaurants, Bars, Cafes, Clubs
Supermarkets, Shopping Centers, Single Site, Distribn. Centers
POS Terminals
Tags
Cash Registers
Vending Machines
Signs, etc.
Security/ Public Safety
Surveillance
Equipment
Tracking
Public Infrastructure
Emergency Services
Radar/Satellite, Envirn, Military Security, Unmanned, Fixed
Weapons, Vehicles, Ships, Aircraft, Gear
Human,Animal,Postal,Food/ Health, Packaging,Baggage
Water Treatmnt, Building Environ, Gen. Environ, Surveillance
Equip. & Personnel, Police, Fire, Regulatory
Tanks, Fighter Jets
Battelfield Comms
Jeeps, Cars, Ambulances
Breakdown, Lone Worker
Homeland Security, Fire
Enviro. Monitor, etc.
IT & Networks
Public
Enterprise
Services
E-Commerce
Data Centers
Mobile Carriers
Fixed Carriers
ISPs
IT/Data Center
Office
Private Nets
Servers, Storage
Printers , Photo Copiers
PCs , Gateways
Switches
PBXs, etc
Beecham Research
Boston | London
info@beechamresearch.com
+44 (0)845 533 1758
www.beechamresearch.com
© 2010 Beecham Research Ltd.

COST OF SENSORS

$1.30 ↘ .60

AVG. COST

over the past 10 years.

COST OF BANDWIDTH

↓40X

over the past 10 years.

COST OF PROCESSING

↓60X

over the past 10 years.

SMARTPHONES

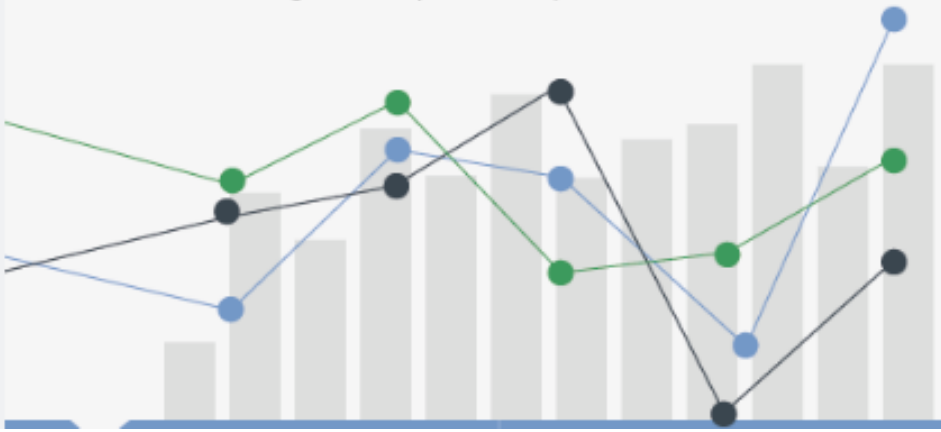
Smartphones are now becoming the personal gateway to the IoT.

WI-FI

With Wi-Fi coverage now ubiquitous, wireless connectivity is available for free or at a very low cost.

BIG DATA

As the IoT will by definition generate voluminous amounts of unstructured data, the availability of big data analytics is a key enabler.



SCALABILITY OF IPv6

IPv6 = 3.4×10^{38} IP addresses

Internet Protocol (IP) addresses are the identification and location system for every computer on a network. IPv4, the fourth version of this protocol, allows for 4.3 billion addresses. **IPv6, the newest version, allows for an almost limitless amount.**

Timing for the Internet of Things

- What challenges has Enterprise faced in delivering high-precision timing and can IoT benefit from the learnings? – **Wojciech**

- How is the Power Industry looking to deliver accurate timing and how much of this is relevant to IoT? – **Chris**

- What are the considerations and concerns of using low-power radio networks for synchronization and time distribution, and how can we benefit from the features of such networks?”.– **David**

- A microsecond is great but can we do better? How could this benefit us? - **Kevin**