ADVANTECH B+B SMARTWORX

The Rise and Rise of Internet of Things

1001 Real Life Applications From Around the Globe

Alaa Dalghan, Director, MEA

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The Vision: Smart City

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The vision of a Smart City

"A Smart City is a city that uses information and communication technologies (ICT) to be more intelligent and in the use of , resulting in cost and savings, improved delivery and quality of life, and reduced environmental footprint – all supporting innovation and the low-carbon economy." –Boyd Cohen

The Vision

Expo 2020 City

KAEC

Lusail City

The Model

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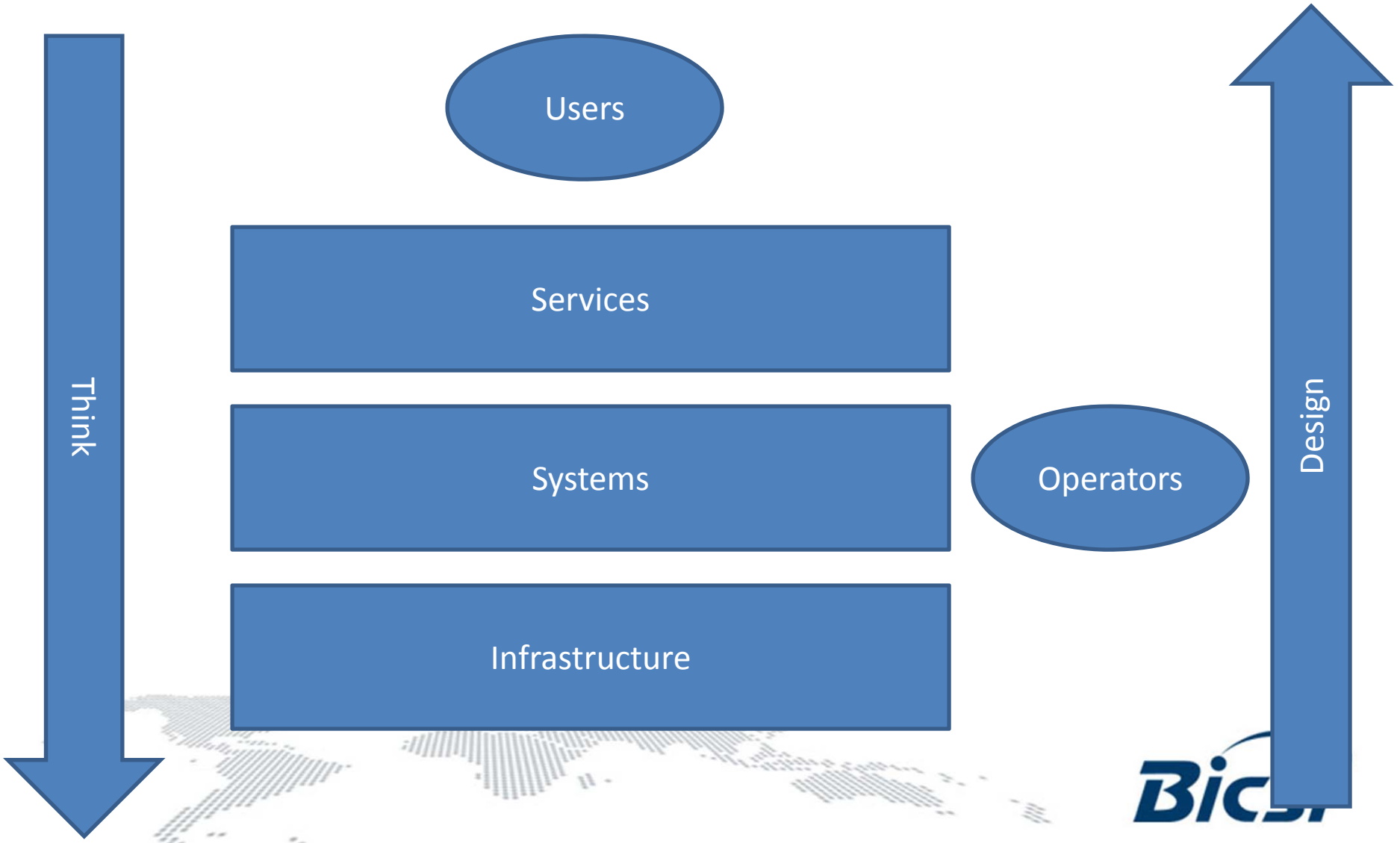
The Model


Think
Users
Services
Systems
Infrastructure
Operators
Design

The Service Dimension

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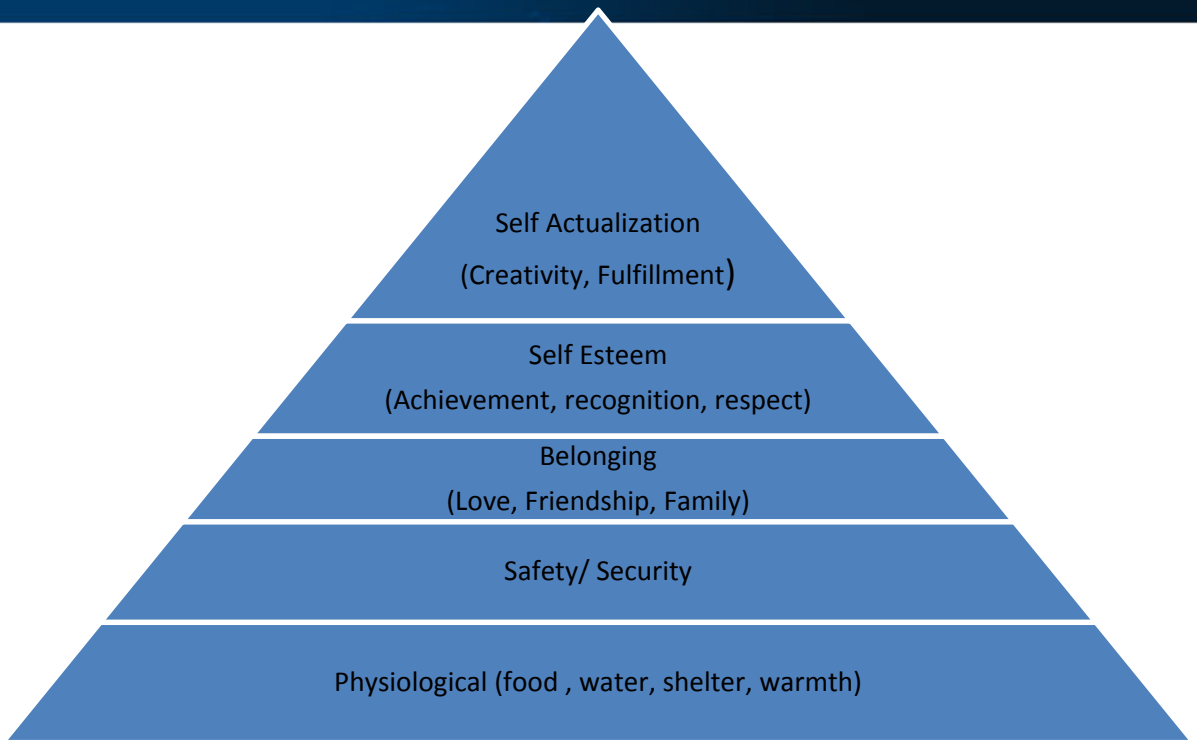
The Services Dimension



The Sustainability Dimension

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The Sustainability Dimension

- Cities are consuming 75% of World Energy and produce 80% of GHG
- This energy is consumed by buildings, streets. Infrastructure, factories, etc.
- How inefficient are we?

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Global Bio-Capacity

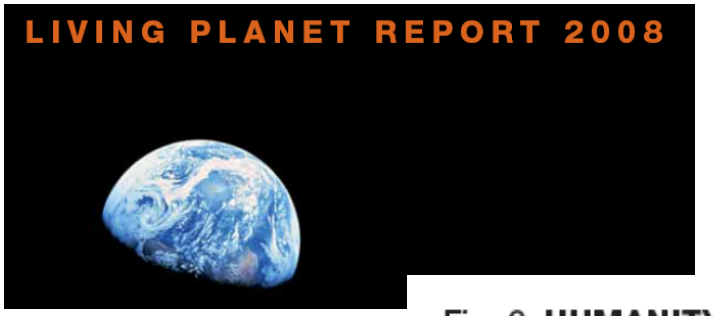
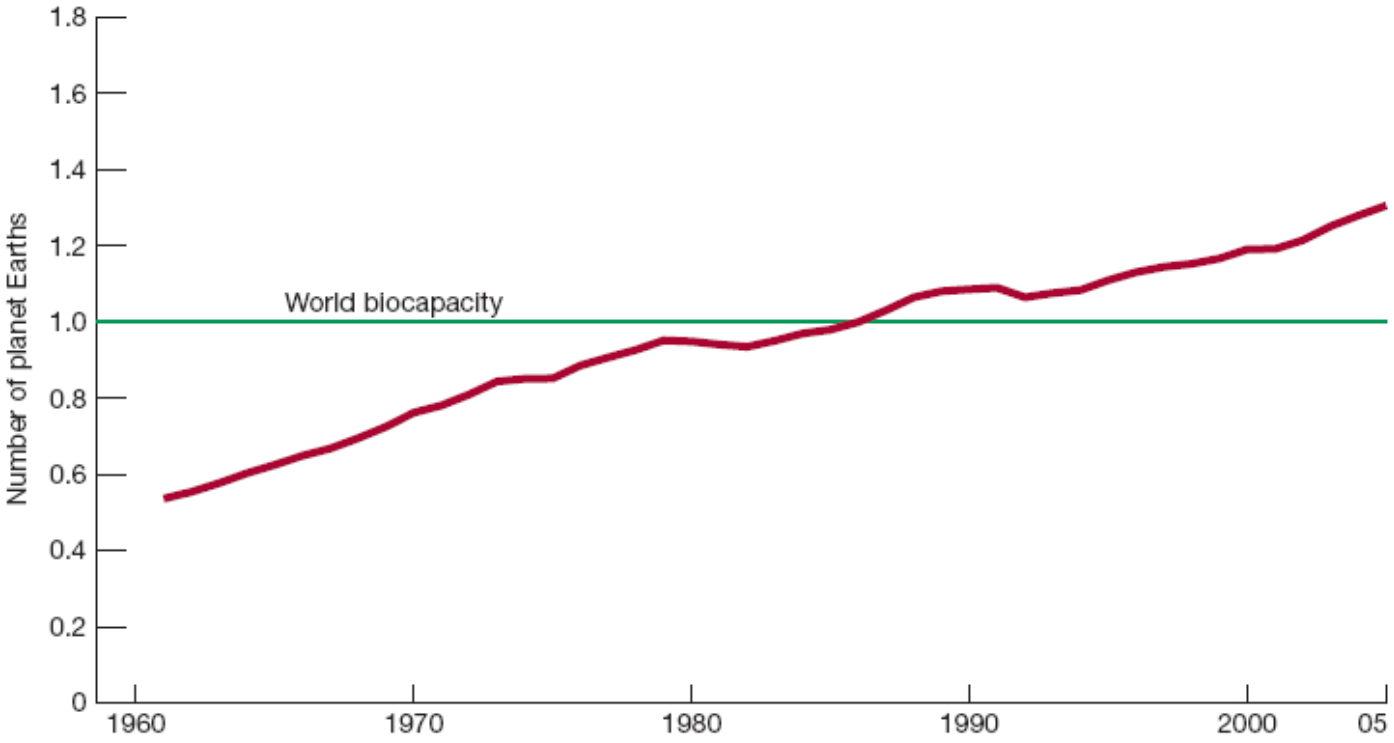


Fig. 2: **HUMANITY'S ECOLOGICAL FOOTPRINT,** 1961-2005



Our Carbon Footprint

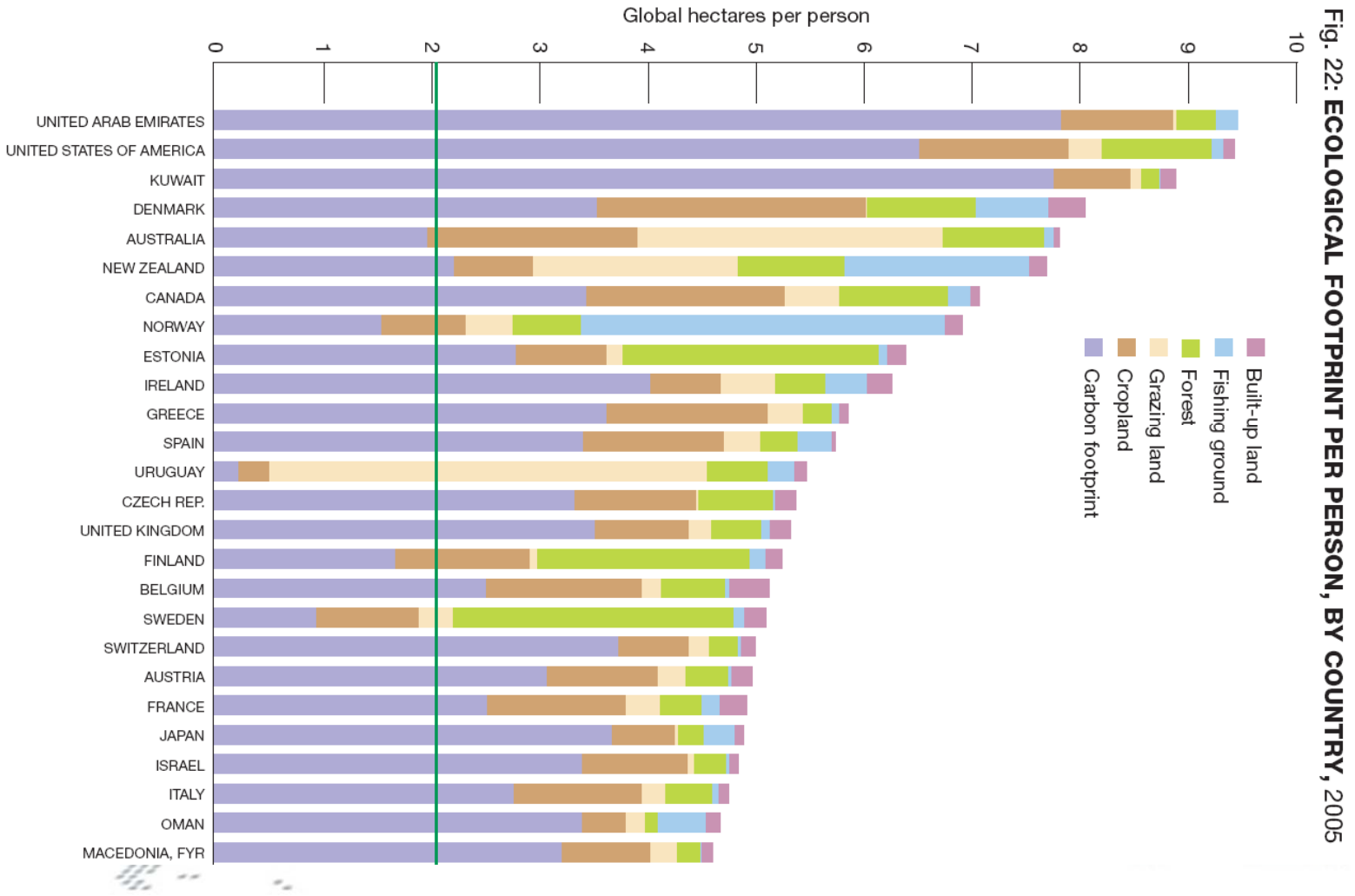


Fig. 22: **ECOLOGICAL FOOTPRINT PER PERSON, BY COUNTRY,** 2005

g Planet Report 2008

Our Carbon Footprint

Country	Population in millions	Ecological Footprint in gha/pers	Biocapacity in gha/pers	Ecological remainder (if positive) in gha/pers
United Arab Emirates	6.25	10.68	0.85	-9.83
Qatar	1.41	10.51	2.51	-8.00
Bahrain	0.76	10.04	0.94	-9.10
Denmark	5.45	8.26	4.85	-3.41
Belgium	10.53	8.00	1.34	-6.66
United States	310	8.00	3.87	-4.13
Estonia	1.34	7.88	8.96	1.08
Canada	32.95	7.01	14.92	7.91
Australia	23.07	6.84	14.71	7.87
Kuwait	2.85	6.32	0.40	-5.92
Ireland	4.36	6.29	3.48	-2.81
Netherlands	16.46	6.19	1.03	-5.16
Finland	5.28	6.16	12.46	6.30
Sweden	9.16	5.88	9.75	3.87
Czech Republic	10.27	5.73	2.67	-3.06
Macedonia	2.04	5.66	1.43	-4.23
Latvia	2.27	5.64	7.07	1.43
Norway	4.72	5.56	5.48	-0.08
Mongolia	2.61	5.53	15.14	9.61
Spain	44.05	5.42	1.61	-3.81
Greece	11.11	5.39	1.62	-3.77

Source: Global Footprint Network 2010

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UAE Carbon Footprint

Different countries have different footprints

An individual's Ecological Footprint varies significantly depending on a number of factors, including their country of residence, the quantity of goods and services they consume, the resources used and the wastes generated to provide these goods and services. If all of humanity lived like an average Indonesian, for example, only two-thirds of the planet's biocapacity would be used; if everyone lived like an average Argentinean, humanity would demand more than half an additional planet; and if everyone lived like an average resident of the USA, a total of four Earths would be required to regenerate humanity's annual demand on nature.

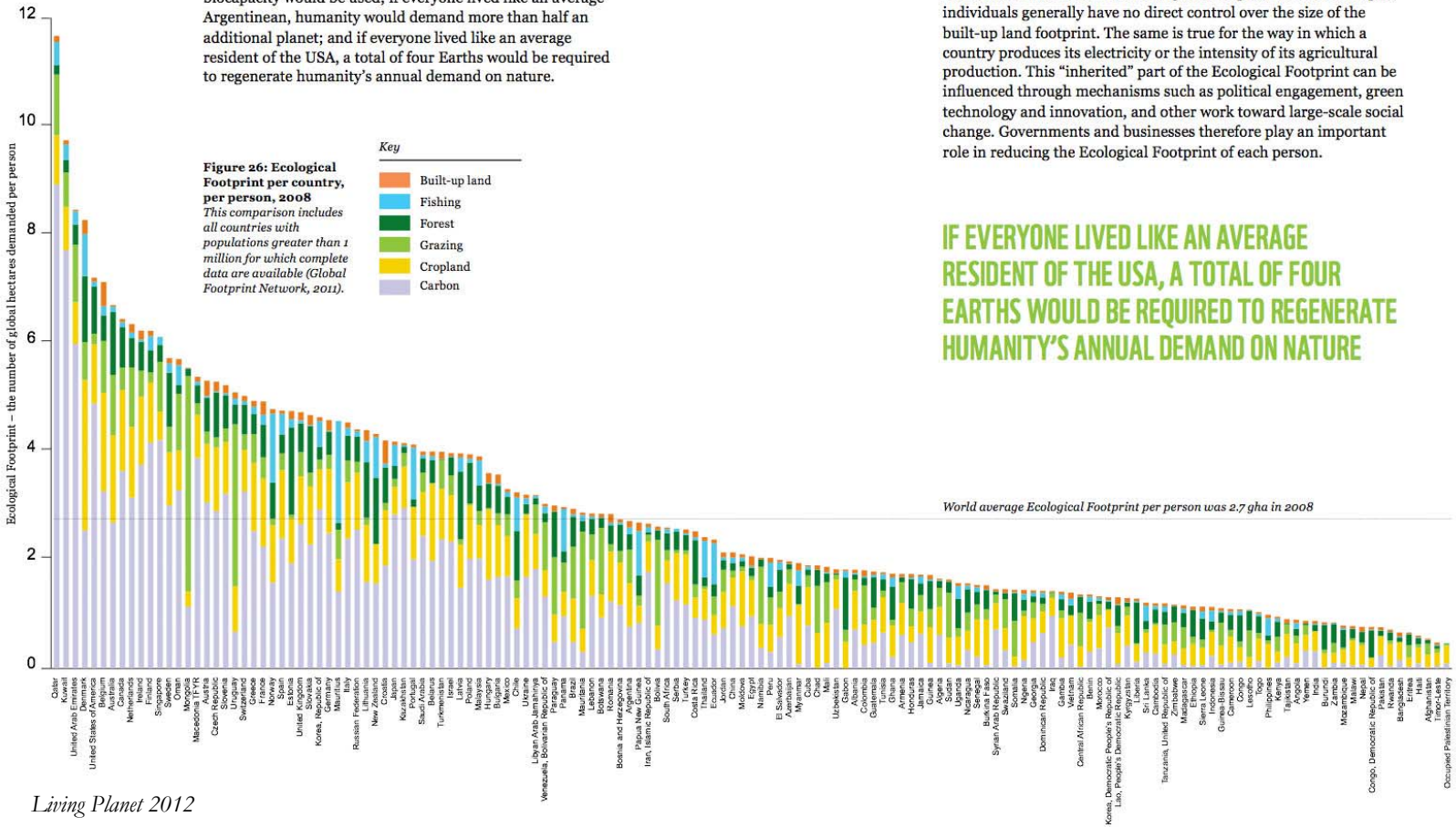

Figure 26: Ecological Footprint per country, per person, 2008
This comparison includes all countries with populations greater than 1 million for which complete data are available (Global Footprint Network, 2011).

How much of a country's footprint is determined by individuals?

The size of a person's Ecological Footprint depends on development level and wealth, and in part on the choices individuals make on what they eat, what products they purchase and how they travel. But decisions undertaken by governments and businesses have a substantial influence on the Ecological Footprint too. For example, individuals generally have no direct control over the size of the built-up land footprint. The same is true for the way in which a country produces its electricity or the intensity of its agricultural production. This "inherited" part of the Ecological Footprint can be influenced through mechanisms such as political engagement, green technology and innovation, and other work toward large-scale social change. Governments and businesses therefore play an important role in reducing the Ecological Footprint of each person.

IF EVERYONE LIVED LIKE AN AVERAGE RESIDENT OF THE USA, A TOTAL OF FOUR EARTHS WOULD BE REQUIRED TO REGENERATE HUMANITY'S ANNUAL DEMAND ON NATURE

Living Planet 2012

Smart Dubai Initiative – The 7 Pillars

- Smart Municipality
- Smart Electricity
- Smart Transport
- Smart Police
- Smart Civil Defense
- Smart Tourism
- Smart Trade

Source: smartdubai.ae

The Business Dimension

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The Business Dimension

Operational Efficiency

New Innovative Business Models

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The Rise of IoT

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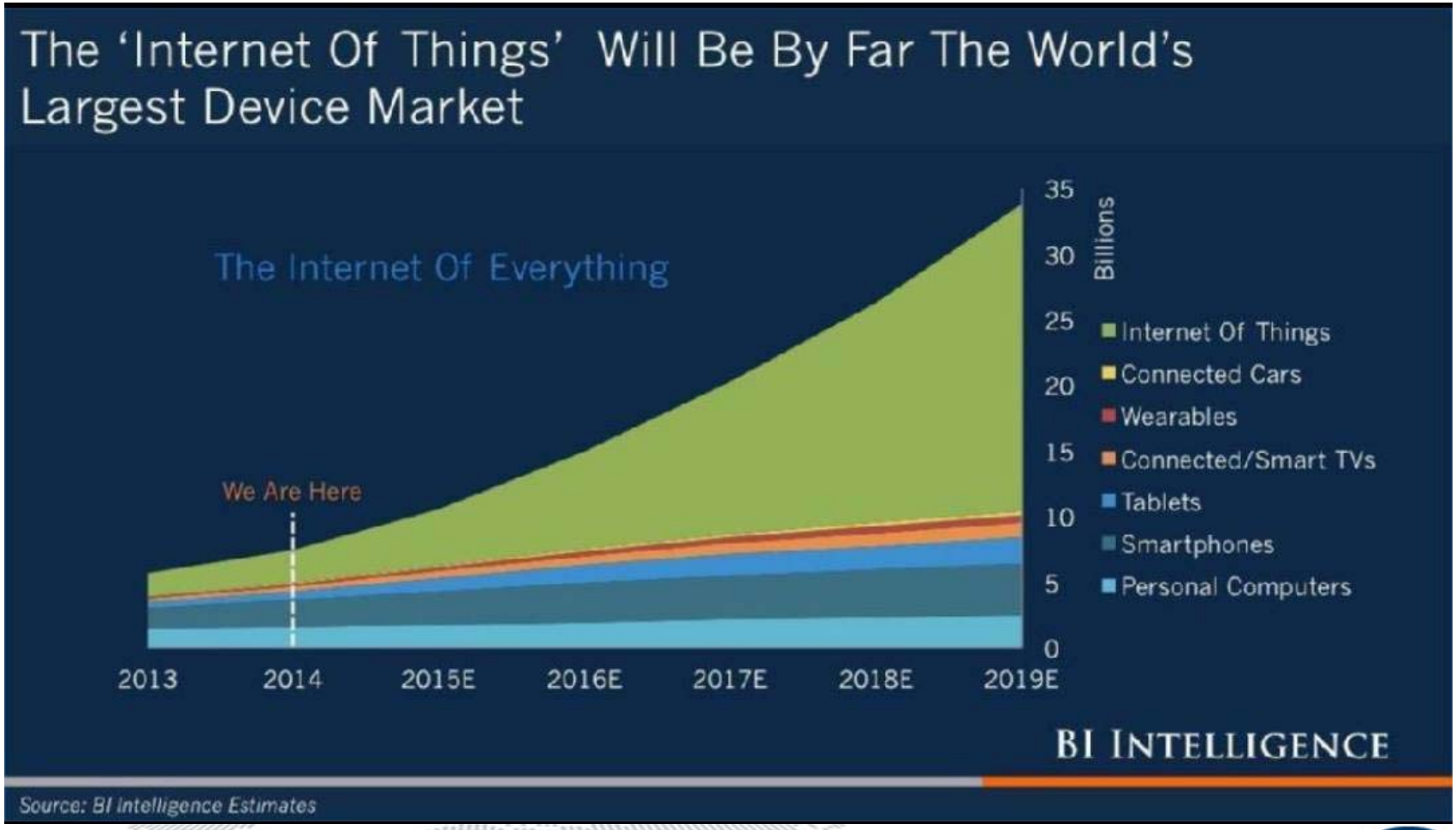
Growth


The 'Internet Of Things' Will Be By Far The World's Largest Device Market
The Internet Of Everything
We Are Here
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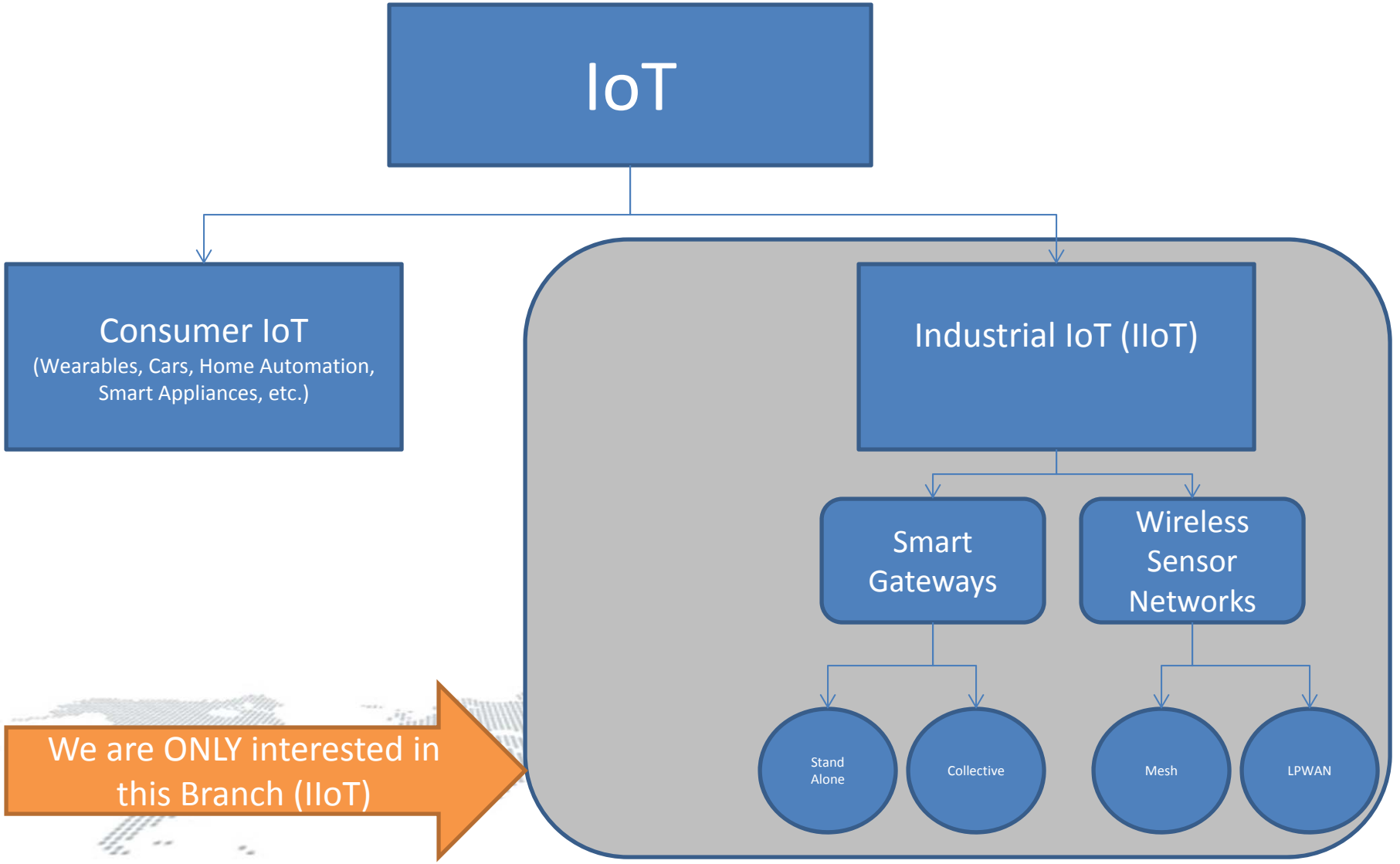
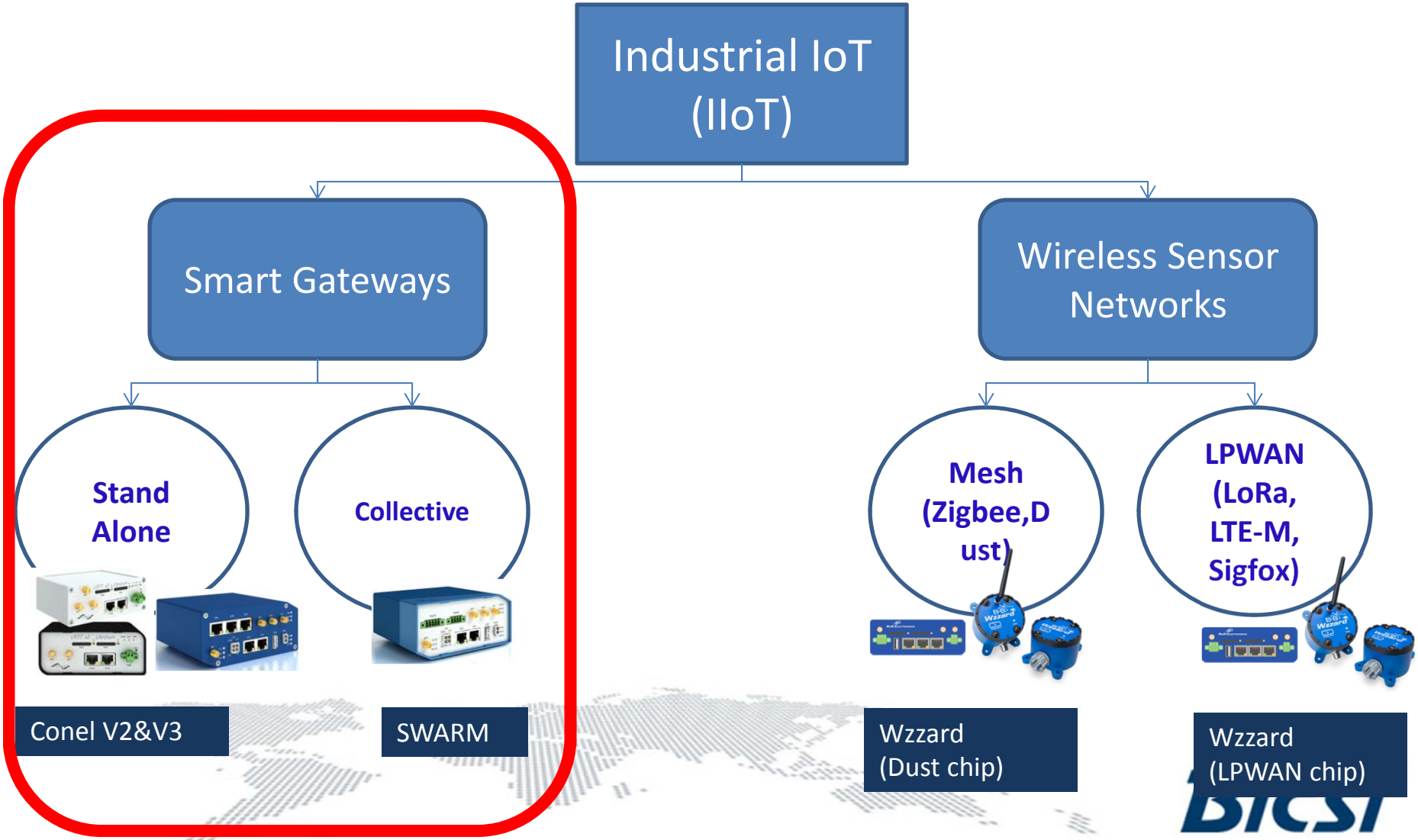
Billions
2013
2014
2015E
2016E
2017E
2018E
2019E
Internet Of Things
Connected Cars
Wearables
Connected/Smart TVs
Tablets
Smartphones
Personal Computers
BI INTELLIGENCE
Source: BI Intelligence Estimates

Branches of IoT



Branches of IoT – Focus on IIoT



Cellular IoT

From Simple Routers to Smart IoT Gateways

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Industrial Cellular Routers

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Next generation intelligent IoT Gateways

Bicsi®

ADVANTECH B+B SmartWorx

ThingWorx™ A PTC® Business

- **AT Modem Emulator** - implementation of emulation telephone modem behavior
- **DNP3 Outstation** - implementation of DNP3 protocol
- **Easy VPN Client** - provides secure (encrypted) connection LAN
- **pppGateway** - allows the router to establish connection via PPP
- **Protocol ALPHA-MODBUS** - communications protocol with Mitsubishi ALPHA
- **Protocol BGP** - implementation of routing protocol
- **Protocol IEC 101-104** - implementation of conversion IEC101-104 protocols
- **Protocol IS-IS** - allows your router to use IS-IS protocol
- **Protocol MODBUS-RTUMAP** - periodically read stored values from the buffer
- **Protocol MODBUS-TCP2RTU** - convert protocol MODBUS TCP to protocol MODBUS RTU
- **Protocol NHRP** - implementation of dynamic Multipoint VPN
- **Protocol OSPF** - OSPF routing protocol available
- **Protocol PIM-SM** - Protocol Independent Multicast

martcellular.eu/user-modules/#1389791225-1-72

deviceWISE

BM Bluemix

Cumulocity

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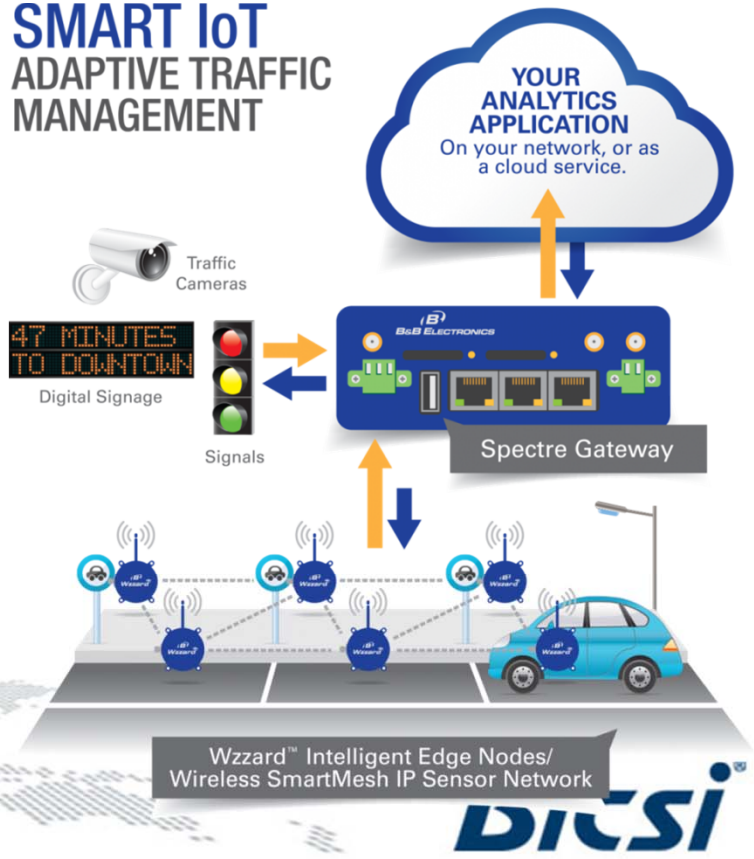
1. IoT for Energy, Utilities

- Power Sub-stations (Abu Dhabi)
- Smart Grids (Texas, Frankfurt)
- Smart Metering (W-Mbus)
- Water Distribution
- Water Treatment
- District Cooling
- Solar, Wind

2. IoT for Roads & Infrastructure

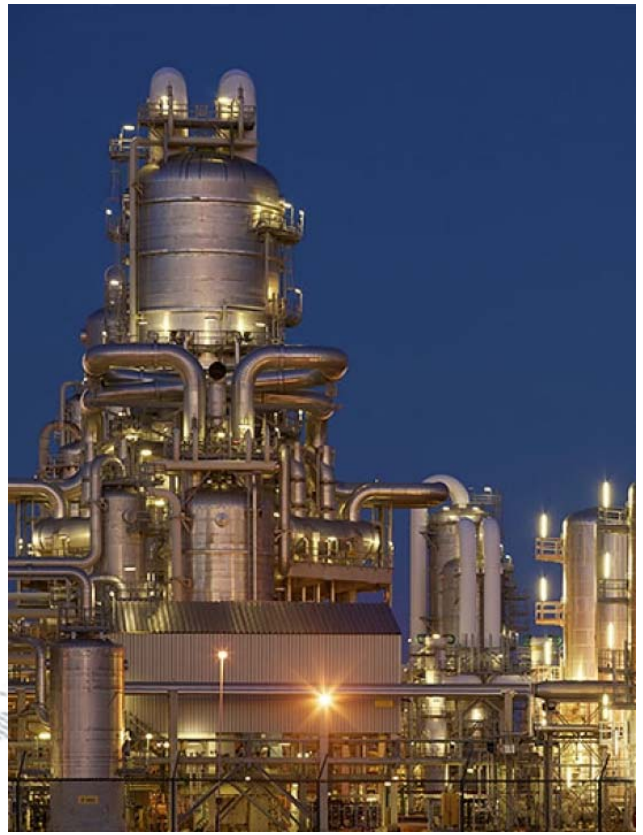
- Dubai RTA: Traffic Signals
- Galway, Ireland: Traffic Management
- London : Real time Information for passengers + Smart Ticketing
- Swiss Rail : Real time data for passengers

- Roads, Bridges
- Induction Loops
- Security Cameras
- Speed Radars



3. IoT for Oil & Gas

- Pipelines
- Telemetry
- Remote Control & Monitoring
- Leak Detection



4. IoT for Transport

- Trains, Metros
- Fleet Management
  - Buses
  - Trucks
  - Taxis
  - Police Cars
- Telematics (OBD Data)
- Mobile WiFi

5. IoT for ATMs/ Kiosks

- Lottery Machines (Poland)
- ATMs (Europe, KSA)
- Retail PoS (UK)
- Vending Machines (Germany)
- Laundrybox (Dubai)
- Information Kiosks
- Check in/Ticketing
- Biometric, Loyalty, Car Rental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Laundrybox
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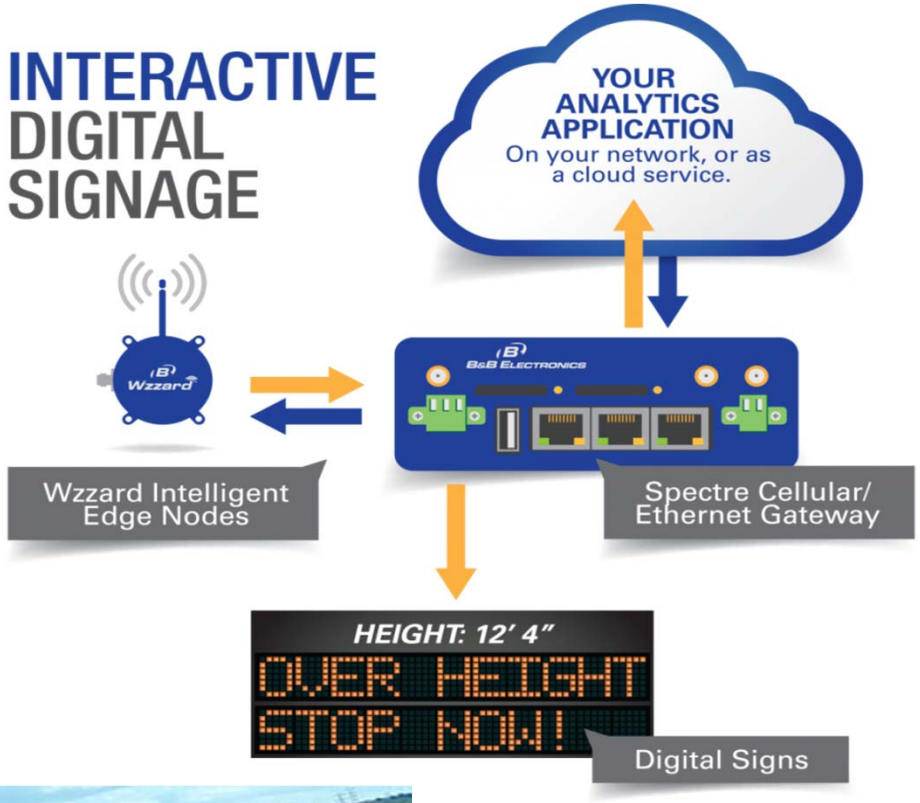
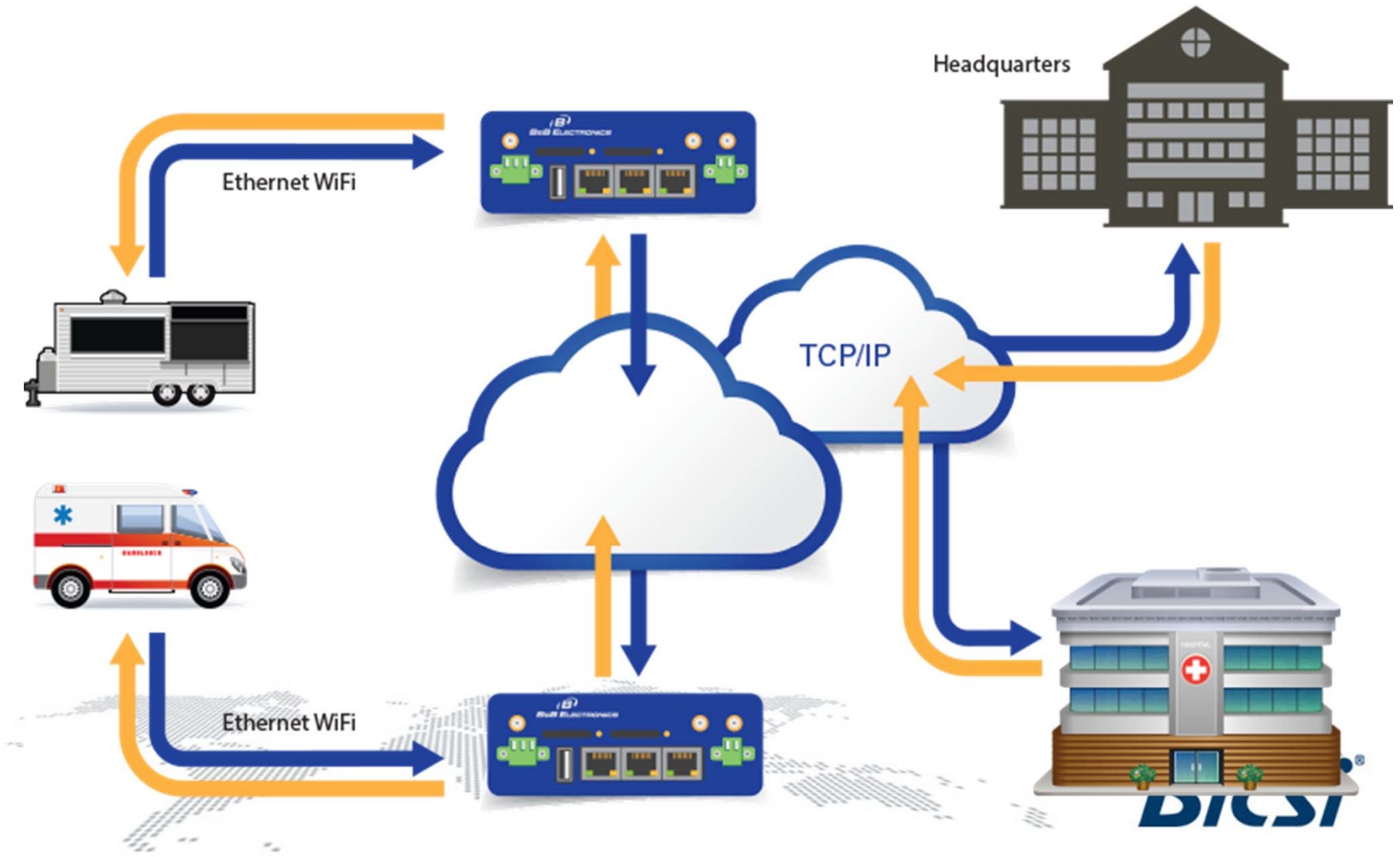
ndrybox

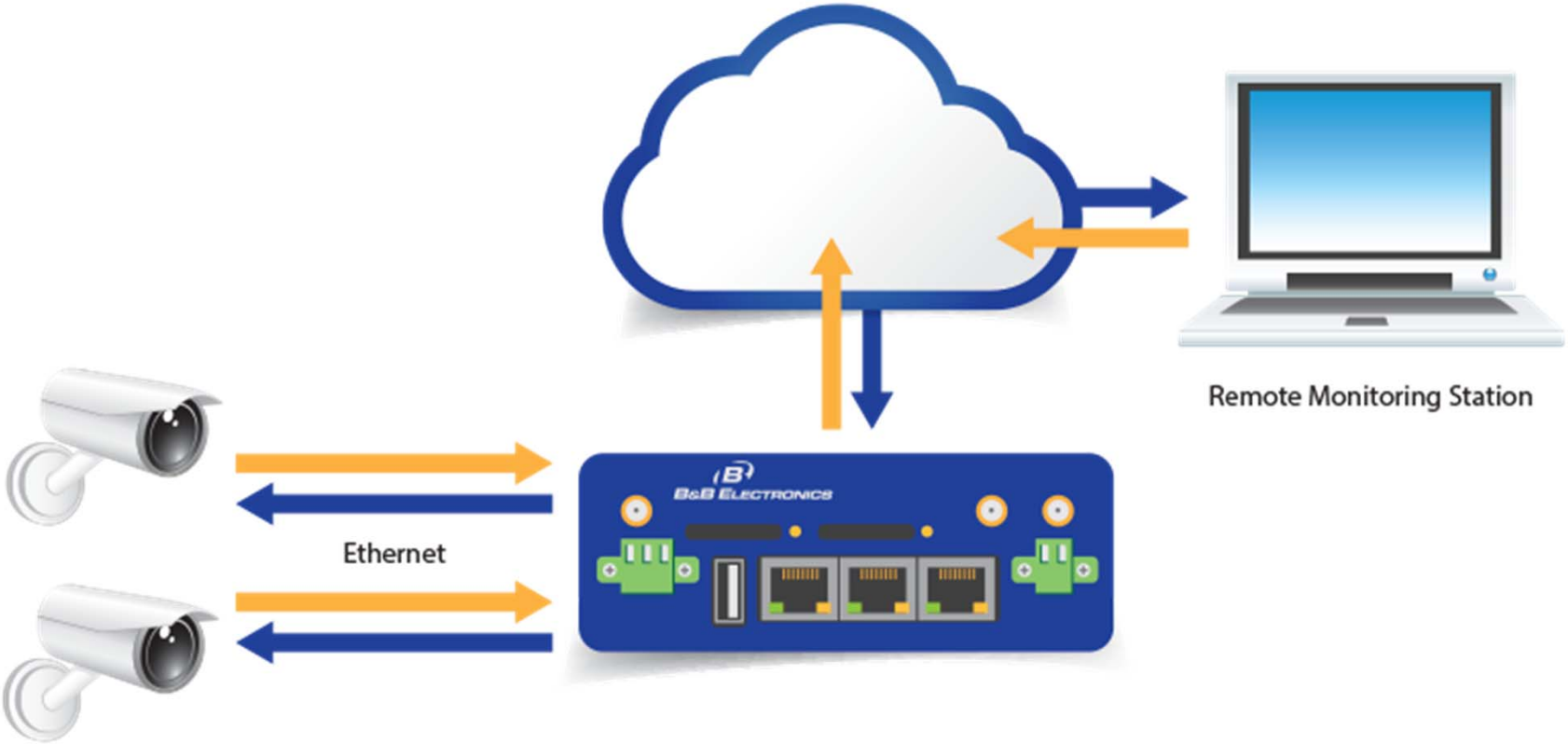
6. IoT for Digital Signage



7. Mobile Office



8. Security Cameras



- Transfer of images and videos from security IP cameras
- Large camera systems monitoring
- Camera motion control
- Security systems connections

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Wireless Sensing Mesh

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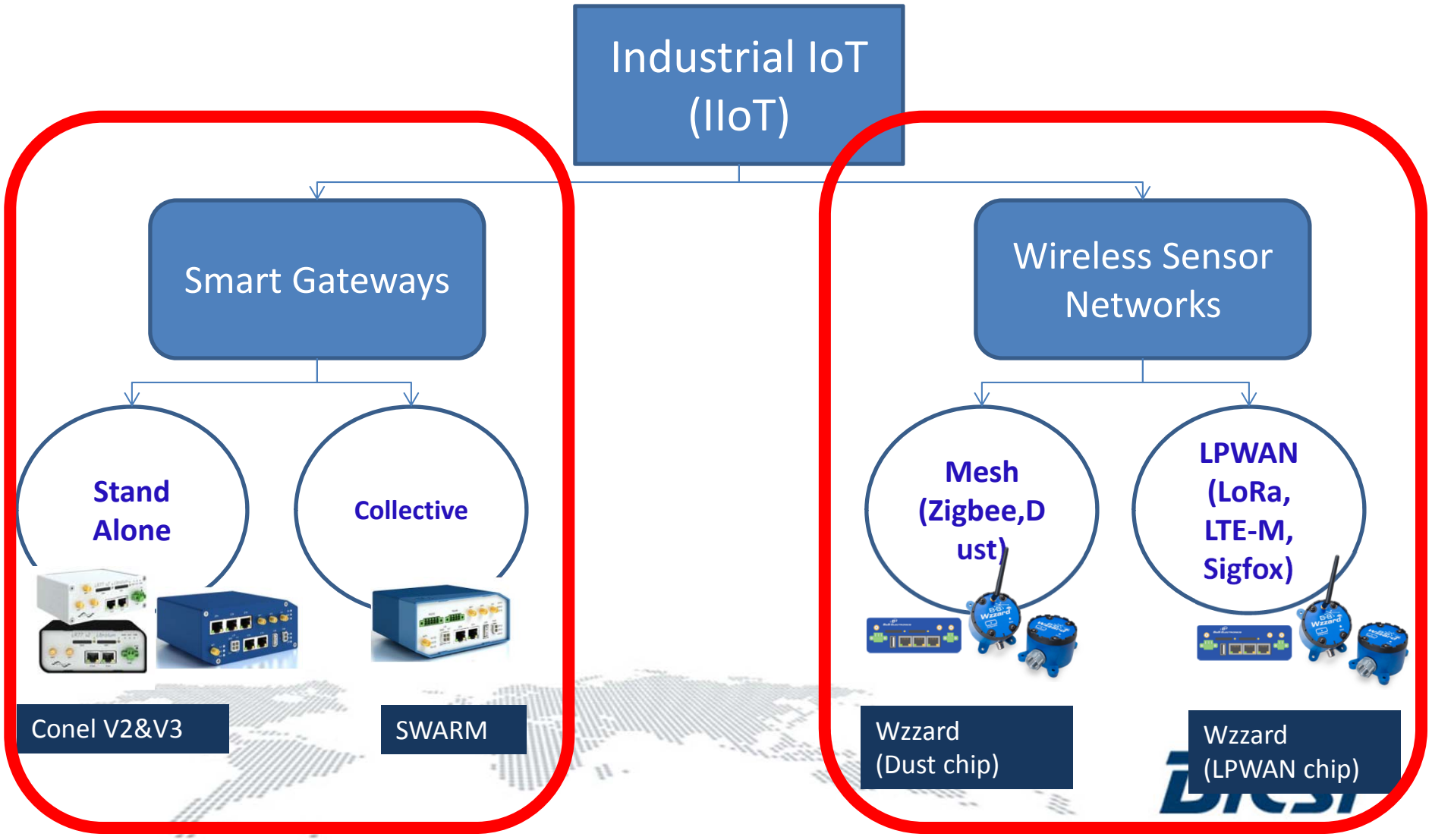
Branches of IoT – Focus on IIoT



WZZARD™ Wireless Sensing Mesh

INTELLIGENCE AT THE NETWORK EDGE

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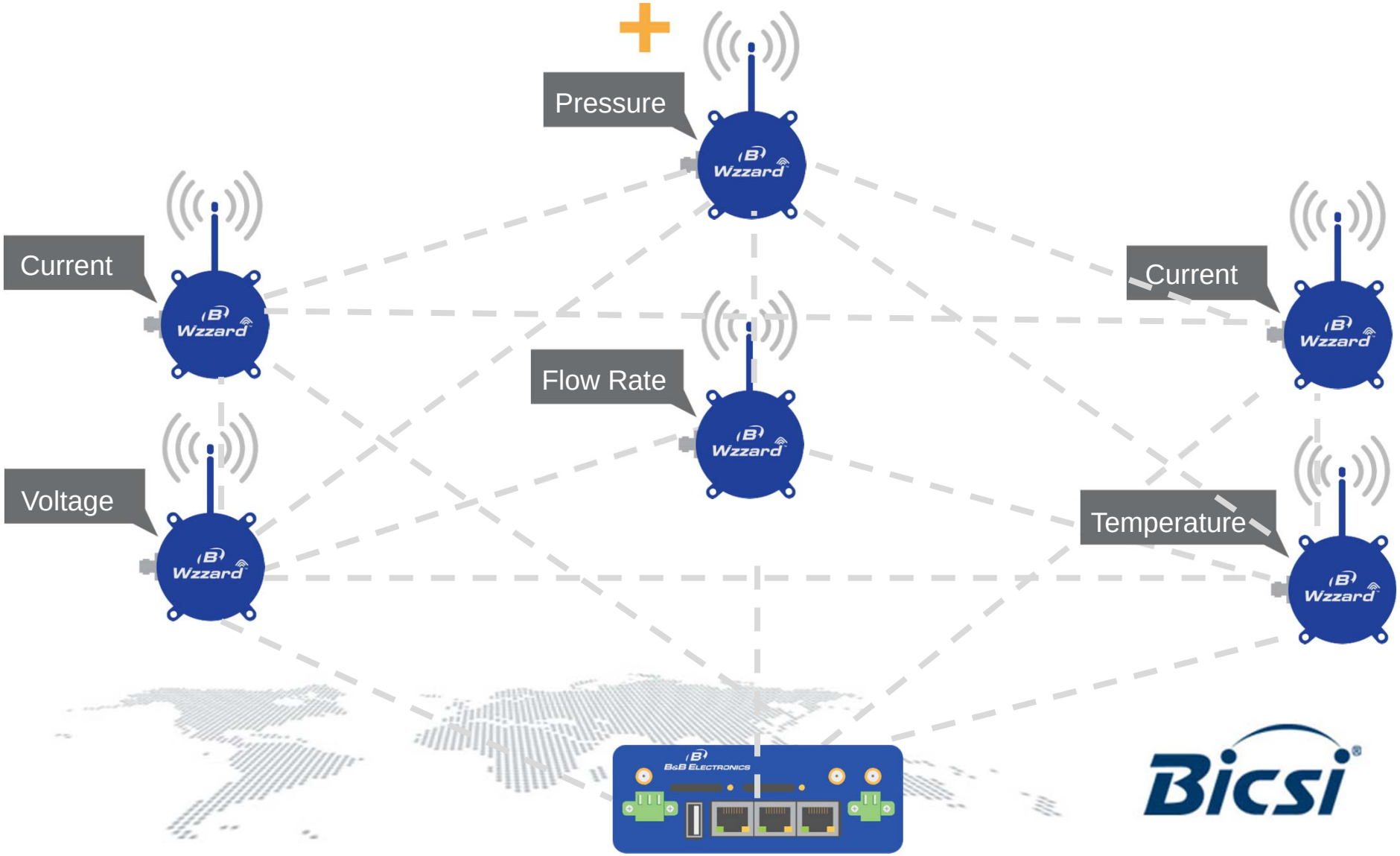
IoT: Wireless Intelligent Sensing Platform

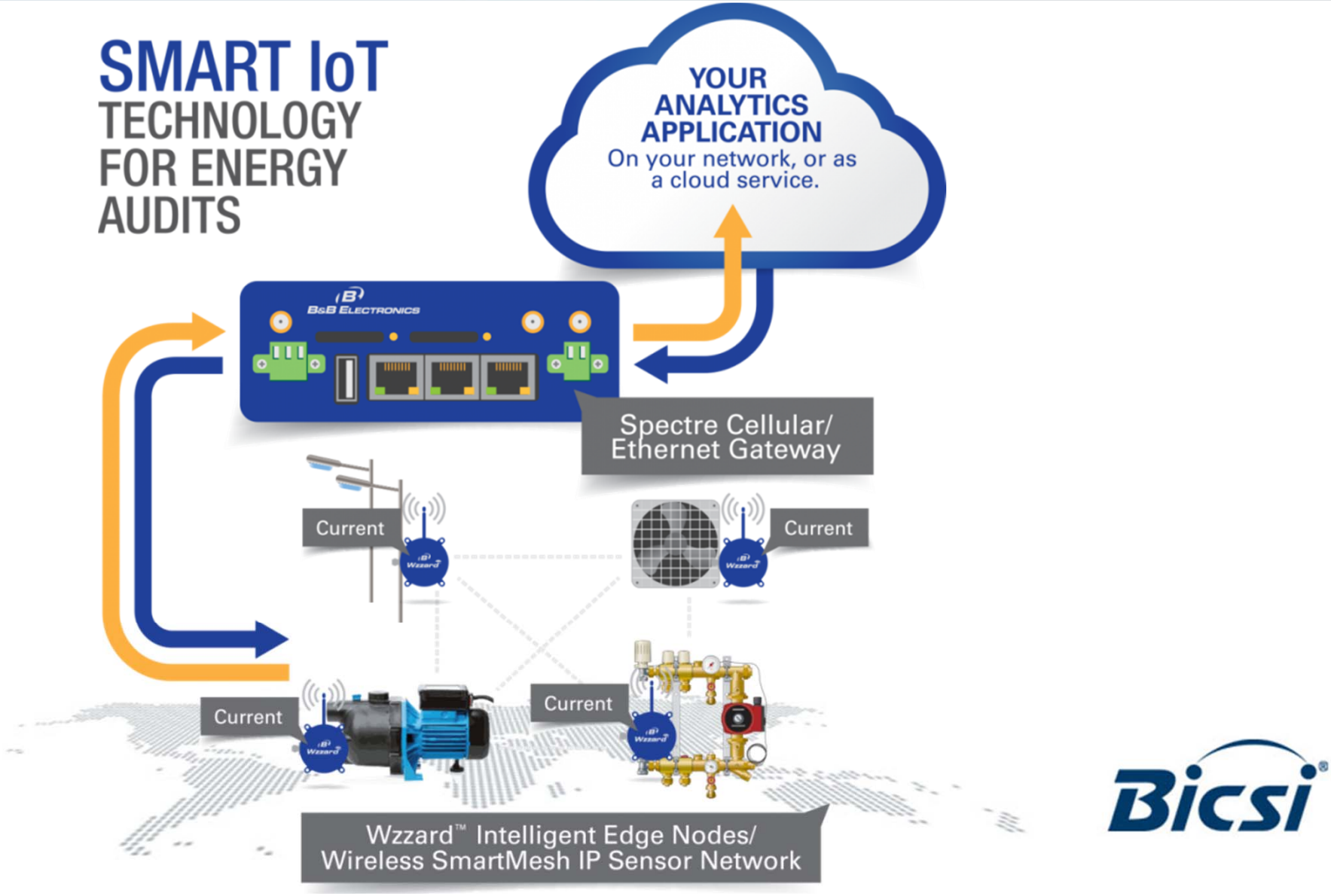



Wizard

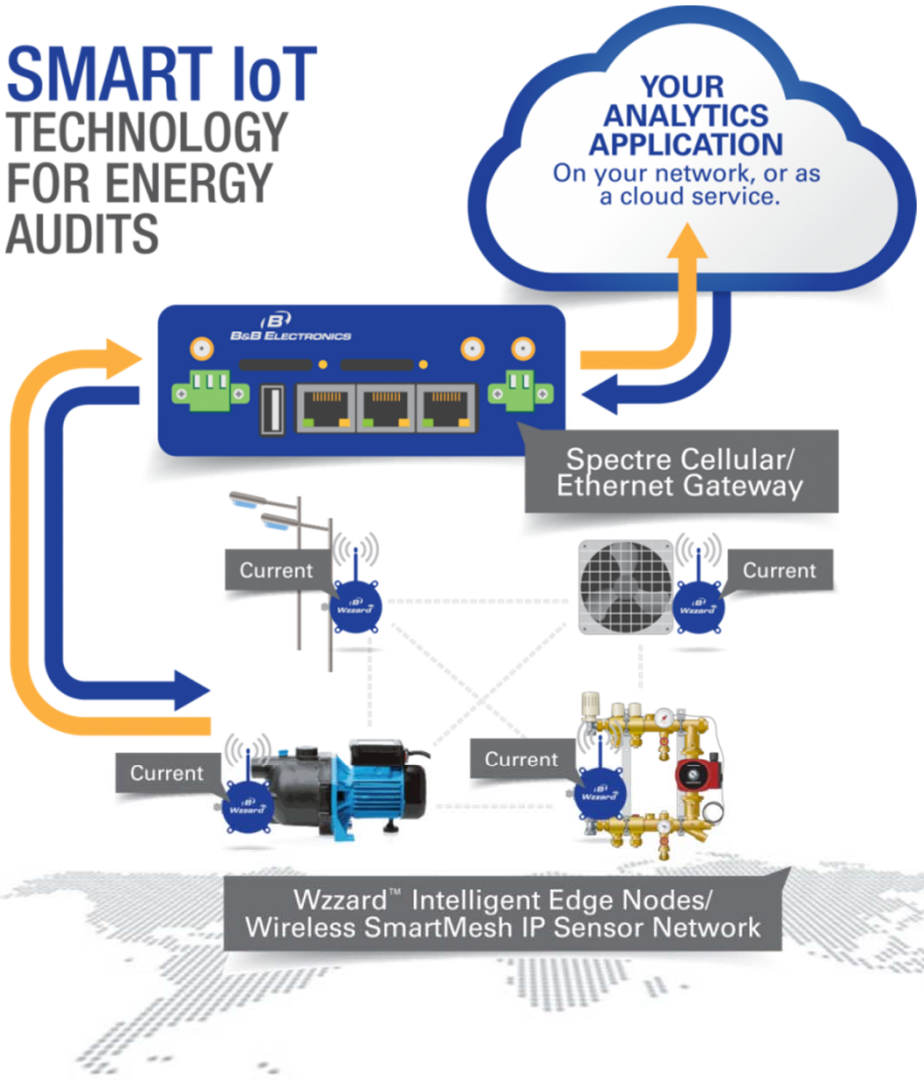

Wazzup


VOLVO FM 13
COSHLA QUARRIES LTD.
COSHLA QUARRIES LTD.
CASHLA,
ATHENRY.
TEL:
091 - 389020
ECO FRIEND

1. IoT for Facility Management / Equipment Monitoring



2. IoT for Energy Monitoring - ESCOs



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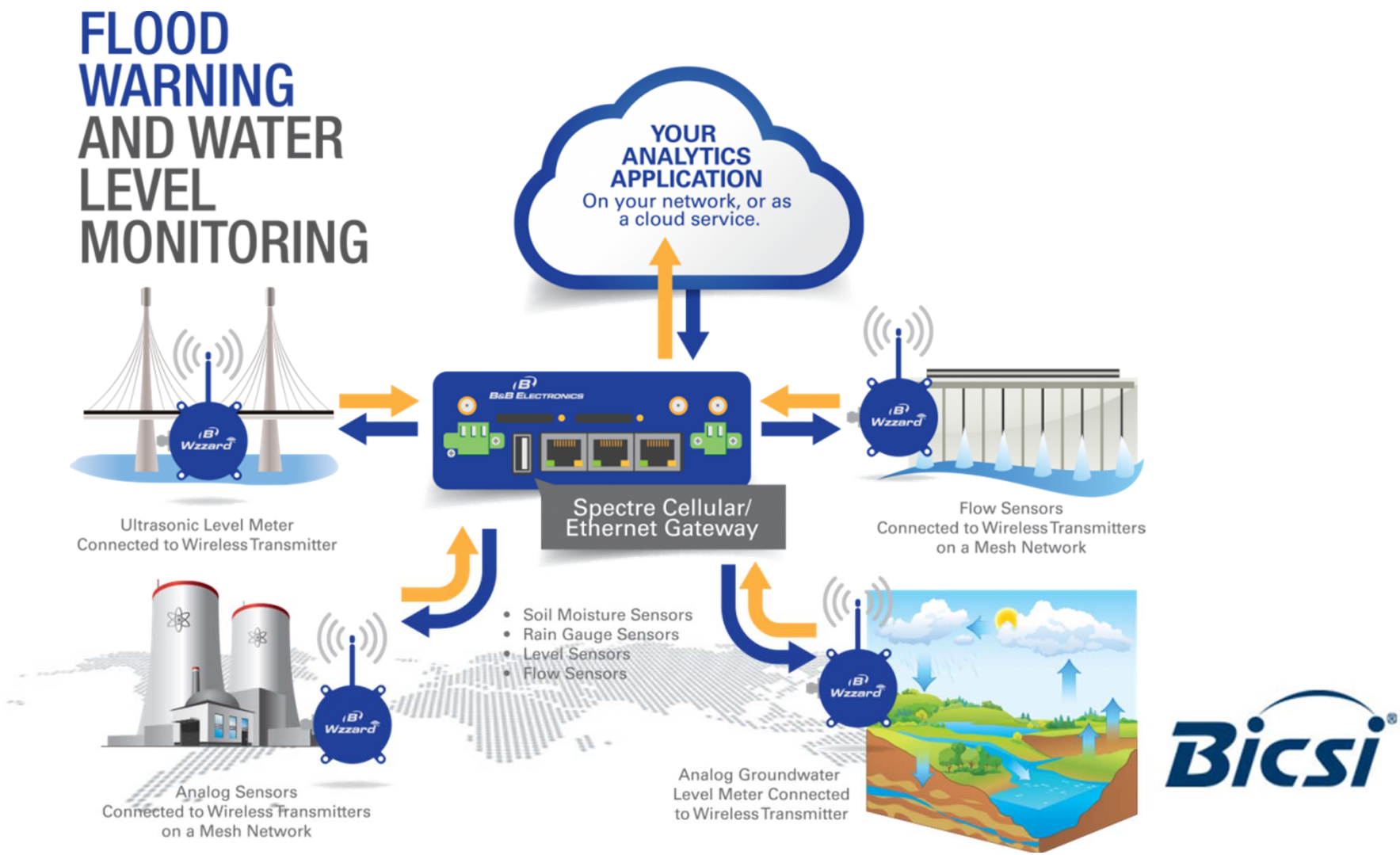
3. IoT for Infrastructure



4. IoT for Heavy Machinery

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4. IoT for Heavy Machinery

5. IoT for Concrete Monitoring


CASEY


DELL
Wizard

And many others..

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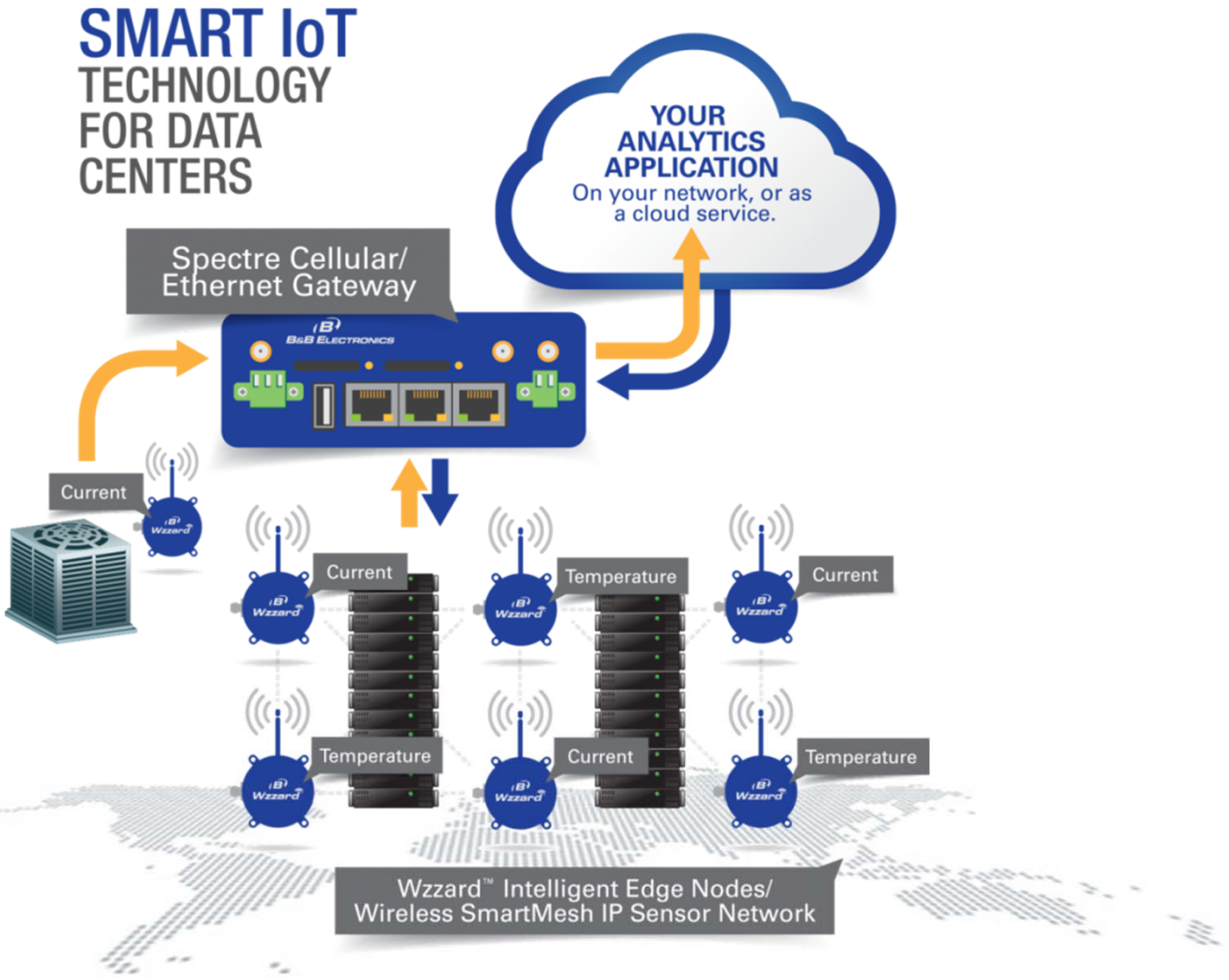
IoT for Data Centers



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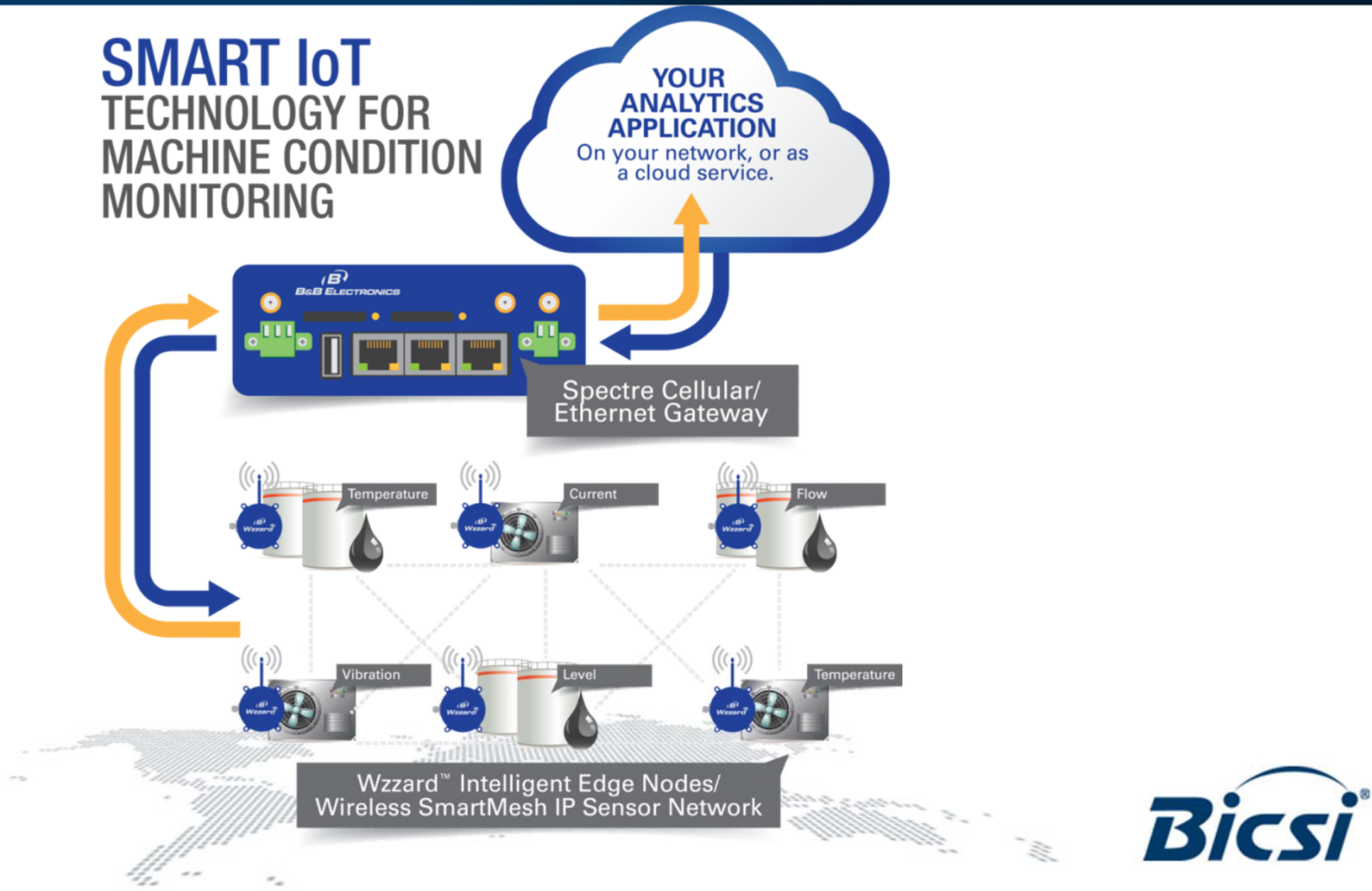
IoT for Factories



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Roundup

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Roundup - The Business Dimension

Operational Efficiency

- More Production: Concrete Factory:
- Savings on a City/Municipal/National level: Irrigation in Barcelona/ Traffic in Ireland
- Faster time to deploy and start operation: ADDC in Abu Dhabi, TRA in Dubai
- Increasing life of expensive assets: e.g. maintenance for Chillers/Pumps
- Decreasing downtime: Quary in Illinois

New Innovative Business Models

- Telecom Operators: New subscribers: Machines
- Machine Leasing : Pump as a Service
- ESCOS: Mobile energy probes
- Concrete Monitoring Service
- Digital Signage on Bus Stations
- Laundrybox
- Differentiating offering and customer experience: example: Taxis/Trains: free wifi

What's next?

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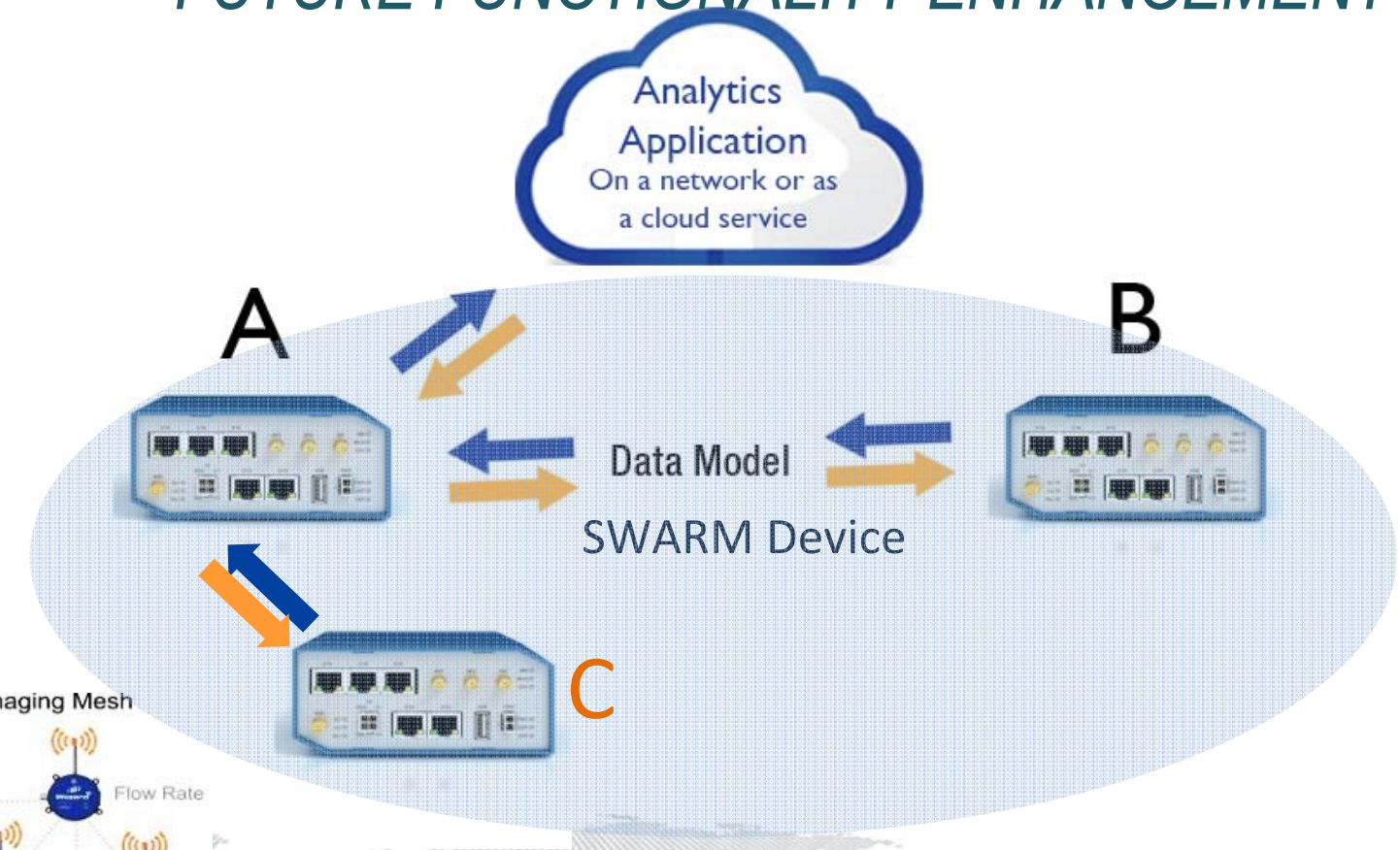
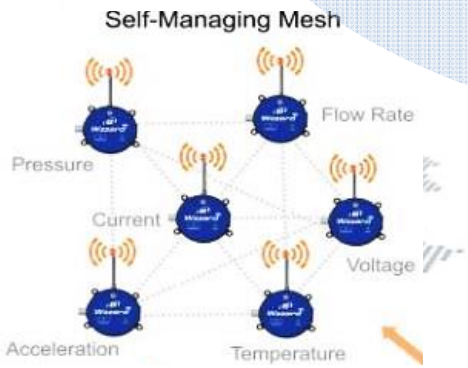
SWARM INTELLIGENCE

FUTURE FUNCTIONALITY ENHANCEMENT





Final Thoughts

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