The Internet of Things

What's Stopping You?

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AGENDA

First third:

- What is IOT – practically
- IOT broken down: high and low bandwidth, 9 Layers of the IOT stack

Second third:

- Key inhibitors to IOT uptake
- The major players in SA: pros and cons of their tech, risk mitigation, future proof

Last third:

- Use cases for IOT in network operations
- Opportunities for network operators in the IOT space

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Dimension Data IoT *Reference Model*

9 **Collaboration and Process**
Involving people and business processes

8 **Application**
Reporting, analytics, control

7 **Connectivity / Interconnect Networks**
Communication and processing units

6 **Data Abstraction**
Aggregation and access

5 **Data Accumulation**
Storage

4 **Connectivity / Backhaul Networks**
Communication and processing units

3 **Edge Computing**
Data element analysis and transformation

2 **Connectivity / Sensor Networks**
Communication and processing units

1 **Physical Devices and Controllers**
The 'Things' in IoT

Security

Management

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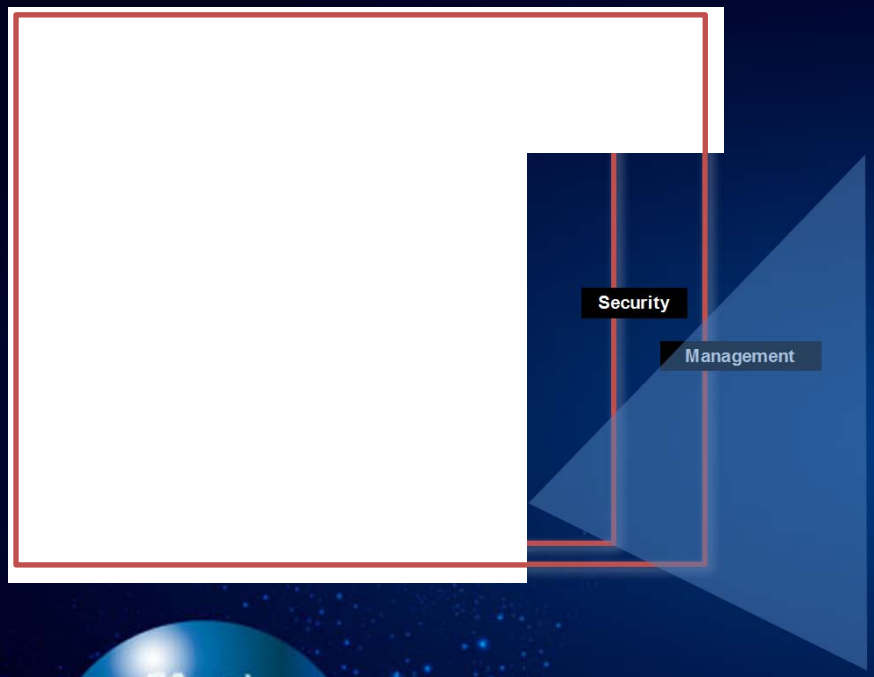
Dimension Data IoT *Reference Model*



- Simple Sensors
- Complex Sensors
- Embedded O/S
- Wearables
- Phone

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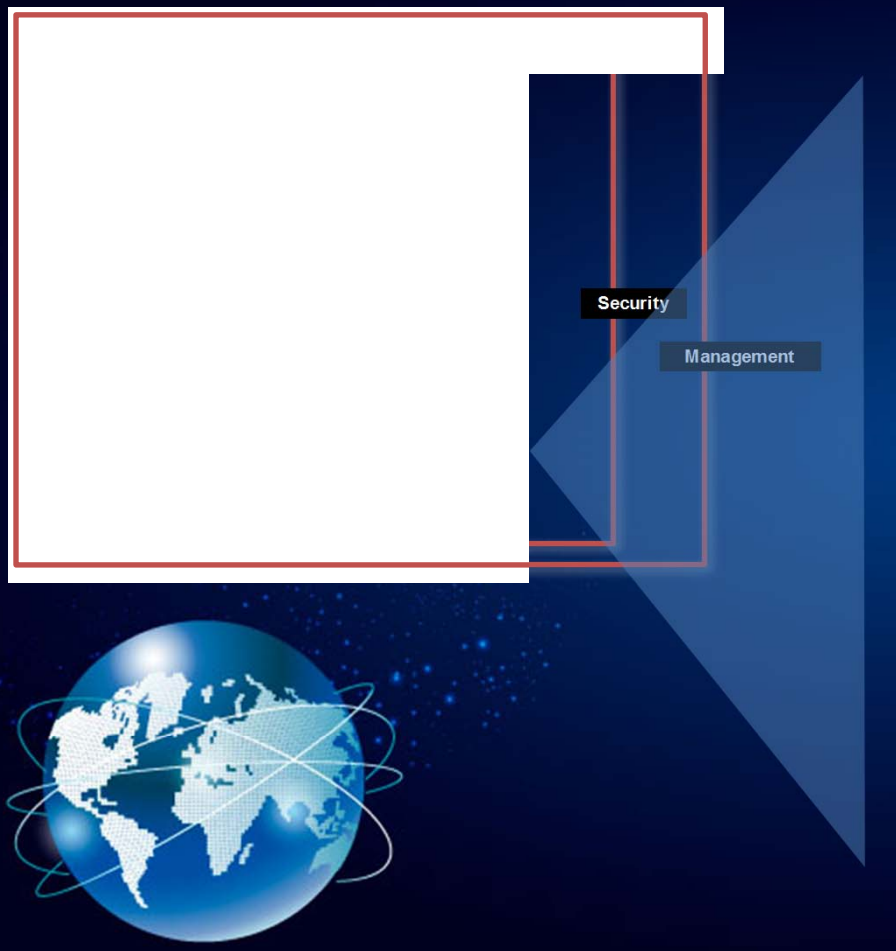

- WiFi
- Ethernet
- Low Power WAN
- Cellular
- Bluetooth
- Radio Frequency
- Serial
- ANT+

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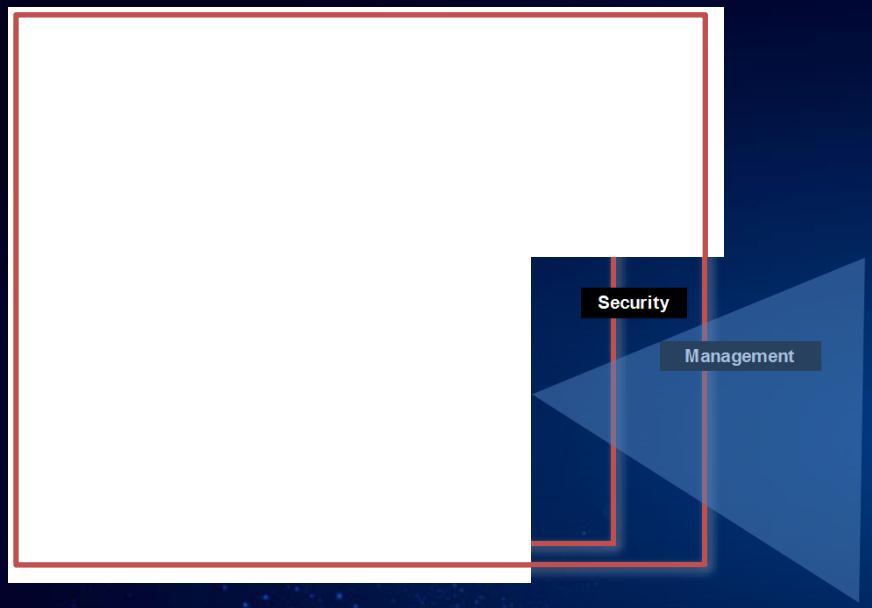

- **Simple Gateway**
- **Complex Gateway**
- **Operating System**

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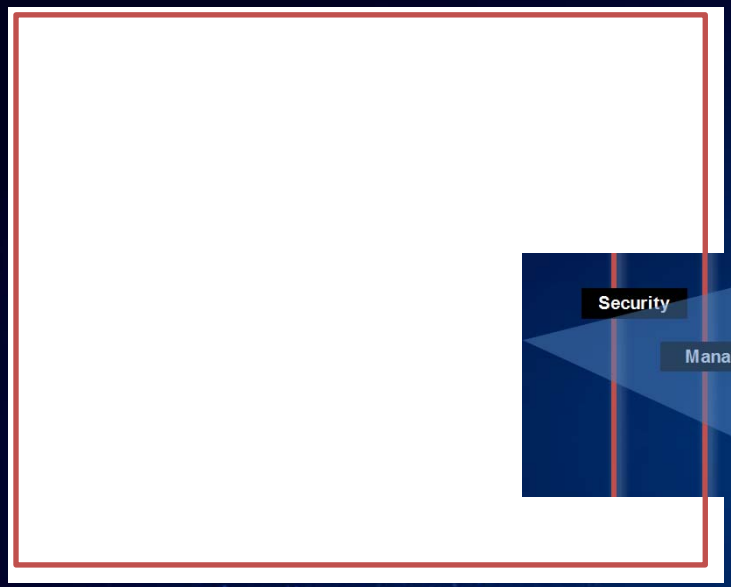

LAN

WAN

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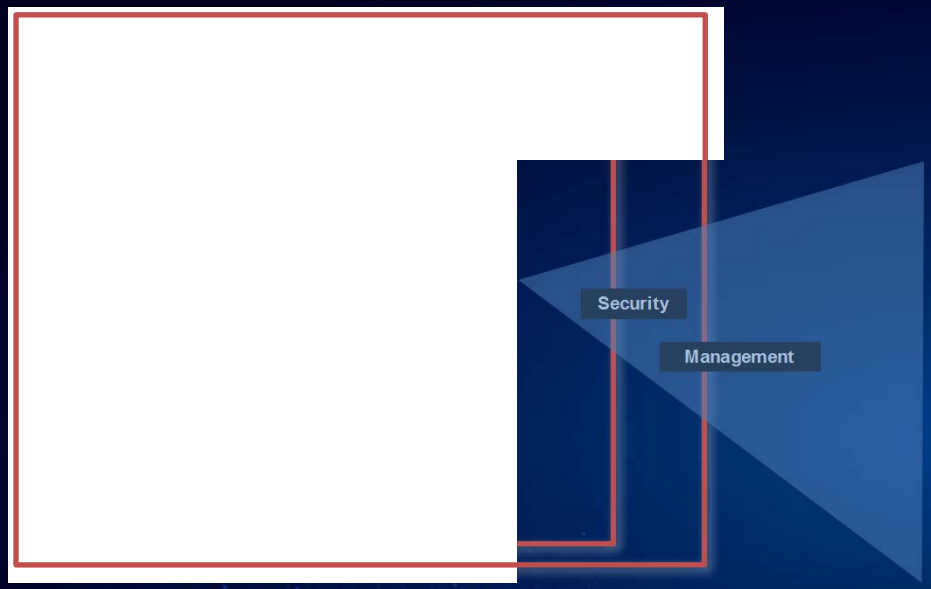

- **Data Centre Networking**
- **Compute**
- **Storage**
- **Data Base**

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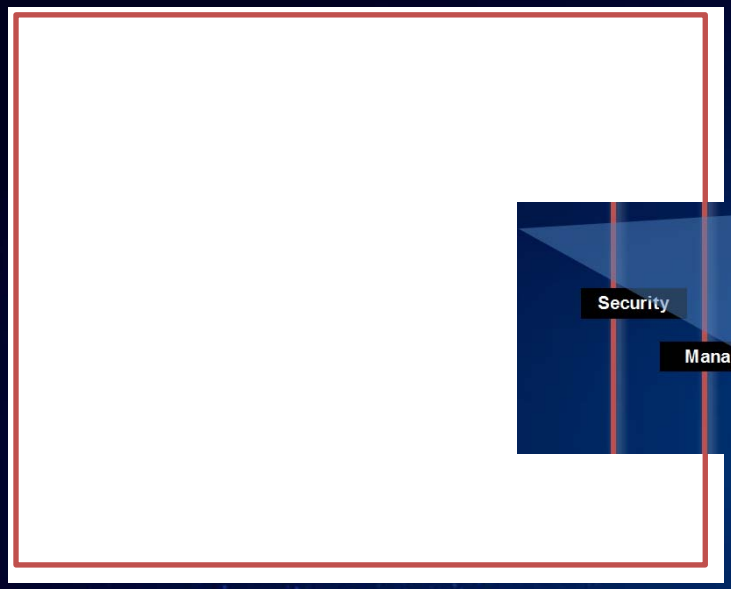

Application Enablement Platform

Data Presentation /
Application Programming Interface

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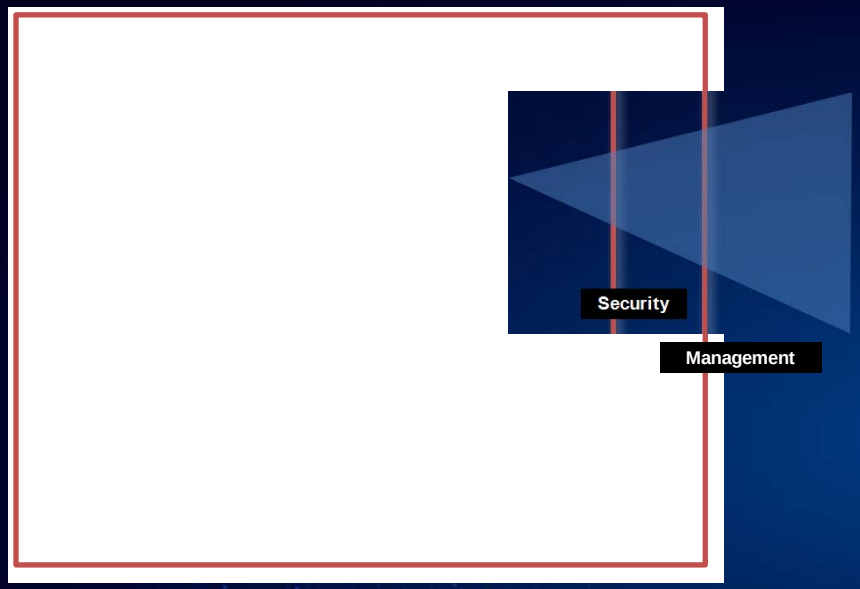

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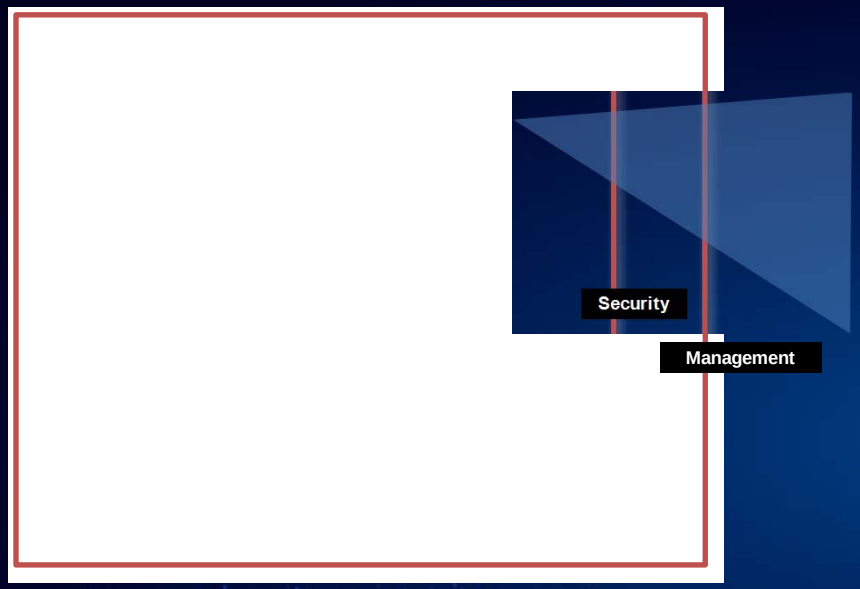

Analytics

Visualisation

Consumption

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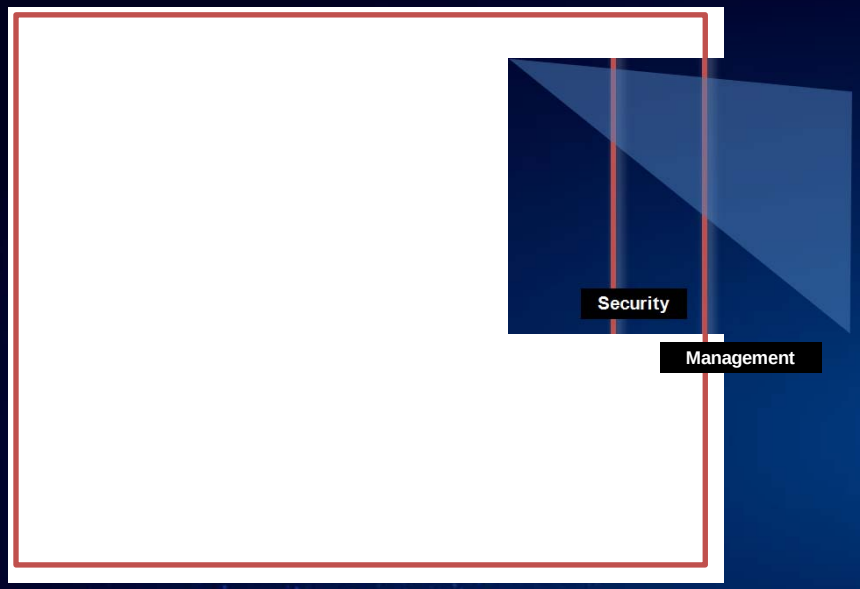

Accessing the Outcome

Business Process

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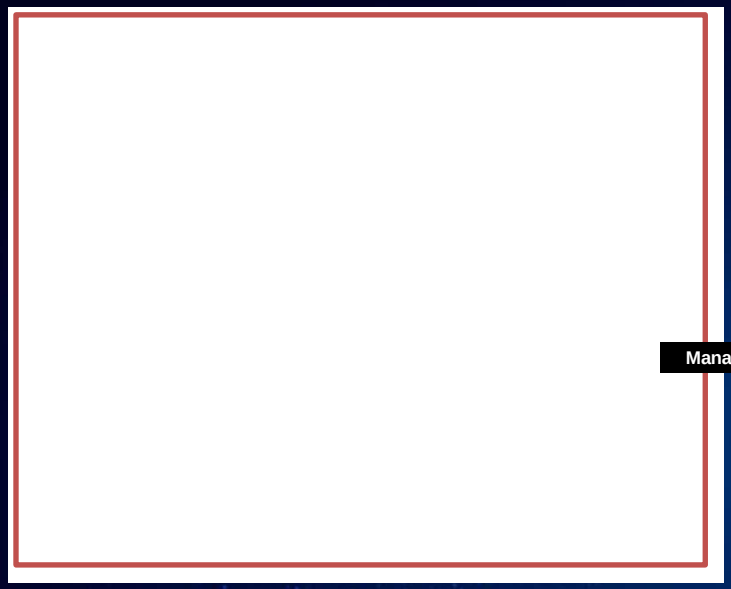

Security
From Edge to Application

Management
From Edge to Application

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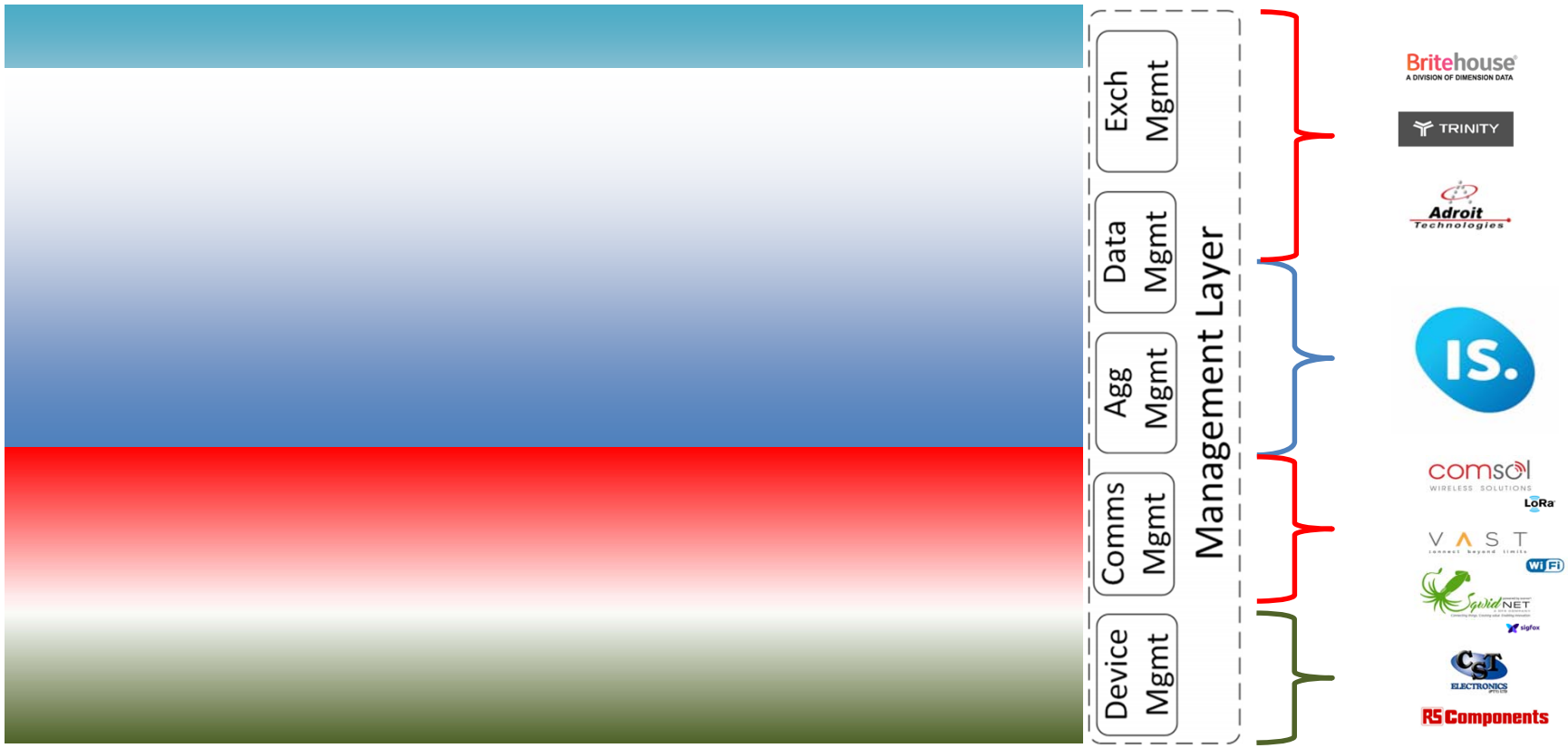
Layering of the IoT industry



An ecosystem game

End-to-End IOT Solution

Device-level hardware systems integration

+

Network, network services and processing

IS.

+

Analytics, visualisation, software integration

+

Business Re-Engineering

Industry specialists with domain knowledge and credibility

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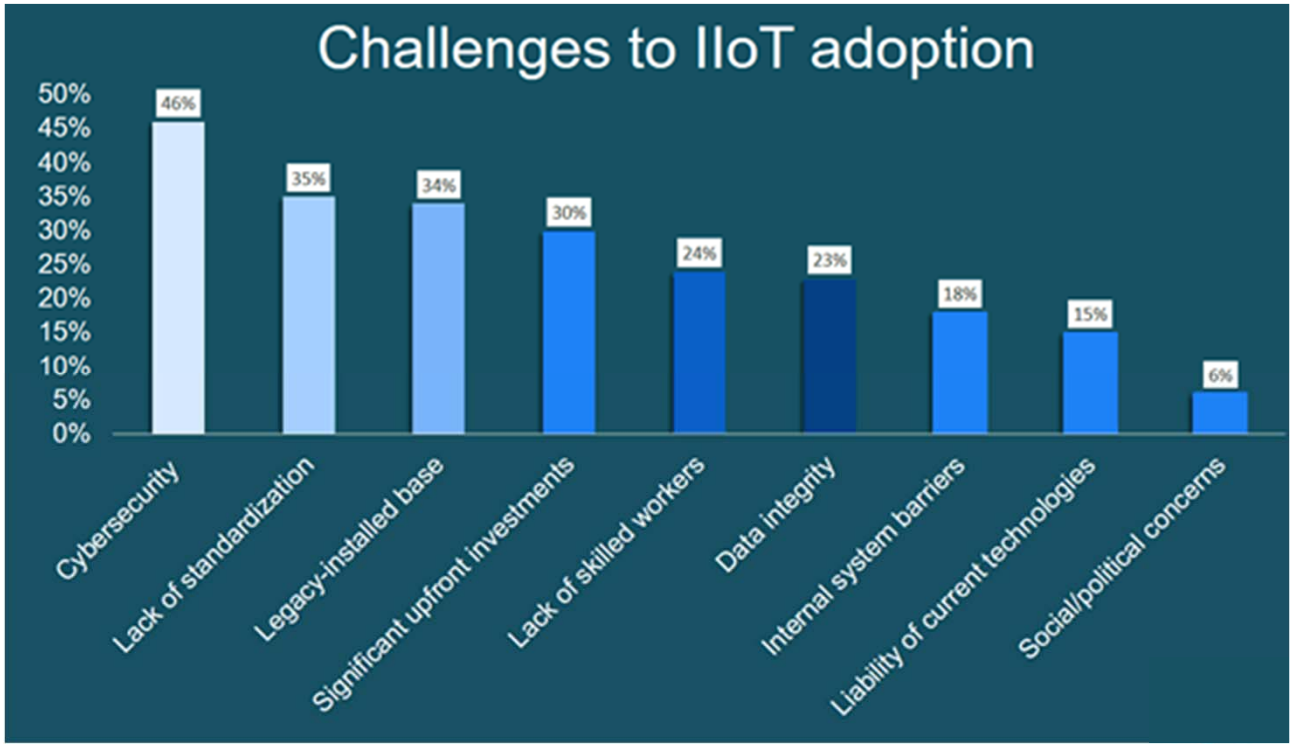
Why some are hesitating



Source: Morgan Stanley: Automation World Industrial Automation Survey, AlphaWise 2016

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Two Main Use Cases for "True" IoT Technology

Massive number of devices connected at ultra-low cost

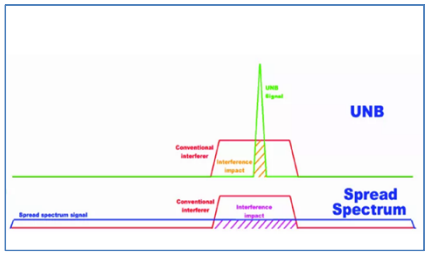
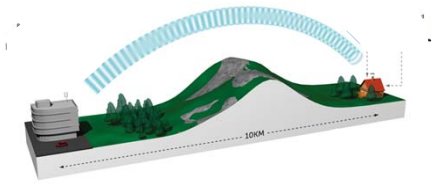
For tracking, managing, monitoring large numbers of devices where cost of network provisioning and installing physical devices is the main decision factor

Devices installed, activated and not messed with for ten years

Ultra-low power consumption and ultra-compact hardware allows intelligent, battery-powered devices can be put it in the field and not touched for 5-10 years

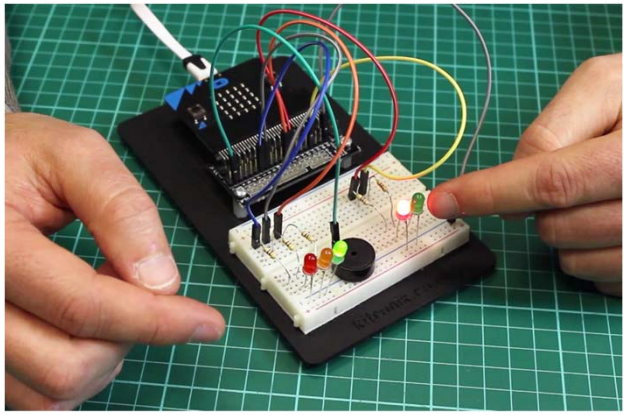
Enabling Technology

To allow for these use cases, the IoT network is:

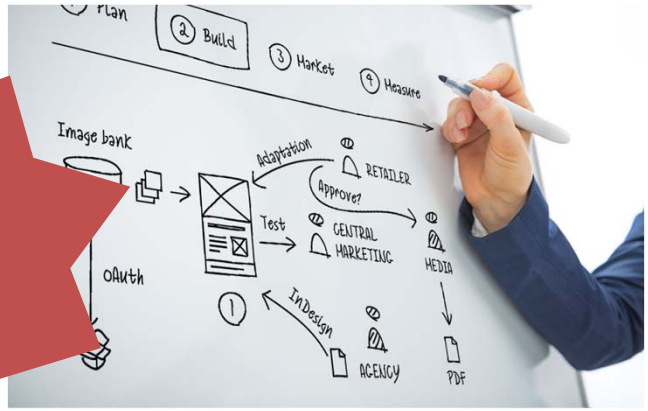
Narrowband radio – low power consumption, interference resistant	No SIM or hardware-based identity module to dramatically cut operating costs	Sub-GHz radio for extreme propagation/ penetration and low power consumption	Licence-exempt ISM bands to reduce deployment and op-ex costs
			

Easy to trial, or adopt on a large scale

Experiment:
buy a handful of devices, turn them on and see sensor data pop out on an Internet site seconds later.



Cost?
- R1,600 for 3 devices
- R15,000 for an electronics hacker
- R100 for connectivity



Cost?
- R12,000 for 30 devices
- R35,000 for an electronics hacker
- R1000 for connectivity
- R1000 for IOT platform

Complete proof of concept implementation:
buy a box of sensors, hook them up, point their data at favourite BI tool.

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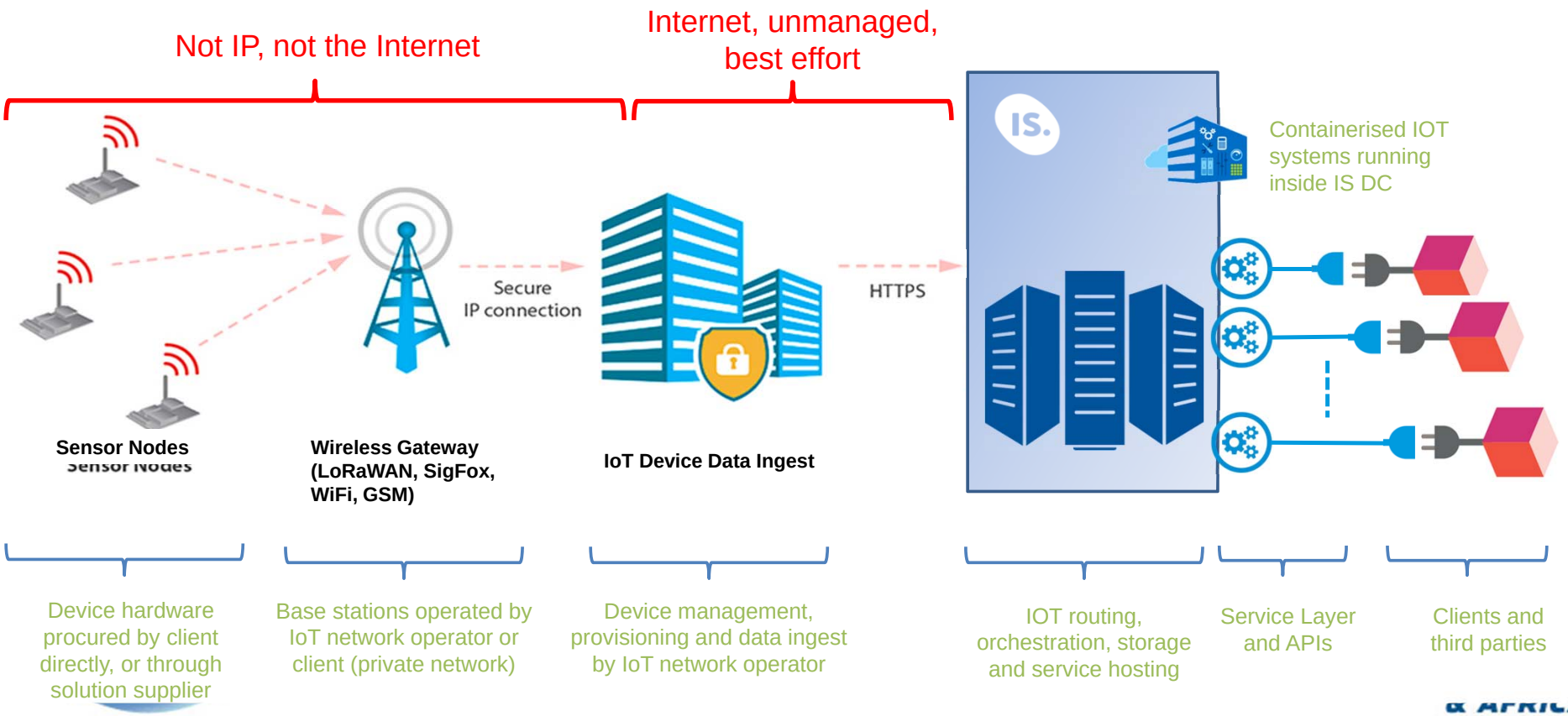
The LPWAN Network Chain



Existing and New Players

GPRS and 3G based solutions, focus on connectivity. “M2M” = single country billing.

GPRS and 3G based solutions, focus on connectivity. May deploy NB-IoT.

Wholesale network partner to IS, but could offer solutions directly.

Wholesale network partner to IS, but could offer solutions directly.

- FastNet
- Vula Telematics

Existing and New Players

IoT.nxt bridging the edge

Startup in platform/ application enablement space, heritage in connecting legacy devices via a smart box

TRINITY

Decades in M2M using GSM networks, adopting LP-WAN. Strong domain skills with analytics, visualisation tech

Microsoft Azure

Massive scale in PaaS offerings, with rapidly evolving IoT capability (IoT Hub, Stream Analytics)

amazon web services™

Massive scale in PaaS offerings, with rapidly evolving IoT capability (many advanced and mature IoT services)

thingworx®

Major provider of IOT platforms to manage devices, preform analytics, etc

yodiw

New player in the Application Enablement space

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IOT in the Network Operator Space

Now: “How do we get IOT into our systems?”

Future: “Our systems have sensors that need to be connected so the data can be used”

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IOT in the Network Operator Space

IOT ->> Big Data ->> Analytics

IOT ->> Small Data ->> Real-time Business Management

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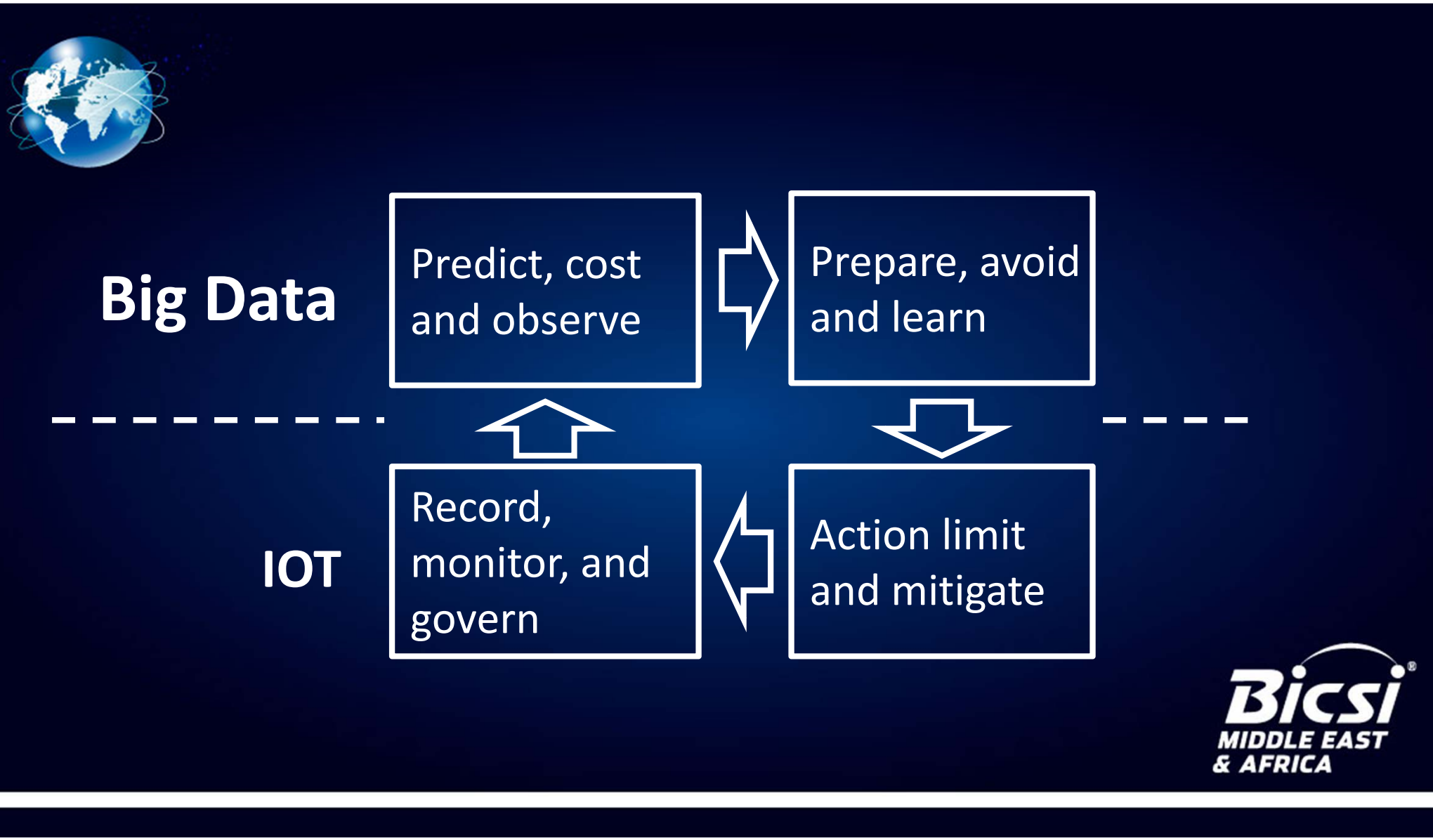
Big Data
Predict, cost and observe
Prepare, avoid and learn
IOT
Record, monitor, and govern
Action limit and mitigate
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Your Big Question

Slow, expensive, but transformative

Problem looking for a solution

Digital Transformation to Re-engineer Enterprise

Device-Led Solution to Solve One Problem

Fast, cheap… but tactical

Solution looking for a problem

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Integrating into NetOps

Managed Service Stack

- Device
- IOT Network
- Data Store
- Data Communications
- Data Processing
- Applications management
- Process assurance

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Integrating into NetOps

1. Application layers: value add and support for disruptive tech
2. Legacy systems integration
3. Governance and responsibility realignment
4. Compliance and privacy
5. Stack maintenance and data stewardship
6. Network and communications (Cloud/business systems interconnect)
7. Big Data and Small Data
8. Things and Transmission hardware
   (including private network > IP, routing, communications services)

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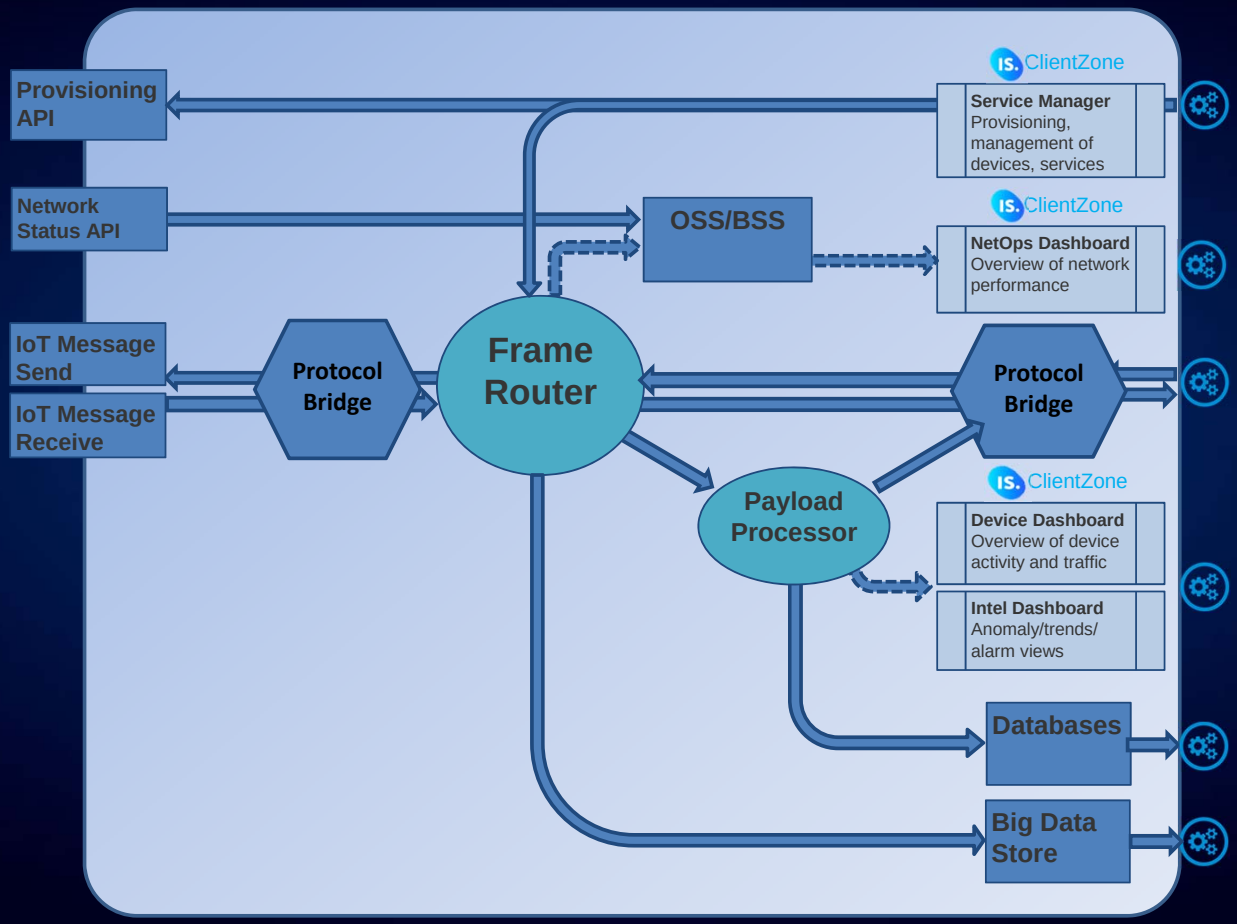
IoT Platform Functional Diagram

One of each API set per network operator



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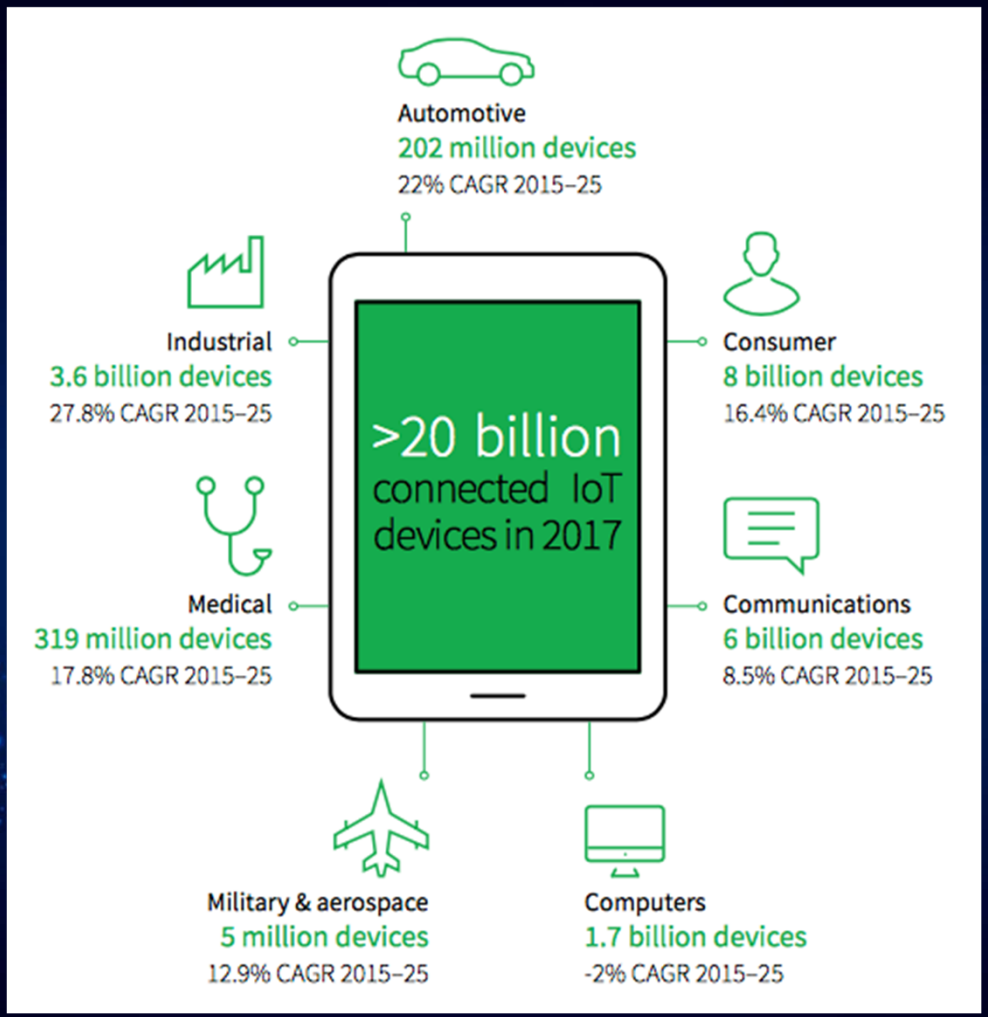
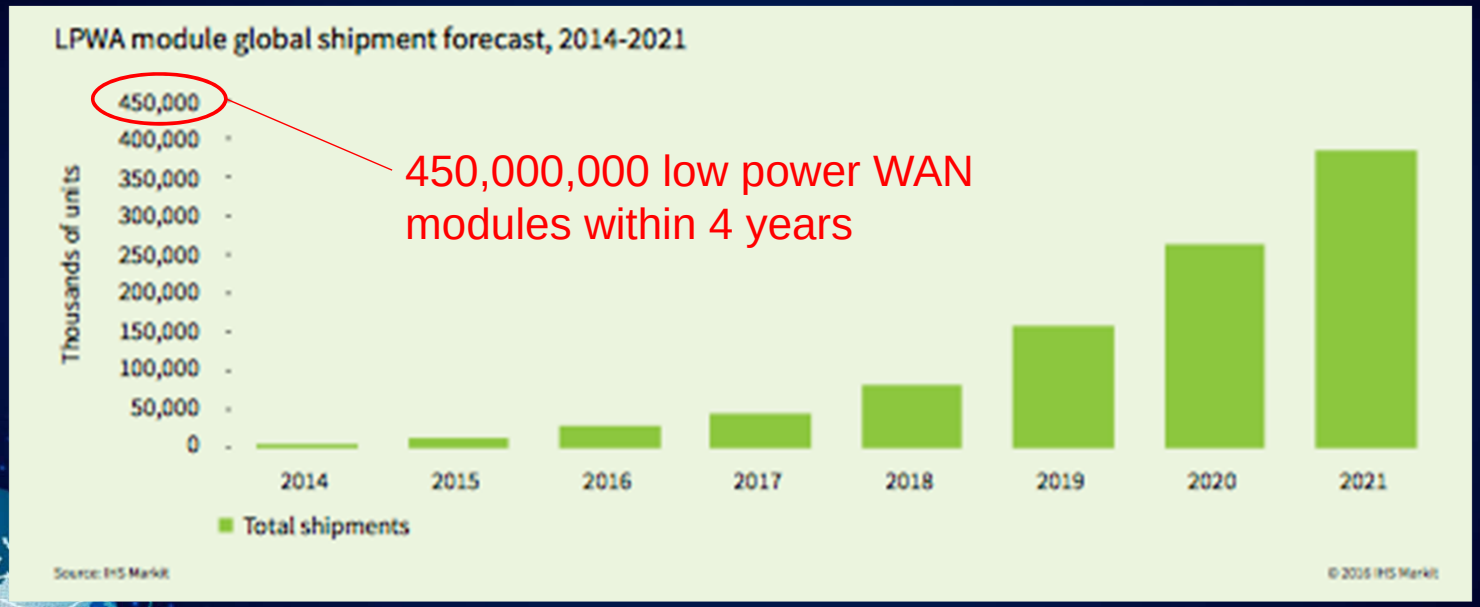


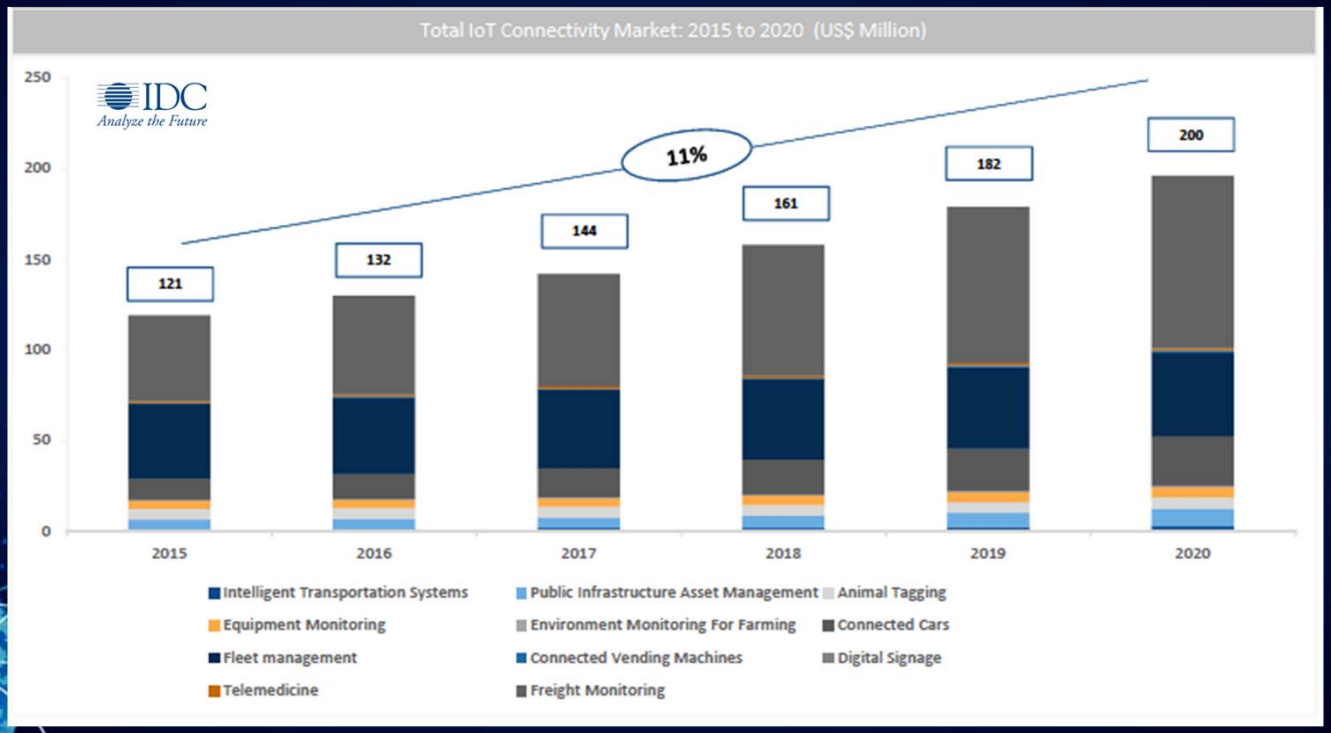
Source: IHS Markit, IoT Trendwatch 2017

The Interesting Number



Source: IHS Markit, IoT Trendwatch 2017

IDC Market Forecasts – South Africa



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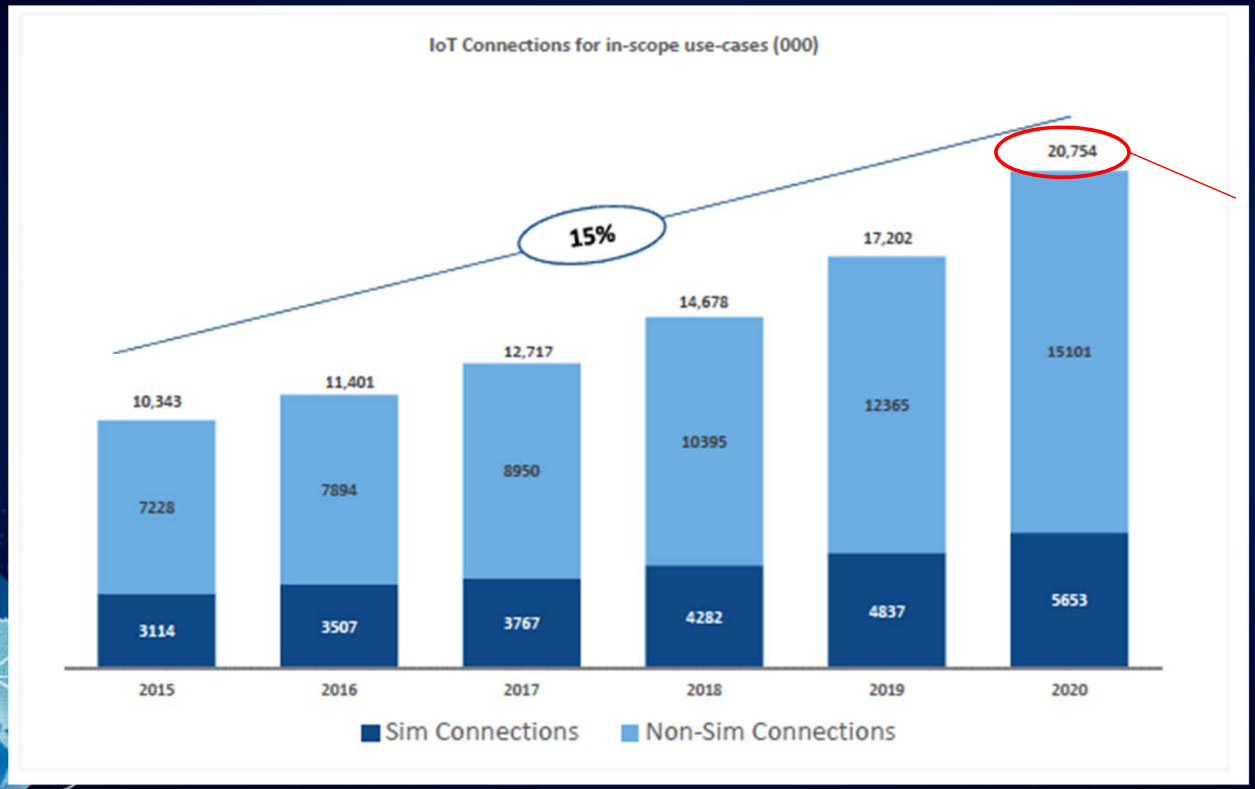

20 million

Thank You

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