

# The importance of open standard in IoT

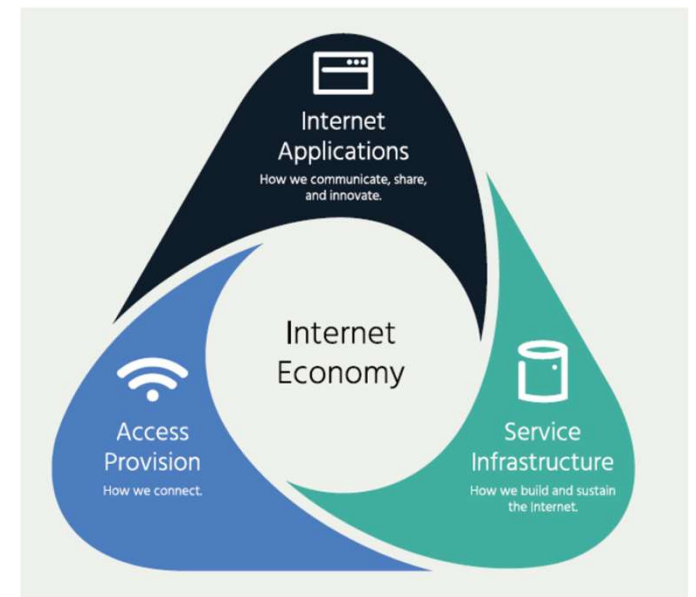
# Platforms vs Open Standards

It is not completely correct to look at Platform driven API as something different and against the Open Standards. Those platforms are built and fundamentally dependent on the Internet Open Standards and its evolution. They use the openness and cross-border nature of the Internet to continue improve their offering.

The largest platforms are not only capturing fundamental human interactions becoming default one-stop shop access to the Internet and in doing so driving the consolidation and concentration of Internet

...they are also influencing the open standards development and implementation at scale, as they have the resource to invest in and promoting the evolution of standards happening in IETF, W3C and in other SDO.

...they are shielding more and more Internet functionality and interoperability thru their own platform APIs



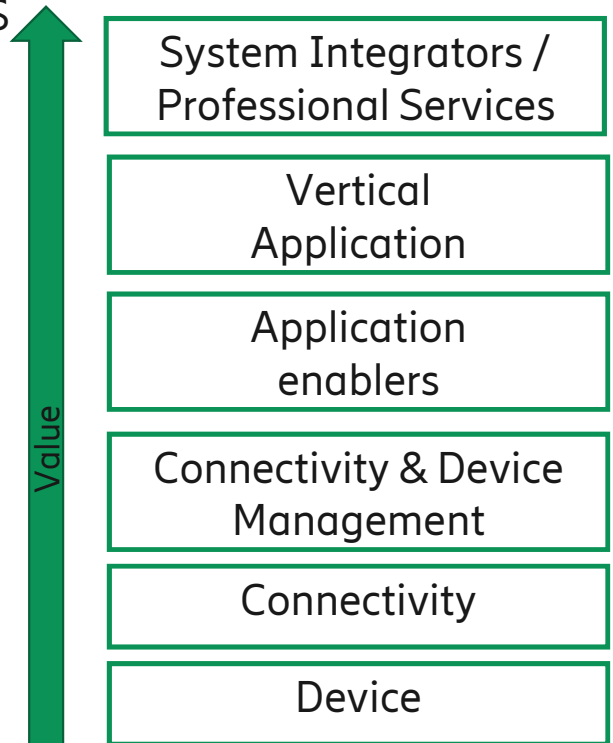
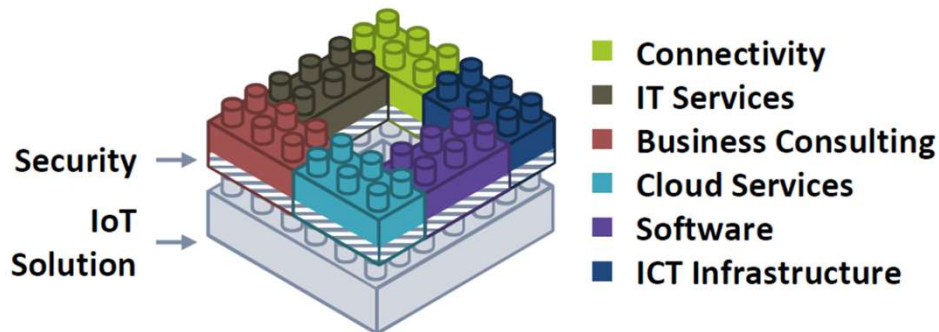
# The Internet of Things – the Market

Commercial IoT Market size in 2019 is estimated to be in the range of 400 B \$

commercial IoT: The practice of deploying collections of uniquely identifiable devices and/or sensors, along with supporting infrastructure, networking, and software and analytics. The goal of these solutions is to generate insights on collected data that enable

IoT Ecosystem is still very immature and highly fragmented due the presence of several standards and the large number of companies and small startups entering the market. However the potential is massive!

The fragmentation is at different level of the value chain!



IoT Value Chain

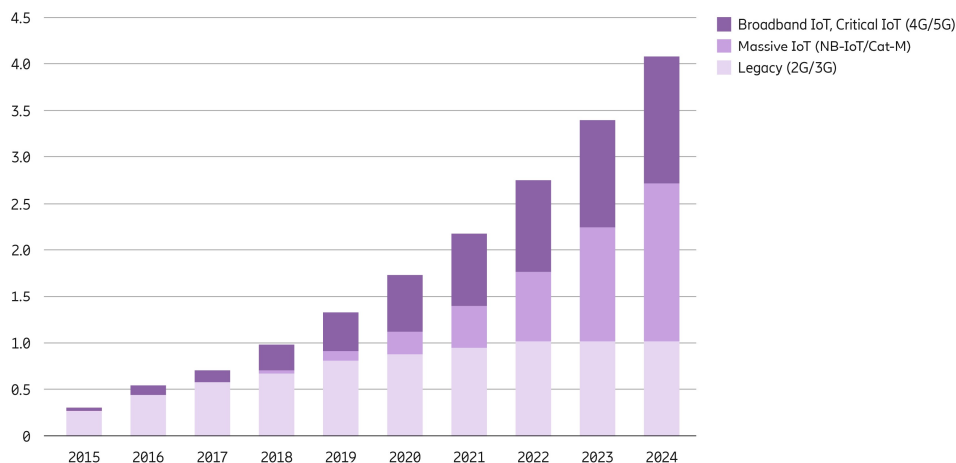
# The Internet of Things –The Connectivity

The Cellular IoT Connectivity is yet not seen as easy to use by developers (i.e. APIs ) and costly.

No one start an IoT project with a Cellular connectivity in mind...

Cellular IoT is now becoming regulated by the authority around the world similar to Voice services!

Cellular IoT connections by segment and technology (billion)



IoT connections (billion)

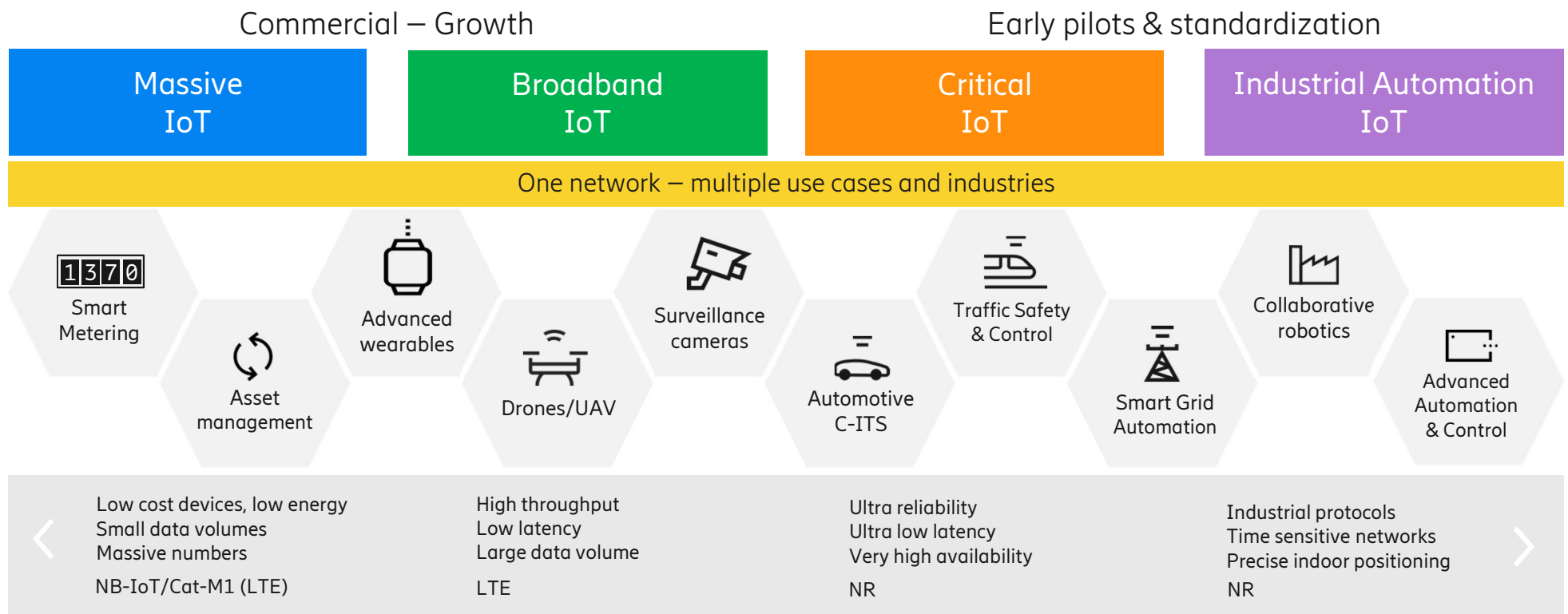
IoT	2018	2024	CAGR
Wide-area IoT	1.4	4.4	27%
Cellular IoT <sup>1</sup>	1.0	4.1	27%
Short-range IoT	9.3	17.8	15%
Total	10.8	22.2	17%



2G-3G-LTE ARPU 1,2-1,5 \$ / Month

LTE-M NB-IoT ARPU 1,2-1,5 \$ / Year

# Cellular IoT evolution and segments



# The reasons of the fragmentation

MQTT  
CoAP  
HTTP  
XMPP  
LWM2M



Many platforms each using a specific set of open standards

- Addressing broad range of different requirements
- End to end security challenging across platforms

## HOW STANDARDS PROLIFERATE:

(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)

SITUATION:  
THERE ARE  
14 COMPETING  
STANDARDS.

14?! RIDICULOUS!  
WE NEED TO DEVELOP  
ONE UNIVERSAL STANDARD  
THAT COVERS EVERYONE'S  
USE CASES.



SOON:

SITUATION:  
THERE ARE  
15 COMPETING  
STANDARDS.

# The consequence of the fragmentation

Not all the devices (i.e. protocols) can work with all the platforms.

The Data stored on a platform cannot be easily exported to another :

- Needed to ensure that platforms share the same meaning for the data they exchange (same semantic)

Each platform create an ecosystem of developers because of the proprietary APIs, platforms are now competing on creating the bigger developers ecosystem thru

- Simplification of API
- Platforms/Ecosystem aggregation



# The Internet of Things – Bridging the Silos

Fragmentation and Silos are holding back the potential  
Why....

Open or closed system?

- Closed systems incentive: control
- Open systems prompt: reduced costs and increased market size

Need for wide adoption of shared open standards



# Analogy with early days of networking

Before the Internet, there were many non-interoperable network technologies

- IP made it simple to interconnect networks and create interoperable services independent of the network technologies
- The Internet grew exponentially as the opportunities were realised
- Likewise for the Web which took over from isolated information services

Direct analogy with today's IoT silos and their lack of interoperability

- The Web of Things is the equivalent of IP for semantic interoperability and end to end security
- The Web of Things will enable explosive growth as the barriers to interoperability are torn down



