

## How big is the Internet of Things?

Marc Jadoul ( @mjadoul) ETSI IoT/M2M Workshop Sophia Antipolis, 17 November 2016



#### About this presentation



https://en.wikipedia.org/wiki/Nabaztag



Moore's law (1965)

The number of transistors in a dense integrated circuit doubles approximately every two years





#### Micro-processor evolution has followed Moore's law



#### Moore's law has enabled IoT (r)evolution

![](_page_4_Figure_1.jpeg)

Source: Goldman Sachs & BI Intelligence, 2015

![](_page_4_Picture_4.jpeg)

#### Metcalfe's law (1993)

The value of a network is proportional to the square of the number of its nodes – while the cost follows a more or less linear function

![](_page_5_Figure_2.jpeg)

NOKIA

#### Facebook growth has been following Metcalfe's law

![](_page_6_Figure_1.jpeg)

#### IoT value will come through Metcalfe's law

![](_page_7_Figure_1.jpeg)

Source: BI Intelligence, 2015

![](_page_7_Picture_4.jpeg)

### Everett Rogers' diffusion of innovation (1962)

![](_page_8_Figure_1.jpeg)

![](_page_9_Figure_0.jpeg)

The greatest peril in developing high-tech markets is closing the gap between the early adopters of any technology and the mass market.

![](_page_9_Picture_3.jpeg)

## Many IoT devices and apps are still stuck in the chasm

![](_page_10_Figure_1.jpeg)

Source: IDC Worldwide Quarterly Wearables Tracker

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![](_page_10_Picture_4.jpeg)

#### Clayton Christensen's innovator's dilemma (1997)

It is in disruptive innovations, where we know least about the market, that there are such strong firstmover advantages. This is the innovator's dilemma.

Disruptive technology should be framed as a marketing challenge, not a technological one.

![](_page_11_Picture_3.jpeg)

![](_page_12_Figure_0.jpeg)

![](_page_12_Picture_2.jpeg)

#### Jeremy Rifkin's zero marginal cost society (2014)

THE MARGIN COST SOCIETY

The IoT is emerging with the potential of pushing large segments of economic life to near zero marginal cost in the years ahead.

Prosumers can connect to the network and use big data, analytics, and algorithms to accelerate efficiency, dramatically increase productivity, and lower the marginal cost of producing and sharing a wide range of products and services to near zero, just like they now do with information goods. The IoT is enabling a zero marginal cost value model

![](_page_14_Picture_1.jpeg)

av is the **added value**, mc is the **marginal cost** of an IoT service

![](_page_14_Picture_4.jpeg)

# So, how big is the loT's (potential) value?

![](_page_15_Picture_2.jpeg)

#### Moore's Law applied to the IoT

![](_page_16_Figure_1.jpeg)

![](_page_16_Picture_3.jpeg)

### Metcalfe's Law applied to the IoT

![](_page_17_Figure_1.jpeg)

![](_page_17_Picture_3.jpeg)

### A standards-based, horizontal IoT platform can boost the value of the network

![](_page_18_Figure_1.jpeg)

NOKIA

![](_page_19_Picture_0.jpeg)

adoption

Moore's

law

law

#### IoT technology Crossing Innovation Standardsthe chasm based, & user

Marginal cost

zero

**7.5X 36X** 

![](_page_19_Picture_6.jpeg)

horizontal

20

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Metcalfe's

![](_page_19_Picture_8.jpeg)

![](_page_20_Picture_0.jpeg)

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![](_page_20_Picture_4.jpeg)

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![](_page_20_Picture_8.jpeg)

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http://insight.nokia.com/how-big-internet-things-part-1 http://insight.nokia.com/how-big-internet-things-part-2

![](_page_20_Picture_12.jpeg)

![](_page_21_Picture_0.jpeg)