

Una panoramica sullo stato di fatto dell'IoT tra applicazioni e nuove tecnologie radio

Roberto Verdone

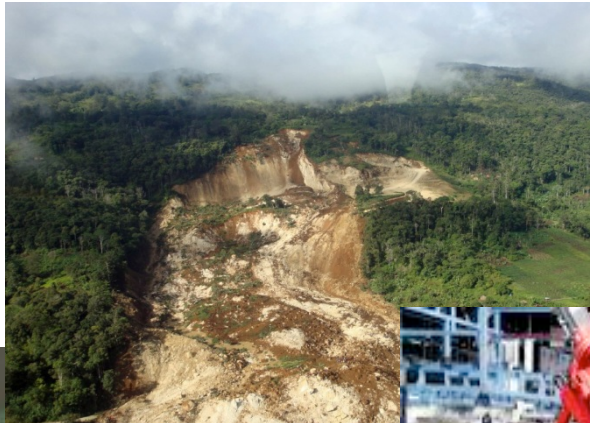
**Full Professor
Radio Networks
DEI, University of Bologna**

**Marconi Days
11 aprile 2019**



Internet of Things

Environmental Monitoring



Connected Cars



Smart Agriculture



Smart Manufacturing



Smart Farming



Smart Buildings

Internet of Things

Le previsioni di IDC sulla spesa IoT nel 2019

La spesa mondiale relativa all'Internet of Things raggiungerà i \$745 miliardi dollari nel 2019, con un aumento del 15,4% rispetto al 2018. Aggiornamento della IDC Worldwide Semiannual Internet of Things Spending Guide.

Forrester Predictions 2019: basta sognare, è l'ora del pragmatismo

L'IoT decollerà nel 2019 nel B2B, con aziende che adotteranno queste tecnologie per aumentare efficienza, connettere l'impresa, con soluzioni significative in industrial Manufacturing, Sanità, Retail e mercato Utility. In area B2C, invece, la persistente mancanza di standard, rallenta ancora l'adozione di soluzioni per la smart/connected home.

Internet of Things

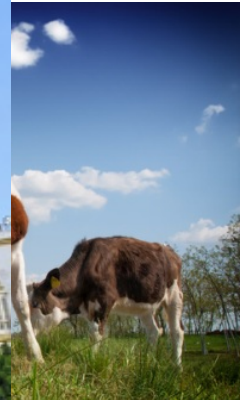
Environmental Monitoring



Connected Cars



Smart City



Smart Farming



Smart Agriculture



Smart Manufacturing



Smart Buildings

Smart Cities



2003 “THE QUAKE”, Deborah Estrin

Environmental Monitoring



LA as a Smart City

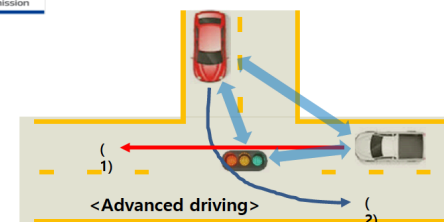
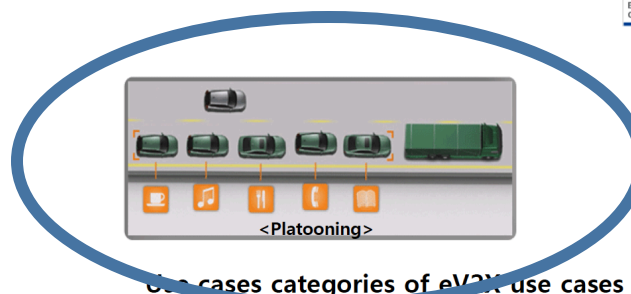


Connected Cars

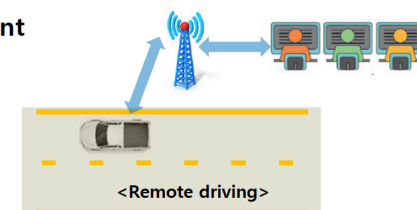
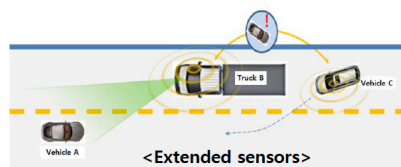


2019 Ready! (?)

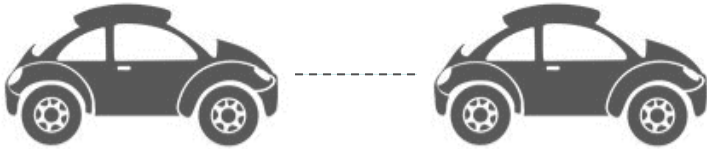
5G Ex. Use cases



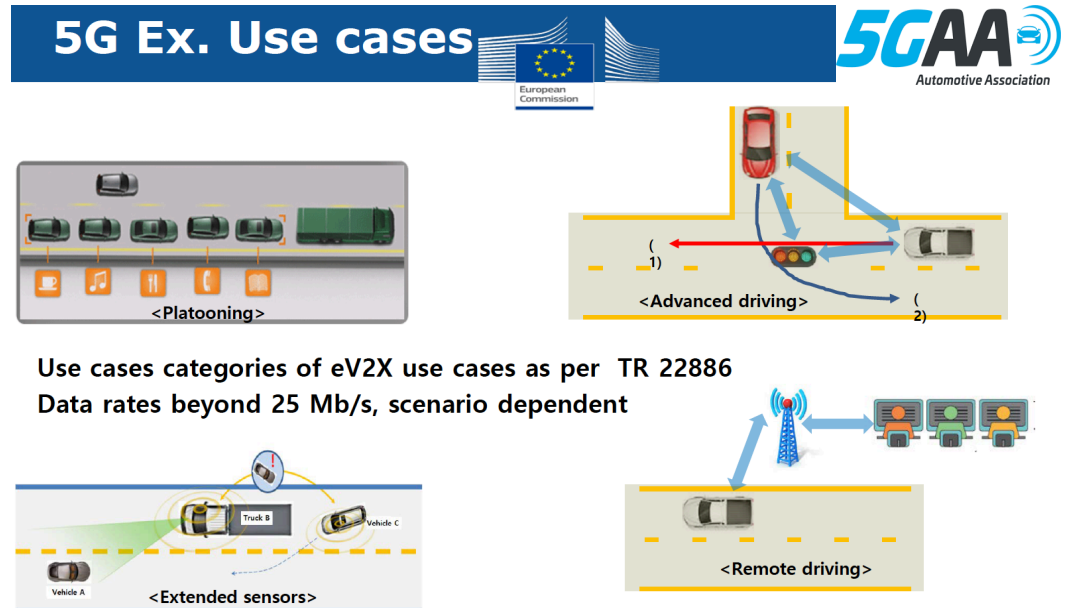
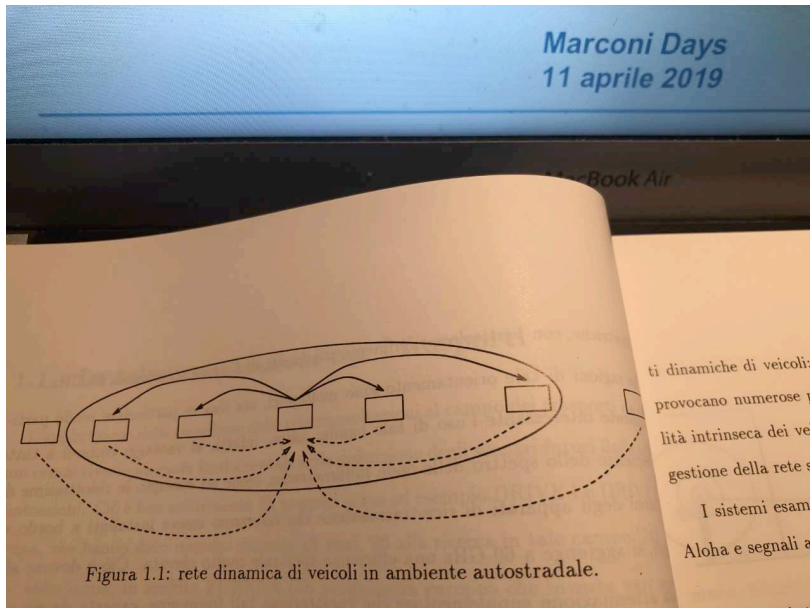
Use cases categories of eV2X use cases as per TR 22886
Data rates beyond 25 Mb/s, scenario dependent



Connected Cars



1994 My PhD thesis
2019 Ready! (?)



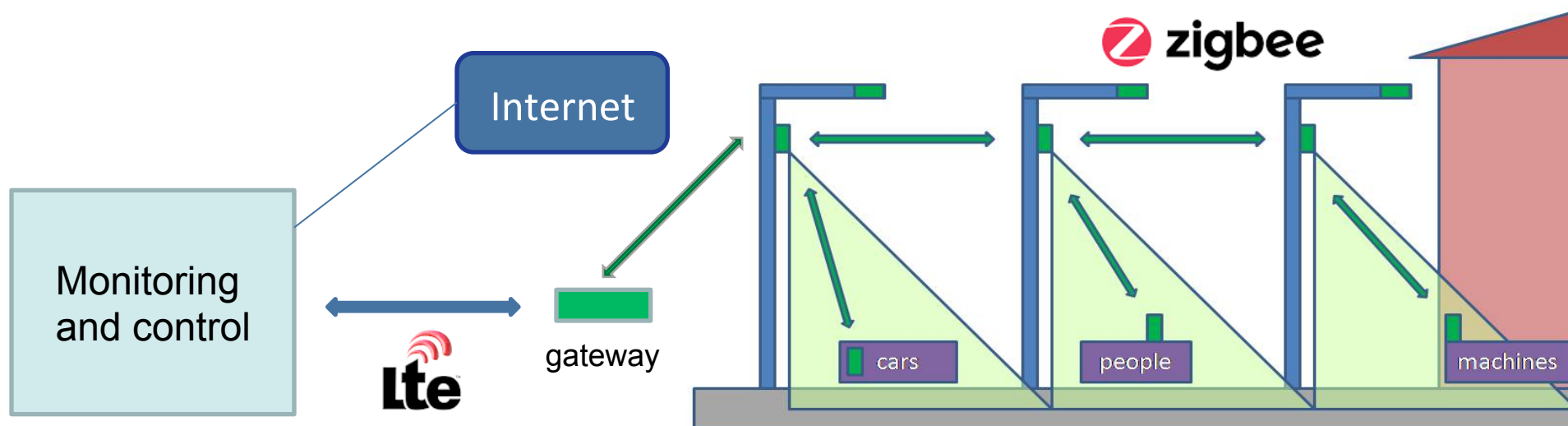
Smart Cities



2012 Smart Lighting
2019 Ready! (?)



**Smart City Exhibition
Bologna, 2012**



Are we Ready?

- 1) Awareness
 - 2) Use
 - 3) Radio Technologies
-

Radio Technologies

LoRaWANTM

NB-IoTTM

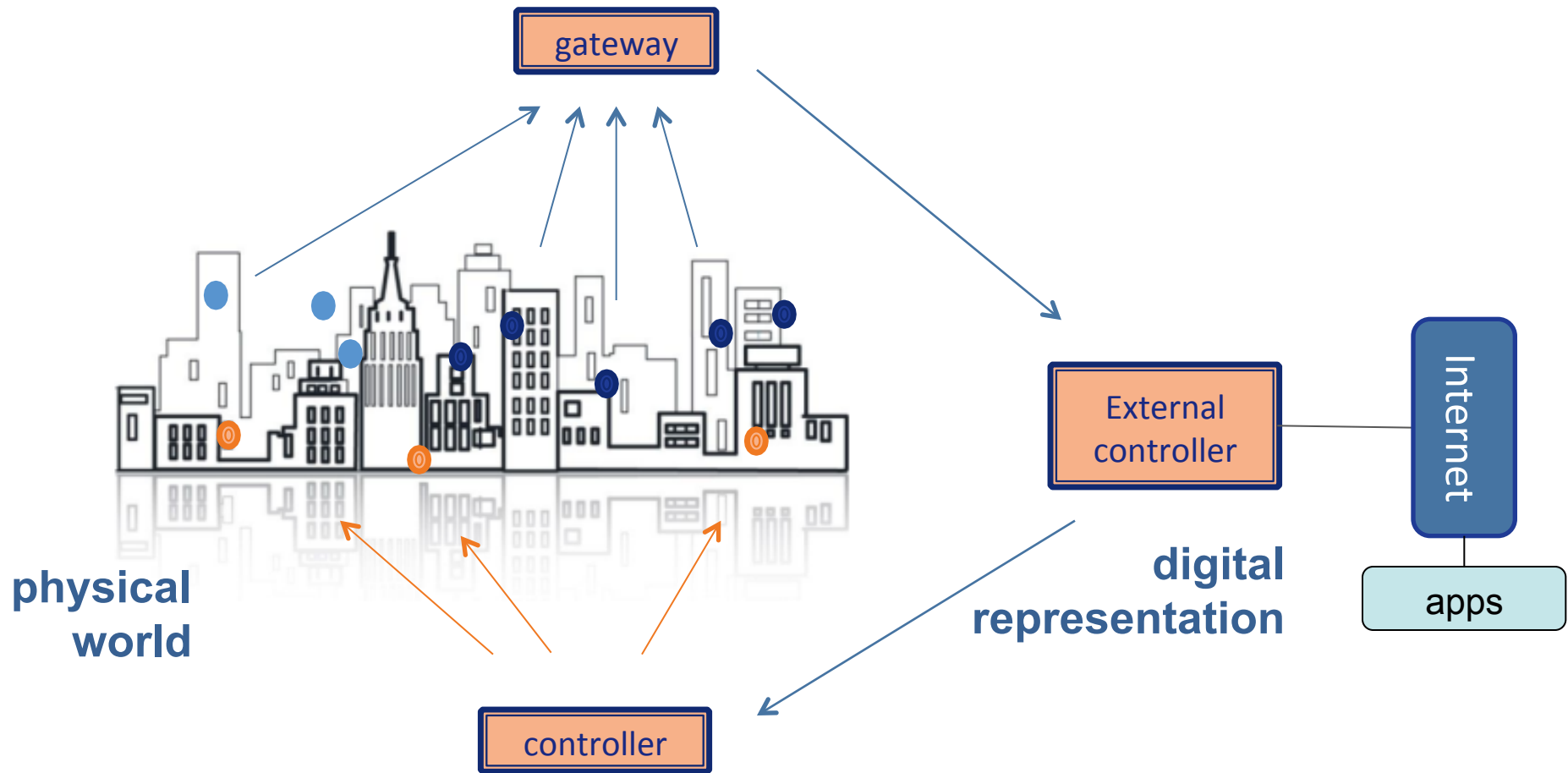
5G

↑ Energy
Efficiency

↓ Data
Rate

↓ Costs

Smart Cities An Ecosystem



Smart Cities

- **For the Citizen**
home monitoring
elder people
...
- **For the City**
garbage collection
energy bill
...
- **For the Environment**
natural resources (gas, water, energy, ...)
pollution control
...

Ready

Are we Ready?

Are we Ready?

For the Citizen

IDESIO
multi-sensor
LoRaWAN platform
for home wellness monitoring
(temperature, humidity, CO2, luminosity, ...)



Beyond the Horizon

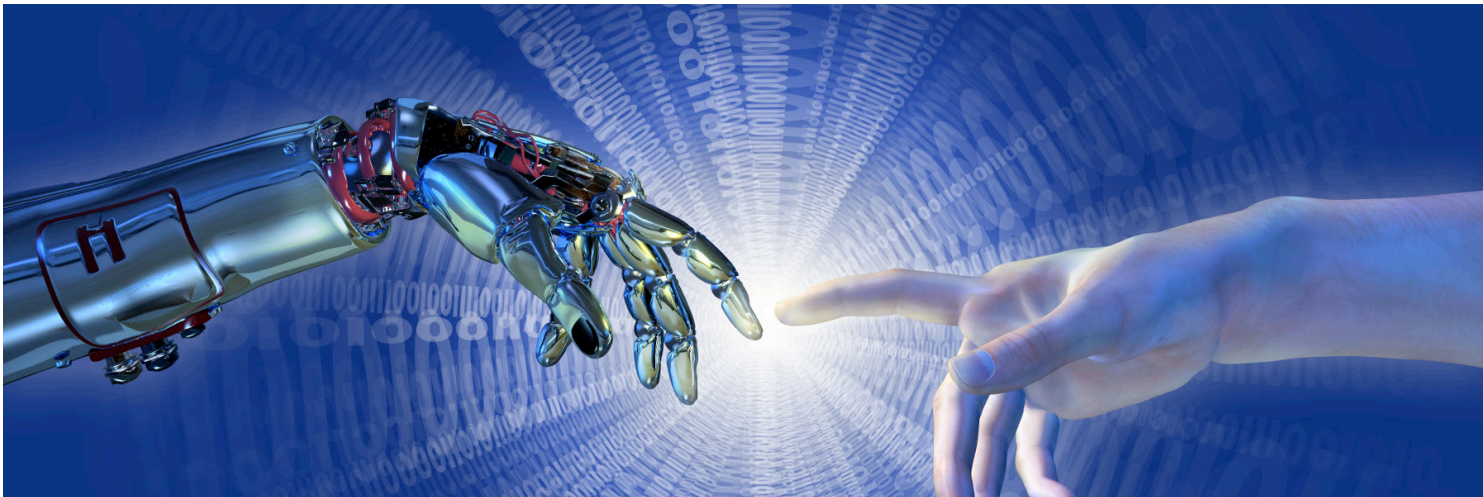
From “Human-to-Human Full Experience and Physical-World-to-Human Interaction”
by Roberto Verdone (2019)

THE CRASH

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Posts



Grazie

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