



ملتقى المعلومات الصناعية والإحصاء في الدول العربية Forum for Industrial Information & Statistics in the Arab Countries

7-8 November - 2018 - 8-7 نوفمبر
Rabat- Kingdom of Morocco الرباط، المملكة المغربية

IoT & Big Data for better life



*We Invest In
Intelligence*

Mourad TISSAOUI
(+216) 29 372 322
tissaoui@hotmail.com
mt@cyclopes.net

Short Resume

2000 : Eng. Computer sciences . Tunis-Carthage University, Tunisia

2001 : Master degree in Systems & Communications . Joseph Fourier University, Grenoble, France

Actual Positions :

CONNECT INTERNATIONAL : ICT Strategy Export Advisor

HIGH SCHOOL FOR DIGITAL ECONOMY, MANOUBA CAMPUS: Teacher

VMD SOLUTIONS : Technology Advisor

Past experience :

+ 10 years : ICT consulting in France : **Canal+, Bouygues Telecom, Renault, M6,...**

CEO of several startups : **MICORA, ALPHA ENGINEERING, CYCLOPES, ...**

Contacts :

Mob. : (+216) 29 372 322, mail : tissaoui@hotmail.com / mt@cyclopes.net

Plan

- What is Big Data
- What is IoT (Internet of Things)
- How Big data & IoT are Improving The Quality Of Urban Life
- How Big data & IoT are improving life on our planet
- Our challenges next years
- How designing Future
- The smart building case

What is big data ?



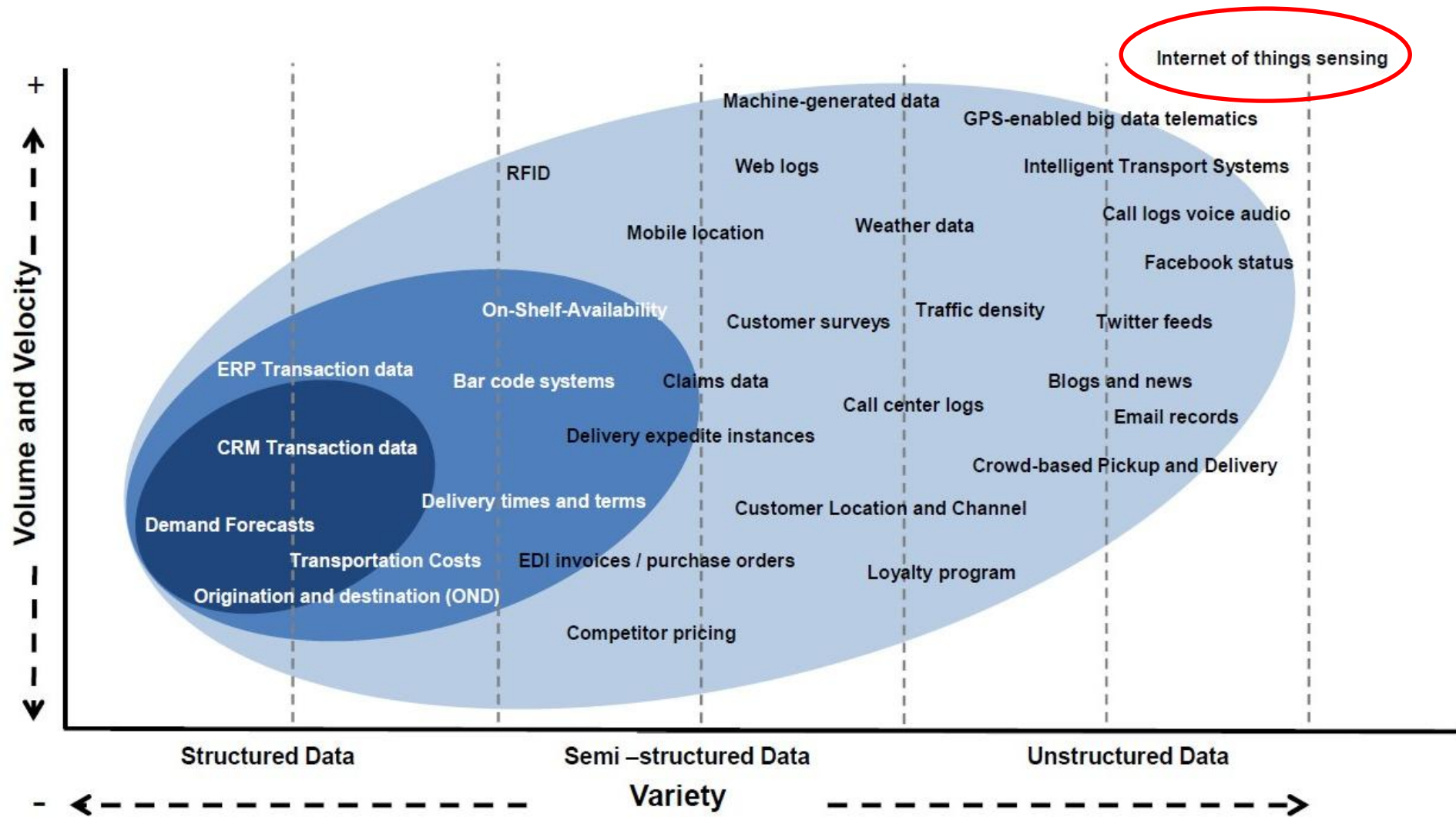
Volume : Terabytes to exabytes of existing data to process

Velocity : Streaming data, burst, milliseconds to seconds to respond

Variety : structured, unstructured, text, audio, video,...

We can add in some cases **Veracity** : uncertainty of data, untrusted data,...

What is big data ?



What is big data ?

we're talking about big data today thanks to :

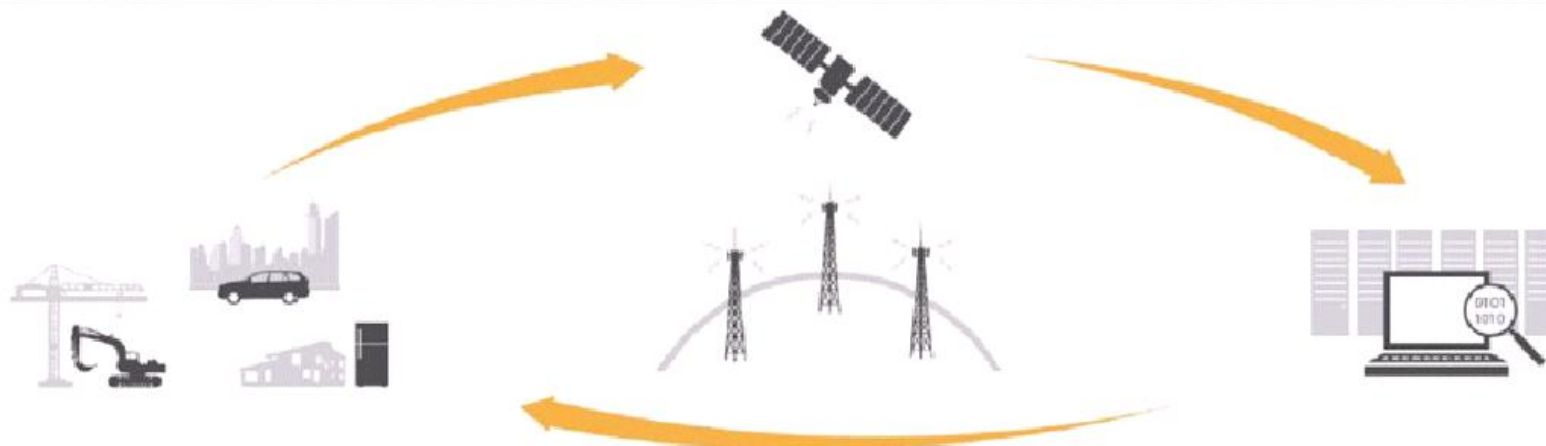
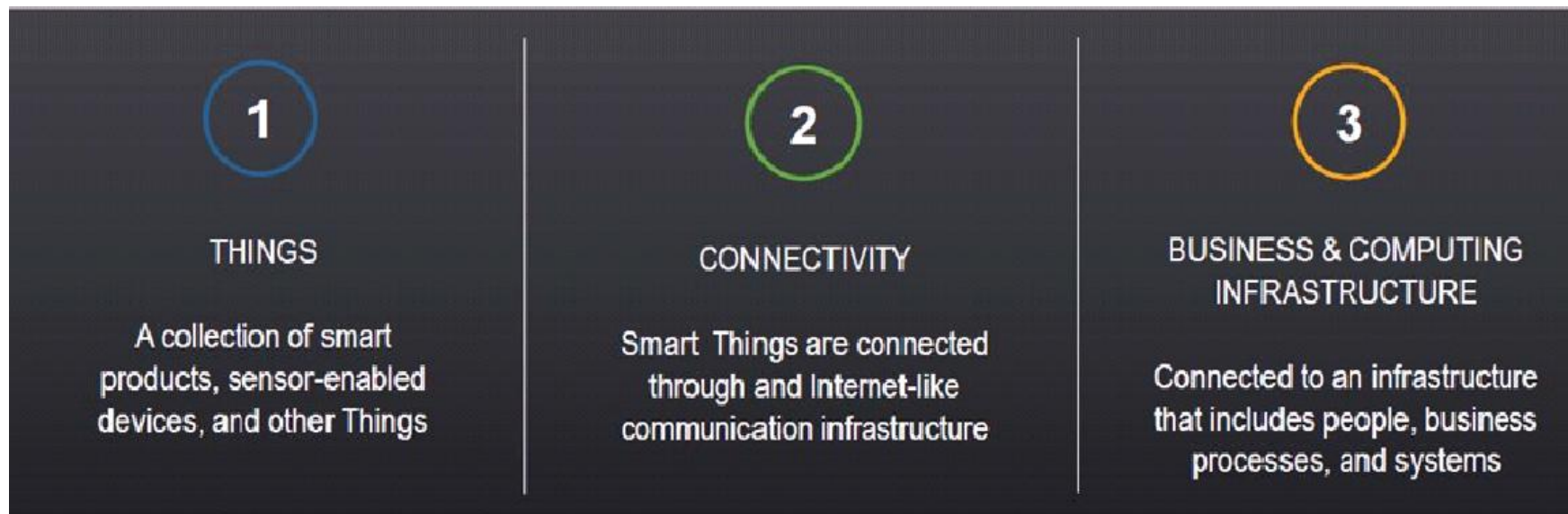


the advent of IoT : billions of connected devices in 2025. LPWAN, Mobility, durability ...

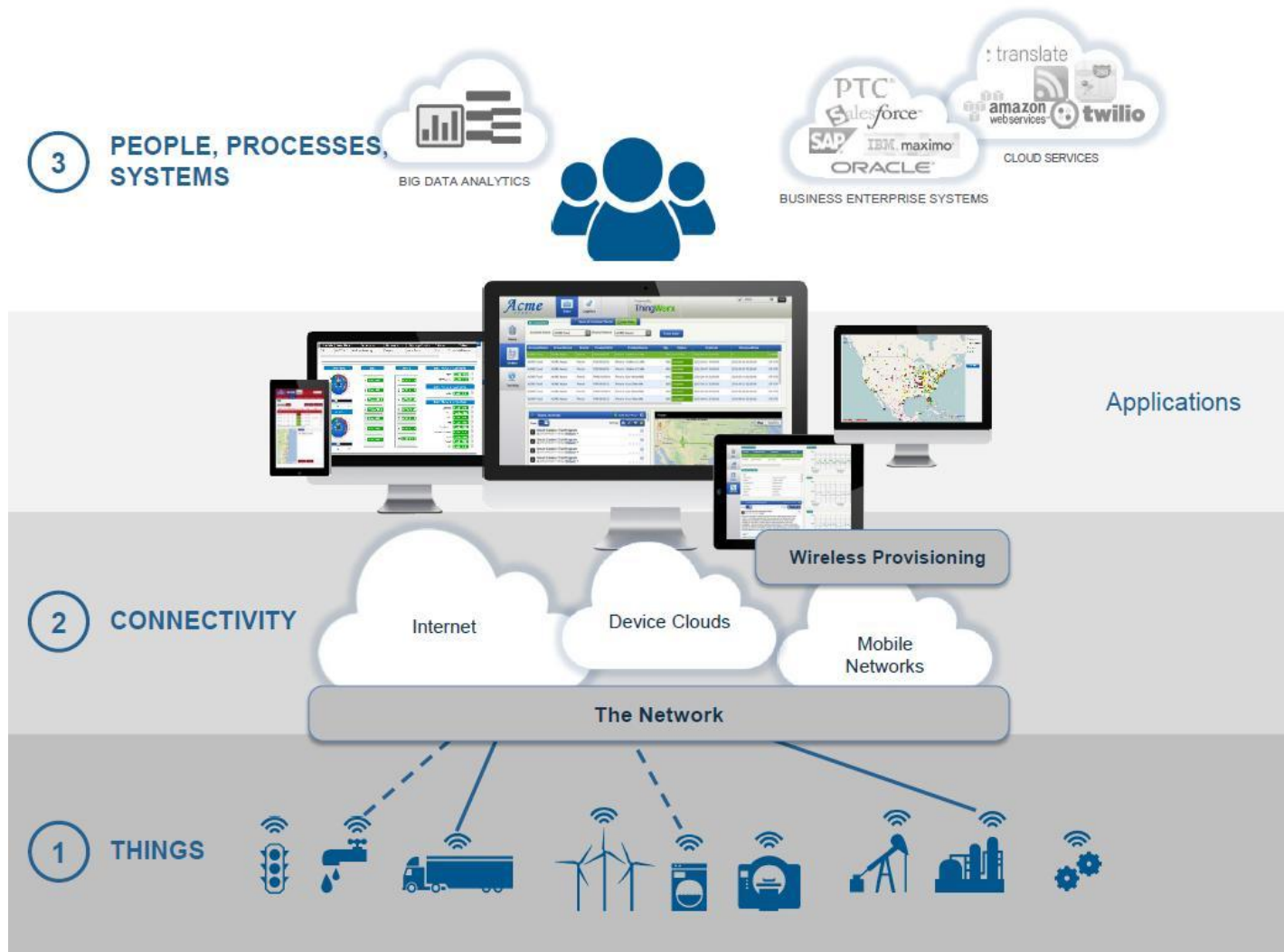
evolution of AI and analysis algorithms : Machine learning, Deep learning, Neural Networks,...

efficient and accessible infrastructure : HPC, distributed storage, SQL & NoSQL databases,

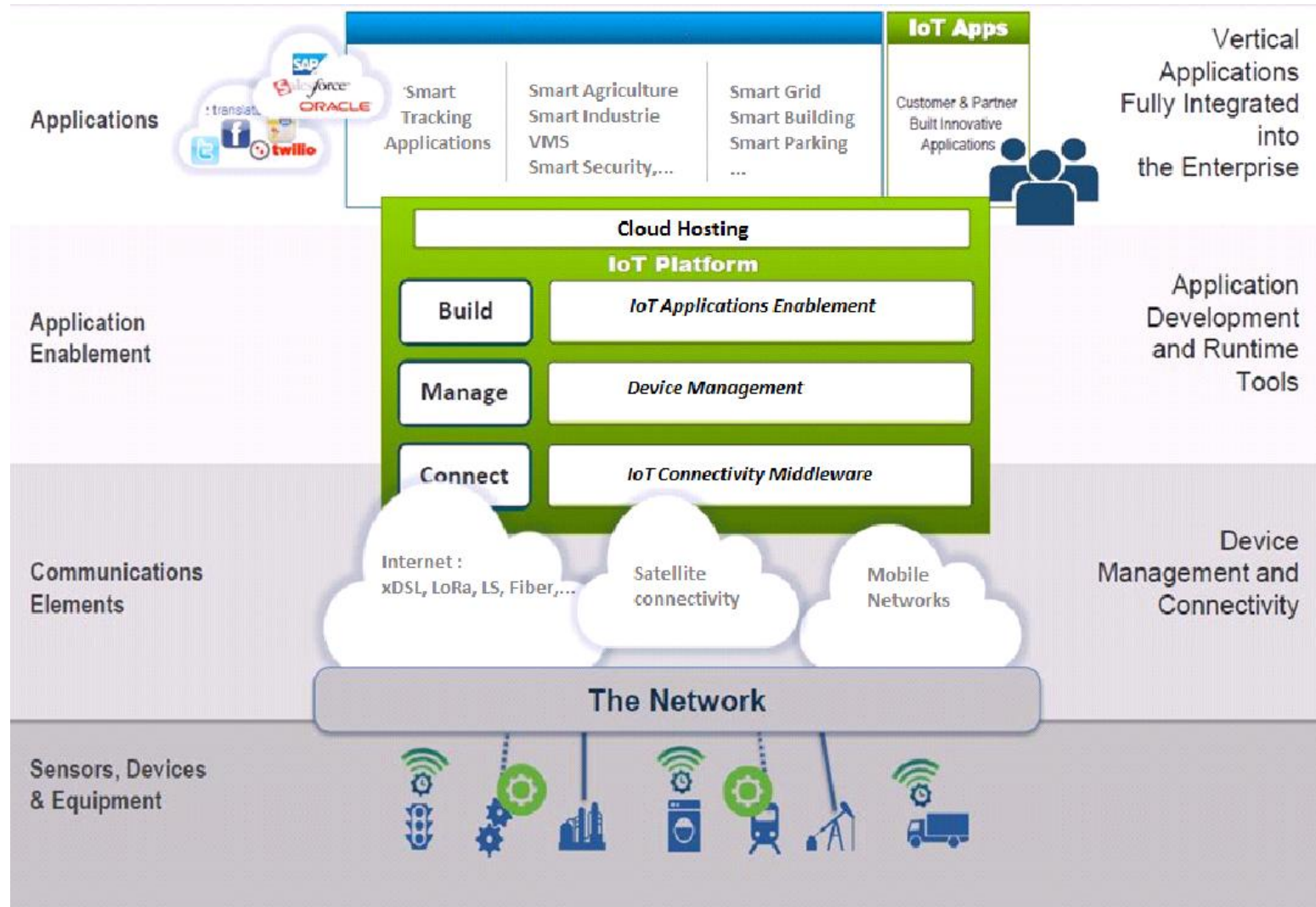
What is IoT (Internet of Things) ?



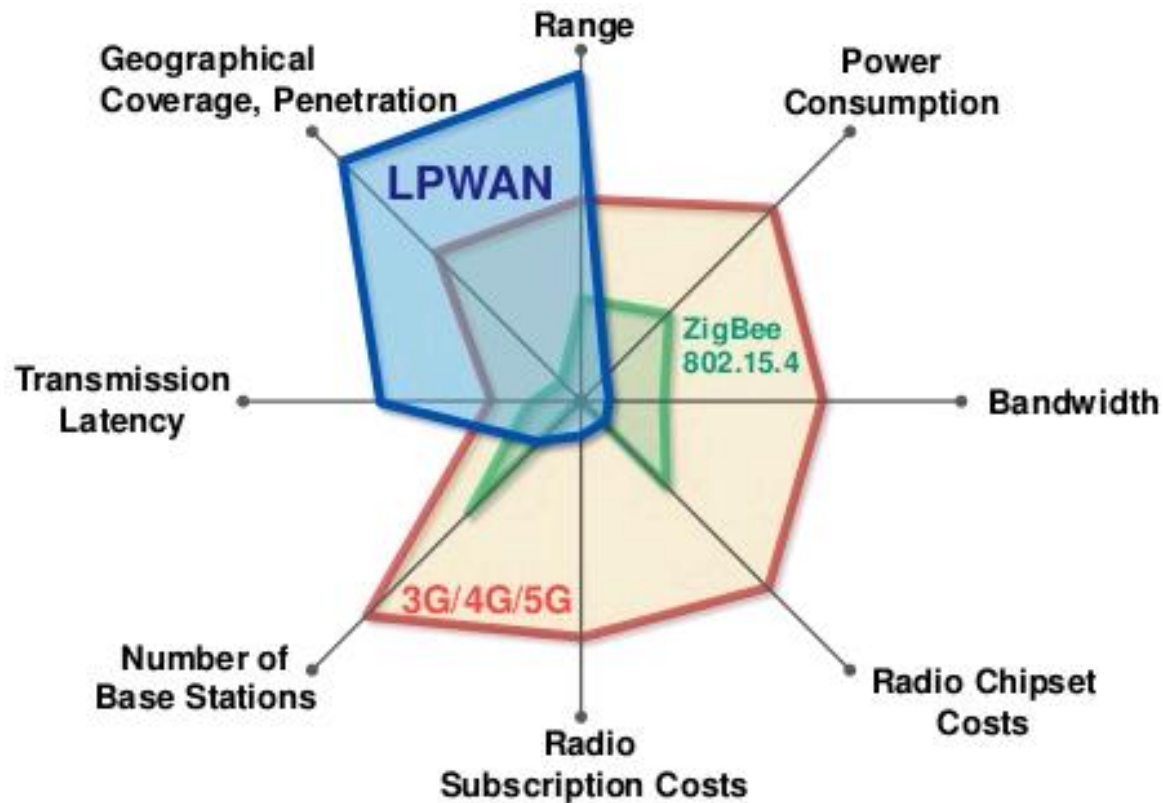
What is IoT (Internet of Things) ?



What is IoT (Internet of Things) ?



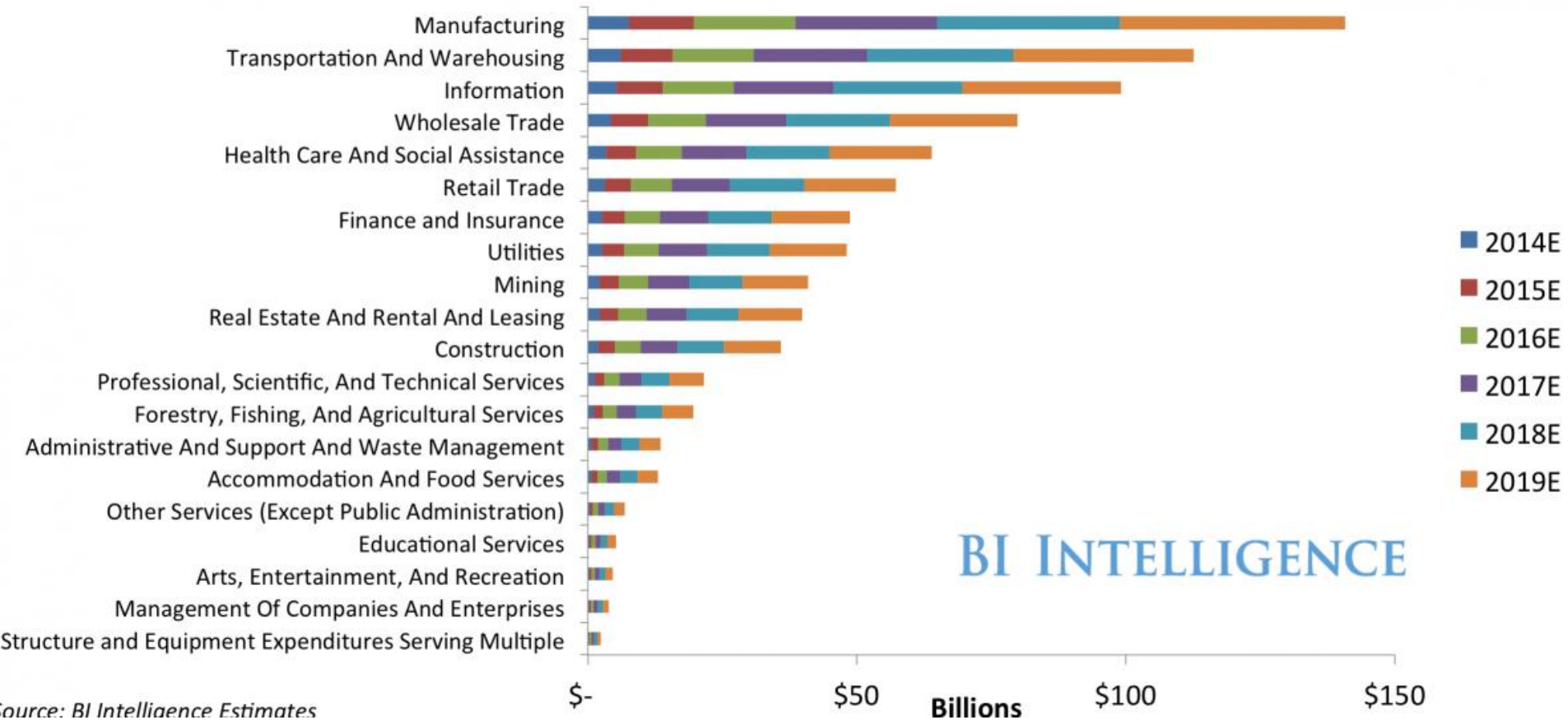
What is IoT (Internet of Things) ?



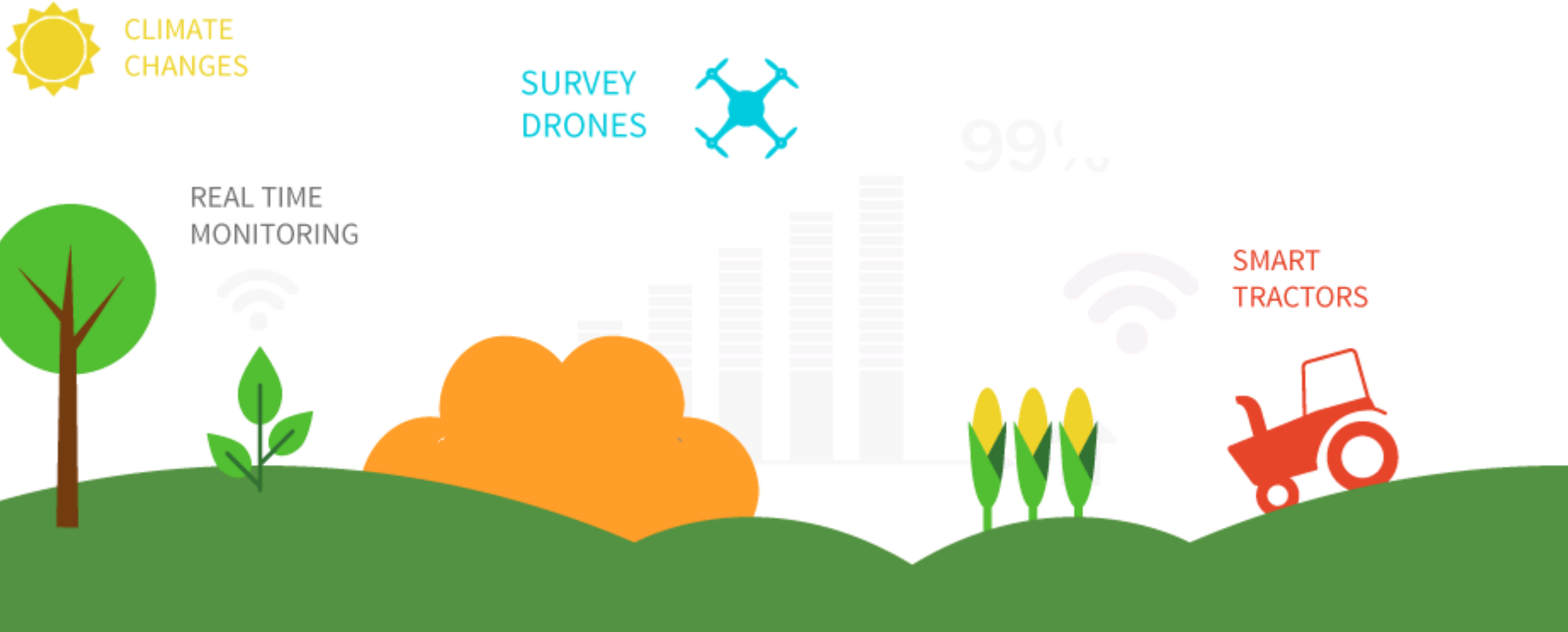
Simple, performance, cheap = massive adoption

What is IoT (Internet of Things) ?

Investments In IoT Solutions By Industry

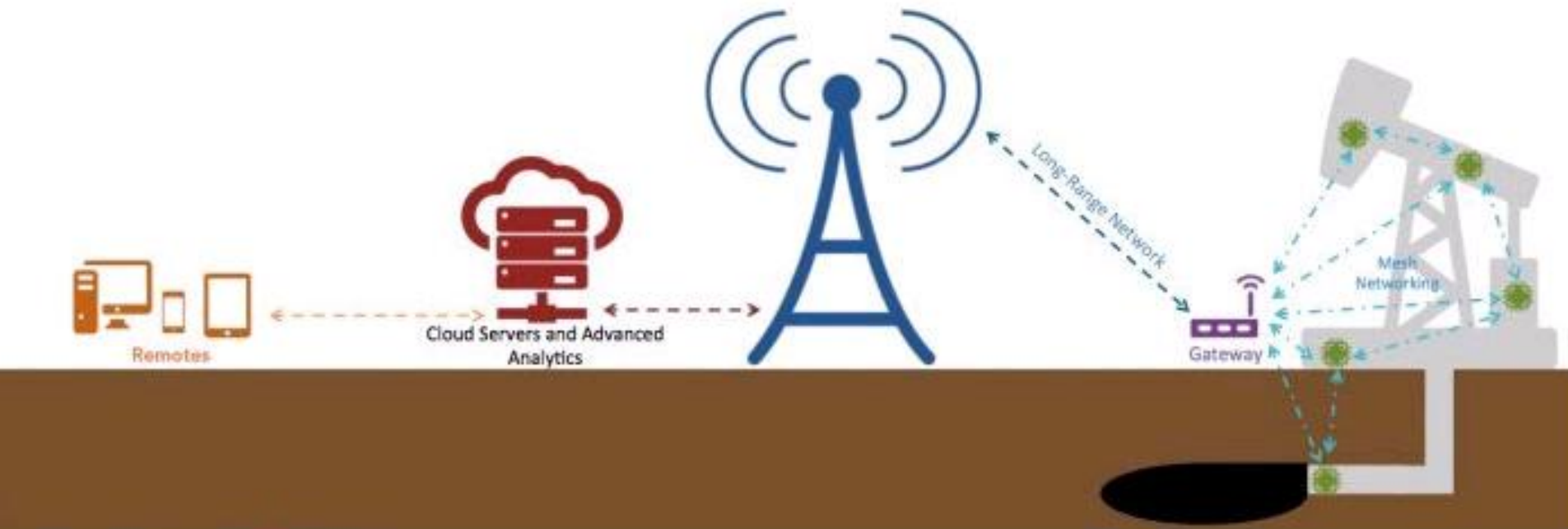


What is IoT (Internet of Things) ?



Agriculture and Farming : Drones for Field Monitoring, Machines for routine Operations, Soil Monitoring sensors, Water Management, Climate changes

What is IoT (Internet of Things) ?



Oil & Gas: security and fire detection, pipelines monitoring, Asset tracking & equipment monitoring, Expanded supply chain, automated replenishment

What is IoT (Internet of Things) ?



Utilities : Smart metering (Gas, Electricity and Water), Smart Grid

What is IoT (Internet of Things) ?



Environment: Temperature & humidity sesoring, Nuise & pollution measurement, Water quality measurement, Flood prevention

Big data & IoT... are Improving The Quality Of Urban Life

“If technology can’t help its people achieve happiness, then there is no reason for technology to exist”

said Theo Veltman, the innovation manager for the City of Amsterdam, on April 2018 at a summit in London.

Big data & IoT... are Improving The Quality Of Urban Life

How Internet of Things influence our daily life ? Some exemples :

Smart Home : smart refrigerators keep track of all the items stored in your fridge. It can sense when your grocery stock runs low or any item's expiry date is over...

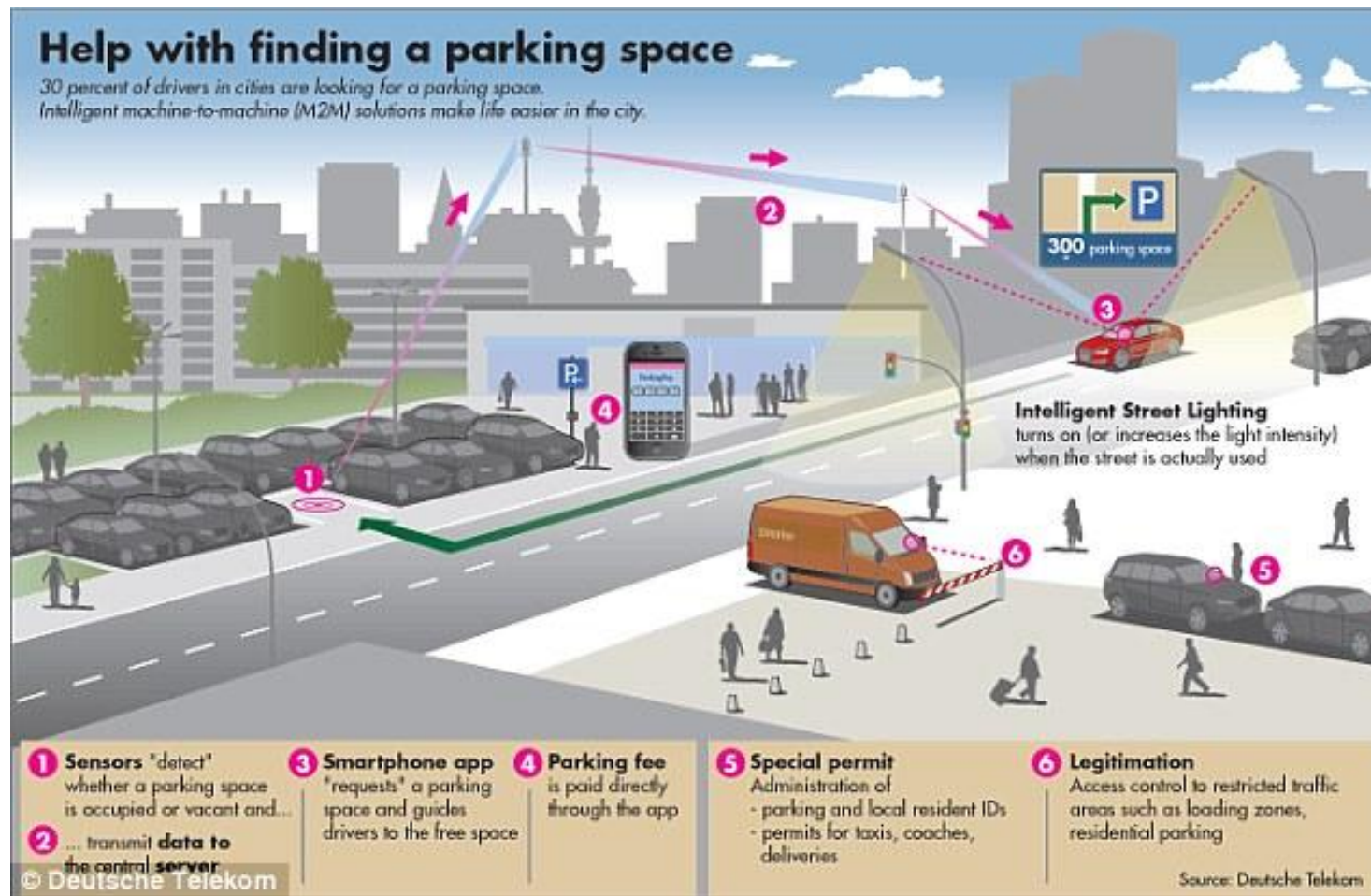
Reducing Air & Water Pollution : people can monitor the pollution level of a particular place through smart devices and take actions according to the data.

Improving Personal Health : we can track everything with IoT connected vitals-tracking wristbands. we can check the blood sugar level and monitor heart condition via a smartphone application for exemple.

Managing Energy Consumption : The lighting and thermostats, powered by the internet, can go through your habits and create the optimum setting according to your day to day life. These appliances can also sense when nobody is in the home and automatically turn off to minimize the electricity waste as well as your electric bill

Big data & IoT... are Improving The Quality Of Urban Life

Other exemple : Smart Parking & Traffic



Big data & IoT... are Improving The Quality Of Urban Life

Other exemple : Smart Parking & Traffic

Easing Traffic Congestion : Data from the Intelligent Transportation Society of America shows that 30% of all traffic congestion in cities results from drivers looking for parking spots.

Improving Air Quality : By lessening car exhaust emissions, this also improves the air quality. German conglomerate Bosch is working with Daimler on an alternative system that uses sensors in cars to track vacant parking spots

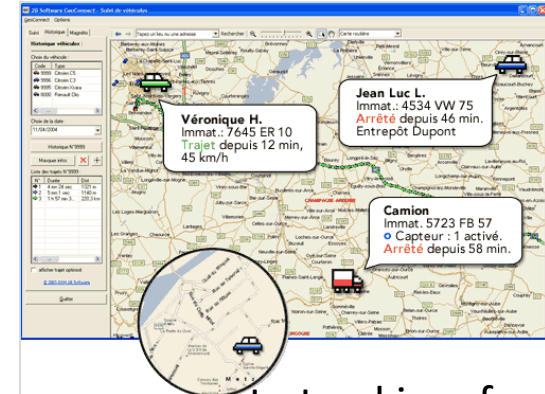
Optimizing Traffic Flow by deploying sensors at intersections. The sensors can count vehicles and pedestrians, and eventually, the system learns to intuit traffic patterns with Big Data and Machine Learning mechanisms.

Big data & IoT... are Improving The Quality Of Urban Life

and many others applications...



better interventions by the public forces



Fleet management : tracking, fencing,...



Smart waste survey



better management of public transport

Big data & IoT... are Improving The Quality Of Urban Life

and many others applications...



Big data & IoT... **are improving life on our planet**



What about our planet ? Big Data can do for sustainability ?

In February 2015, Christiana Figueres, former Executive Secretary of UNFCCC, talking about how to face climate change, stated:

“This is probably the most difficult task we have ever given ourselves, which is to intentionally transform the economic development model, for the first time in human history”.

Big data & IoT... **are improving life on our planet**

- Climate change is happening and there is nothing that can refute its existence or its **increasing effect on human life on earth.**
- It has been identified that **human activity is the major cause** of this change as CO2 emissions have increased by almost 50 percent since 1990 !
- While a major part of this damage is irreversible, it is **still possible with the usage of a wide range of technological measures** to control the global increase in temperature...

How ?

Big data & IoT... **are improving life on our planet**

Understanding the operations through Big Data :

Big Data's potential impact on sustainability rests on its power to present a clear picture of the complete impact their operations are having on the natural world. Earlier this information was disbursed across different formats, locations and sites.

Assessing environmental risks :

An important application of Big Data is in assessing environmental risks that the world faces right now or may face in future. Many GIS applications participate on risk management like Aqueduct for Measuring and Mapping Water Risk.

Optimizing resource run-through :

Another big contribution of Big Data to the corporate world is its ability to help them optimize usage of resources. Small improvements in efficiency due to resource optimization can result in big savings.

Source : « Big Data And Sustainability », José de la Rubia, Policy Analyst/Economist OCDE, November 2016

Big data & IoT... **are improving life on our planet**

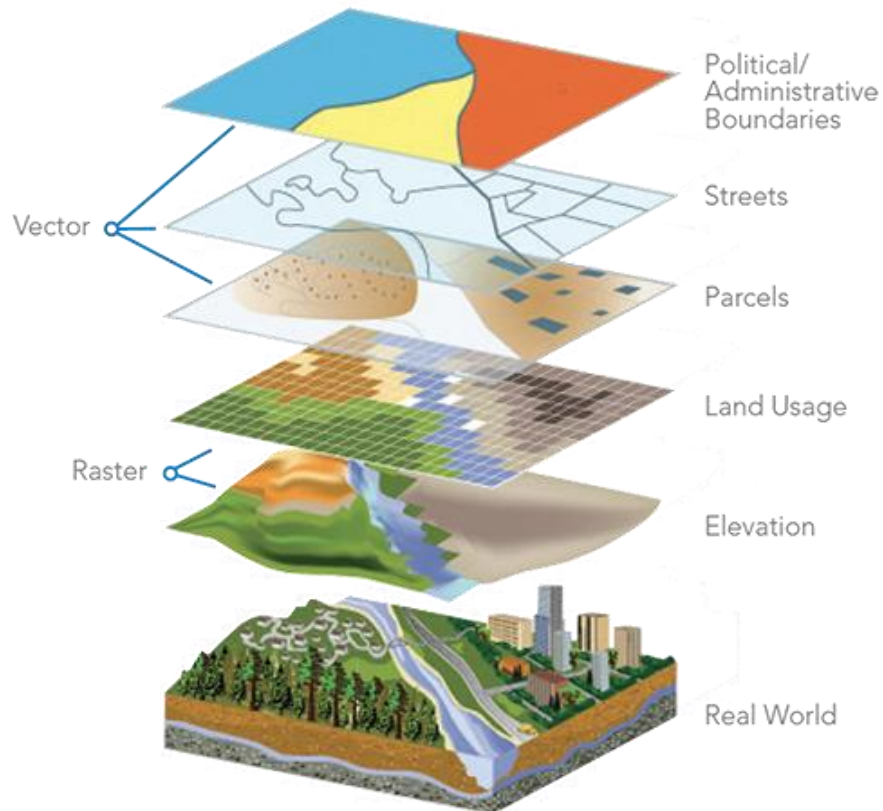
Big Data helps better regulation :

Big Data can also be integrated with government policies to ensure better environmental regulation. Governments can now implement latest sensor technology and adopt real-time reporting of environmental quality data.

Source : « Big Data And Sustainability », José de la Rubia, Policy Analyst/Economist OCDE, November 2016

Big data & IoT... are improving life on our planet

In addition to Big Data and IoT we need **GIS** (geographic information systems)



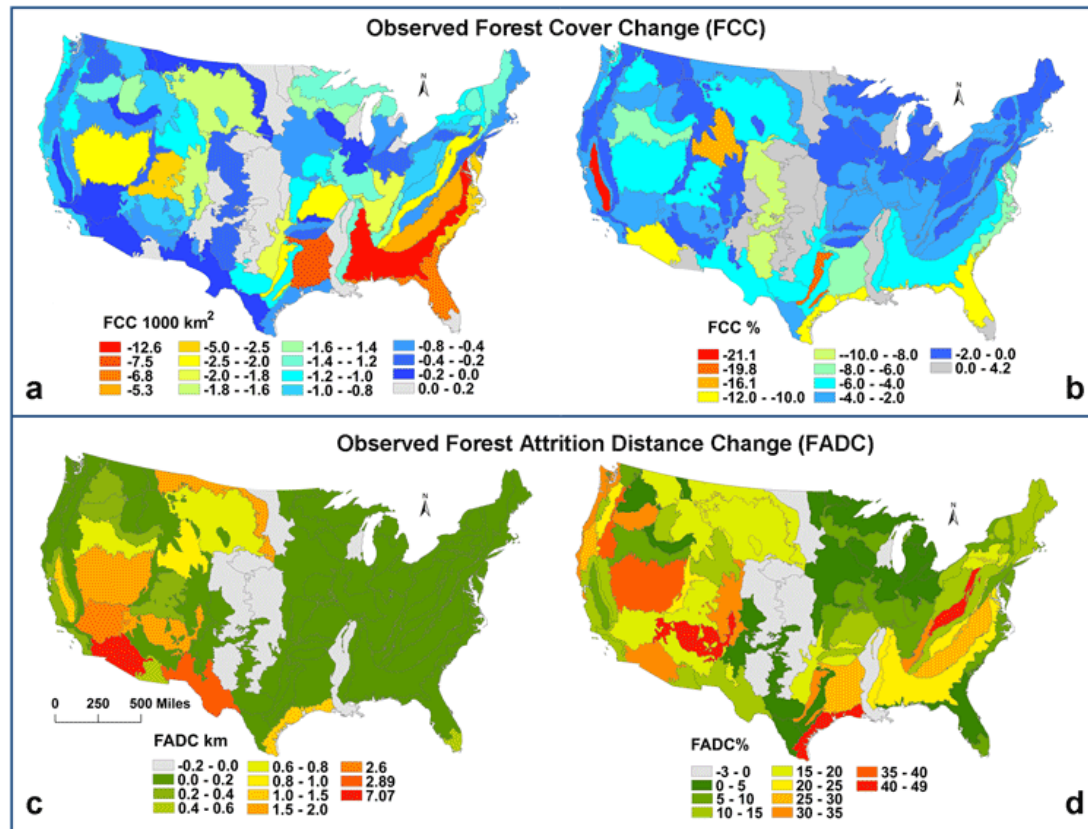
Typically GIS is used for handling maps of one kind or another.

These may be represented as several different layers where each layer holds data about a particular kind of feature.

Each feature is linked to a position on a graphical image of map

Big data & IoT... are improving life on our planet

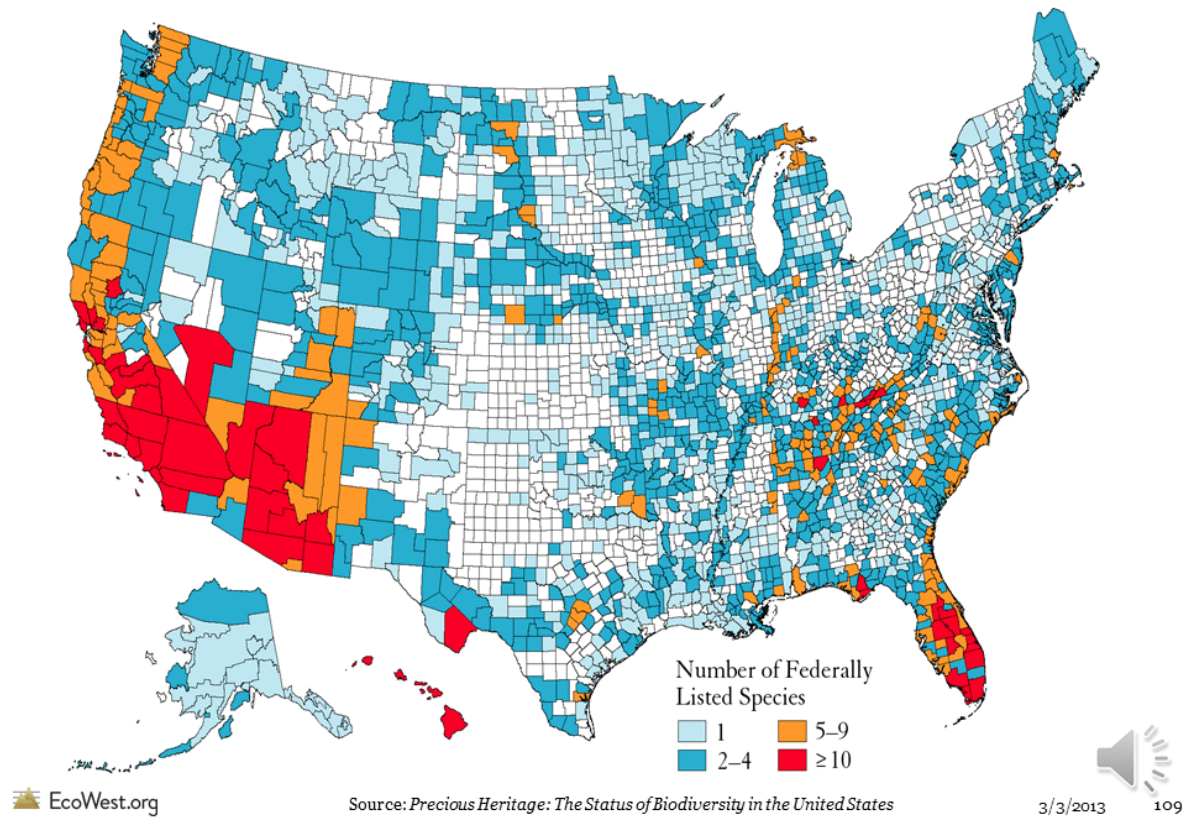
Some ways Big Data can protect our planet : Deforestation



Big data & IoT... are improving life on our planet

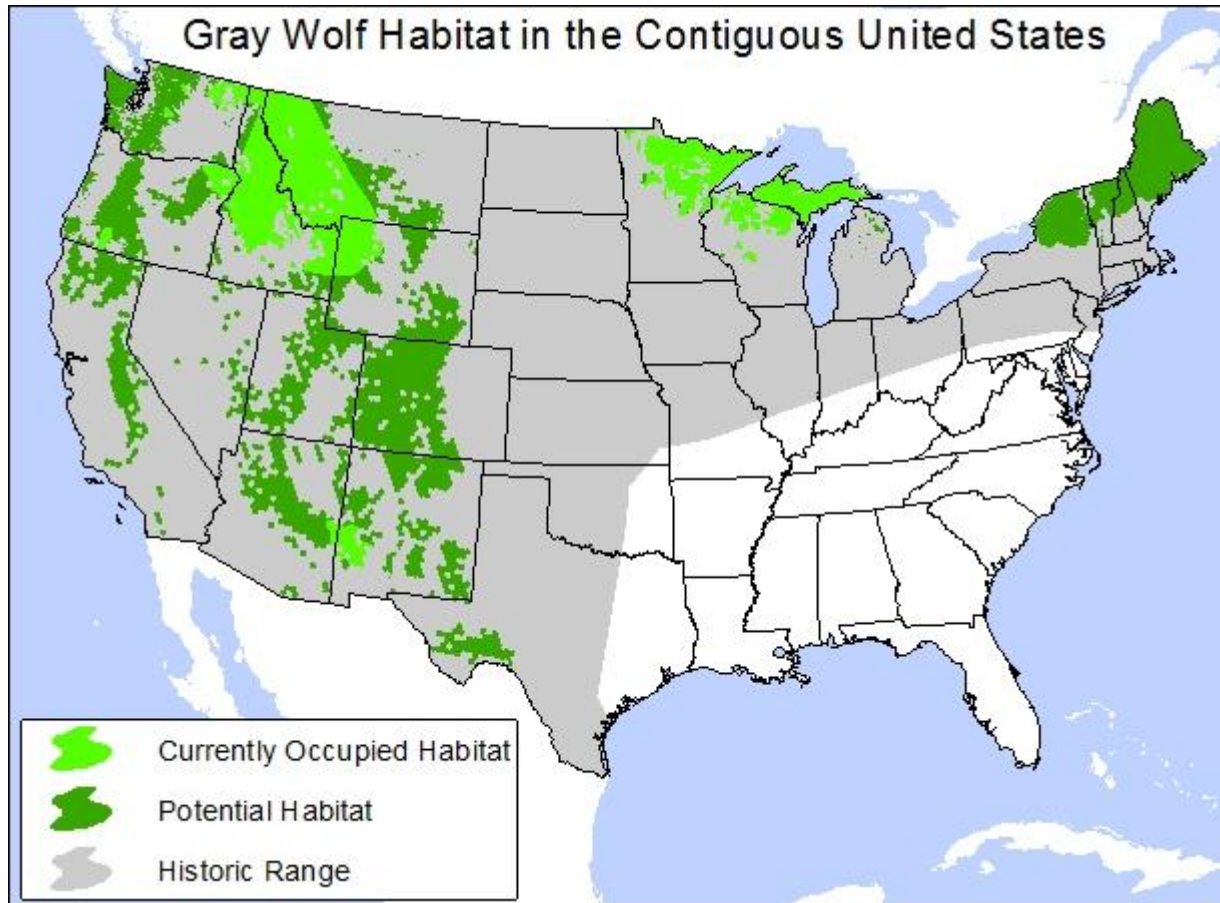
Some ways Big Data can protect our planet : Endangeres species

Endangered species clustered in subset of counties



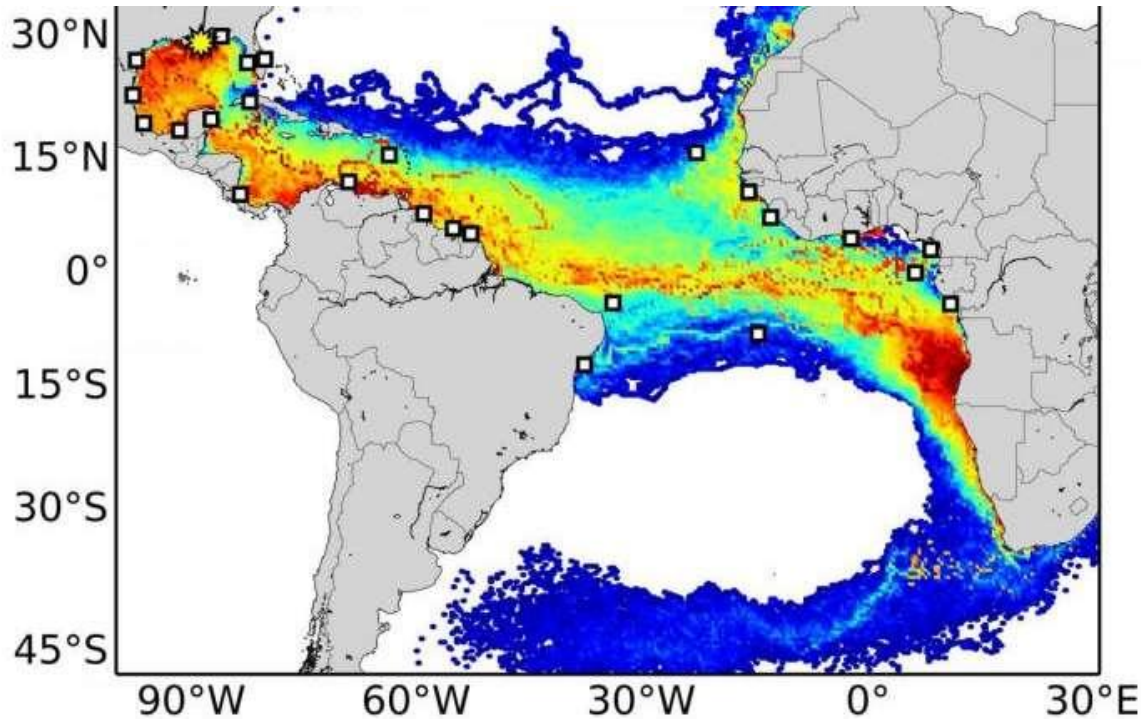
Big data & IoT... **are improving life on our planet**

Some ways Big Data can protect our planet : Deforestation



Big data & IoT... **are improving life on our planet**

Some ways Big Data can protect our planet : Oil Dumping

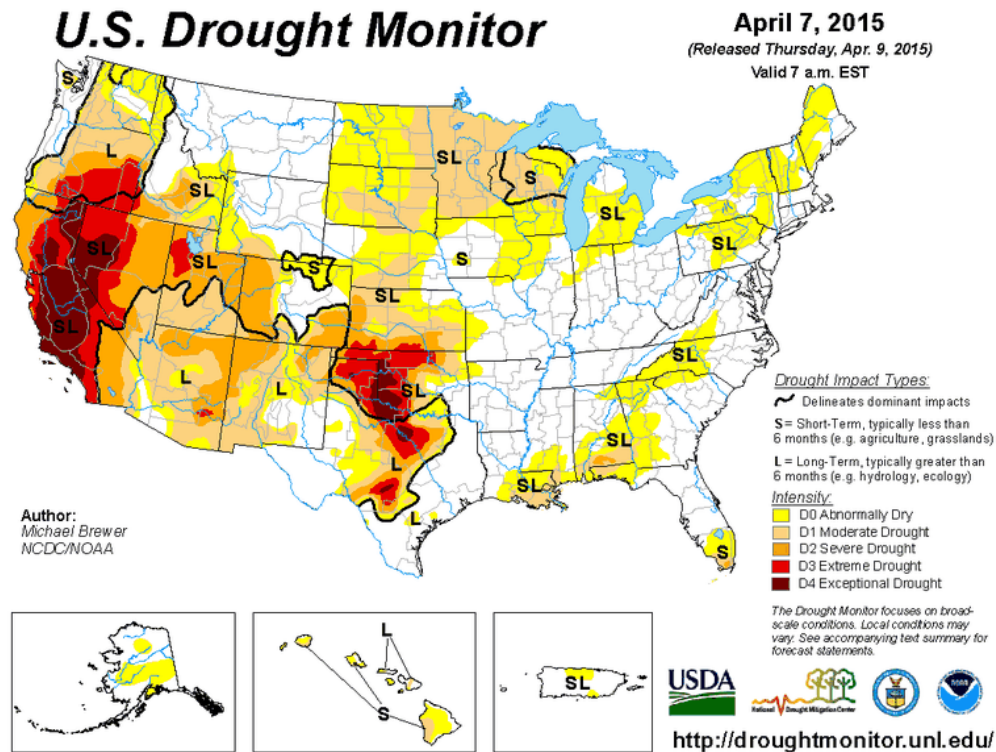


Investigation of the impacts of the Deepwater Horizon oil spill on sea turtles.

Source : Phys.org

Big data & IoT... are improving life on our planet

Some ways Big Data can protect our planet : residential Water Waste



This topic is especially relevant for those in the West, especially California, battling through a drought. Too many residents use too much water for watering lawns and gardens

Our challenges next years... complex and complicated....



Our challenges next years... complex and complicated.... But

I place a bet on technologies (Big Data analytics, Internet of Things, Geographical Information System,...) to help scientists and engineers of today solve problems of tomorrow and make the development of human race more sustainable and environmentally friendly

and people have a better life

**the technology is
universal and global
but the solutions are
specific and local**

How Designing the Future

Remember :

- technology is not the target, technology is a tool**
- Sustainable economy is political and strategic problem...**
- Some choices accelerate social fracture !**
- Focus in your specific requirements and innovate**

And build local and regional ICT champions....

The smart building case



the smart building case

Some of Vincent Callebaut Architectures smart cities projects



What is this city ?

Nasr city, Cairo

the smart building case

Some of Vincent Callebaut Architectures smart cities projects



What is this city ?

Brussels

the smart building case

Some of Vincent Callebaut Architectures smart cities projects



What is this city ?

Paris

the smart building case



what wrong with this cities?

These cities are smart, sustainable,... **but they seem to be the same !**



Which one is sustainable ?

Which one is intelligent / Smart ?

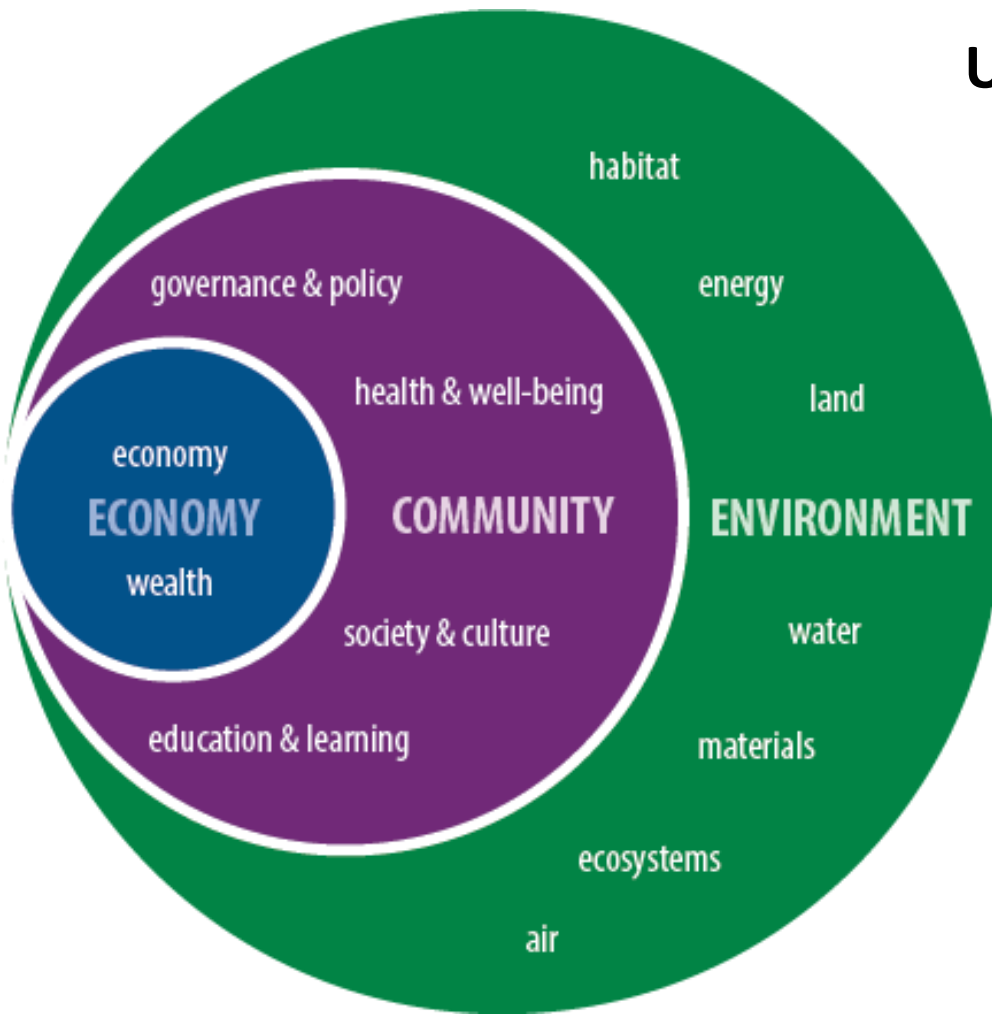


the smart building case



which of these cities look like Cairo?

the smart building case



Universal isn't always sustainable

we don't need to build a new city to be sustainable !

technology has the power to be invisible and integrated.

Preserve existing culture.

Enjoy and protect your wealth, your difference , what you are.

in the sustainable word there is culture, history, identity...

it's part of our goals to reach better life.

Conclusion

The technology is ready, powerful solutions exists, and growth is for now.

take profil of technology to resolve your specific problem while participating to universal goals (UN, World Bank,...)

you could improve better people's lives TOGETHER

Thank you for your attention