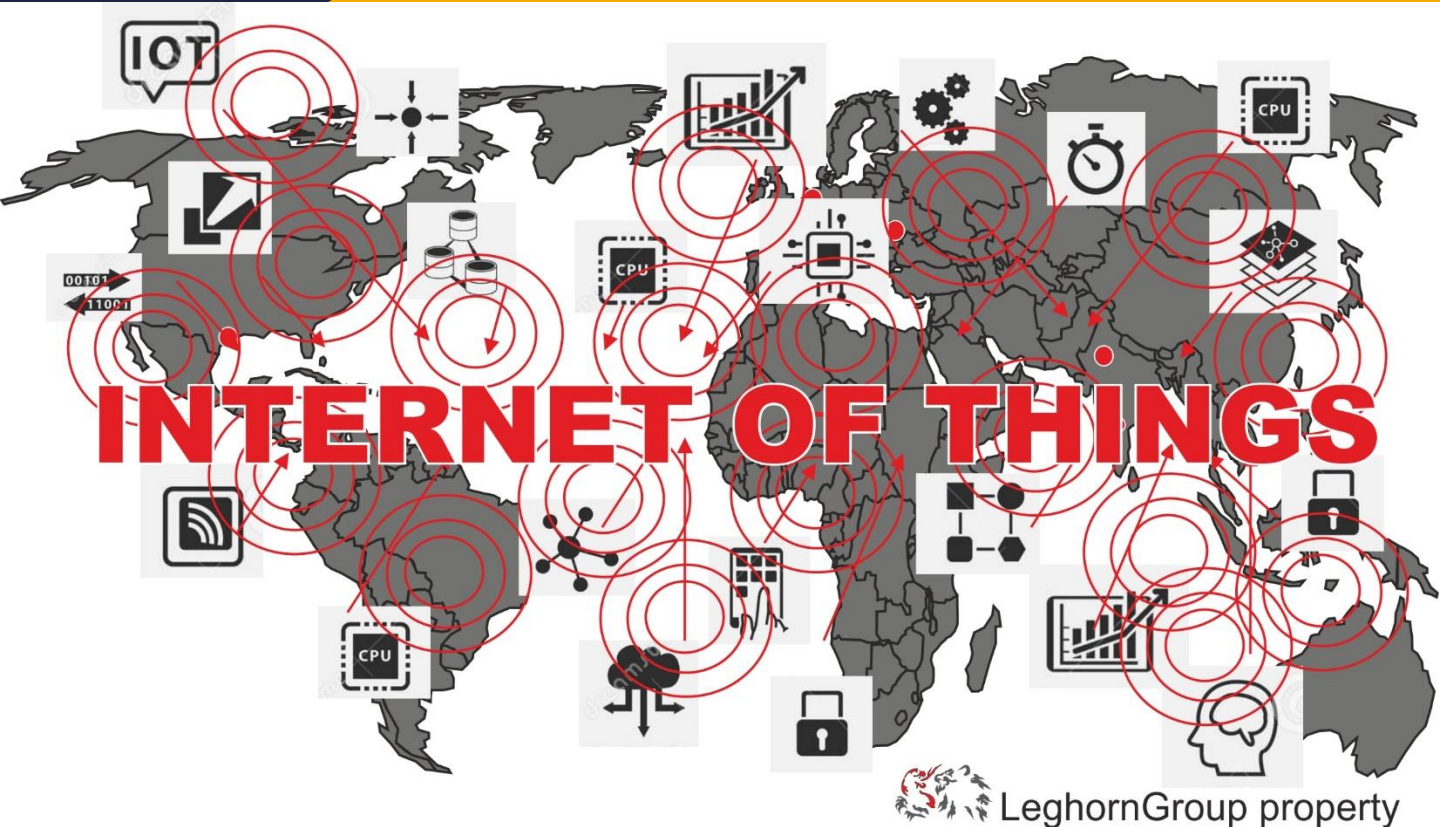


2008



AND TRANSPORT & LOGISTICS (PAPER LESS)

PROTECTION- CONTROL- IDENTIFICATION – TRACKING



WHAT IS THE INTERNET OF THINGS?



1. What is the Internet of Things? The expression Internet of Things (IoT) refers to the ability of extending the power of the Internet beyond computers and smartphones to a whole range of other things, processes and environments.

By combining these connected devices with automated systems, it is possible to gather information, analyse it and create an action. E.g. air conditioning systems, electrical appliance, camera, fitness sensors, seals for container etc.



WHICH THINGS CAN BE CONNECTED TO THE NETWORK?



2. Which things can be connected to the network? Everything can be connected: computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

Here below some examples:

Plants: throughout sensors that check their need of water.

People: for their remote control of biological parameters.

Animals: throughout a sensor that tracks its location.

Container: throughout RFID seals for tampering prevention.

3. What is the purpose of lot? There are several billion objects that are connected in the world throughout this new technology and the main purpose is to make life simpler.

Here below some examples:

- **Our watch can remind us that we have fixed an appointment and can check if we keep to schedule.**
- **Sensors placed on the parking stripes can detect if there is a car parked or not.**
- **The packaging of a medicine will be able to tell us if we are taking it as described in the general instructions.**
- **Cars can be engaged in a continuous dialogue with the environment, improving security for the car driver and simplify some daily tasks.**



Currently, thanks to lot, it is possible to save energy consumption by using smart thermostats which are connected to the Internet. They learn your family's routines and will automatically adjust the temperature based on when you're home or away, to make your house more efficient and help you save up to 20% on heating and cooling bills.

In fact, currently lots of people turn on the heating or air conditioning before coming back home.



HOW MANY OBJECTS ARE CONNECTED?

4. How many objects are connected? Currently, there are more than 8 billion objects connected and they will turn 25 billion within 2020.



HOW WILL THE INTERNET OF THINGS AFFECT THE ENVIRONMENT?



5. How will the Internet of Things affect the environment?

Thanks to the Internet of Things production processes and economic performances can be optimised and lead to a reduction of both pollution and resource consumption.

E.g.: public lightening can limit 40% of the power consumption.

In the farm field, automatically getting information about the soil moisture can tell farmers exactly when their crops need to be watered, based on temperature, weather conditions, season etc.



WHAT RISKS ARE TO BE CONSIDERED IN A WORLD OF CONNECTED OBJECTS?

6. What risks are to be considered in a world of connected objects?

The main problem of the Internet of Things concerns data and privacy protection. There is a high risk of losing control of what we are sharing on the net. In fact we are almost living in a world where objects are linked with sensors and are able to share information on our habits or even on our state of health.

SUPREME DICTATOR?



An example? If our fitness smart wristband stores a poor performance, we could even be contacted by a company that produces food supplements.

Or a financial institution could check our state of health and decide whether or not to concede a mortgage.

How about Nest Smart Thermostat of Google?

It knows the weather forecast of the location and its sensors are able to count how many people walking past and their habits.



WHAT RISKS ARE TO BE CONSIDERED IN THE INTERNET OF THINGS?



Problems and risks needs to be taken into account.

Every sensor used is able to collect data on our lifestyle habits. How many time do we walk past the thermostat? These sensors perfectly know how we manage temperature in our house, at what time we turn on the heating etc, and are able to share these information on a platform.

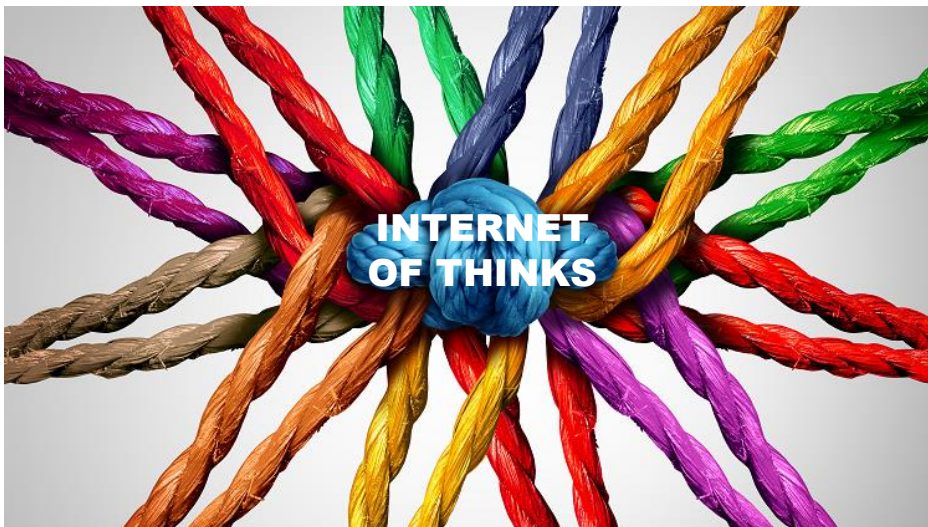
A regulatory framework is needed to establish the owners of the information gathered with lot and the rights and obligations of all the parties involved.

So, in other words, the risk that our private life shall fall into the public domain is very high.

WHICH SECTORS WILL BENEFIT MOST FROM THE DEVELOPMENT OF THE INTERNET OF THINGS OVER THE MEDIUM TERM?

7. Which sectors will benefit most from the development of the Internet of Things over the medium term?

The energy and transport sector will benefit most because the Internet of Things will bring:



- an optimisation of energy consumption, reporting energy waste and failures.
- an improvement in handling of goods or people, choosing the most suitable routes depending on traffic conditions.

Currently, this creates considerable and measurable savings for economic operators.

8. The Internet of Things involves ethical implications?

Yes, it does and some of the decisions that these connected objects take could have very serious consequences.

Here is an example:

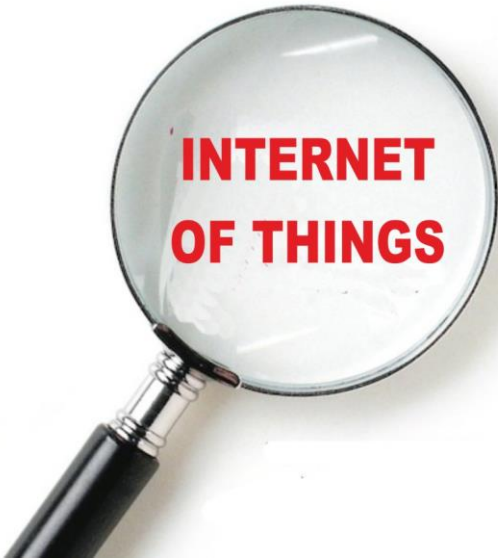


If a self-driving car heads towards the pavement while lots of pedestrian are walking in order not to strike a child that is crossing the road, what is the best decision it can take?

Moreover, who will be responsible for this decision?

Will the programmer who has created the management system be responsible for it? Or will it be the car manufacturer who has decided to use that programme?

THE INTERNET OF THINGS IN TRANSPORT&LOGISTICS APPLICATION



Cargo security and tracking has become increasingly significant in the logistics industry which involves a higher security in the supply chain and transport management.

The Internet of Things brings a considerable added value in increasing the supply chain level of visibility and control. E.g.: the traceability of a container via mobile or satellite network is set to rise by 67% a year.

Concerning container transport, in this field it is required a system that allows both the management and optimisation of logistics flows in the supply chain (in ports, terminal and interchange points) and the control of the integrity of the container.

RFID seals strongly contribute to provide additional information that were once unthinkable:

- a) Unused seal
- b) Closed seal
- c) Opened seal or tampered seal

It is thus clear that the technology of the Internet of Things can contribute to monitor the different assets.

Using RFID tags, e-Seals or GPS for identification purpose is the less expensive and more efficient solution the market can offer.

The adoption of new technology is based on solutions that take into account these systems together with the intent of ensuring security, traceability and savings.

THE INTERNET OF THINGS IN TRANSPORT&LOGISTICS APPLICATION



Smart tags, temperature sensors, barcode and RFID labels are among the Internet of Things solutions offered by LeghornGroup.



These solutions can be applied to lorries, vehicles that transport people, goods and much more.



Automatic readers (in the case of RFID), handheld scanner or laptops can acquire data and send them via Wi-Fi or 4G to your back office.



Data can be reviewed by using an efficient and low-cost cloud. Once the data gets to the cloud, software processes it and then might decide to perform an action.

THE INTERNET OF THINGS IN TRANSPORT&LOGISTICS APPLICATION



**CABLELOCK
ANTITAMPER
High security RFID
seal
ISO 17712:2013**

The inspection of the integrity of goods.

An additional requirement concerns the inspection of the goods integrity, often carried out by checking the integrity of the container.

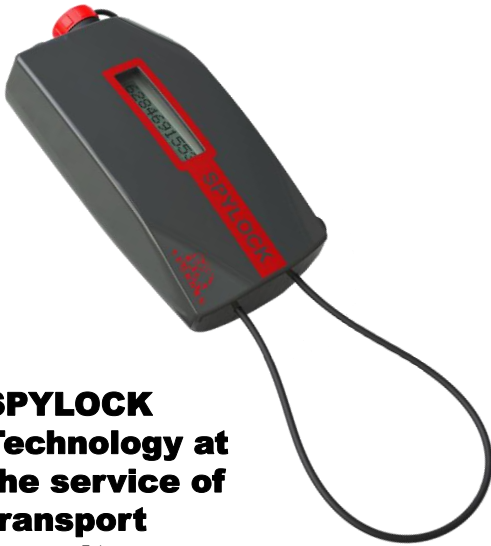
It is clear that the technologies of the Internet of Things have a great importance in contributing to the remote monitoring of flows and assets, providing a series of information useful to their management and optimization.



**RFID
ULTRADESTRUCTIBLE
LABEL**

This is possible through the identification (via active RFID or barcode), the localization (via GPS), the monitoring of the assets (via electronic seal or sensors) and their communication (via Wi-Fi or GSM/GPRS).

THE INTERNET OF THINGS IN TRANSPORT&LOGISTICS APPLICATION



SPYLOCK
Technology at
the service of
transport
security

The adoption of these solutions combines security, assets protection together with the possibility to track and monitor vehicle along the supply chain.

Radio frequency automatic identification grants the access to port areas to trailers that transport container without checking paper-based documents (paperless Management System).



E LOCK GOLD:
Monitoring
electronic system
for lorries

- Speeding up *gate-in/gate-out operations* (6 times faster)
- Increasing security thanks to an unique ID (impossible to clone).
- Avoiding manual controls and human mistakes.

General e-mail: info@leghorngroup.com



LeghornGroup – Italy
www.leghorngroup.it

LeghornGroup – U.S.A.
www.leghorngroup.com

LeghornGroup – Belgium
www.leghorngroup.be
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LeghornGroup – Spain
www.leghorngroup.es



LeghornGroup srl

34/36, Via degli Arrotini - 57121 Livorno Tuscany Italy

Ph: +39 0586 406376 - Fax: +39 0586 407621

www.leghorngroup.com - info@leghorngroup.com

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