

Alexis SEITÉ assignment 1

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University of Wales Trinity Saint David

Service logistics assignment

Subject : Using case studies critically evaluate the application of asset tracking technologies in the movement of goods and people.

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Introduction

Mankind is currently witnessing a revolution in it's way of living, there are deep changes in the way people are thinking as technologies evolve and improve. Since then, men had to travel for days or weeks to cross a country and they now can do it in a day. Information has seen an even more impressive change because it can travel almost instantaneously halfway around the globe. And these changes made people more impatient than before because we can know in real time all kinds of informations.

That change of state of mind can partially explain why tracking technologies have such a success with people (private like professionnall) and therefore why there are various different tracking methods develop.

Tracking is a service that allows a person to see on a map where a package is through various technologies such as RFID, GPS etc... but also the path it took to get where it currently is. This service is offered by carriers most of the time as an option to the customers for an extra charge or for themselves when moving goods from a warehouse to another to check if the truck follows the right route for exam.

In this assignment, i am going to build a classification of the different existing tracking technologies and i'm going to try to highlight their strengths and weaknesses through case studies and an analysis of the various informations available.

The different tracking systems used in transport

RFID – Radio Frequency Identification

Definition :

RFID is a tracking technology originally developed and used by the British Army to identify the planes that entered their air space. It was originally called IFF (Identify Friend or Foe) and then had its use spread to the surveillance of nuclear sites for example. Then in the 1980s, the passive RFID found its way to the cattle industry to tag the animals and from then it had an exponential growth to all kinds of domains like transport.

RFID tracking can be divided in 3 categories :

- Passive RFID is a tag that is put on the package and that responds to a signal that you send him by sending back a signal containing various informations about itself.
- BAP (Battery Assisted Passive) or Semi-active RFID is a tag that works like a passive but has a battery and uses its battery to have more signal range than the passive (100m at best).
- Active RFID is a tag that has an internal battery and uses it to constantly emit a signal when a passive only sends a signal when he receives one. The range of the signal of an active RFID tag is (like BAP) approximately 100m.

RFID today is probably the most used tracking technology as it is the go to technology in logistics for tracking pallets in a warehouse, identifying a cow etc... the uses of the RFID are almost limitless.

Case study

An example that features RFID tracking is the project that Romain and a few colleagues of my previous diploma in France. The project was called Qualhumet and consists in collecting school supplies and funds to send those supplies to other schools but in Tunisia by sea. Their job was firstly to collect the supplies and then to organise the entire transport of the container from Quimper in France to its final destination which was Hammamet in Tunisia. For the transport, the container featured a tracking system which allowed them to track the container all the way through the transit from the website called Marine Traffic. On that website they only had to enter the code of the container that the carrier sent them when borrowing the container to see on the map where it is and where it has been through

The container was equipped with an active RFID that constantly emitted signal to a hub on the ship that then redirected the signal to other devices to finally arrive on Marine Traffic.

Analysis SWOT

Strengths : - The 3 types of RFID tags allows users to adapt the technology to a lot of situations and needs

- The passive RFID tag is simple and reliable
- Passive RFID tags are cheap as well (0.10\$ per tag) which explains why it is so widely used in warehouses as they only have to invest in a few expensive readers and then tag every merchandise with very cheap tags.
- They have a long life span as they don't have batteries
- All RFID tags are reusable  14
- RFID chips can resist water unlike bar codes which are printed on paper.

Weaknesses : - Passive and semi-active RFID tags need an exterior actor to be used as they need to be « stimulated » by a device that sends and receives signals

- RFID readers are expensive (\$10 000 to \$20 000) which makes it a big investment for companies when implementing this technology into their logistics.
- Active RFID tags are pretty expensive as well (\$20-25 per tag) which makes them more scarce than the other two RFID tags.
- The range of signal can be limited for semi active and active RFID tags

Opportunities : - The improvement of batteries' lifetime for active and semi active RFID tags could greatly benefit this technology as the life span of one of these batteries is 3 to 5 years now

-Decrease of the price of RFID emitters and receivers as production techniques and components evolve and costs decrease.

Threats : - the fast evolution of technology can come up with a new system cheaper or easier to implement, making this technology obsolete. That's why despite the fact that it is probably the most common tracking technology, there has to be investments to improve the system constantly.

GPS – Global Positioning System

Definition :

The GPS or Global Positioning System is a technology that uses the U.S.A's satellites (there are 30 satellites in total) to track all kinds of devices around the world. It is used to track cars, trucks etc... This technology works as following :

- The satellites emit signals that contain their own position and the time it was emitted.
- The devices on the ground when they receive 4 of these signals then are able to calculate their position.

This technology is the most common one to track vehicles as today every vehicle has a beacon by default. This makes it particularly useful for road transport companies because they can track all of their vehicles on a map. That way, they can manage their flows, manage incidents, check if the driver respects the regulation on rest time etc...

On a domestic hand, as almost every modern car is equipped with a GPS, people use this technology to know where they are going with a application that is already installed and ready to use.

Case study

There is a company in France called Mesguen, it's a road transport company that transports vegetables and other various refrigerated goods (notably in the U.K). I had the opportunity a while ago to visit their agency in Saint Pol de Leon near my home town and discover how a road transport company works. During this visit, one of the most remarkable places was the truck managing room. A room in which managers have a large screen displaying a real time map with all the trucks of the company on it. All the trucks are equipped with a GPS beacon which allows the personnel to manage the different flows like the routes the drivers take, if they had an incident, ... It also makes it useful when they make contracts with their customers because they can see where the truck is going to be unloaded and therefore if a truck drives to a certain city and unloads there, they can manage to find a contract from that city to another to avoid having a truck rolling empty.

Mesguen isn't the only company to use this technology, a lot of road transport companies, when they reach a certain size, invest in such a system because all operations are centralized in one place which therefore facilitates management because all operators work together

SWOT analysis

Strengths : - Free to use for car users as every car has a GPS beacon by default when bought and there isn't any subscription to pay to use that beacon.

- For companies, you have the option to rent the service to avoid big investments (\$20 to \$30 per month)
- Doesn't need an expensive receiving device
- It is an accurate technology that has from 3 to 10 meters radius error margin

Weaknesses : - GPS devices consume a lot of energy as they have to constantly do calculations of position from the signals it receives. It also consumes a lot of energy on comparing its position to deduce on which road the vehicle is on. On most of the GPS devices, the autonomy of the batteries often don't exceed 12 hours

-GPS signals are affected by obstacles like trees, tunnels etc... so it's not always reliable depending on the environment.

Opportunities : - The improvement of technology may increase even more the accuracy of this technology or its ability to receive signals under obstacles. This is the project of the Australian Government who recently invested 224 million in the improvement of the accuracy of the satellites as it could have some big positive impact on industry. "This opens the door for a whole new wave of applications in intelligent transport, utilities, smart cities, emergency services and construction, as well as for mining and agricultural surveying where it's traditionally been used." (source : <https://www.rmit.edu.au/news/all-news/2018/oct/better-gps>)

Threats : - The U.S government owns the satellites used for the GPS system which makes it a risk in case of diplomatic tensions or if they want to increase the prices of the service it would have a big impact especially in poorer countries.

-Some people can access to the datas of beacons that aren't secured properly.

QR Codes or Quick Response Code

Definition

The QR code or Quick Response Code or even Flash code can be considered as an improvement of the barcode and has been created in 1994 by the Japanese company Denso Wave. It was originally created to track the components of the cars in the Toyota factories. It was then released open source in 1999 for everyone to improve and use it.

As I said before, the QR code is an improvement of the bar code as it functions the same way but the bar code can contain only 10 to 13 characters when the QR code can contain a total of 7089 numeric characters and 4296 alphanumeric characters.

The QR code can also be used by more devices than the bar code which means it can be used in a lot more situations than the bar code which needs a special reader to be used.

Case study

As an example, QR codes nowadays are with RFID one of the most used tracking technologies in various warehouses. And for a fact, QR codes cover way more uses than RFID does. For example, I did an internship at the « Base de l'aéronautique Navale de Landivisiau » which is a marine base in Landivisiau, France that hosts the Dassault Rafale that land on France's plane carrier. During that internship, I had a mission to accomplish and to accomplish that mission I had to find a way to optimize the flow of entrance in stock. Therefore I first had to spend a certain time studying how the process works to then find a way to optimize it.

A technology that they used is a synergy between some QR codes that were on the different packages that they received and a software called SILRIA (Logistic informatic system of tracking of resources between armies). The goal of that software was to be some sort of database for all of the packages sent and received so everything is tracked and so they know by scanning a QR code on the package where it has been through to arrive to its destination. When the QR code is scanned and SILRIA recognizes the package, it automatically fills a big part of the receipt confirmation.

In this case, QR codes allow the French Marine to track efficiently the different packages they receive as well as filling some documents for them.

SWOT analysis

Strengths : - Big data capacity compared to similar technologies which means they can be used in a lot more situations as they have more possibilities than the others.

- QR codes can be read even with dirt on it which is useful in some industries where dust, dirt etc ... can make bar codes unreadable.

- QR codes have additional uses like directly creating a bill on a computer system by scanning it when bar codes only give a certain amount of information and don't allow such functions.

- QR codes can be used once or as many times as possible which can guarantee security of information

- QR codes can be either printed on metal for instance to be water resistant (but costing more) or on paper which costs almost nothing but can't resist as much.

Weaknesses : - QR codes are very often printed on paper which makes them vulnerable to the elements like water when RFID is a chip and can be insulated from the elements.

Opportunities :-The QR code is progressively replacing the remaining bar codes in companies which are getting obsolete due their lack of capacity compared to the QR code

-The QR code may also replace a lot of RFID tags as they need expensive signal readers to be used when the QR code doesn't need expensive devices.

Threats :-Badly intentioned people could use these codes to hide a virus in it so it contaminates the computer systems of a company.

Conclusion

To conclude, the new concept of tracking had a big impact on people private like professional, especially for businesses because they can know what steps the product or package has been through and in case of a lithe they can investigate the different steps of the supply chain to determine where a problem occurred.

But these technologies keep evolving and a lot of options are now available for businesses, each one with it's advantages and disadvantages. Some are easier to implement (like the QR code), some are more expensive (like the RFID). Some technologies have a better success towards companies like the QR code and RFID, some like the GPS have a better success towards private people as their cars are equipped by default with a beacon.

But with the speed at which technologies evolve like the accuracy of satellites for example, what opportunities can this evolution give in the near future ? Is there going to be a new revolutionary technology cheaper, easier... that will overcome all the others and dominate the « market » ? Only time and investments in research will tell us.

References

Ideas on the different tracking asset technologies available :

https://trackinno.com/2017/06/21/asset-tracking-technologies/?fbclid=IwAR3WhshtJXDdcC3Nzn766FE1A7aNQdr23DMZr39WnDVUeUD3O_Bhj5Y2U3U

Some datas like prices of RFID tags

<https://www.bastiansolutions.com/blog/index.php/2018/05/04/comparing-internet-of-things-iot-based-asset-tracking-technologies-rfid-vs-ble/?fbclid=IwAR1JM2ZXwhJIVoJd9dYfZSnn9T0DnamNFtDM-Viwl12zGvhrh3sx0zszDjc>

(in French) History of RFID and other informations

https://www.tribofilm.fr/la-rfid-guesaco/?fbclid=IwAR337TDAQVzh-OPg_7RUjGwZhumVzXYR1IadpYaENAOYd3kw1k3ZPD1V20

Informations about the GPS system

http://www.gpsports.com/gpsports_website/articles/GPS%20-%20What%20is%20it.pdf?fbclid=IwAR2ooPSaiSOeY-jvEGeKyvEwmTcusCX8wklOG-jSVIQazd_DuqWX7EyrGE

Source of the quote page 6 about investment in GPS

<https://www.scienceandtechnologyresearchnews.com/better-gps-opens-new-opportunities-for-industry/?fbclid=IwAR2-c0f0GSqWezc2RpnwJNgopy9hNjQ8QfxvsQrTHC1S1sdzcnPahpomb0>

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GRADEMARK REPORT

FINAL GRADE

43/100

GENERAL COMMENTS

Instructor

Using case studies critically evaluate the application of asset tracking technologies in the movement of goods and people.

Your submission should be in the form of a report with a target word count of 2,750 words (+/- 10%).

Assessment Criteria:

Critically evaluate the extent to which the logistics industry have adopted joined up information technology solutions with regard to the movement of goods and material

Word Count: 2497

Line spacing should be 1.5, not 1.0 as presented in the assignment.

Not the greatest assignment I have read, of RFID etal, your assignment suffers from lack of evidential support, in supporting the claims you have made within. There is some work which is similar to an assignment I had marked against another student, you need to be careful for the future that you cite that case study.

The literature available to research RFID etal, is considerable and the idea is that you research, acknowledge, understand, if you have carried out good research, in depth reading will generally lead to a good understanding of the subject matter and in turn will translate in to knowledge. This will easily be

then transferred into competent delivery within your assignment.

Your assignment does not come across a competently delivered piece of work, this is largely due to your reference material.

In terms of assignment flow, it does tell the tale of evolution of visibility in transit, which added value to the assignment.

There well may be a language problem in the interpretation of words, which may the assignment difficult to comprehend at times.

Your Bibliography [Reference] Section was light in content, internet based and not conforming to the Harvard conventions. The difficulties encountered by using internet referencing is in the main they have not been peer reviewed or been subject to academic rigor which provides no strength in its use within any assignment. Also you like of providing dates and times of access to the sites you have referenced means that they are unable to be truly validated, as internet sites can change or be no longer available.



Comment 1

Before then otherwise the sentence will not makes sense.



Comment 2

Where is your evidence to support this claim?



Comment 3

spelling: developed.



Comment 4

What type of map, paper electronic, through an app etc?



Comment 5

Would this be for their own vehicle or a third party haulier??



Comment 6

Third person speak only in assignments.

PAGE 3



Comment 7

Be careful in future I have seem similar if not the same words in another assignment I have marked very recently.



Comment 8

Royal Air Force



Comment 9

its



Comment 10

Your evidence to support this is???



Comment 11

Read only tag



Comment 12

Evidence?



Comment 13

This opening for your case study is almost identical to the wording on an assignment I have recently marked. You would be best advised for the future to cite this to avoid any potential investigation of copying.



Comment 14

Not so. Class 1 Tag. Write Once Read Only (WORM) Classes to 4 are re-writable.

LARAN (2004) A basic introduction to RFID technology and its use in the supply chain. - White Paper



Comment 15

Evidence????????



Comment 16

Evidence to support this statement????????????????