

Assignment 1

by Julien Andre

Submission date: 19-Nov-2018 02:56PM (UTC+0000)

Submission ID: 95028737

File name: 13541_Julien_Andre_Assignment_1_144098_608965003.docx

Word count: 2666

Character count: 16223

UNIVERSITY OF WALES TRINITY SAINT DAVID

Service Logistics

Assignment 1

André Julien

20/11/2018



PRIFYSGOL CYMRU

Y Drindod Dewi Sant

UNIVERSITY OF WALES

Trinity Saint David

SWANSEA - ABERTAWE

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

Content

Introduction:.....	1
RFID:.....	1
Application example: In a Library	2
GPS:	3
Application example: Why and when to use GPS trackers for fleet management in companies?.....	3
GPS indoor:.....	5
Open and Secure IT networks:.....	6
1) WMS.....	6
2) GIS	6
NFC:	7
Conclusion:	8
Bibliography:.....	8

Introduction:

In a networked world, information spreads everywhere without temporal or geographical obstacles. Similarly, in this globalized world, goods move faster and further. Logistics links the informational and physical aspects of the movement of goods. One of the major factors transforming the logistics of commercial companies is the increasing use of new information and communication technologies (NICTs), which leads to the development of new logistics organisations and profoundly changes the organisation of companies (purchasing, production, storage or distribution). This evolution is part of a fundamental movement linked to multiple causes such as the evolution of manufactured products, the tendency of companies to outsource activities that do not belong to their "core business" and the growing demands of consumers in terms of deadlines and quality of service. All sectors are affected by these developments, to varying degrees. However, what is the application of asset tracking technologies in the movement of goods and people? What types of NICTs exist?

RFID:

RFID technology (for Radio Frequency Identification Data) makes it possible to identify an object, collect and modify information about it and integrate this information into a database, all without human intervention. Composed of a reader and a tag, RFID uses radio waves to transmit data in a bidirectional manner, from the label to the reader or vice versa. This technology has many advantages. Indeed, it allows scanning products in mass without having to see or touch them and thus saves a considerable amount of time. RFID is mainly used in supply chain management (inventory tracking in the industrial sector, cold chain traceability in the food industry or even sanitary traceability in the pharmaceutical industry for example) or in supply management (containers, pallets...). These tags can also be used in the field of surveillance (anti-theft system recording the slightest movement of the objects).

Application example: In a Library

RFID technology therefore has several advantages since, unlike barcodes; the label and reader do not need to be too close to interact. In addition, an RFID tag (water, heat and wear resistant) can contain more information than a barcode. It can also be reprogrammed and reused, which is a major asset. Subsequently, this technology combines the functionalities of barcodes and electromagnetic bands, which reduces the number of operations during processing. Finally, it has been demonstrated that in the "Grande Bibliothèque" located in Montreal, RFID technology generates 75% fewer false alarms than the electro-magnetic strips previously used.

RFID is used in libraries to help perform four functions. First, **self-service loan/return** allows users to borrow and return their documents without going through the counter. The RFID system communicates with the ILMS (Integrated Library Management System) which automatically manages loan restrictions (age, loan limit, type of documents, etc.) and identifies the documents reserved upon return. This improves the flow of loan/return operations and increases transaction confidentiality. The client can thus borrow or return a document without presenting it to an employee and thus gain autonomy. The employee therefore has fewer manual tasks to perform, which reduces the associated musculoskeletal disorders. This reduction in manual tasks also frees up staff to meet the more complex needs of customers. This also allows several documents to be read simultaneously. However, this functionality depends on the ILMS of the library and the application used by the lending terminals.

Next, it's a really good technology for **security** reasons. Indeed, when lending, the status "Borrowed" is set on the label. At the exit of the library, the portal readers activate the label and confirm the status (borrowed or not borrowed) of the document. This improves the processing of documents that trigger the alarm since the employee working at the counter can remotely identify the status of each document thanks to his or her computer workstation. In addition, it helps prevent theft because the RFID tag can be hidden in the document or under its binding.

With regard to **shelf management**, it is possible to use a scanner that will read the RFID tag information on books located in a specific aisle without the employee having to scan them one by one by removing them from their shelf. This facilitates the shelf management by reducing the number of manual tasks to be performed, saving staff time.

Finally, RFID technology makes it easy to know the exact **location** of a document by geolocating it with a computer of an employee. This saves valuable time since it is not necessary to search a document for hours.

GPS:

The Global Positioning System (GPS) is a technological device that allows locating in real time any object or person equipped with it through satellite coverage. Thus, thanks to satellites and receivers also called GPS, a person can not only know where he or she is very precisely but also find his or her way to a place. This technology is therefore very useful to track in real time the route of any parcel a company or a customer ordered for example.

Nowadays, it is very easy to order an item on the Internet and this action is not that long: just the time to choose a product, pay and fill in the information that the issuer needs (name, address...). However, it is not easy to know exactly where our package is and especially when it will arrive. That is why the American carrier UPS has recently created a new service to complete its offer: Follow My Delivery. Thanks to the use of a GPS chip, this service allows any recipient, but also an issuer, to track parcel on a map in real time. Today there are many delivery solutions that are already in service or in the test phase. But when it comes to receiving a package at home with the famous "between 9am and 6pm" period, a real problem begins. We can't guess when our package will arrive and so we can't take the risk of missing even five minutes... Because of course, the delivery man will pass right through at that moment! UPS now offers the ability to track the truck that transports the package directly from a Smartphone or a computer, for example, which is really relevant.

Application example: Why and when to use GPS trackers for fleet management in companies?

- ✚ **For the safety of employees and goods.** In a so-called "at risk" zone for example (Seveso establishment, region subject to severe bad weather, difficult to access place...), it is possible to locate immediately to the nearest metre where the land resource is located and if it is in a vulnerable or damaged situation.

✚ **To protect against theft.** The GPS tracker is also an effective anti-theft device for all types of vehicles or goods (construction machinery, trucks, 2-wheelers, containers, etc.) and therefore makes it possible to quickly find lost equipment.

✚ **For the profitability of a company.** Indeed, a GPS tracker allows planning and checking the different trips to be made (deliveries...) which remove unnecessary or unjustified trips. This optimizes the distances covered and results in savings. It can also be useful to track vehicles in order to bill for transportation. For example, if a passenger or freight transport is carried out, it is possible, in an instant, to determine the exact cost of the journey to be invoiced to the customer.

✚ **For working time management.** If employees work independently or outside the company, it is necessary to determine their actual working time over a given period.

In addition, geolocation has other advantages such as:

✚ Check the temperature in a refrigeration compartment. This is very important because when there is food inside a truck, it must travel with a specific temperature without which it could be damaged (frozen food for example). That is why, thanks to a GPS chip, the sender and the customer have the possibility to ensure that the goods are transported in the best conditions.

✚ Ensure irreproachable service to the customer. Indeed, the customer can know in real time where exactly is or are his good(s).

✚ Obtain information from the tachograph (a device that records working, driving and rest times, as well as other driver activities). Indeed, there are special rules concerning the working time of a lorry driver, for example. As a general rule, the driver must drive for a maximum of nine hours a day and take a forty-five-minute break after four and a half hours of driving. Otherwise, if the regulations are not respected, the driver could lose all his driving licences (truck, car, motorcycle...) and the manager could pay a fine of several hundred Euros.

- ✚ Assign missions to the nearest vehicle, which saves a lot of time. In addition, the physical and information flows are then optimized to the maximum.
- ✚ Check the punctuality of interventions: for example, if a company's carrier is often late in delivering, this technology can help managers choose a more efficient alternative carrier.
- ✚ Track vehicles in real time and display trip history.
- ✚ Identify the drivers.
- ✚ Inform customers in real time.

It is therefore relevant for businesses to invest and equip itself with GPS trackers in a company in order to secure its merchandise, preserve the integrity of its employees, optimize trips and increase its profitability.

GPS indoor:

An indoor GPS positioning system (GPS indoor) makes it possible to find the position of objects or people in a space internal to a structure (buildings, houses...). Location is very important in everyday life. While GPS-based tracking is popular, its proliferation in indoor environments is limited. This is due to the poor penetration of GPS signals into buildings and the frequent lack of indoor location systems. The adoption of GPS by mobile phones, combined with Wi-Fi and mobile phone networks, has largely solved the problem of outdoor geolocation. However, this type of system cannot be used for geolocation in indoor spaces because it requires taking into account certain particularities such as the floors of a building. Nevertheless, localization has always been an active area of research, which has led to the emergence of many internal localization solutions. For example, to find our way around a shopping mall, we can use a wireless network called WLAN (Wireless Local Area Network). Customers will therefore be able to access this internal network and even locate objects on a kind of map of the store if this technology is coupled with RFID technology. This same device can be used in spaces such as airports, university campuses or hospitals, for example, which makes it easy for customers to find their way around. This will optimize the physical flow of people because they will not waste time trying to find where they are and where they want to go.

Open and Secure IT networks:

1) WMS

A WMS (Warehouse Management System) is an IT network designed to manage a logistics warehouse. The objective of a WMS is to manage stocks to prepare and ship customer orders. The WMS makes it possible to record physical flows (inputs, outputs), manage internal operations (packaging, kitting, etc.), and make administrative documents available (BL, transport receipt, etc.). A WMS must represent the warehouse as an assembly of storage areas (Accumulation, Rack...) containing customer account item references (potentially different). The physical flows (inputs / outputs) of an item in the warehouse are recorded in the WMS to be able to carry out an inventory at any time. That is why this type of computer network is really effective and relevant for managing the movement of goods in a company: the information is accessible at any time, which gives a better visibility of the physical flows generated each day in the business. Moreover WMS thus allows a maximum optimized management of stock flows, from the entrance to the exit of the warehouse.

2) GIS

A GIS (Geographic Information System) is a computer tool that combines geographic data and other types of information to create graphical representations, maps, etc. For example, a GIS helps public transport companies to make safe and informed decisions based on real information. In particular, it can be used to establish the actual distances travelled on foot or by car and not the estimated distance as the crow flies.

This technique can improve the accuracy of passenger flows, which will therefore help managers to organise bus lines according to certain criteria (distance, time, frequency, etc.).

GIS can be used to manage and analyze certain essential information such as:

-  Route planning and analysis.
-  Bus distribution and emergency response.
-  Automatic location and tracking of vehicles.
-  Planning and definition of specialized transport routes.
-  Inventory of bus stops and infrastructure.

- ✚ Facilities Management, Track Maintenance, Power System, Communications and Signal Maintenance.
- ✚ Accident reporting and analysis.
- ✚ Demographic analysis and path restructuring.
- ✚ Analysis of the user community.
- ✚ Transport planning and modelling.

NFC:

RFID technology, which has been used for a long time in industry, enables logisticians and manufacturers in particular to better manage and control their stocks. RFID technology is adapted to the general public with NFC (Near Field Communication), which allows secure data transfer and only works when the terminals are located at a short distance (about 10 centimetres maximum). NFC technology is already being used by various common public carriers to restrict access to their "network" to people who have a specific badge or smart card holders. This kind of contactless card operates in a closed system, requiring the transport operator to develop its own information system and requiring the installation of specifically adapted equipment. In France, a well-known example is the "Navigo pass" set up by RATP in 2006, which allows users to access all or part of the Ile de France public transport network depending on the type of subscription purchased.

Other more complex systems also exist in Europe, such as the Oyster Card in London, which was introduced in 2003 and allows a credit to be charged and then gradually consumed, taking into account the actual cost of each trip, calculated on the basis of the traveller's entry and exit stations. The investment required to bring a contactless card system into service is quite high, mainly due to infrastructure costs. However, on the one hand, the operator transfers part of this investment to the user, who often has to pay for the access card, and on the other hand, the operator saves money related to the dematerialisation of transport tickets. This technology is really effective in this kind of professional activity because it is easy to use (no need for cash) and allows the customer to easily access public transport. In addition, in the case of the Oyster card, people only pay the exact amount corresponding to their trip from point A to point B, which encourages them to stop using their car during their daily life.

Conclusion:

To conclude, we can say that real-time localization technologies are taking up more and more space in our society. People want to know exactly where they are and where they have to go, or they want to know the exact location of the parcel they ordered so they know when they will receive it. As this technology becomes more and more important over the years, we may see the emergence of more and more sophisticated localization technologies or updates to existing technologies in order to maximize the quality of service provided to the users. But as we push the research further and further, won't this one day affect our privacy?

Bibliography:

RFID technology:

https://www.cs.colorado.edu/~rhan/CSCI_7143_001_Fall_2002/Papers/rfid_intro_01593568.pdf

<http://www.ijcee.org/papers/306-E794.pdf>

RFID application in a library: <http://eprints.rclis.org/15253/3/RFID.pdf>

EETimes: https://www.eetimes.com/document.asp?doc_id=1278363

Howstuffworks: <https://electronics.howstuffworks.com/everyday-tech/location-tracking1.htm>

Techtarget: <https://whatis.techtarget.com/definition/GPS-tracking>

<https://searcherp.techtarget.com/definition/warehouse-management-system-WMS>

UPS: <https://www.ups.com/us/en/help-center/sri/follow-my-delivery.page>

Senion: <https://senion.com/indoor-positioning-system/>

Infsoft: <https://www.infsoft.com/solutions/basics/indoor-guide>

National geographic: <https://www.nationalgeographic.org/encyclopedia/geographic-information-system-gis/>

GrindGIS: <https://grindgis.com/blog/gis-applications-uses>

RMSomega: <https://rmsomega.com/products/warehouse-management-software-wms/>

NFC technology: <http://www.sacg.com.tw/sacweb/marcom/epaper/images/NFC.pdf>
http://paper.ijcsns.org/07_book/201202/20120216.pdf

Geotab: <https://www.geotab.com/fleet-management-solutions/>

GPS fleet management: https://www.fleetwiki.net/documents/white_paper.pdf

Assignment 1

GRADEMARK REPORT

FINAL GRADE

64/100

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..

This was a good assignment, although not referenced within as it should, it did meet in the main the requirements of the assignment.

It was well thought out and planned.

What lost marks within the assignment was the lack of the "critical analysis" requirement and proper referencing within. There was a lack of supporting evidence within the assignments to the claims you had made.

Word Count 2594

It is clear that you have knowledge and understanding of RFID technology and GPS systems and their uses which you ably demonstrated.

PAGE 1

PAGE 2

PAGE 3



Comment 1

Who stated that?



Comment 2

Says who!



Comment 3

Evidence?

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11
