



PROJECT

LYNX: THE ROAD SECURITY SYSTEM



INTRODUCTION TO ROAD SECURITY

TERRORISM THREAT

Since September 2001 (or 9/11 as it is commonly referred to), security has become a key issue of concern for governments worldwide and a significant number of measures have been taken to strengthen security in the transport sector. Many companies have now developed security projects in the following sectors:

Aviation Maritime; Border crossings; Road transport; Cash in Transit; Critical infrastructure protection; Counter-terrorism intelligence (including cyber security and communication); Crisis management/civil protection; Physical security protection; Protective clothing and many others.

The security threat on African roads has become commonplace since drivers, vehicles and cargo are increasingly exploited for criminal activities. The reason why road transport provides an alluring choice for criminals or terrorists is that a large percentage of trucks carry hazardous freight among which it is easy to conceal illegal items. Indeed, the transportation of dangerous goods is the most common security threat in Africa even though two directives have already been adopted in this regard; i.e. the carriage of all dangerous goods and the carriage of high consequence dangerous goods. Furthermore, the events of 9/11 and the subsequent terrorist attacks have highlighted an entirely new set of security issues in Africa.

African countries are responsible for controlling their own borders, and therefore, also security related matters mainly fall under their exclusive competences. Recently however, the Security Commission has acknowledged that a Security Environment may be necessary in the fight against terrorism, trafficking, drug smuggling, illegal immigration, organized crime and several other emerging security threats. With this in mind, the Commission has launched several security programs and actively supported security-related research projects.

With regard to the development of new security measures, it is essential to extend them to cover all modes of transport in terms of effectiveness. If one of various modes of transport fails to respect set security standards, it steals the basis of the overall security of transport infrastructure. Common policies to all modes of transport also avoid loopholes in the supply chain. The importance of road security is becoming more and more visible, and the European Union is expected to address new policy measures in the near future.

LYNX: The Road Security System

Due to the spread of terrorism in different countries, it is necessary to study a system that helps law enforcement officers to prevent terrorist attacks. In order to do this, we have developed a system for tracking, monitoring and responding to vehicles on the roads – “The LYNX Road Security System”

Benefits of the LYNX

LYNX is not an “item”. LYNX is a complete “system” and with this system, it will be possible to:

- Monitor and track which vehicle is on the road at any one moment.
- Compare the vehicle data within law enforcement officers and vehicle registration database.
- Respond to information received and if necessary in conjunction with the relevant authorities, proceed with disabling and or detention of the vehicle.

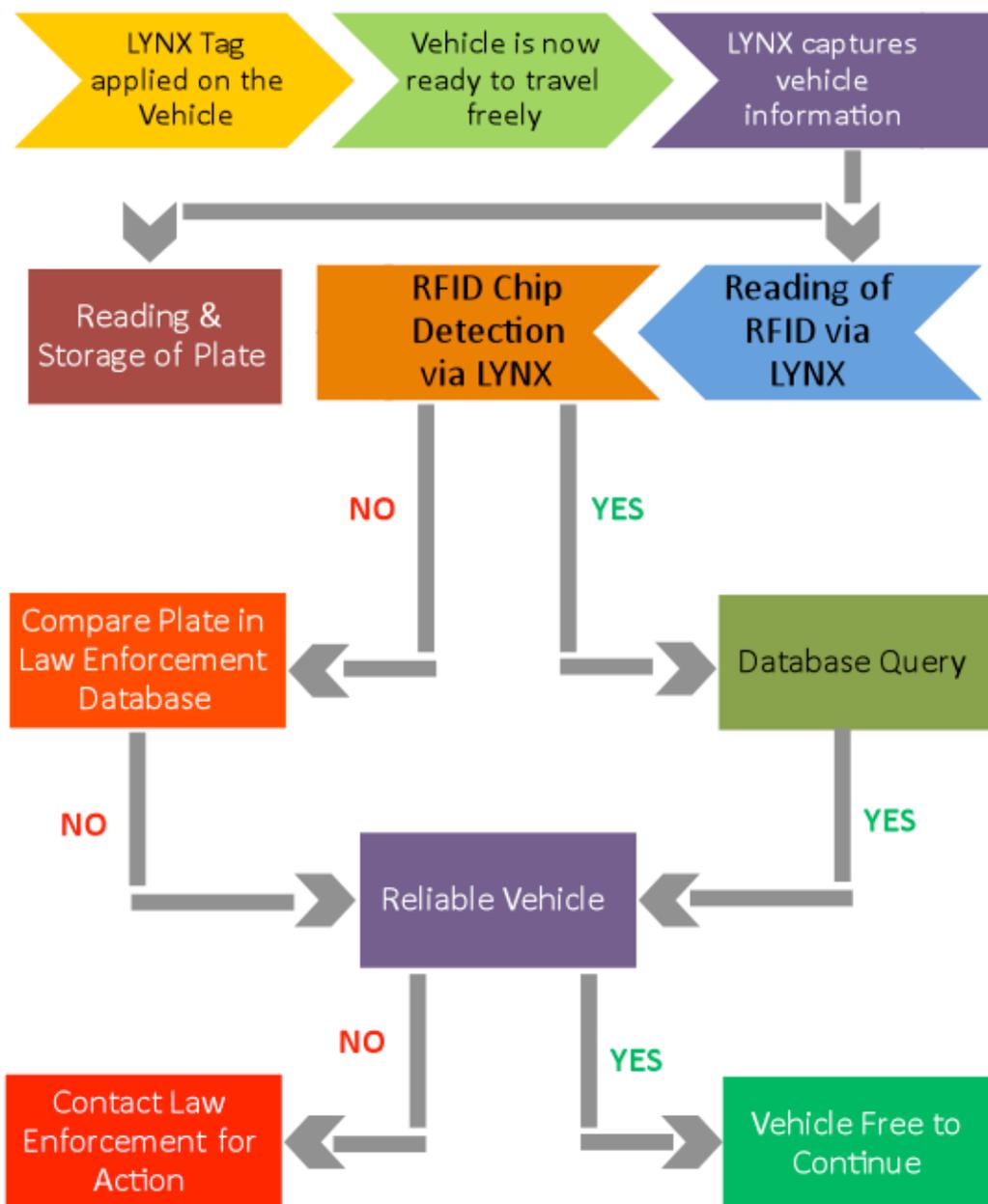


How the LYNX works

The LYNX system comprises a completely integrated system created from the following components:

- LYNX RFID tag
- LYNX RFID antennas
- LYNX RFID reader
- 3G/Wi-Fi router
- LYNX Server
- Server Backup
- LYNX Software

The flow chart below gives a graphic explanation on how the LYNX system operates



How Electronic RFID Works

Step 1

Vehicle is fitted with the LYNX RFID sticker on the windscreen.



High-speed camera



RFID tag

RFID reader

Step 2

As the vehicle approaches the LYNX antenna, the LYNX RFID reader captures data on the sticker.



Step 3

The LYNX RFID reader transmits the vehicle information via the lane reader to a central computer for synthesizing. If the vehicle does not have a RFID sticker, a high-speed camera captures its license plate and sends a query to the law enforcement authorities.



First the target vehicle is tagged with the LYNX RFID label, and after this the vehicle is authorized to travel across the road network within the country. At strategic places along the roads several radio receivers are located for detecting the license plate of the vehicle (a.k.a. tutor systems). These receivers are also equipped with the detection systems of the RFID tag. If the system detects the license plate but not the RFID tag, it will send a query alarm code for a double-check on the eligibility of the car with the database of the law enforcement authorities (police).



If the double-check confirms that the license plate is one of those that has been "authorized" despite the fact that the chip has not been detected (for example because of damaged chips or shielded chips), the system will delete the alarm code. There will be no further intervention in respect to this vehicle.

If on the other hand the double-check confirms that the vehicle is "not authorized", a call is launched to the nearest law enforcement authorities (police) patrol and/or directly to the central station to proceed with vehicle control.

DATABASE INTERCONNECTIONS

The database interconnections between LYNX, law enforcement authorities (police) departments and National Intelligence Agency authorities is of key importance.

LYNX can monitor all the steps of the vehicle in certain areas or at certain points of the customs in order to track the routes taken in order to defeat terrorist activities well in advance.

If the application of the LYNX tag could be made mandatory for all vehicles traveling within the country, this would give the authorities total control of all the incoming and outgoing traffic.

ALARM AND ALERTS SYSTEM

Alarm and Alerts system As explained earlier, LYNX is a complete system for security at all levels; As a system, LYNX also provides very interesting applications from the point of view of the types of alarms that it can generate and of the types of alerts that can be sent to users and to the law enforcement authorities (police).



The system is programmed to generate diversified alarms for different types of problems detected, for example:

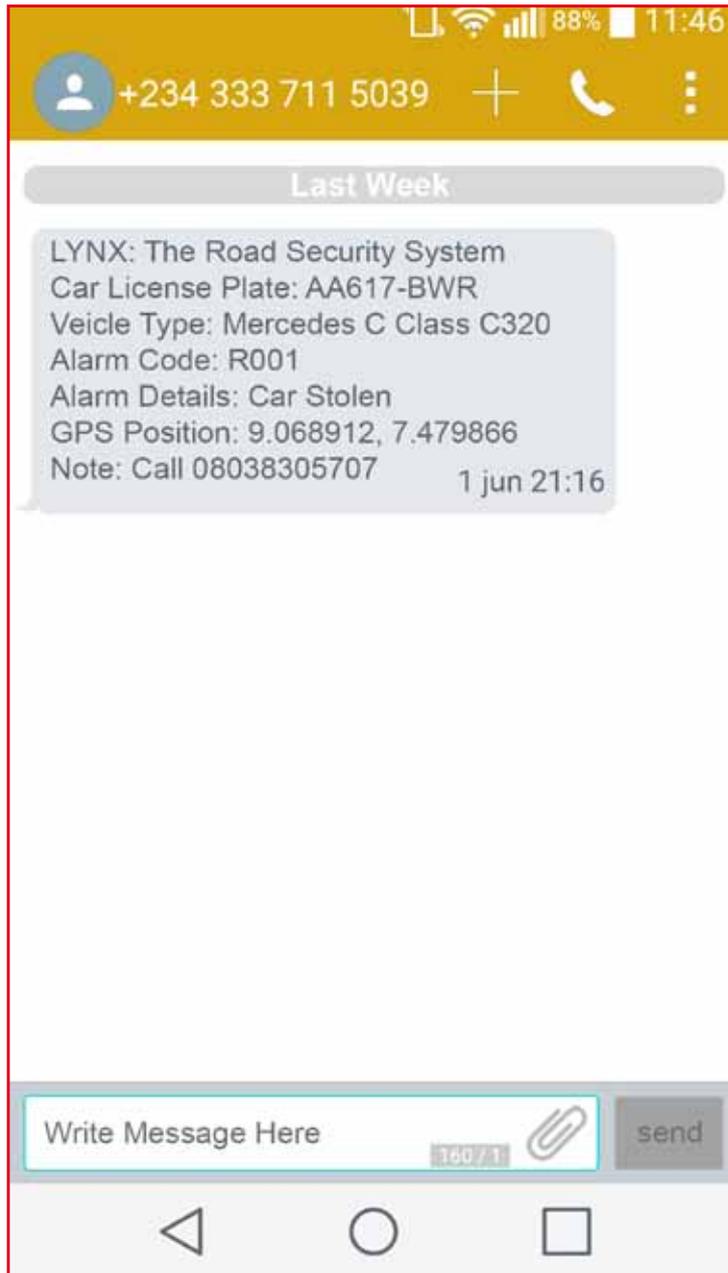
- 1) Damaged RFID tag
- 2) Missing RFID tag
- 3) Stolen Vehicle
- 4) Vehicle that exceeds the allowed speed limits.



When a vehicle arrives in a country that uses the LYNX system, it will be registered immediately upon entry.

During the registration exercise, each vehicle is also provided two phone numbers.

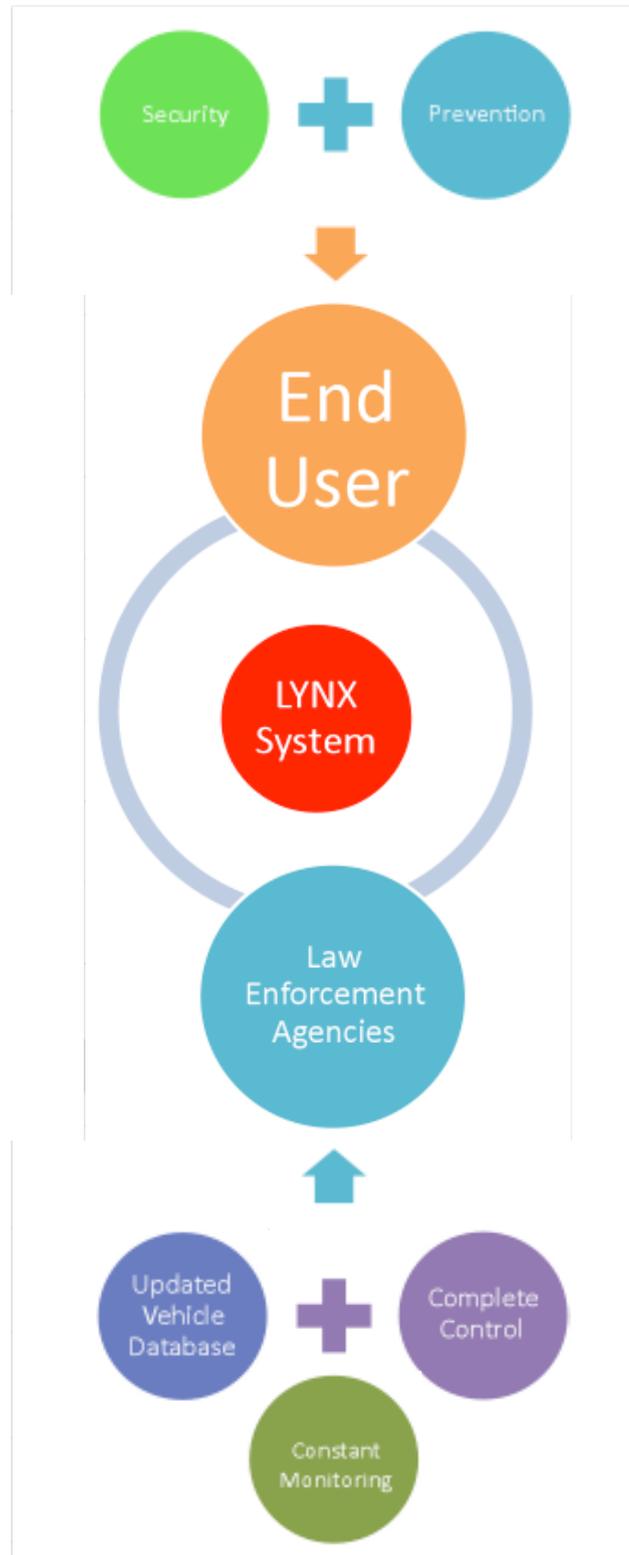
While the vehicle is in transit, should something among those listed trigger the alarms a push notification by SMS will be sent directly to the registered phone numbers.



Typical LYNX sms alert

We can state with certainty that LYNX System encapsulates within it all the necessary technology to give end users the assurance of threat prevention and the security they need to counteract the dangers of the streets; Above all LYNX guarantees to governments and law enforcement a complete control, constant monitoring and full data collection system aimed at the country's road transport security.

Below is an illustration of a typical layout of how the LYNX SMS alert system functions.



SECURITY SYSTEM OF THE LYNX TAG - TECHNICAL OVERVIEW

Security applications and features on the LYNX TAG are developed at the highest quality and efficiency level.

The LYNX TAG is constructed by combining at least 4 layers, each with its own function and characteristics.

This LYNX TAG plate has the capacity to carry large amounts of information about the vehicle such as ownership details, amount and type of duties, licenses and taxes paid, geographical location, actual & average speeds and so on.

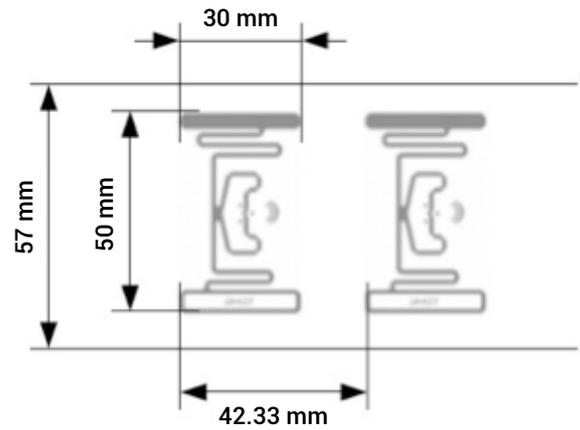
This information is captured via the RFID chip, which is an integral part of the sticker constructed with at least 4 layers to form the plate. (see image below for more details):

1. Information stored in the RFID chip is read by antennas located in strategic places. The system use a passive RFID that is powered by the electric field generated from the same antennas.

2. The sticker is tamper resistant Any attempt at removal of the sticker after placement on the car windscreen will result in permanent and visible destruction of the printed image.

3. The sticker assembly comprises a Transparent holographic layer for increased security features.

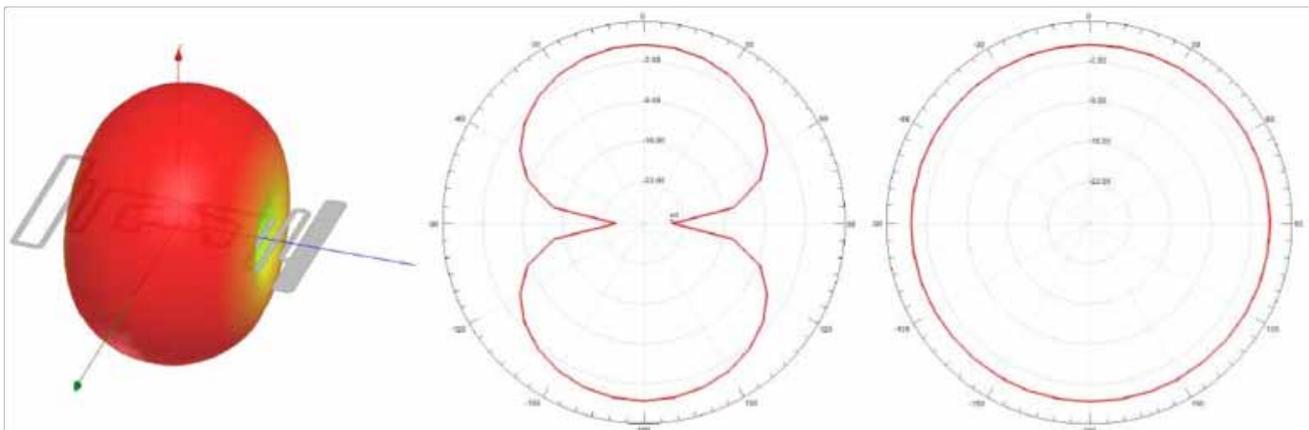
4. The sticker assembly also includes high security special printing of information including owner information and logos of government enforcement or issuing agencies.



Inlay Features

- ï EPC Class1 Gen2 compliant
- ï Common 30x50 mm format
- ï Supports NXP UCode and EM Marin dies

Inlay Layout and Dimensions	UH427	
Antenna width	50 ± 0.5 mm (1.97 ± 0.02 in)	
Antenna length	30 ± 0.5 mm (1.18 ± 0.02 in)	
Lengthwise pitch	42.33 ± 0.5 mm (1.67 ± 0.02 in)	
Web width	57 ± 0.5 mm (2.24 ± 0.02 in)	
3D Radiation pattern	[Z,X] Radiation pattern	[Y,Z] Radiation pattern



Inlay Composition

Composition Material Thickness* [µm]

Top
Support

Aluminium 9 ± 5%
Polyester PET 38 ± 5%

* Overall thickness depends on the IC. For IC thickness please refer to the "Available ICs" table

SELF ADESIVE MATERIAL TECHNICAL SHEET

DATA SHEET - Self - Adhesive Material

Facestock

A clear glossy polymeric plasticised vinyl film.

Basis Weight	103 g/m ² ISO 536
Caliper	80 µm ISO 534
Maximum Service Temperature	110 °C

Adhesive

Strong, permanent, solvent-based acrylate adhesive.

Liner

White supercalendered glassine paper.

Basis Weight	64 g/m ² ISO 536
Caliper	57 µm ISO 534
Transparency	50 % DIN 53147

Laminate

Total Caliper 162 µm±10% ISO 534

Performance data

Initial Tack	10 N/25mm FTM 9 Glass
Min. Application Temp.	0 °C
Service temperature	-80°C to 110°C
Peel Adhesion	90° 9 N/25mm FTM 2 st.st. 24hr
Adhesive Type	Solvent Acrylic
Adhesive weight	24 g/m ² FTM12

Adhesive Performance

Very high ageing stability and features excellent resistance against chemicals, heat and UV light. It has a high peel adhesion on high and medium surface energy substrates.

Applications and use

Is ideal for many medium-life indoor and outdoor applications. A durability of 7 years (vertical exposure) can be expected. The durability is based on middle European exposure conditions. Actual performance life will depend on substrate preparation, exposure conditions and maintenance of the marking.

Conversion & printing

PVC features good thermal transfer printability; for good abrasion resistance we recommend the use of resin ribbons. In addition this material can be printed with UV flexo inks. It shows good die cutting performance.

Special Approvals

The adhesive meets the requirements of the so-called "Toy Standard" EN 71-3.

Shelf life

Two years under storage conditions as defined by FINAT (20-25°C; 40-50%RH)



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