



GNSS Based System for Pharmaceutical Logistics Services in Remote Regions

Pharmaceutical products are fundamental for people's health. Many types of products such as vaccines must be kept within a narrow temperature range to remain safe and effective. This puts high demands on the distribution chain. In remote and underdeveloped regions, the lack of reliable infrastructure makes it more demanding to maintain a reliable supply of pharmaceutical goods, especially ones that are sensitive to temperature. This calls for better insight into the distribution chain and a means to react before a shipment becomes damaged. Gulliver is a space based (Satellite Navigation, Satellite Communications) service supporting the pharmaceutical distribution chain offering real-time track&trace of shipments globally.



Who needs what?

Producers of pharmaceutical goods like Sanofi Aventis need to ensure its products are safe, otherwise the damage to the company's reputation can be very high. NGOs operating in remote and underdeveloped areas, like Médecins Sans Frontières and UNICEF, need to ensure that their vaccination campaigns are successful. This calls for a more efficient management of the supply chain to increase availability of goods while reducing losses and unnecessary storage. Insurance companies like AXA seek a better understanding of related risks and responsibilities. Finally, donors want to be confident that the goods they have paid for arrive at the destination in good condition.

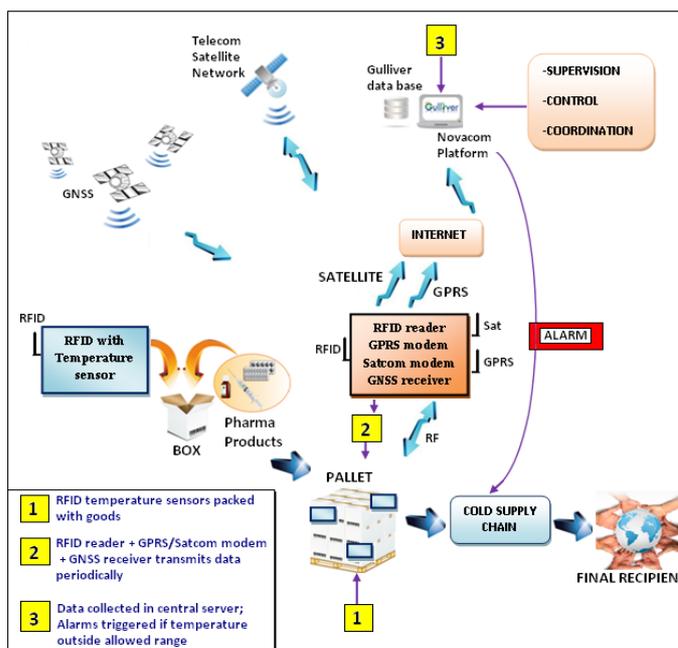
Challenge

The typical pharmaceutical distribution chain from the producer to the end user is highly complex and builds on an extensive network of transport organisations, warehouses, importers/exporters, pharmacies, and so on. Furthermore, goods often have to be kept within a specific temperature range, requiring temperature controlled containers and storage rooms. Often, only a simple tag fitted to a shipment shows the recipient if the goods had been exposed to too high or low temperatures. Although this method allows the discovery of damaged goods, it does not help finding where the system failed or when corrective actions should have been taken to save the goods. Availability can then only be ensured if places along the distribution chain are overstocked. This makes stock management less efficient.



Solution

Gulliver is a space-based service tailor made for supporting the pharmaceutical distribution chain. It provides real-time track&trace information of individual packets and their condition. This information is available to users from a central database through a web interface which also helps partners exchange information. In case the temperature of a shipment exceeds allowed limits, the responsible operator will get alerted such that corrective action can be taken. While positioning itself is done with Satellite Navigation systems, Satellite Communications enables global tracking coverage. Linking the position with inventory control also enables better management of stocks. Finally, donors get information on where and when their sponsored goods arrive and in which state.



Outcome

The Gulliver feasibility study which included a proof-of-concept has concluded that the service is technically feasible and commercially viable. For example, the market for temperature sensitive pharmaceutical goods in remote and developing regions is worth more than \$100 billion yearly and is growing. This is also an area where the losses are high. This indicates that even with small improvements of the distribution chain goods of high value can be saved. A 2-year demonstration involving a number of users is planned to start in 2013.

Project details

The feasibility study was completed by Novacom Services.

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The project is further described on <http://iap.esa.int>

Collaborating with ESA

The Integrated Application Promotion (IAP, or ARTES 20) programme funds feasibility studies and demonstrations. It aims at generating sustainable services which meet the needs of public and private organisations. Gulliver is just one example of IAP applications. Do you think that space technologies and services such as space imagery, satellite navigation, satellite communication, manned space technologies might help you better address your operational challenges? ESA's IAP programme can make it happen. For further details please contact us at

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