



# NS FRITS Business Case

## Further Investment

European Union  The European Regional Development Fund

**The Interreg IVB  
North Sea Region  
Programme**



*Investing in the future by working together  
for a sustainable and competitive region*

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# 1 Executive summary

NS FRITS has been a three year 'proof of concept' project to develop an Intelligent Transport System (ITS) for the road freight transport sector. NS FRITS has combined leading edge technology and existing data sources in an innovative way to:

- Improve accessibility for the road freight industry in the North Sea Region
- Increase safety and security for commercial drivers and their loads
- Improve road transport efficiency

NS FRITS has utilised the skills and experiences of ten public and private sector organisations plus the involvement of road transport companies from the NSR to develop a cost efficient ITS.

This document presents an opportunity for organisations to consider the feasibility of further investment in the North Sea Freight and Intelligent Transport Solutions (NS FRITS) system. It is anticipated that €400,000 is the level of finance required for the final development of the system.

## 2 Introduction

### 2.1 Background

In 2009 the Interreg IVB North Sea Region Programme awarded 50% of a €4.9 million investment to the NS FRITS partnership to develop an ITS. The aims of the NS FRITS project were to:

- Improve accessibility to areas in the NSR
- Contribute to economic development and growth
- Increase performance, profitability and competitiveness for the road freight sector
- Improve the quality of life for people living and working within the NSR
- Have a positive impact on the environment through reducing emissions

The NS FRITS partnership comprises:

- People United Against Crime (PUAC) – Project Manager
- Avanti Communications Ltd – Design and Development of the ITS
- The Netherlands National Police Agency (KLPD) – Data supply
- Volvo Technology Corporation – Technology partner
- Bremen Senator for Education and Science – Technology partner
- University of Hull – System testing
- Humberside Police – System testing
- ACPO – Vehicle Crime Intelligence Service (AVCIS) – Data supplier
- University of Huddersfield – Project evaluation
- Avonwood Developments Ltd – Technical partner

The NS FRITS project has successfully proved the concept of the ITS. The system was initially validated through commercial driver surveys and stakeholder seminars and later refined in workshops and system simulations. The system was subsequently developed and tested during live trials across the NSR.

NS FRITS partners invite organisations to consider the feasibility of further investment which will enable the NS FRITS system development to continue.

## 2.2 Context

The NSR includes Belgium, Denmark, Germany, the Netherlands, Norway, Sweden and the UK. Long distance freight transport in this region is heavily influenced by geography and the necessity of border and sea crossing. The logistical complexity of freight transport in the NSR is compounded by multiple languages, laws, security services and border crossings with diverse customs regulations and inspections.

The use of technology to mitigate logistical challenges is well proven. However customised telematics systems are often too expensive for small and medium sized enterprises (SMEs). In the UK over 50% of road haulage companies have less than five trucks. In addition many systems used in the road freight sector are fragmented and only provide solutions to a specific or limited number of operators.

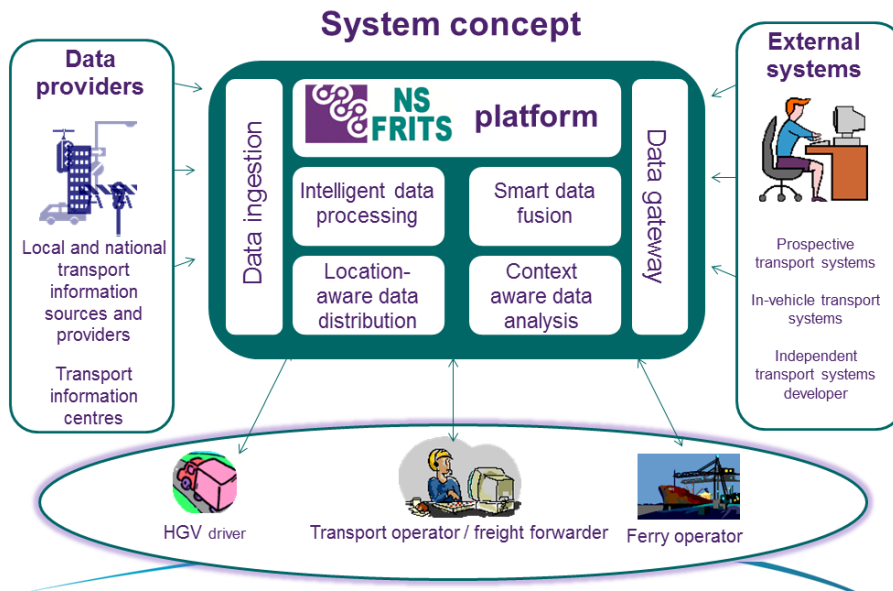
NS FRITS provides a cost effective telematic solution for the road freight industry through the innovative utilisation of open software technology and the capabilities of smart phones and tablets. NS FRITS brings together data collection, integration and distribution in a single solution using data from a wide range of sources in addition to a multi-lingual communication capability.

## 2.3 The NS FRITS system

NS FRITS is an information and communications management system which provides hauliers and freight operators with a wide range of relevant information. NS FRITS uses a 'one stop shop' concept with data supplied from a range of sources and has the ability to retrieve data from public and private sector organisations. NS FRITS provides multiple, value added services which are accessible to end users from fixed locations or 'in cab' as commercial drivers travel around the NSR.

The system concept was originally developed from a number of regional freight security initiatives with an emphasis on driver and load security, including secure parking and crime hotspot information. These data types have been termed 'driver environmental data' as they apply to commercial drivers in a specific area. The NS FRITS concept was extended to include operational data (data that relates to a specific user i.e. port information, ferry bookings etc.). The system has been developed and tested to include the following information:

- Driver environmental data:
  - Secure parking areas
  - Crime hotspots
  - HGV optimised route planning
  - Traffic alerts and information
  - Weather and local driving conditions
  - Police identification images
- Operational data
  - Advance booking systems (terminals or companies)
  - Customs information
  - Expected time of arrival at destinations



NS FRITS is multi-lingual and can currently communicate in six languages - English, Dutch, German, Swedish, Norwegian and French, offering a two way translation facility which enables for example, a Norwegian operator to communicate with a German driver each using their own language.

The detailed specification for the NS FRITS system is described in Appendix one – ‘User Requirements’. This includes end user functions; security; performance; adaptability; usability; reliability; safety; scalability and business requirements.

The NS FRITS system enables:

- Automated and manual data ingestion from a range of sources and providers
- Analysis and processing of freight transport data
- Distribution of data (either pushed or pulled) to remote end user systems such as smart phones, tablets and TV screens
- Improved transnational communications

The development of the NS FRITS system has involved the sourcing of relevant data providers and facilitating data access. These arrangements have been formalised through Data Sharing Agreements (DSAs).

Full details of the data providers and the DSA template can be found in Appendix two – ‘Identification of NS FRITS data sources and data types, stakeholders and the negotiation of data supply and legal and licensing issues’ document.

The design of the NS FRITS system has focused on the following end user benefits:

- More efficient management of freight movement
- Improved safety and security in the road freight industry
- Accident reduction as drivers are alerted to poor weather conditions and local driving laws
- Reduced congestion on road networks and at ports

A two minute video is available to view on You Tube which provides an overview of NS FRITS.

## 2.4 NS FRITS screen media

NS FRITS is capable of providing information to commercial drivers via TV screens which can be installed at remote locations used by commercial drivers including truck stops.

The NS FRITS screen media provides location specific and contextually relevant information, including traffic information, crime hotspots and secure parking locations. All information is displayed in the sites' local language.



The image on the right is an example of the NS FRITS screen media. On the left hand side of the screen is the NS FRITS animation film which provides the viewer with an overview of the project. Traffic information, crime hotspots and secure parking locations relevant to the area can be seen on the right hand side. A BBC news feed is provided along the bottom of the screen.

The NS FRITS screen media trial at Ulceby truckstop at the port of Immingham attracted the local media. The article below appeared in the Grimsby Telegraph can be seen in Appendix three.

## 2.5 Future developments

During the development of the NS FRITS system areas for future development have been identified. These include:

- Accommodating a variety of end user needs within a single freight logistics system
- Developing a secure data supply chain which ensures the quality and currency of data and maintains a strong working relationship with current and new data providers
- Inadequate mobile connectivity coverage in some locations. The system currently uses 2G data services which 99% of the UK population has access to. A more data intensive service would require 3G services which 75% of the UK population has access to. This equates to a geographical coverage of 17%
- Addressing legal issues which are considered in section 5

## 3 Development of NS FRITS

### 3.1 Outcomes of NS FRITS pilots

The NS FRITS system was tested by commercial drivers and their managers during three pilots in autumn 2011. The outcomes of the pilots have provided the direction for future system development.

The participating drivers were supplied with tablets to test the system. In a practical situation end users would be able to install NS FRITS onto their existing equipment.

The trials were conducted in the UK, the Netherlands and Scandinavia and included participation from small, medium and large transport and logistics companies. The Scandinavian trials also included a customs agency.

The trials were deemed successful and gained support from all participants. The majority of feedback was positive, with comments mainly focused on the usability of the system. Some users were very reluctant to hand back the system.

Participant feedback included requests for:

- 'Turn by turn' satellite navigation functionality
- Improved 3G reception
- Re-routing capabilities
- Integration with existing company systems
- Additional secure and unsecure parking information

In addition, a screen media trial was completed at Ulceby truck stop near the port of Immingham, North Lincolnshire, UK.

A detailed report and evaluation of the trials is available on request.

### **3.2 Further development potential**

The development and testing of the NS FRITS prototype system has identified additional development opportunities for the system including:

- 'Turn by turn' satellite navigation functionality with an additional re-routing facility
- Multimodal operations including rail, sea and air
- Client usage recording, if a pay per view business model be adopted (see section 6.1 below)

Appendix four studies how data capture and transmission can encourage innovation and increased use of information and communication technologies in the NSR. The findings in this document will be considered in any future system developments.

NS FRITS demonstrates that innovation can be applied to the road freight sector within a transnational ITS that collects, integrates and distributes data from a wide range of sources.

It is probable that with further development the NS FRITS system could become the platform for many service innovations in the road and other freight sectors.

NS FRITS could provide a standardised interface to enable a company's operational data to function seamlessly alongside the environmental data already in the system.

In addition, NS FRITS could form a platform for the future standardisation of data and ICT methodology in the freight logistics sector. For example, further development could link NS FRITS with other established data providers and transmission systems. This creates an opportunity to become involved in the international standardisation of ICT aspects in road freight security.

## 4 Market analysis

### 4.1 Profiling competitors

Please refer to Appendix two - 'Identification of NS FRITS data sources and data types, stakeholders and the negotiation of data supply and legal and licensing issues' document – compiled January 2011 Appendix five - 'Technical Concepts' document compiled September 2009.

The above documents describe the data and information systems which are currently available.

The illustration below identifies the key features of potential competitor systems

	Products/Services	Secure Parking	Crime Hotspots	Police ID Im ages	Traffic Alerts	Weather & Local Driving Conditions	Advanced Booking System	Customs Info	HGV Optimised Routes	Real-Time Information	Translation of data into own language	Expected Arrival Times	Direct Driver Communication	Mobile Applications	Vehicle Tracking	Voice Controlled Navigation	Turn by Turn	Driver Hours
TOM TOM	N,F,A				x	x			x	x		x	x	x	x		x	x
GARMIN	N,F,A	x			x	x						x		x	x		x	
MIREO	N,F,A				x					x		x	x		x		x	
ALK	N,F,A				x				x	x		x			x		x	
TRAFFIC MASTER	N,I		x	x	x									x			x	
INRIX	I				x					x				x				

Products/Services: N = Navigation System, F = Fleet Management, A = Asset Management, I = Information System

The yellow columns illustrate comparisons to current features in the NS FRITS system. The orange columns list functions which were requested by participants in the pilots.

The six competitors identified are:

- **TomTom** provides in-car location and satellite navigation products and services. Based in Amsterdam, the Netherlands, TomTom has over 3,500 employees and sells products in over 40 countries. These include portable navigation devices, in-dash infotainment systems, fleet management solutions, maps and real-time services, including HD Traffic
- **Garmin** provides satellite navigation, communication and information. Garmin designs, develops, manufactures and markets a diverse line of user-friendly handheld portable and fixed-mount products for the auto, mobile, outdoor, fitness, marine and general aviation markets
- **Trafficmaster** is a provider of real-time traffic information in the UK, which is supplied from a range of data sources



- **Mireo** is a provider of navigation and GPS tracking solutions, including applications for mobile devices
- **ALK Technologies** is a developer of mobile navigation and transportation technology solutions. ALK has a number of brands which include CoPilot, a GPS navigation service platform for fleets, mobile operators, hardware OEMs, systems integrators and commercial drivers globally, and PC\*MILER, a routing, mileage and mapping solution which is primarily used in the US
- **INRIX**, a provider of traffic information, directions and driver services, as well as apps and tools for developing traffic-powered solutions to the market. INRIX operates a worldwide traffic information network (the largest in the world), and is partnered with auto manufacturers (including Ford), mobile developers, transportation agencies, fleet and internet companies.

Several of NS FRITS' potential competitors offer some services which are similar to those provided by NS FRITS. However, NS FRITS has many advantages and unique selling points not offered by competitor systems.

## **4.2 NS FRITS advantages and unique selling points**

NS FRITS has been developed to meet the specific needs of SMEs in the road freight sector that would not necessarily have access to ITS.

NS FRITS unique selling points include:

### **4.2.1 A 'one stop shop' for information**

Many systems supply elements of the information provided by NS FRITS. However, NS FRITS is the only system that can provide the full range of information required for the road freight industry.

### **4.2.2 Providing users with specialist data such as crime hotspot information**

The NS FRITS partnership includes representatives from the public and private sectors, including law enforcement agencies, which facilitates the sharing of data not normally available to commercial drivers including crime hotspot information.

### **4.2.3 Secure parking information for commercial drivers**

NS FRITS provides commercial drivers with truckstop locations which have been deemed secure by the International Road Transport Union (IRU). Additionally, the NS FRITS system informs commercial drivers of parking areas which are considered unsafe.

### **4.2.4 Multi-lingual system with translation services**

The NS FRITS system is currently available in six languages - English, French, Dutch, German, Swedish and Norwegian. Additionally, the system has the ability to translate a two way conversation enabling each speaker to communicate in their preferred language.

#### **4.2.5 Facilitating real-time communications for drivers and transport managers**

The NS FRITS system enables 'on-the-go' communication between the commercial driver and the transport manager / operator.

#### **4.2.6 Operational data**

NS FRITS enables drivers to establish 'Agreements' with other actors in the supply chain to improve efficiency and collaboration across the road freight sector. For example a driver can establish an 'Agreement' with a port operator, booking a time slot for arrival at a port and NS FRITS will periodically update the port operator of the drivers estimated time of arrival.

#### **4.2.7 A scalable system design**

NS FRITS has been developed as a platform that enables additional data sources to be incorporated into the system over a period of time. Additionally, NS FRITS has the capacity to be expanded geographically across the EU and beyond.

### **4.3 Profiling customers**

Transnational trade is a cornerstone of the EU, with nearly three quarters of all goods transported utilising road freight. The transport services sector employs approximately 8.8 million people in the EU; each day many goods worth billions of Euros are moved on the trans-European road network - an integral element of the supply chain. The UK road freight industry alone is worth £14.5 billion and employs around 2.3 million people in over 195,000 companies.

NS FRITS has the potential to attract end users from both the private and public sector including:

- Lone commercial drivers who may well be running their own business. They would require access to the NS FRITS system via the mobile application whilst driving
- Fleet drivers who are employees of a company or part of a larger group and interact with other fleet drivers and / or a fleet dispatcher. They may require access to the NS FRITS system via the mobile application whilst driving
- Fleet dispatchers who have a responsibility for several fleet drivers and would like to have visibility of drivers locations and information about their routes etc. They would require access to the NS FRITS system via the desktop application
- Authorities (for example port authorities) who may require access to the NS FRITS system via the desktop application to plan the arrival of commercial drivers or to act as a data source (for example, providing information about ferries)

## **5 Further considerations**

Further considerations relating to the future development and commercialisation of the NS FRITS system include.

- EU regulations regarding the commercialisation of a product resulting from an EU funded project
- DSAs have been agreed with data providers during system development and trials. DSAs would have to be negotiated and agreed with data providers prior to any commercial launch of NS FRITS and costs may be involved
- NS FRITS provides information which enables transport managers and commercial drivers to make informed decisions. When the system is available commercially the issue of liability for acting on this information will need to be addressed

## **6 Business operation**

### **6.1 Potential business model**

For the purposes of this document a business model has been developed which is a combination of an annual subscription and a pay per view system. Subscription costs would be kept at a minimum rate to encourage adoption and the pay per view system would operate over a 24 hour period.

### **6.2 Hub location**

Within this business model, NS FRITS will operate from a single hub, and will manage relationships with data providers and system end users.

The NS FRITS system hub could be located anywhere within the NSR which has access to the appropriate technology. However, it is recommended that the NS FRITS hub be based at Avanti Communications' London offices. Avanti Communications is the NS FRITS partner that led the development of the NS FRITS system and is able to offer the most cost effective solution.

### **6.3 Staffing and equipment**

In order to further develop and refine the NS FRITS system for a commercial launch additional staffing will be required. This will include three full time system developers for approximately eight months.

Once operational the NS FRITS hub will require two full time operational staff to manage and maintain the system. One member of staff will also have management responsibilities for NS FRITS. In addition, as the system will be available 24 hours a day, an 'out of hours', multilingual call handling service will be required.

A server is required to operate the NS FRITS system which will provide a daily back up, alongside a reserve server. For the operational and development team a high specification PC is required alongside standard office equipment.

## 6.4 Data suppliers

As described in section 2.3, NS FRITS currently operates with data from a range of sources and all data providers have signed DSAs. When the system operates commercially the DSAs would require amending and data supply may attract charges.

## 7 Financial considerations

### 7.1 Investment opportunity

NS FRITS is at a stage where additional investment is required to enable further development of the system and to ultimately launch the system commercially.

The NS FRITS system requires approximately eight months further development at an estimated cost of €400,000.

Estimated costs for eight months of additional NS FRITS system development	
Description	Total cost (€)
Development computers	7500
Back up Servers	5000
Host Servers	1500
Tablet devices	2500
Data software	5000
Multi lingual functionality	1000
Subscriptions to data sources	TBC
MOUs/DSAs	TBC
Maintenance Charges for servers	25000
Staff costs	300000
Management costs	35000
Administrative costs	10000
Travel and subsistence	5000
Miscellaneous costs	2500
<b>Grand total (excludes VAT)</b>	<b>€400000</b>

This investment opportunity is open to either a single organisation or a consortium and could be a combination of public and private sector organisations.

## 7.2 Future operational costs

The operational and running costs of a commercial NS FRITS system are estimated as follows:

NS FRITS operational costs for 12 months	
Description	Total cost (€)
Host servers	1200
Tablets	1500
Data software	5000
Multi lingual functionality	600
Subscriptions to data sources	TBC
MOUs/DSAs	TBC
Maintenance charges for servers	15000
Management costs	4700
Administrative costs	2000
Miscellaneous costs	TBC
<b>Grand total</b>	<b>€30000</b>

Further development of a financial model for an operational NS FRITS system will be required.

## 8 Summary

This business case has outlined an investment requirement of €400000 which would enable further development of the NS FRITS system.

The level of investment to the NS FRITS system would enable:

- Further development of a leading edge product
- Establish a leading role for investors within the European road freight management market
- An opportunity to promote international ICT standardisation for road freight communications and security