North Sea Freight Intelligent Transport Solutions



NS FRITS

Final Evaluation Report

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Executive statement

NS FRITS – North Sea Freight Intelligent Transport Solutions

NS FRITS has been a three year proof of concept, European project with ten partners across four EU Member States. NS FRITS aimed to develop a leading edge, innovative information communication technology (ICT) solution which combined multiple data sources in a cost effective way across a single platform to improve the logistics and security of the transport freight sector. NS FRITS has been designed and developed in conjunction with end users and stakeholders to ensure it was driven by end user needs. This included examination and selection of the most appropriate ICTs and data sources, continuous system development and refinement with extensive internal testing, followed by real world live trials with evaluation and feedback from end user. A number of applications and products were developed including the NS FRITS concept itself, NS FRITS information hub, driver tablet application, operator desktop application, screen media and user manual. Each of these products was examined through the evaluation of the pilots. This report describes the evaluation of the NS FRITS project, incorporating both an examination of the partnership and the products developed.

Summary

The NS FRITS Final Evaluation Report covers the period January 2009 to December 2011, and is an updated version of the two previous Interim Evaluation Reports. It provides an overview of the evaluation approach and the NS FRITS process. It summarises the activity that has been taken during the project and discusses the findings of the evaluation activity, highlighting particular successes, limitations and potential future direction of the NS FRITS project. The first section of this report provides an overview of the NS FRITS Final Evaluation Report. Section two describes the evaluation approach, the use of both process and impact evaluation, and the role of the collaborative evaluator. Section three discusses each of the evaluation methodologies in more detail. Section four provides detailed results of findings from each strand of analysis including participant observation of meetings and external events (4.1), review of project documents (4.2), annual questionnaires of partners (4.3), evaluation of the pilots (4.4) and final partner interviews (4.5). It then provides a synthesis of the findings from all stands of the evaluation (4.6). Section five provides some concluding remarks.

Key findings

The key findings from the NS FRITS are summarised below, based on the questions developed in the evaluation framework.

Project results and achievements

NS FRITS was a highly successful project which achieved all its deliverables, milestones and indicators. There were a number of key final products and the evaluation of the pilots demonstrated that each of these were very successful. These are:

- NS FRITS concept a integrated interface that combines information required by those working in the freight sector in a cost efficient way including logistics and security
- NS FRITS hub/information platform containing and processing system data that drives each of the applications
- NS FRITS driver tablet application which is the mobile version of the system used by drivers
- NS FRITS user guide/manual providing detailed instructions of how to use the system
- NS FRITS web based operator application which fleet managers use to manage their cargo and drivers
- NS FRITS screen media providing detailed information at strategic points along the transport corridor

As a proof of concept it is difficult to assess the impact of this project on the real world, thus Intermediate Achievements (IAs) were devised to test the extent to which a fully rolled out NS FRITS could meet its higher level aims and objectives. The NS FRITS system met all of its IAs and successfully demonstrated a proof of concept system.

Transnational partnership working

There were a number of examples of how the partnership achieved a high level of transnational working, within the partnership across ten partners and four countries, and through engagement of potential end users and stakeholders. Examples of this include:

- Participation, engagement, communication, commitment to the project and discussions observed at partner meetings. These meetings:
 - Provided a forum for the exchange of knowledge and ideas
 - Created an environment that fostered working relationships and transnational partnership working
 - Provided a platform for strategic decisions to be made and progress to be reported
 - Enabled a systematic transparent approach to be developed for partnership working. The high quality of documents produced in each of the Work Packages (WPs) required a high degree of transnational partnership work.
- The external events, workshops and conferences revealed that this transnational partnership working extended beyond the partnership, by including and engaging stakeholders and end users.
- A unique feature of this project was this it was an example of a highly successful transnational public-private partnership working model.
- The data acquired in WP3 and the engagement of stakeholders in defining the case scenarios for system development required high levels of transnational partnership working with end users.
- The evaluation of the pilots further enhanced the transnational partnership working of NS FRITS, through internal testing, and engaging the end user community to participate in the live trails.
- All partners involved believed that NS FRITS achieved a high degree of transnational partnership working and some of the benefits from being a partner included profile

raising and the opportunity to network with transnational partners, end users and stakeholders.

• The final conference received particular praise and was evidence of a high degree of transnational partnership working and end user and stakeholder engagement in the project.

Innovation

The evaluation of NS FRITS demonstrated a number of ways that NS FRITS was innovative including:

- The NS FRITS concept was developed using existing technology in an innovative and appropriate way to meet problems identified in the road freight transport sector.
- The system design included: a thorough review of existing ICT; engagement of stakeholders and potential end users through case scenarios; identification and acquisition of appropriate and reliable data (including legal, technical and data sharing protocols); and discussion that occurred at partner meetings and external events to share and exchange knowledge, experience and ideas, to explore innovative possibilities, test ideas and consider new solutions
- The system developed and tested included: development of a leading edge and innovative ICT solution to combine multiple data sources in a cost effective way across a single platform; targeted and relevant information to lone drivers and other users of the road freight transport system; the engagement of the user community in engaging in real world trials to test the relevance of the innovative concepts devised; the positive findings of the evaluation of the live trials demonstrated the relevance and applicability of this innovative proof of concept project; the Nordic Trial was extremely valuable for demonstrating the benefits of operational data; and screen media was an example of how technology can be used and adopted in an innovative way to assist the transport freight sector.
- An innovative aspect of the partnership is that it successfully implemented a publicprivate partnership approach and this is essential in order to incorporate security data
- A testament to the success of NS FRITS is that it provided an innovative proof of concept to the road freight industry, perhaps one of the more demanding environments for testing new software and technology.

Knowledge Transfer

NS FRITS achieved a high level of knowledge transfer, both between transnational partners and also through engagement with the end user community, including:

- The high degree of learning required for all partners, despite their extensive experience and knowledge of different aspects of the freight sector. This occurred through; open discussions and sharing of knowledge and experience at the partner meetings; the review of potential ICT solutions (WP2) and potential data sources (WP3); and sharing of documents produced
- The external workshops and events provided an arena for the engagement of potential stakeholders and end users, providing excellent networking opportunities, eliciting the

views of end users and stakeholders in system design and development and for the exchange of ideas to improve the understanding of the project as a whole

- The design and specification of the system and the internal and external testing of the pilots resulted in extensive knowledge transfer. The technical partners commented that the input of end users experiences of the freight logistics and security industry to the case scenarios were a crucial component of system design.
- During the system testing phases there was much sharing of knowledge required to adapt, refine and continually improving the system.
- The communication and dissemination activities of WP6 were viewed by all partners to be of a high standard and raised awareness of the project.
- The Bremerhaven event, Volvo simulations, Nordic Trial and real world pilots provided a high level of end user engagement and further knowledge transfer
- The products produced (user manual, driver tablet application, screen media and operator desktop application), all provided further avenues for knowledge transfer in NS FRITS

Long term perspectives

The NS FRITS project has a number of high level objectives (Ultimate Goals) which are to: improve accessibility to places in the North Sea Region; contribute to economic development and growth; increase performance, profitability and competitiveness for road freight sector; to improve the quality of life for people living and working within the North Sea Region; and to have a positive impact on the environment as emissions are reduced.

NS FRITS achieved all its Intermediate Achievements (IAs) and these provided evidence that a fully rolled out NS FRITS could achieve all the projects ultimate goals. Partners felt the more likely avenues for future success were in building the innovation capacity of businesses and services in the North Sea Region, in promoting the adoption and use of ICT applications, and in promoting regional accessibility. Over time, from years one to three of the project, partners became more positive about the ability of NS FRITS to meet its ultimate goals.

The unique selling point of NS FRITS identified by a number of partners was that it brings security data, including crime data and secure parking data, alongside everything that already exists, together into a single place/device and that it is essential to have a public-private partnership in order to incorporate the security aspect.

Summary of success factors, limitations and future recommendations

This evaluation identified a range of successes, limitations and suggestions for future activity.

Critical factors for success

NS FRITS was a highly successful project and critical success factors identified for this include:

• Project management team developed a clear strategy for project steer, feedback on progress and activities and continuous monitoring of performance

- Expertise, engagement and a high level of commitment from all partners
- Creation of a multi-disciplinary cross sector, transnational partnership based on trust and mutual respect which encouraged innovation, sharing of knowledge and the generation and discussion of new learning, ideas and approaches
- Open and transparent lines of communication and a process for the partnership to agree on strategic decisions about the direction of the project
- Effective transnational partnership working across both the public and private sector
- Majority of partners were involved in multiple WPs which helped with vertical transitions between the WPs
- A structured framework for evaluation built in at the outset of the project and continuous evaluation over the lifetime of the project
- A clear definition of the NS FRITS concept
- Engagement of end users and stakeholder to identify user needs and problems to ensure the project was driven by and focused upon the needs of end users
- A thorough review and then selection of the most relevant and most appropriate ICTs
- Identification, agreement to share, acquisition of, analysis of the appropriateness of and final selection and ingestion of appropriate datasets
- Use of case scenarios ensured the system requirements and functionality are appropriate to the needs of the user
- Internal development and extensive refinement and testing of the system enabled prototypes to be developed that were fit for real world trials.
- Real world pilots tested the system using actual end users and engaged end users in testing and the refinement of the system
- Dissemination activities and external events were essential to raise the profile of the NS FRITS partnership and project.

Project limitations

Despite the clear successes evident in the NS FRITS project, there were a number of difficulties and obstacles to overcome during the three year project, some that were resolved more successfully than others. The main limitations of the NS FRITS project are summarised below:

- The funding body placed a large administrative burden on this project, and the interruption of payments caused severe financial difficulties, particularly for SME partners
- There were difficulties in achieving a balance between streamlined formal IMG meetings, and having an arena flexible for appropriate discussions. More communication channels were needed outside of WP meetings to facilitate discussions before and after IMG meetings around WP activities where appropriate
- At times the project suffered in that making the vertical links needed between WPs 2, 3, and 4.
- There were delays experienced in obtaining and testing suitable data and additional time was required for an unforeseen step: after obtaining permissions and agreement to use data, to actually receiving data, by agreeing and specifying the technical format of data
- There were difficulties for the partnership due to the different cultures and working styles of transnational partners across both the public and private sector; and their differing motivations for being a part of the project and different agendas and priorities

- There were initial problems in the field testing of the driver tablet application due to the wrong routing software being supplied, which caused a number of frustrations between partners and perhaps a lack of understanding about the complexities involved in the system design by none technical partners
- There was a lack of leadership and steer provided in WP5 which contributed to a delay in the launch of the pilots. Some felt they should have included more functionality, some more data and some more geographic scope and operators.
- Most of the difficulties experienced in the pilots related to technical issues such as connectivity and slow uploads and refresh rates, and the time it takes to learn and use the system
- The key limitation of the system was that it was not a turn by turn Sat Nav.

Future recommendations

Recommendations for future activity that have arisen from the evaluation are:

- NS FRITS has thus far proved a concept and its key strengths are crime and security data, which are brought together in a single platform alongside other relevant logistical data sources appropriate to the end users' needs. Future activity should include crime and security data
- In order to secure this data, a public-private partnership will be necessary for future activity
- Discussions are needed with end users and partners to define the key priorities for future development. This should include: whether to include new data or to expand the current scope of the system to new geographical regions; whether to refine existing platforms or develop new platforms (other than Google Android); whether to expand to other forms of transport beyond the road sector; what additional functionality should be included
- The key limitation of the system is that it is not a turn by turn sat nav and this should be a priority for future development.
- Suggestions for additional functionality based on feedback from pilots include information on temporary road works; ferry delay warnings; local police telephone numbers; programming with fuel card stops; route specific settings that are programmable (based on truck dimensions); a favourites location setting; being able to include multiple pick up and drop off points; improving connectivity issues; incorporating operational data; trailer tracking, temperature monitoring, and access restriction; trace and track of cargo (for example if a driver deviates from a route); and accurate time to destination.
- It is important that end users are engaged with deciding the priorities for further development of system functionality to ensure NS FRITS remains driven by user needs. Clear priorities need to be set out for any future development as a range of the above could be implemented.
- Future partners need to be committed, with a range of expertise in this area, relevant to the priority areas set for future development
- Further testing is required of the operator web based desktop system, screen media and the potential for using operational data. Future trials should test the system for a few weeks, refine it and then test it again over a longer time period and a wider geographical scale.

• A final suggestion is to develop the NS FRITS platform as a publicly available service to allow a registered user to provide transport information to the system. The platform could be provided as a web application to the public as a legacy for the project.

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1 Introduction and overview

The Final Evaluation Report of the NS FRITS project details the findings from the evaluation based on the 36 months of the project (January 2009 to December 2011) although much of the evaluation activity was conducted from March 2009.

This report provides an overview of the evaluation approach and the NS FRITS process. It summarises the activity that has been taken during the 36 months of the project.

1.1 Report structure

This evaluation report is divided into five sections; the first section provides an overview of the content of the report and a brief description of the NS FRITS project.

The second section discusses the nature of the evaluation itself, reasons for the evaluation and justification of the approaches adopted. It examines the role of the Applied Criminology Centre (ACC), University of Huddersfield, as a collaborative evaluator. It examines the reasons why evaluation used both process and impact evaluation. It describes the evaluation framework which has been created due to the complex nature of the project and why an Evaluation Mind Map was developed to help simplify this. Furthermore, it explains why the evaluation team developed, in conjunction with other partners, NS FRITS project Ultimate Goals (UG) and Intermediate Achievements IA), against which the successes or limitations of the NS FRITS project could be assessed. Finally, it examines how the evaluation drew together all these separate strands to assess individual project deliverables based on the Project Work Plan, the results of each component of the evaluation, against the NS FRITS UGs and IAs, to assess the relative successes and limitations of the NS FRITS project.

Section three discusses the individual evaluation methodologies, for each WP and the evaluation of the pilots. This includes: the overall design of the evaluation; regular meetings with the lead partner; participant observation of the International Management Group (IMG) and individual WP meeting; review of WP documentation; annual partner surveys (conducted at the end of each of the three years of the project); the evaluation of the pilot activity and final partner interviews.

Section four details findings from the analysis for each of the above methodologies and is subdivided by each methodology. At the end of this section a synthesis of all results is provided, drawing together the various strands of the evaluation. Section Five then provides some concluding summary information, and discusses potential avenues for future direction.

An important note here is that this evaluation does not include an examination of the dissemination of NS FRITS which was conducted by a separate body appointed by the lead beneficiary on an annual basis (see WP 6 Final Report, a separate report available on request).

1.2 **Brief description of the NS FRITS project**

NS FRITS is a proof of concept project aimed at improving security and safety across the supply chain. NS FRITS aimed to develop a communication system to provide information to commercial drivers and their managers. The system was intended to be designed using leading edge technology and data in an innovative way to improve efficiency, safety and security within the road freight sector.

This three year project ran from January 2009 to December 2011 and was funded by a \leq 4.9 million investment (50% funding from the NS FRITS partnership and 50% European funding from the Interreg IVB North Sea Region Programme). It consisted of ten European partners from academia, private sector, registered charities and police forces. These included:

- People United Against Crime (PUAC), UK
- Avanti Communications, UK
- Volvo Technology, Sweden
- Association of Chief Police Officers (ACPO) Vehicle Intelligence Service (AVCIS), UK
- Avonwood Developments, UK
- University of Hull, UK
- Institute of Shipping Economics and Logistics (ISL), Germany
- KLPD (Netherland's National Policing Agency), the Netherlands
- Applied Criminology Centre (ACC), University of Huddersfield, UK

1.2.1 NS FRITS aims and objectives

The aims of NS FRITS were to:

- Improve accessibility to places in the North Sea Region
- Contribute to economic development and growth
- Increase performance, profitability and competitiveness for road freight sector
- Improve the quality of life for people living and working within the North Sea Region
- Have a positive impact on the environment as emissions are reduced

A range of potential end user benefits were identified including:

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

NS FRITS aimed to combine a range of existing sources of information into a single system for drivers and fleet managers in a range of languages and in a timely fashion. This would enable operators and drivers to have up to date and reliable information upon which they can make informed decisions. Potential information sources included:

• Secure parking areas

- Crime hotspots
- Traffic alerts
- Weather condition
- Advance booking systems
- Police identification images
- Local driving conditions
- Estimated time of arrival at ports and ferry terminals

1.2.2 The NS FRITS system

The NS FRITS system was a proof of concept, which was constructed, developed and refined by the NS FRITS partnership in conjunction with a range of potential end users and external stakeholders. After a period of internal testing and development, this system was piloted and evaluated across two real world pilot routes to examine the potential of this proof of concept system. The system was developed across three user interfaces: screen media (large flat screen TV) providing information at a truckstop; an in cab, tablet device and a web based fleet operator system to run on standard PCs. These pilots were evaluated through examination of the use of the system by drivers and operators and interviews with drivers and operators. The system aimed to offer innovative utilisation of open software tools and technologies that exploited the computing capabilities of smartphones and tablet devices, and utilised relevant space assets where there is lack of terrestrial infrastructure (to provide information over the mobile telephone network to drivers through their tablet devices).

1.2.3 NS FRITS WPs and structure

NS FRITS was divided into six WPs. These are detailed described below in table one:

Table one: NS FRITS WPs



2 Evaluation design

This section describes the overall design of the evaluation of the NS FRITS project, including the role of the evaluator, evaluation approaches adopted, Evaluation Framework developed and simplified visual Mind Map summarising this and how the Evaluation Framework, and project deliverables and work plan were assessed, through the creation of NS FRITS Ultimate Goals and Intermediate Achievements. It also justifies the approaches adopted for each of these. It should be stressed that the design of each of these was carried out under consultation and through agreement with all project partners.

2.1 Collaborative evaluator

As a partner in this project due to financial regulations imposed, the Applied Criminology Centre (ACC) at the University of Huddersfield acted as a collaborative evaluator within this project. Therefore they are not and independent evaluator which may be seen as a limitation. However, the University of Huddersfield evaluation team played an active role within all WPs, and, as such, had the advantage that the evaluation could be designed and conducted at both the outset and during the lifetime of the project. Additionally, it could advise, challenge and pose questions to the project partners during the running of the project. Some specific advantages of acting as a collaborative evaluator were that the evaluation team could:

- Pose questions to project partners, for example to justify why they have selected a particular method or strategy
- Question how activities relate to overall project aims and objectives
- Question how individual WP activities relate to the overall NS FRITS aims and objectives

2.2 **Evaluation approach**

This evaluation incorporated two types of evaluation methodologies: process and impact evaluation. The reasons for this are that the NS FRITS project is a complex three year project with ten partners, spanning four countries. In addition the project is a proof of concept, and therefore it was difficult to assess the actual impact of this project, due to the limited nature of the real world trials in the context of the size of the problem it is trying to address.

Each of these two approaches, process and impact evaluation are now described in turn.

2.2.1 Process evaluation (all WPs)

Process evaluation asks questions about the NS FRITS process, how activity was carried out through various WPs, looking at the way the project was delivered. This type of evaluation asks questions that include:

- Under what conditions does a project work or fail?
- What are the mechanisms by which it succeeds or doesn't?
- How was the project implemented?

2.2.2 Impact evaluation (related specifically to WP5)

This looks at the impact of the project and whether (and to what extent) a project achieved its goals and objectives. This component of the evaluation will include questions such as:

- What were its aims objectives?
- Were these met?
- Did the project produce its indented outputs and outcomes?
- What were the mechanisms by which it achieved successes or didn't meet these objectives?

2.3 **Evaluation framework**

Due to the complex nature of this project, with ten partners across four different countries, and six separate but integrated WPs, an Evaluation Framework was drawn up to ensure that the evaluation was conducted in a robust and systematic fashion. This was developed by ACC, under consultation and then with agreement with all the NS FRITS partners. The summary Evaluation Framework produced is provided in Appendix One. This sets out the following for each individual WP:

- Identification of the assessment objectives (as linked to the project objectives)
- Identification of project deliverables and milestones for each WP
- Definitions of the performance indicators to be used (outputs and outcomes)
- Type of evaluation activity (process or impact)
- Evaluation methodology and evaluation questions
- Assessment against overall aims and objectives of NS FRITS

2.4 Evaluation Mind Map

Due to the complexities of this framework the evaluation team produced a simplified Evaluation Mind Map (appendix two) which visualises the overall evaluation process and linked into the project work plan and deliverables.

2.5 **Project work plan and deliverables**

As part of WP1, the lead partner of the NS FRITS project (PUAC) developed a project work plan detailing the deliverables for each WP and the links between each individual WP. These are related to the Evaluation Framework. A list of project indicators is provided in appendix nine.

The NS FRITS project itself was a proof of concept and it was formulated with a range of aims, goals, objectives and a series of intended deliverables and project achievements. Some of these were longer term goals that could not be achieved within the lifetime and due to the scale and scope of this project. As a result of this it was also necessary to define the project's Ultimate Goals and Intermediate Achievements that linked to the Evaluation Framework, Mind Map, and work plan and deliverables. This enabled a link to the overall objectives of NS FRITS allowing the following to be incorporated in the evaluation:

- Details of the overall evaluation programmes including the measurement of technical and operational performance
- Identification of the processes and outcomes emerging from the pilots
- Views and experiences of the stakeholder group

2.6 Ultimate Goals (UGs) and Intermediate Achievements (IAs)

A series of goals or high level objectives of the NS FRITS were defined and these are termed UGs for the purposes of this project. This approach (Hirschfield, 2005) refers to the desired eventual outcomes of a project (appendix three).

Due to the nature of the NS FRITS project as a proof of concept, many of these are difficult to measure and during the lifetime of a project such as this it will be difficult for such goals to be achieved, and, moreover, highly problematic to measure the extent to which the project has achieved these goals.

Therefore a series of intended IAs of the NS FRITS project were defined appendix three, which could be tested and measured within the scope of the project. These IAs can be described as the mechanisms through which NS FRITS may reach its UGs.

Therefore, this approach:

- Examined the extent to which IAs were met
- Assessed the reasons why they have or have not been met
- Identified the feasibility that future NS FRITS activity (expanded both in scope and delivery) would be likely to achieve its UGs
- Offered suggestions for future advancement

3 Evaluation methodology

This evaluation used a mixed methodology approach which made use of a range of research techniques. Due to the complex nature of the project a number of methodologies were used for the evaluation throughout the project and at each stage all partners were provided with an opportunity to comment and feed into the design. Each of the methodological approaches used are discussed in turn, with a description of both the methods used and reasons behind each of the approaches.

3.1 Evaluation meetings (linked to WP1)

Regular meetings were held between the lead beneficiary (PUAC) and the evaluation lead partner (University of Huddersfield). All evaluation meetings were held at PUAC offices, Sheffield, UK. At each meeting agendas were provide in advance and minutes and actions agreed and circulated. A list of all 18 Evaluation Meetings is provided in appendix four

The main purpose of the evaluation meetings was to ensure that throughout the NS FRITS project the:

- Design of the Evaluation Framework was appropriate and systematic
- Design and subsequent activities of each WP were linked to the overall aims and objectives of NS FRITS
- Project deliverables and achievements were relevant to UGs and IAs
- Partners were aware of the evaluation activity through the NS FRITS process
- Evaluation team were aware of all activity reported to the lead partner
- Evaluation process was continually reviewed

3.2 Participant observation of WP and project meetings (linked to all WPs)

The evaluation team attended a range of meetings that occurred throughout the NS FRITS project. This included nine International Management Group (IMG) meetings, a range of technical meetings, workshops and conferences and also individual WP meetings. A full list of the key NS FRITS meetings is provided in appendix five. At each meeting minutes and actions were agreed and circulated.

The advantages of this approach were that it enabled the evaluation team to make an assessment of a range of factors including:

- Inter-agency collaboration
- Project management
- Planning
- Decision-making processes
- Internal monitoring arrangements
- Organisational dynamics of meetings
- Project achievements, results and impacts
- Innovation

- Transnational working
- Territorial cohesion
- Knowledge transfer
- Long term perspectives
- Project indicator progress

3.3 Review of project documents (linked to individual WPs):

All relevant NS FRITS documentation covering the period January 2009 to December 2011 was collated and reviewed to provide the evaluation team with a thorough understanding of the role and activities of the NS FRITS partners and specifically how these related to each WP. These documents were reviewed within the specification of the NS FRITS Evaluation Framework. This allowed an assessment of the performance of the NS FRITS project against each of the defined IAs. More specifically, this enabled an examination and assessment of the:

- Design of each WP activity
- Documentation and level of recording and information sharing of NS FRITS activities
- Appropriateness and relevance of the design and activities of each WP to the project
- Achievements and outputs of each WP activity against IAs
- Co-operation and level of working within individual WPs
- Integration between each WP
- Level of innovation and transnational working
- Level of engagement with external stakeholders
- Successes and limitations of individual WPs
- Overall successes and limitations of NS FRITS activities
- Potential future applications of the NS FRITS project

A list of all documentation examined and reviewed by the evaluation team is provided in appendix six.

3.4 Partner questionnaires (linked to all WPs)

Three partner questionnaires (Year 1, Year 2 and Year 3) were conducted at the end of each year of the project to examine how partners viewed the progress and activities of NS FRITS at that stage. The questionnaire structure can be found in appendix seven. These were carried out in February 2010, February 2011, and November 2011. These questionnaires were conducted online and analysed by the evaluation team. The results of the first two surveys were presented in previous Interim Evaluation Reports, This Final Evaluation Report includes the findings of the third partner questionnaire (year three, November 2011), and also consolidates and brings together the findings of all three surveys.

The advantage of these partner questionnaires were that they allowed the evaluation team to explore partner views about progress and processes of the NS FRITS project throughout the duration of the project and to examine how these have changed and evolved over time. More specifically, they allowed an elicitation of partner's views on:

• Successes and limitations of the NS FRITS project

- Benefits to their organisation of being part of the NS FRITS project
- Dynamics and proficiency of project meetings
- Communication within and between WPs
- Level of activity by individual partners
- Management of individual WPs
- Overall management of the project
- Successes and limitations of each WP
- Achievements of NS FRITS (against IAs and UGs)

3.5 **NS FRITS pilots evaluation (linked to WP5)**

A separate document was produced which detailed the specification of the evaluation of the pilots (supplementary report available on request). The purpose of this was to set out and define the methodology and approaches adopted in the evaluation of the NS FRITS pilots (WP5). The key areas are summarised below and included the analysis of:

- In house laboratory testing and field testing of the NS FRITS pilot system
- Analysis of the training packages developed of the NS FRITS pilot system
- Recruitment and selection of operators and drivers
- Pre and post pilot interviews with drivers and operators
- Weekly monitoring reports of drivers and operators
- Automatic activity logging of the NS FRITS system
- Use of the NS FRITS helpdesk
- Questionnaires about the value of the NS FRITS screen media

This material was examined to assess the impact of the NS FRITS project, against a number of the IAs. Due to the limited scope of the live pilots (across 20 drivers and 10 operators) it is important to stress the limited impact that this proof of concept project could have compared to some of the wider UGs, particularly considering the scope of the problem it was trying to address. However, the evaluation of the pilots did enable an assessment of the potential of future NS FRITS activity to address some of these broader and longer term ambitions.

3.6 Final partner interviews (linked to all WPs)

At the end of the project, all partners were interviewed. This allowed partners to present their views on the overall successes and limitations of the NS FRITS project, and to elicit their views on its strengths and weaknesses and priorities for the future. It enabled partners to reflect on the activities they were involved in, level of co-operation, transnational working, and inputs of the various partners, and achievements of the NS FRITS project. The methodology for this was the use of semi-structured interviews which were recorded, although not transcribed due to the time available. The interview schedule is presented in appendix eight. The key aims of these interviews were for a critical reflective perspective on the NS FRITS project through individual partners: Twenty interviews of individuals were carried out across all ten NS FRITS partners. The key areas covered were:

- Overall reflections on the NS FRITS project as a whole
- Strengths, weaknesses and achievements of each WP activity

- Co-operation and effectiveness of partner meetings
- Level of interaction of partners within individual WPs and between different WPs
- Benefits of NS FRITS to partner organisations
- Feedback on the achievements of the NS FRITS pilots (including screen media, mobile handset device, and web based desktop interface)
- Level of innovation achieved in the project
- Engagement of relevant stakeholders and potential end users
- Dissemination of the NS FRITS project
- Level of integration with other relevant EU projects
- Potential future applicability of the system
- Degree to which the NS FRITS system met its IAs and therefore could potentially achieve its UGs

3.7 Evaluation of dissemination activity

The evaluation of dissemination and media activity was covered by a separate partner and specifically not included as part of this evaluation activity. For more information on this the reader is referred to the WP6 Final Report (supplementary documents available on request).

3.8 Evaluation documents

A series of documents have been produced which partners contributed and agreed to as part of the evaluation of NS FRITS. These include the following (supplementary documents available on request):

- First Interim Evaluation Report (including results of the Year 1 Partner Questionnaire)
- Second Interim Evaluation Report (including results of the Year 2 Partner Questionnaire)
- Evaluation of Hull Rotterdam seminars and workshops
- Evaluation of Pilot Specification document

3.9 Final evaluation synthesis

The report aims to consolidate and bring together findings of all methodologies and synthesise findings from the evaluation of the NS FRITS project. A range of approaches were taken within this evaluation and a large volume of material was collected.

In order to bring this material together, section four of this report discusses the findings of each of the key approaches of the evaluation in turn, (3.1 to 3.7). It then concludes with a synthesis section. This section brings together the main findings against the following overall evaluation questions:

- What were the achievements and results of the NS FRITS project?
- To what extent did the NS FRITS project achieve a transnational approach to partnership working?
- To what extent was the NS FRITS project innovative?
- To what extent did the NS FRITS project achieve knowledge transfer?

• What is the potential and long term perspective for future NS FRITS activity to meet the Ultimate Goals of NS FRITS?

4 Evaluation results

This section details the results from all three years of the project and the analysis is divided into a number of sections. Each of these will be discussed in the order presented below. Section 4.6 provides a synthesis of the findings of all components of the evaluation approach.

- Participant observation of meetings (4.1)
- Review of project documentation (4.2)
- Annual questionnaire of NS FRITS partners (4.3)
- Evaluation of NS FRITS pilots (4.4)
- Final interviews with partners (4.5)
- Evaluation synthesis (4.6)

4.1 **Participant observation at partner meetings and e**

This section presents findings from the analysis of participant observation at meetings and events. This includes IMG meetings, technical WP meetings, external events, seminars and workshops. The main findings from this analysis are:

Summary of key findings from participant observation at meetings

- It is evident from meetings that overall the NS FRITS project was an excellent example of transnational partnership working
- Participant observation at meetings identified a range of activities which demonstrated this, including the following examples of transnational partnership working at IMG and technical WP meetings:
 - Participation and attendance
 - Communication
 - Sharing of knowledge and innovative ideas
 - Discussion and decisions about the strategic direction of the project
 - Constructive feedback of WPs
 - Regular feedback on progress of WP activities
- It was further evident from the external events, workshops and conferences that this transnational working extended beyond the partnership, by including and engaging potential stakeholders and end users
 - A clear example of this was the support provided by an MEP who spoke at two events during the project, including the final conference
- The meetings served a range of functions which included:
 - Provision of a forum for the exchange of knowledge and ideas
 - An environment and working relationships that encouraged innovation and transnational partnership working
 - A systematic transparent approach to partnership working
 - A forum where ideas could be tested and discussed, constructive criticism to be raised and new solutions to be considered
 - A forum for solving obstacles and problems encountered during the project
 - A forum for private discussions between partners (IMG meetings and technical meetings)
 - A forum for the engagement of potential stakeholders and end users (NS FRITS events, seminars and workshops)
- One of the difficulties was finding a balance between having formalised structured meetings and enabling discussions around issues that evolved during the course of meetings. It was found that the best method for resolving this was to reserve the IMG for formalised discussion, and where more detailed debate was needed to move this into the technical WP meetings. Whilst most partners approved of this, a few felt the IMG meetings were still too formal.

4.1.1 IMG meetings:

There were a total of nine (three per year) IMG meetings (see appendix five). The purpose of the meetings was to provide updates on each WP. Before each WP meeting a detailed agenda was produced, and after each IMG meeting minutes were circulated alongside actions, dates and responsibilities for completion.

It was also agreed at the first IMG meeting that it would be a platform for strategic decisions to be taken if necessary regarding the direction of the NS FRITS project. It was agreed that after discussion, if an agreement could not be reached, the process would be for each partner would have one vote (ten votes in total) with the chair of the IMG having the casting vote. Perhaps a clear indicator of the successful nature of the NS FRITS transnational partnership was that no such voting was required during the course of the three year project.

One issue that has been evident from participant observation, partner feedback and was highlighted in the First Interim Evaluation was that there was some overlap between some of the early IMG and technical meetings. As a result of this the format was changed and the technical meetings were either themed or linked to specific WPs at appropriate time periods during the project. This was to ensure that the IMG meetings were not a forum for long technical discussions but a place for updated reports on WPs and for making strategic decisions when deemed necessary.

It is evident from observation and supported by partner feedback (see sections 4.3; Annual Evaluation Questionnaires and 4.5; Final Partner Interviews) that the IMG meetings became more 'streamlined' and 'businesslike' over time. They become a forum for partners to feedback on progress and for relevant discussion around timely and relevant agenda items and for strategic decisions to be made where necessary. They demonstrated an excellent example of successful transnational partnership working.

Some of the limitations of these meetings were that their formal nature was sometimes viewed as obstructive to discussion around key issues identified during some of the agenda items, as the time available for discussion at these meetings was limited. However, as these were viewed as strategic meetings it could be argued that this was not the forum for holding such discussions and WP meetings were a more appropriate arena for these discussions.

4.1.2 Technical meetings

There were a number of technical meetings across each of the WPs and a list of all meetings is provided in appendix five.

At each of these meetings agendas were provided in advance and minutes agreed with a list of actions and partners responsible for these. The function of these meetings was to provide a forum for discussion and to steer and advance each of the retrospective WPs. Some of these meetings were also themed when it was necessary to discuss activity between WPs, and provided a key forum for interaction between WPs. This was essential for the progress of NS FRITS.

The key advantages of these meetings were that they allowed detailed technical discussions between knowledgeable partners specific to each WP activity. They enabled thoughts and

knowledge to be shared, new ideas to be constructed and discussed, innovation techniques to be advanced and also provided regular meetings to facilitate transnational working. Whilst the activities often required specific technical inputs from partners with relevant expertise, they also fostered an environment whereby partners could trust each other to share new ideas and knowledge. Moreover, technical partners were also required at times to explain their Information Technology Solutions to other partners with perhaps less technical expertise. This was extremely useful as in order to encourage end users to participate in the NS FRITS pilots, it was necessary to explain in simple terms the benefits of the potential solutions that the NS FRITS proof of concept was proposing.

One of the limitations that occurred was when new individuals came onto the partnership and attended technical meetings they required a period of 'bringing up to speed' on the project. It was suggested this activity could have occurred before the technical meetings to save time re-discussing previous issues. However, this was a rare occurrence and the consistency of individuals who worked on the project across all partners certainly assisted in the development of good working relationships and lines of communication between the partners.

During the second and particularly third period of the evaluation, a number of teleconferences were arranged between technical meetings and these proved very useful for discussing problems identified, particularly due to the logistical difficulties in arranging meetings between ten partners across four different countries.

4.1.3 Stakeholder meetings and external events

NS FRITS held four external practitioner/stakeholder events seminars during the period of the First Interim Evaluation report. During the period of the Second Interim Evaluation there were a further four seminars and two workshops. During the Final Evaluation Period, there was one final event, the NS FRITS Conference held in November 2011 which showcased the NS FRITS system. A list of events is provided in appendix five.

In the First Interim Evaluation Report, NS FRITS partners suggested in the questionnaire responses that out of all events the external practitioner/stakeholder events have been the most satisfactory (scored below out of 5).

There was some disappointment expressed by partners in the second evaluation period, particularly after seminars six and seven, and as a result of this an additional evaluation of this seminar was conducted with partners. The findings from this were discussed in the Second Interim Evaluation Report. The key findings were:

- There were perhaps higher levels of 'dissatisfaction' from this event than was raised at previous events, reflected in the request for this additional evaluation of partners
- Overall responses of both days ranged from 'excellent' through to 'unsatisfied', with the average response 'good'
- For both days, the least favourable responses were for speakers and presentation style. For speakers the most frequent response was 'satisfactory' on Tuesday (range from 'good' to 'unsatisfactory') and on Wednesday this was 'good' (range from 'excellent' to 'satisfactory'). Similar responses were found for presentation style. Thus

there was an improvement observed from the Tuesday to the Wednesday overall in presentation and speakers.

- Concerns were raised that some of the presentations did not come across as
 professional and that perhaps this event could be seen as an opportunity missed to
 raise the profile of NS FRITS. Some suggestions were offered for improving the
 presentations including more preparation and rehearsal, and more advanced
 information and trials of the technology at each venue. This was difficult due to
 gaining access to the venues in advance.
- The workshops were praised as highly interactive and informative.

During the Final Interim Evaluation period there was one final event organised. This was the NS FRITS conference held in Brussels In November 2012. At this conference the NS FRITS proof of concept system was demonstrated and this event was attended by over sixty delegates. Diana Wallis (MEP, Vice President of the European Parliament) spoke about the need and potential for this system, particularly with the challenges faced today by the road sector, and the inherent dangers of lone driver working. This received wide press coverage and David Ransom, Diana Wallis and Chief Superintendent Colin Andrews, Humberside Police were interviewed.

The feedback received from this was overwhelmingly positive, and the partnership was praised for its achievements and partnership working. The project management was also highly praised by attendees from the Interreg IVB North Sea Region Programme.

4.1.4 Summary of participant observations at NS FRITS partner meetings, events, conferences and workshops

The NS FRITS partner meetings enabled the development of relationships between ten partners across four different countries, and these new partnerships (which would not have been formed without the NS FRITS project) created an environment which facilitated a number of key functions. These included

- Provision of a forum for the exchange of knowledge and ideas
- An environment and working relationships that encouraged innovation and transnational partnership working
- A systematic transparent approach to partnership working
- A forum where ideas could be tested and discussed, constructive criticism to be raised, and new solutions to be considered
- A forum for private discussions between partners (IMG and technical meetings)
- A forum for the engagement of potential stakeholders and end users (NS FRITS events, seminars and workshops)

Evidence of the levels of participation and satisfaction with these meetings is provided in table two below. This is based on the annual evaluation questionnaires of partners. Partners were asked about their satisfaction with events they attended, with a score of 1 being poor and 5 being excellent. Across all events and meetings, for each interim evaluation period, the minimum score received was 3.2 and this was for the technical meetings. There were concerns raised in the first interim period. It is noticeable that in subsequent periods this score improved to 3.4 and 3.6. The IMG meetings were consistently seen as successful and

also improved each year, with scores of 3.6 in year one, 3.7 in year two, and 3.8 in year three. The external events were seen as most successful with a score of 4 in the first and final evaluation periods. There was a reduction in how partners perceived these events in year two, but the problems identified were discussed above and again it is apparent that difficulties were resolved in the final period of evaluation.

	Average satisfaction score (1 = poor, 5 = excellent),		
	Interim Evaluation	Interim Evaluation	Interim Evaluation
	Report year one	Report year two	Report year three
IMG meetings	3.6	3.7	3.8
Technical meetings	3.2	3.4	3.6
External events	4	3.5	4

Table two: Overall satisfaction with the NS FRITS partner meetings

4.2 **Review of project documentation**

A series of documents were produced in each WP, and were reviewed as an ongoing process as part of the NS FRITS project evaluation. A full list of these is provided in appendix six. Each of these will now be described in turn for each of the WPs. The key findings of this section are:

Summary of key findings from project document review

- One of the successes of the project was the creation of WP1 templates which enabled regular performance monitoring of each WP, tracked against responsibilities of each partner, timetables for deliverables and monitoring progression.
- The level of detail in completing these documents suggests that all partners bought into this process
- The level of detail in these documents provided further evidence of the mechanisms by which the NS FRITS partnership created and carried out successful a transnational approach across all ten partners in the four participating countries
- The frequency and detail of the evaluation meetings between the lead beneficiary and evaluation team demonstrated an advanced level of cooperation and was an important component in enabling a detailed, systematic and robust approach to the evaluation of the project.
- All project deliverables (appendix nine) were produced and achieved
- WP2, WP3 and WP4 final reports detail the complexity that was involved in creating this proof of concept project including;
 - Thorough review of existing Information Communication Technology (ICT)
 - Engagement of stakeholders and potential end users through case scenarios
 - Identification and acquisition of appropriate and reliable data (including legal, technical and data sharing protocols)
 - Design of the system
- At times the project suffered in that it was difficult to make the vertical links between WPs 2, 3, and 4. The reports at times do seem isolated. As multiple partners worked on all three WPs this perhaps limited the difficulties this caused for the project
- WP5 documents show the key successes of the pilots and how they demonstrated the system adequately. There were some delays in this WP (discussed elsewhere in this report)
- WP3.6 report and WP5 Business Case demonstrated the potential future roll out of the NS FRITS system
- The quality of material in these reports is evidence of the high level of engagement and transnational partnership working and innovation that has been achieved in this project by partners

4.2.1 **WP 1**

The lead partner, PUAC was responsible for the delivery of this WP. Its main function was overall project management, to ensure the project was delivered on time and in accordance with the NS FRITS scope timescales. A number of key documents were produced as part of this WP. The key documents were:

- WP Activity Frameworks and Deliverables (4.2.1.1)
- Project Work Plan (4.2.1.2)
- Monthly Flash Reports (MFRs) and Half Year Work Plans (HYWP) (4.2.1.3)
- Half Year Activity Reports (4.2.1.4)
- Evaluation Meetings (4.2.1.5)

4.2.1.1 WP activity frameworks and WP deliverables

At the start of this project an activity framework was produced for each WP containing the activities to be carried out within each WP and the responsible partner for each WP activity. The framework detailed which partners would work on each activity. Further information includes which phase of the project the activity will be carried out, expected milestones and outputs, potential risks and mitigation strategies. These WP activity frameworks were used to inform the design of the evaluation framework. This document was as a successful component of the overall WP.

4.2.1.2 WP project milestones and deliverables (project work plan)

In addition to the WP activity frameworks, a deliverables document was produced that was refined over time. This supplementary report is available upon request. This detailed the milestones for each activity, partner responsible and completion date (appendix nine). It also mapped the deliverables of each project against each WP, provided links and integrations between different WPs and mapped out timelines for these. PUAC was responsible for monitoring the progress of each of these activities. This document also provided essential links between the project work plan, the project deliverables, and IAs. In order to monitor the activities a series of documents were designed and partners produced these on a regular basis. In addition to providing monitoring information about progress to the lead beneficiary, these documents also enabled progress to be shared between partners to ensure transparency and accountability for each WP activity and to disseminate information between partners.

4.2.1.3 Monthly Flash Reports (MFR) and Half Year Work Plans (HYWP)

MFRs were produced by each partner and related to each WP activity. These reports were then compiled into a monthly summary by the lead beneficiary. These aggregated MFRs were used to track partner activity and this progress was tracked against HYWPs that partners produced on a six 6 monthly basis. These were produces in June 2009; December 2009; June 2010; December 2010; and June 2011. The lead beneficiary tracks this progress using Microsoft Project to monitor the progress of each partner and WP and relate these to the project work plan. This information was also used to inform the NS FRITS process evaluation to cross reference progress against the activity frameworks.

4.2.1.4 Activity reports

In addition to HYWPs, partners submitted an activity report every six months to the lead beneficiary and these accompanied the financial claims. These were produced in September 2009, March 2010, September 2010, March 2011 and September 2011. The final of these to be produced will be in March 2011 as part of the final submission. The lead beneficiary compiled this activity in reports submitted to Interreg IVB North Sea Region Programme along with the six monthly financial claims. These summary reports were used by the evaluation team to cross reference with the evaluation framework and WP activity frameworks, to determine if NS FRITS WP activity met the aims and objectives of the project.

4.2.1.5 Evaluation meetings

Regular meetings have been held between the lead beneficiary (PUAC) and the evaluation lead partner (University of Huddersfield). All meetings below were between these two organisations were held at PUAC offices, Sheffield, UK. At each meeting agendas were provide in advance and minutes and actions agreed and circulated. There were 18 meetings in total and a list of these is provided in appendix four. These meetings were provided to ensure links between the overall project evaluation and the monitoring of the project, to discuss any problems that arose during the project related to evaluation, and to ensure the NS FRITS activities were in line with the project aims and objectives. Circulation of the minutes of these meetings to all partners ensured transparency and transnational partnership working. This successful working relationship formed between the lead beneficiary (project management) and the evaluation team is viewed as a crucial component that enabled a robust systematic evaluation of the NS FRITS project.

4.2.1.6 Overall findings from WP1 document review

One of the successes of this project was the creation of a number of templates and reporting mechanisms that enabled regular performance monitoring of each WP, to be tracked against the responsibilities of each partner, timetables for the deliverables, and monitoring of their progression. They also enabled a transnational approach across all partners in the four participating countries. The completeness of these documents and level of detail suggested that all partners bought into this process. This information was also incorporated into the Evaluation Framework. It is apparent from these documents that the level of cooperation between the project management team and the evaluation team was a key factor in ensuring a robust and systematic approach to the delivery of the evaluation of the NS FRITS project. All partners were fully involved and committed throughout this process and this was reflected in the detailed information each partner provided.

There were some minor gaps in the information provided, which sometimes occurred slightly outside of the deliverable date. It is apparent that there were some delays in this project, particularly around the delivery of WP5. More discussion of this is presented in the analysis of the partner questionnaires and final partner interviews in later sections of this report.

4.2.2 WP 2

This part of the NS FRITS project was concerned with the definition of the technical requirements of the NS FRITS system, which was intended at the outset to be an electronic communications and data capture system that can support efficient, safe and secure supply chain management. This was led by Avanti Communications. There were two key documents produced as part of this WP.

- NS FRITS Technical Concepts
- WP2 Final Report: NS FRITS System Requirements

4.2.2.1 NS FRITS Technical Concepts and System Requirements documents

These documents identified the potential technical issues that may arise during the development of the NS FRITS system. They were produced as a way of compiling a range of potentially relevant documents related to technical issues that may be important for NS FRITS to consider. They reviewed the potential architecture of the system, and provided an overview of current and relevant systems.

They reviewed the data sources, end users and considered the operational system (highlighting the need to consider legal implications and storage costs). Contributions were made to these documents by a range of partners. The Technical Concepts document was used as the basis for the creation of the System Requirements document.

These documents incorporated an analysis of the state of the art in commercial and EU research projects for similar systems, and input from participants to the first NS FRITS stakeholder meeting. They provided a brief system overview, mission requirements, system requirements and use case scenarios.

The mission requirements considered scalability, operation, performance, design, economics, regulation, safety and security. System requirements examine identified data sources, coverage, modes of distribution, report transmission, report acknowledgement, report payload capabilities, life cycle, interfaces, end users, architecture legal and financial requirements and operational requirements.

The documents also described hypothetical situations or scenarios ("events") which might occur within the freight logistics transport industry. The scenarios are set out to represent as accurately as possible real-life events in the industry. In addition, consideration was given to ways in which the NS FRITS system could improve these situations. The scenarios are presented as a series of stories and as a timeline to demonstrate their evolution. They provide a simple model for identifying the systems users, services and how the two interact.

These documents also included the results of the driver and operator surveys. The methodologies used for these were discussed in the Second Interim Evaluation Report. This document was also rolled out to include system functionality as part of WP4.

4.2.2.2 Overall discussion of WP2 document review

The report produced in this WP provides evidence of transnational partnership working, due to the range of partners who contributed to this document. The thorough review of potential ITS demonstrates how partners have identified the most appropriate ITS for the NS FRITS

system. The engagement and consultation with end users through use case scenarios and the relation of these to priority areas identified through driver and operator surveys have ensured that the system requirements and functionality specifications are appropriate to the needs of the user community.

4.2.3 **WP 3**

This WP identified the type and sources of data to be captured, edited and transmitted, using the NS FRITS communications platform. This was led by KLPD, and as part of this WP, the partner also negotiated access to the range of data sources used in the NS FRITS pilots. Two documents were produced for this WP.

- WP3 Final Report: Identification of NS FRITS data sources and stakeholders, identification of data types and negotiation of data supply and legal issues
- WP3 Supplementary Report: (WP3.6) To study and analyse how data capture/ transmission can encourage innovation and increased use of information and communication technologies within the North Sea Region

4.2.3.1 WP 3 Data Sources Final Report

This report delivered a range of aspects of this WP including identification of NS FRITS data sources and stakeholders, identification of data types and negotiation of data supply and legal issues. It was supplemented by a table which summarised each of these data sources and included: a brief description; geographic location; if it is push or pull data; dates for approach to the organisations and dates for agreement to provide. It also matches these to driver needs, operator needs and scenarios that were identified in WP2 and WP4 (system requirements and system specification and functionality.

The needed data was identified and categorised into a number of information types: traffic, weather, route planning, legal and transport document, security and cargo. In addition, access to this data was negotiated through a range of data sources and information providers. This process was extensive, identifying, interviewing, selecting, and finally securing the data source/information provider to the NS FRITS project with the Data Sharing Agreement from a range of organisations across the different countries

This report is divided into eight chapters which were: chapter one - introduction to the NS FRITS project, main missions and goals for WP3. This chapter also includes a glossary and definitions; chapter two - data types and sharing data; this describes and categorises data to be delivered to the NS FRITS system in different information types and examines how NS FRITS intends to share data; chapter three - stakeholders and data sources, identifies the method for identification and selection of data sources and stakeholders and describes how data sources and stakeholders were selected: chapter four - description of stakeholders and data sources acquired, presents data sources and stakeholders for NS FRITS; chapter five - data sources acquired, provides a description of the type of data and how it will be ingested, processed, handled, disseminated and presented and describes the architecture; chapter six - describes data handling and NS FRITS system architecture: chapter seven details a list of the references used and chapter eight provides a series of annexes to this report.

The main data sources were described and classified into: traffic, weather, route planning, legal and transport document, security and cargo. Many of these related to areas of interest identified through driver and user surveys.

In chapter three the methodology for identifying potential stakeholders was described and over 60 were identified in a number of countries. The next stage was initial contact with these via a range of methods to establish personal contact.

Chapter four summarises the process for selecting which data was useful and available for NS FRITS. Chapter five then provides a description of each of the data sources acquired for the NS FRITS project, subdivided by countries (the Netherlands, the UK, Belgium, Germany, Sweden, Norway and Denmark). A number of these data sources were then accessed for use within the NS FRITS pilots (WP5).

Chapter six describes how the data sources would link to the NS FRITS system architecture.

4.2.3.2 WP 3.6 supplementary report

This standalone report was provided in addition to the main WP3 report and examined WP3.6, led by Volvo Technology. This aimed to examine how data capture and transmission could encourage innovation and increased use of information and communication technologies within the North Sea Region. It built on work from other WPs and identified three key factors as necessary for innovation - users, technology and strategy. The report considered a range of different perspectives and identified the following:

- Factors that inhibit the use of ICT
- Features that users require from ICT in the road freight transport sector
- Lessons learned from earlier activities within NS FRITS, similar projects and commercial activities

The key feature of this report is that it identified that NS FRITS could encourage innovation by offering a transnational solution that collects, integrates and distributes data from a wide range of sources, including a two way communication capability. This satisfied a number of the IAs of the project. Moreover it suggested that using these features as the basis, it was probable that with adequate development, the NS FRITS system could be the platform for many service innovations, providing evidence for the delivery of a number of the NS FRITS UGs. It also highlighted a range of potential methods though which future adoption of NS FRITS could be encouraged. These included

- Develop use acceptance by providing multiple, value added services that are enabled by the system
- Allowing data providers to plug-in easily to the system
- Vet data sources to ensure that they provide accurate and current data
- Design a robust and stable system to ensure 24/7 availability
- Develop a system that can respond to user needs as they evolve and allow future development without a need for users to upgrade

4.2.3.3 Overall discussion of WP3 document review
The reports produced in this WP provided evidence of transnational partnership working, due to the range of partners who contributed to these documents. Data was also identified and sourced from a number of different countries. This WP provides the bridge between WP2 and WP4. It demonstrates how the public and private sector have worked in partnership to develop, populate, administer and benefit from the system.

4.2.4 **WP 4**

The purpose of this WP was to design and implement ITS identified and recommended in WP2 and 3 and incorporated findings from each of these WPs. A key component was the specification of system functionality to be developed. This WP was also led by Avanti Communications. The report produced for this was not an isolated report, but a continuation of the System Requirements document from WP2. Two documents were produced for this WP

- WP4 Final report: NS FRITS System Services and Functionalities Description
- WP4 Supplementary Report: NS FRITS System Manual

4.2.4.1 System services and functionalities description

This report was a continuation of the document produced as part of WP2 set of the system specifications and functionality. It also incorporated data identified as part of WP3. It is subdivided into driver environmental data and operational data (based on WP5 briefing note). For the driver environmental data, this report identified the collection, modelling and conversion, analysis and distribution of data. For operational data this set out the client and driver requirements and then examined the overall system requirements for this data. This report forms the basis of the specification of the NS FRITS system that was developed and tested using the NS FRITS pilots in WP5.

4.2.4.2 NS FRITS system manual

This document provided detailed instructions of how to install and how to use the NS FRITS software. It was used by trainers, drivers and operators in the pilots (WP5). It describes how to use the route planner, search function, and the device in driver mode. It also describes communication between driver and fleet manager, the quick start guide, and the use of the help function. All of these are provided with screen shots and step by step guides.

4.2.4.3 Overall discussion of WP4 document review

The reports produced in this WP provide evidence of transnational partnership working, due to the range of partners who contributed to these documents. Additionally this WP demonstrated evidence of a range of key objectives of the NS FRITS project. These included: establishing an ICT solution that includes telecommunications and an increasing range of sensory, location, security identification and data capture technologies; developing a multi-lingual electronic communications and data capture system; building functionality and capacity into the system to enable compatibility for additional services to be introduced in the future. The extent to which these would be a success was unknown and this highlighted the need for the WP5 NS FRITS pilots.

4.2.5 **WP 5**

This WP was a key component of the NS FRITS project and involved the implementation and execution of three Pilots at key strategic locations in the North Sea Region. This WP was led by the University of Hull. A number of reports were produced as part of this WP, although some of these reports spanned across WP4 and WP5. The documents produced were:

- Data Classification report (WP4 and WP5)
- Bremerhaven Pilot report (WP4 and WP5)
- Trials Specification (WP4 and WP5)
- Evaluation Pilot Specification (WP5)
- NS FRITS Business Case (WP5)
- NS FRITS WP5 Final Report (WP4 and 5)

4.2.5.1 Data Classification report

This briefing paper was an important aspect of WP5, and it identified and distinguished between two types of data that were identified in WP3. These are Driver Environmental Data (DED) and Operational Data (OD). The first of these, DED includes data on the driver and load environment (including traffic conditions, weather, routing for example), driver facilities (secure parking etc.) and other local issues (for example local crime hot spots, police identity verification, local regulations etc.). DED potentially applies to all drivers/vehicles in a particular area and is independent of any operational considerations. DED would be made available to all potential users and has no intrinsic competitive commercial value. Companies will of course derive value from the data since use of it should improve their efficiency but this value is available to all potential users. OD is related specifically to the task which the driver / vehicle is performing. Examples might include: instructions to driver to alter their route; timing information; target arrival time at destination; notification of delays; load details including point-of-delivery confirmation; load status; doors open, load temperature, sensor data and geofence data for example.

This distinction was important for both WP4 (system functionality) and in an examination of what data would be selected and included in the pilots. The report also describes the delivery mechanisms for this data to the NS FRITS system. This can be described as using two approaches, broadcast (push) data and on demand (pull) data. This idea of push and pull data was incorporated into the WP3 document in chapter six describing the system architecture and delivery mechanism.

4.2.5.2 Bremerhaven Pilot report

This report was produced by ISL after the Bremerhaven pilot and captured the research and ideas relevant to the Bremerhaven pilot of NS FRITS. This is considered the first pilot as part of WP5. It analysed the current situation regarding trucks arriving at port terminals and made suggestions regarding solutions to improve driver's situation and handling interfaces at ports.

The report is divided into five chapters which include: chapter one, introduction; chapter two; Bremerhaven pilot; chapter three, Analysis; chapter four, conceptual design; and chapter five, pilot test scenarios.

There are two useful tables in section 4.5 which summarise the pros and cons of the system to potential users. In chapter five, three scenarios are played out and the results are evaluated against drivers and operators perceptions of the system. This information formed a key component in the specification of the functionality of the system and in the formulation of the two subsequent live pilots in WP5.

4.2.5.3 NS FRITS pilot specification document

This report set out the specification for the NS FRITS pilots. It provided an introduction to the specification of the NS FRITS pilot specification and described the format of the pilots. It detailed the system, data and participant requirements for the pilots and addressed the following:

- Data to be included in the system for the pilots and which drivers and operators who will take part
- Internal laboratory and field testing of the NS FRITS system
- Number of drivers and operators who will take part
- Training of participants
- Geographical extent of the pilots (depends on data available and which operators take part)
- Length and frequency of the pilots

This document was crucial for the delivery of the NS FRITS pilots. The information contained within this document was thorough and should have provided clear guidance for the formulation of the NS FRITS pilots. However, a limitation of this report as this it was not produced in a timely fashion and there were severe delays in this report. This led to some delays in the role of the pilots. This is discussed further in sections 4.3 (annual evaluation questionnaires), 4.4 (evaluation of the pilots) and 4.5 (final partner interviews).

4.2.5.4 Evaluation Pilot Specification

This document set out the specification for the evaluation of the NS FRITS pilots. It detailed the data sources that should be collected for pilot evaluation; methodology to be used for this; and analysis methods. It also discussed the theory behind the evaluation of NS FRITS.

There were some difficulties in finalising this document due delay in producing the Pilot Specification document and until the pilots began there were a number of unknowns for the evaluation including the actual dates of the pilots, frequency of journeys, geographical extent, and data sources and end users willing partake in the live pilots. However, partners were able to collect the required information for this evaluation based on processes set out.

Methodologies used were:

- Review of in house laboratory testing and field testing of the NS FRITS system
- Analysis of training packages developed for the NS FRITS system

- Recruitment and selection of operators and drivers
- Pre and post pilot interviews with drivers and operators
- Weekly monitoring reports of drivers and operators
- Automatic activity logging of the NS FRITS system
- Use of the NS FRITS helpdesk
- Questionnaires about the value of the NS FRITS screen media

The evaluation specification also highlighted potential failures or risks to the evaluation, and how the evaluation design has been constructed in order to minimise these potential risks.

4.2.5.5 NS FRITS Business Case: Further Investment

This report presented the business case for future investment of the NS FRITS system. It highlighted successes identified in the pilots (see section 4.4 of this report) and built on the potential innovation impacts of the NS FRITS system based on WP3.6. It identified a number of key potential future developments for the NS FRITS system. Three areas identified were:

- 'Turn by turn' satellite navigation functionality with an additional re-routing facility
- Multimodal operations including rail, sea and air
- Client usage recording

It included a market analysis profiling current competitors of the NS FRITS system. It also identified a number of unique selling points of the NS FRITS system. These included that it:

- Offered a one stop shop for information
- Providing users with specialist data such as crime hotspot information
- Offered secure parking information for commercial drivers
- Offered a multi-lingual system with translation services
- Facilitating real-time communications for drivers and transport managers
- Included operational data
- A scalable system design

It also identified potential customers and detailed potential future operating costs and presented a business case for future investment.

4.2.5.6 WP5 Final Report

This report provides a summary of WP5, although some of the material spans across WP4 and 5. This examines each of the seven phases of WP5 including

- Phase 1: NS FRITS concept verification September 2010 November 2010
- Phase 2: System simulations December 2010 March 2011
- Phase 3: Pilot preparation activities January 2011 August 2011
- Phase 4: Partner pilot activities January 2011 August 2011
- Phase 5: NS FRITS pilots September 2011 November 2011
- Phase 6: Nordic trial October 2011
- Phase 7: Pilot evaluation July 2011 December 2011

Some of these phases could be considered part of WP4 and 5, especially phases one to four.

The report also discusses how the NS FRITS solution compares with other ITS for compatibility and data sharing for future EU rollout. Some of this material is also discussed in the business case.

4.2.5.7 Summary of WP5 document review

This review of the WP5 documentation has revealed how the pilots were set out and tested. It also links to the activity of WP4 as the continuous refinement of the NS FRITS system was informed in WP5. This document shows how the pilots were a culmination of a range of efforts from WPs 2 to 5 and drew together a wide range of ideas, innovation and new knowledge. It shows the transnational partnerships needed to progress and the engagement with end users. It also, through the business case, shows the potential for future development of the system to tackle some of the more ambitious UGs. Whilst there were delays in producing some of the WP5 reports (which did lead to some delays in the setting up of the pilots, a factor discussed elsewhere in this report), it should also be stated that the effort, partnership working and innovation required to create and test the NS FRITS system, based on the needs of and using actual live pilots with end users, should not be underestimated.

4.2.6 **WP6**

One document was produced for this report.

• WP6: Final Report

The purpose of this WP was to manage and co-ordinate the dissemination, communication and publicity activities in collaboration with partners, end users and stakeholders to support and influence regional, national and EU policies. This WP was led by the lead beneficiary, PUAC and work was sub-contracted out to two marketing companies. The evaluation of this activity was a separate activity beyond the remit of this evaluation, and results of this are therefore not included within this report. This is a supplementary report available upon request and some of the documents produced are listed in appendix six. Some aspects of this WP are relevant to the overall evaluation and IAs of the NS FRITS project, including engagement with end users and collaboration with other EU projects. The extent to which these were achieved is discussed in sections 4.3 (annual evaluation questionnaires) and 4.5 (final partner interviews) within this evaluation report.

This report discusses the communication plan and dissemination strategy, target audience, and collaboration with other EU projects. The evaluation of this WP (outside the remit of this report) found that NS FRITS achieved an average of three PR hits every month in its final eight months; and that all objectives were achieved, including the delivery of the animation film, brochure and NS FRITS Conference.

4.2.7 Overall findings of the review of project documentation

This section has summarised the key findings of the documentation review methodology as part of the overall evaluation of the NS FRITS project.

The project management team set up a clear structure and reporting mechanism for monitoring performance and for open communication and transparency of this across the partnership. This included MFRs for monitoring activity regularly, HYWPs to ensure forward planning, and six monthly activity reports to ensure milestones are met. The majority of milestones were met on time and all deliverables were achieved. The level of detail of these documents also suggests that all partners were engaged in this process and also demonstrates the level of successful transnational partnership working in the NS FRITS project. Regular documented meetings between the project management and evaluation teams ensured that systematic evaluation and performance monitoring occurred throughout this project and also that this activity was fed back across the partnership.

In WP2 the system concept was defined, after a review of current ITS technology and the identification of user needs. This was designed to ensure that technology partners delivered a solution required by users. It is evident that in order to define the NS FRITS concept, much discussion was required, and there was a necessary level of learning across all partners.

In WP3 potential data sources were identified. Those relevant to the NS FRITS concept were selected for further investigation. Agreements were sought to access this data, and where possible this was acquired for WP4. Again this documented activity required transnational partnership working and end user engagement. It also required private-public partnership working.

WP4 involved developing an ICT solution that included telecommunications and an increasing range of sensory, location, security identification and data capture technologies; developing a multi-lingual electronic communications and data capture system; building functionality and capacity into the system to enable compatibility for additional services to be introduced in the future. There was much innovation, learning, knowledge sharing and transnational partnership working evident in this activity.

WP5 was the pilot activity. This could be subdivided into internal testing that could be attached to WP4 and external pilots that could be attached to WP5. The testing phases of both enabled developers to continually refine the system. The documents in this WP show how the live pilots were a culmination of a range of efforts from WPs 2 to 5 and drew together a wide range of ideas, innovation and new knowledge. It shows the transnational partnerships needed to progress and the engagement with the end users.

WP6, the dissemination and communication of NS FRITS was seen as a highly successful component of this project.

Overall, the review of documents identifies several key activities documented in the NS FRITS process and these reveal some of the key factors that led to a successful project. The level of detail of documentation demonstrates commitment and high levels of engagement by all partners. That all partners contributed to so many documents also demonstrated the amount of transnational partnership working and communication that occurred between partners. In addition, the steps taken to deliver all indicators, project milestones and activities, reveal the extent of learning, knowledge sharing and innovation that occurred

during the project. Although some documents were produced late, this was a reflection of the commitment of partners to making sure activities were actually delivered. The delays in WP5 did reduce the time available for the live pilots, but perhaps did not significantly hamper the achievements of the NS FRITS project.

4.3 Annual evaluation questionnaire of NS FRITS partners

Three annual online questionnaires for partners were conducted at the end of year one (February 2010), year two (February 2011), and year three (November 2011). The key findings and recommendations from the analysis of these questionnaires are detailed below.

Key findings and recommendations of the NS FRITS annual partner questionnaires

- Partners identified a range of key strengths of the NS FRITS project including:
 - Multi-disciplinary cross sector transnational partnership working between the private and public sector
 - All partners were highly committed to delivering this project
 - o Driven and focused upon the needs of end users
 - Developing a leading edge and innovative ITS that can be delivered across a range of platforms and combine multiple data sources in a cost effective way across a single platform
 - Providing targeted and relevant information to lone drivers and other users of the road freight transport system
 - The project has remained focused on its aims and objectives and delivered these on time and within budget
 - It created a partnership environment which encouraged a culture of innovation and idea sharing across transnational organisations
 - Creating new working relationships which have the potential for future working partnerships to be developed
- Some of the limitations identified were:
 - A lack of clarity as to the anticipated outcomes of NS FRITS from the outset of the project (perhaps to be expected in a proof of concept project such as this)
 - Lack of communication between partners, particularly outside of IMG meetings
 - Delays in obtaining and testing suitable data and that a minority of partners were not pro-active in their approach
 - Large administrative burden and amount of effort that was required for the project by the funding body
- There were a number of advantages identified by partners from being part of the NS FRITS partnership, including:
 - Profile raising and strengthening reputation both nationally and internationally
 - o Opportunity to network with organisations in both the private and public sector
 - Providing a gateway for opportunity for further European collaborative work
 - Potential to incorporate new developments and technical solutions within their organisation
 - Developing knowledge and experience in areas of safety and security in the road freight sector
 - Experience of European project working
- IMG meetings were mainly seen as positive in the following ways:
 - Ability to make strategic decisions
 - Provision of updates (administrative and WPs)
 - o Interaction and discussion between partners
 - Facilitating co-ordination between partners
 - Good overall organisation and focus of the meetings
 - Exchange of ideas and improved understanding of the project as a whole
 - \circ $\;$ Kept the project focused on its aims and objectives

Key findings and recommendations of the NS FRITS annual partner questionnaires (continued)

- The negatives of the IMG meetings were:
 - Repetition
 - Served only as an administrative function and there was debate as to whether more discussions could have occurred at these meetings
 - A minority of partners did not contribute and some additional time could be afforded to developing project ideas
- Technical meetings and seminars received similar comments as to their advantages and limitations. However, findings were more mixed across different WPs as some were seen as more successful than others.
- Key advantages of the external events were:
 - Provided an excellent forum for networking and discussion with stakeholders and end users
 - Enabled engagement of stakeholders in the NS FRITS process (seen as a crucial component of NS FRITS)
 - o Enabled the NS FRITS profile to be raised, showcased and demonstrated
 - NS FRITS Conference received particular praise
- WPs that partners were most satisfied with were WPs 1 and 6. The least satisfaction was expressed about WP5
- Over the lifetime of the project, partner satisfaction with the project meeting its targets increased as more deliverables were met
- Majority of partners were very satisfied with
 - Overall achievements of NS FRITS
 - o That it had engaged with the right stakeholders
- There was a mixed response with plans beyond the lifetime of the projects and partners were less satisfied with future plans
- In terms of its capabilities, more partners were confident that NS FRITS could promote the adoption and use of ICT applications and build the innovation capacity of businesses and services
- Partners were happy that all IAs were achieved, although the extent of this varied. IAs which most partners perceived were fully met were:
 - Transmit and receive data in a series of languages to lone workers as they travel through North Sea Region
 - Provide live up to date information (traffic flow, congestion, safety and security)
 - Develop a multi-lingual electronic communications and data capture system into an ITS
 - Build functionality and capacity into the system to enable compatibility for additional services to be introduced in the future
 - For the public and private sector to work in partnership to develop, populate, administer and benefit from the system

The questionnaires used are provided in appendix seven. There were 12 responses received by partners in year one and two and 16 responses received in year three.

The questionnaire was broken down into four sections:

- Section A asked general questions about satisfaction with NS FRITS overall and why partners were involved
- Section B examined IMG meetings, technical WP meetings and external practitioner/stakeholder events
- Section C investigated individual WPs
- Section D sought the levels of satisfaction with the progress of NS FRITS

4.3.2 **SECTION A:**

This section asked general information about the strengths and weaknesses of the NS FRITS process and the benefits of being involved in NS FRITS to the partner organisations.

4.3.2.1 QA1: What are the main strengths of NS FRITS?

There were a number of strengths identified by partners across each year of the project and these remained consistent across the three year period. The responses can be categorised into the following:

- A strong example of multi-disciplinary cross sector transnational partnership working between both the private and public sector
- All partners were highly committed to delivering this project
- Driven and focused upon the needs of end users
- Developed a leading edge and innovative ITS which can be delivered across a range of platforms and combine multiple data sources in a cost effective way across a single platform
- Provides targeted and relevant information to lone drivers and other users of the road freight transport system
- The project has remained focused on its aims and objectives and delivered these on time and within budget
- It created an partnership environment that encouraged a culture of innovation and idea sharing across transnational organisations
- Created new working relationships which have the potential for future working partnerships to be developed

The following quotes are examples that demonstrate and re-enforce the above responses:

- "There is generally good cooperation between NS FRITS partners. A good balance exists between public and private sector partners. The partners have a diverse range of skills and expertise." – NS FRITS partner February 2010
- "NS FRITS demonstrates good transnational working. All partners work together to ensure that the project is successful. NS FRITS is one of the few EU projects which concludes with a marketable end product and the initial response from demonstrations has been very positive". – NS FRITS Partner, February 2011
- "The project has been well supported across a whole range of international agencies and the willingness to be involved to share the positives and negatives has been

substantial. To produce an item for practical use from a theory has been difficult and demanding, but shared ideas with commitment has not only produced an article that proves the concept, but has led to the formal integration of international partners which would otherwise not have been there. These links have been forged to a level now that could open doors for perhaps different issues". – NS FRITS Partner, November 2011.

- "Calibre and commitment of the majority of the partnership; Sticking to the aims and objectives of the project application supported by a structured reporting procedure; Introducing a culture of innovation where ever possible throughout each WP to push the boundaries in terms of achievements" – NS FRITS Partner, November 2011
- "NS FRITS is a unique European project that has developed a system which can truly benefit the road freight industry" – NS FRITS Partner, November 2011

4.3.2.2 QA2: What have you found less than satisfactory about NS FRITS?

Despite the overwhelming positive response to the strengths benefits of the NS FRITS project, there were some limitations highlighted by partners. Communication was identified as a problem throughout the lifetime of the project, with various potential suggestions attempted (email lists, website forums and teleconferences attempted). There were some minor issues, such as a perceived lack of clarity about the aims of the project at the outset. However the nature of this new innovative proof of concept idea meant that it was difficult to be clear what would be required from the beginning as new knowledge had to be shared and then new ideas developed and tested. There were some difficulties during the project when one partner did not deliver their WP on time and this caused some delays. However, the NS FRITS partnership as a whole managed to deliver all NS FRITS objectives which demonstrate the strength of the partnership and the working relationships that were developed.

The limitations identified from the survey could be classified into the following areas:

- A lack of clarity as to the anticipated outcomes of NS FRITS from the outset of the project
- Lack of communication between partners, particularly outside of IMG meetings
- Delays in obtaining and testing suitable data and a miscommunication between negotiating access and securing the required data
- That a minority of partners were not proactive in their approach, did not fully engage in the project, deliver within the agreed milestones and that led to delays in some of the activity
- The large administrative burden and amount of effort that was required for a project with only 50% funding, the delay in payment which seriously affected SME businesses and the onerous nature of the reporting procedure that has led to some partners decision not to participate in such future research (related to Interreg IVB reporting process)
- The administrative burden meant that sometimes the project was more concerned with ticking administrative boxes as opposed to delivering a real value solution

The following quotes are examples that demonstrate and re-enforce the above responses:

- "Lack of communication and information from partners resulting in missed opportunities, misunderstandings and delays in project activities". – NS FRITS partner February 2010
- "Lack of direction or vision from outset. No one knew what they wanted the ITS to deliver other than very general topic headings" – NS FRITS partner February 2010
- "Communication has continued to be an issue between partners on the NS FRITS project. Frequently partners are making arrangements for meetings or conference calls and failing to involve the whole partnership. The first the additional partners hear about the meetings is when the results are circulated via email. This in turn means that not all partners are able to contribute to important matters." – NS FRITS Partner, February 2011
- "There are a minority of partners who are not as proactive as others. This is emphasised by the high levels of proactivity from the rest of the partnership." – NS FRITS Partner, February 2011
- "The administration function that underpins the project has been intensive, especially during the periodic expenditure claims. Despite a tight administrative regime, it seems to have still fallen down with the freeze being placed on a number of NS FRITS partners. Indeed this payment running 12 months in arrears has a major impact on SME cash flow". – NS FRITS Partner, November 2011
- "The lack of engagement from some partners. Also some partners appear to be negative in their approach to issues which can hinder those who want to find solutions. However this is a minority." – NS FRITS Partner, November 2011

4.3.2.3 QA3: How has NS FRITS benefited your organisation?

There were a number of advantages identified by partners from being part of the NS FRITS partnership and these were consistent across each year of the annual evaluation questionnaire. They can be categorised into the following broad areas:

- Profile raising and strengthening reputation both nationally and internationally
- Opportunity to network with organisations in both the private and public sector
- Provide a gateway for opportunity for further European collaborative work
- Potential to incorporate new developments and technical solutions within their organisation
- Develop knowledge and experience in safety and security in the road freight sector
- Develop experience of European project working

The following quotes are examples that demonstrate and re-enforce the above responses:

- "Wider knowledge of organisation; better multi-national working; and stronger contacts with industry". - NS FRITS partner February 2010
- "NS FRITS has raised the profile of our organisation and enabled us to work closer with a wider range of the public and private sector." – NS FRITS partner, February 2011

- "We deepened our knowledge in the field of truck related transport and demands of drivers as well as safety and security issues". – NS FRITS partner, February 2011
- "Learned from other kind of partners that we usually don't work with; some concepts could probably be used in our own business in the future" – NS FRITS partner, November 2011
- "Opens up channels of communications to different organisations that add value to product development" – NS FRITS partner, November 2011
- "Networking with international and national colleagues, links with academic and specialist resources which may be developed in future projects" – NS FRITS partner, November 2011.

4.3.3 **SECTION B:**

This section of the questionnaire sought to elicit information about the NS FRITS IMG meetings, workshops and external practitioner/stakeholder events.

4.3.3.1 QB1: How many of each of the following events have you attended

Before asking about partner experienced and perceptions of events attended, it is important to identify how many events each partner attended and therefore could comment on directly. This is also a useful measure of levels of partner commitment to the project, for those who responded to the questionnaire. The results of this analysis for each of the three evaluation periods are shown in figure one. This shows that although three to four respondents had not attended many of these meetings and events, the majority of these had attended at least two of each type of meeting and event per evaluation period. This suggests that NS FRITS partners were active in their participation of these (however this is not necessarily an indication of the level of involvement of participants and/or organisations). The analysis of participant observation at partner meetings and events does suggest an active level of commitment and participation by all partners present at meetings. Some members had attended at least five technical meetings and/or external seminars and workshops during the evaluation activity periods reflecting a high level of involvement.



Figure 1: Number of events attended by partners

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4.3.3.2 QB2: Overall, how would you rate events organised through NS FRITS?

Overall, and consistently over the three year evaluation period, the majority of partners rated meetings and events as satisfactory or good (as shown in figure two). There was only one instance of an event being rated as poor and this was the external events in year two. This was discussed earlier in this report. Less than 10% of partners scored any of the events a two (less than satisfactory) during any of the evaluation periods. The average response for all meetings was satisfactory to good. In the final period of evaluation 10% to 20% of respondents suggested IMG meetings, technical meetings and external events were excellent. It is noticeable that across each of these three meeting and event categories, there was an improvement over time in levels of satisfaction. This suggests concerns expressed in the first and second Interim Evaluation reports were addressed by the partnership and suggestions for improvements implemented.

On average, IMG meetings were rated as good with some assessed as excellent and these also improved over time. The technical meetings ranged from less than satisfactory to excellent (with an overall score of "good"). The external events ranged from less than satisfactory to good, (with an overall score of "average"). Overall external events were rated highest, followed by IMG meetings and then technical WP meetings.



Figure 2: Overall rating of events attended by partners

(1 = poor, 5 = excellent, 0 if not attended any of these events)

4.3.3.3 QB3 and QB6: What are the main strengths of, and what has been less than satisfactory about, the IMG Steering Group Meetings

The main strengths identified of the IMG meetings and areas that were also identified consistently across the three evaluation time periods were the:

- Ability to make strategic decisions
- Provision of updates (administrative and WPs)
- Interaction and discussion between partners
- Facilitating co-ordination between partners
- Good overall organisation and focus of the meetings
- Exchange of ideas and improved understanding of the project as a whole
- Kept the project focussed on its aims and objectives

The following quotes are examples that demonstrate and re-enforce the above responses:

- "Ensuring that the strategic aims/goals of the project are being met and the project team are working together for the common goal" - NS FRITS partner February 2010
- "The IMG meetings focus on key issues that are current in the project and provide an arena for making strategic decisions. There is now less confusion about the purpose of technical and IMG meetings as it has been recognised that technical issues are best dealt with at separate technical workshops. IMG meetings are also a very good arena for project progress updates." - NS FRITS partner, February 2011
- "IMG meetings are now more concise and structured. They now concentrate on the more generic matters which affect all partners and the project as a whole instead of becoming bogged down in technicalities for the build of the system" – NS FRITS partner, February 2011
- "This was the opportunity for each agency to collate everything that has happened previously, ask questions and challenge as appropriate. These meetings were very important to our agency because it provided the opportunity to direct future action and assess finances over future periods". – NS FRITS partner, November 2011
- "IMG meetings provide a platform for strategic decisions to be made by the partnership collectively." – NS FRITS partner, November 2011.

Whilst the responses to the IMG meeting were overwhelmingly positive, there were some limitations identified. These can be categorised as:

- Repetition from other meetings (this was only identified as a problem in year one)
- Need for a stronger steer (again this was only identified as a problem in the early phases of the project by some, and most disagreed and suggested clear steer was provided)
- Decision making process took too long
- IMG meetings sometimes served as an administrative function to the requirement of the funding body and some additional time could be used to develop project ideas

- A minority of partners do not contribute (a small minority suggested this was a problem)
- There were times were cultural differences between organisations were not given enough consideration
- Not enough time for discussion (most partners disagreed and suggested these meetings should be streamlined and not a forum for long detailed discussions)
- Some partners suggested these should have been used as a forum for accountability when partners do not deliver (an argument against this is was a management issue and should be dealt with privately by the lead beneficiary)

The following quotes help explain some of the above responses.

- "Clearer leadership and direction from all WP leaders would improve the outputs of IMG meetings" - NS FRITS partner February 2010
- "There has been a tendency for repetition. Other meetings have overlapped into IMG content. Sometimes it's the same discussions that we have had at WP technical meetings once again"- NS FRITS partner February 2010
- "There have been insufficient issues that have required strategic decision making so far in the project. Perhaps we have adhered to the project submission (regarding the number of IMG meetings) to the detriment of best use of time by project partners. Are we looking for problems to solve to fill the time?" - NS FRITS partner February 2010
- "Not enough time to go into details. The main problem here is not the meeting, but the lack of cooperation between the meetings". – NS FRITS partner, February 2011
- Partners have not always been open in their views; cultural differences between different organisations have occasionally been exposed – NS FRITS partner, November 2011
- "Too little time for real discussion. A lot of formality and when an interesting discussions starts to take off, they are interrupted because we need to stick to the schedule". NS FRITS partner – November 2011
- "A little more focus on holding partners to account if they have not delivered particularly if that has affected other partners or project as a whole" – NS FRITS partner, November 2011.
- Some partners have not grasped that it is not the role of the lead beneficiary to dictate activities. NS FRITS is a partnership and the IMG enables partners to discuss and agree actions collectively". NS FRITS partner- November 2011

4.3.3.4 QB4 and **QB7**: What have been the main strengths of and what has been less than satisfactory about the WP technical meetings

The main strengths identified for the WP technical meetings were they:

- Provide a forum for discussion and idea generation
- Can be used to clarify the direction of WPs and gain better insight into WPs or clarify any misunderstandings
- Allow for links to be made with other WPs
- They are highly focused and provide results
- To forge working relationships

• Sharing of information with non-technical partners

The following quotes demonstrate these responses:

- "Good discussion climate. A lot of ideas are coming up" NS FRITS partner February 2010
- "The interactive sessions that provide opportunity for all to share ideas have been invaluable" - NS FRITS partner February 2010
- "The technical meetings generate a lot of results during a short time. This is probably the best spent time during the project". – NS FRITS partner, February 2011
- "The WP technical meetings have allowed non-technical partners a chance to keep up to date with the progress of project deliverables. The meetings have also allowed all partners to contribute to the ideas and design of the system." – NS FRITS partner, February 2011
- "WP technical meetings provide a good platform to develop partner ideas and move WP activities forward. They allow partners to get together and discuss detailed issues that the IMG cannot cater for." – NS FRITS partner, February 2011
- "An opportunity to discuss the detail involved in delivering specific technical issues within WP activities and a forum for work allocation and review of previous WP activities" – NS FRITS partner, November 2011
- "This kind of activity is very productive and essential to get the different partners together. It would probably be good to have even more of them." – NS FRITS partner, November 2011
- "To enable partners to discuss a wide range of issues and find solutions. The use of teleconferences during this period did help to move the project along." – NS FRITS partner, November 2011

The primary limitations identified in the technical meetings were:

- A lack of organisation within some WPs
- A repetition with other meetings (this was only a problem in year one)
- A lack of focus
- There were difficulties in achieving the right balance in ensuring the relevant persons attended the technical meetings and also the right number of persons
- A lack of communication of WP activity and findings to those not involved in the WP meeting
- Bringing in new individuals who were not up to speed before the meeting

The following quotes detail some of these responses:

- "Lack of clarity about meetings aims and objectives leading to partner/stakeholder dissatisfaction and less than optimum outputs being achieved" - NS FRITS partner February 2010
- "There is hardly an added value in these meetings because it coincides with the IMG's and most issues are already discussed during the IMG. It is a needless repetition" - NS FRITS partner February 2010
- "Blurring occurred with other topics. Mainly concerning the real technical meetings. Too many participants caused this". - NS FRITS partner February 2010

- "Hard to find the right number of participants. If too many it tends to be just talk, if too few the project coordination will be a problem."- NS FRITS partner, February 2011
- "The technical meetings tend to be the first time non-technical partners hear about advances and changes in the NS FRITS system. This is due to a lack of communication and inclusion in email streams." – NS FRITS partner, February 2011
- "A minority of partners do not contribute enough to WP technical meetings. Also the production of WP technical meeting notes is sometimes delayed and this holds up activities as the actions are not circulated in a timely fashion." NS FRITS partner, February 2011
- "There have been occasions where partners have attended technical meetings that require a specialised knowledge of the concept and owing to their role within the project need not have been there" – NS FRITS partner, February 2011
- "Technical meetings with too many participants tend to be a bit ineffective. Partly because the lack of common understanding of the project goal." – NS FRITS partner, November 2011

4.3.3.5 QB5 and **QB8**: What have been the main strengths of, and what was less than satisfactory about, the external practitioner/stakeholder events?

The main strengths that were recognised from the external practitioner/stakeholder events were:

- Provided an excellent forum for networking and discussion with stakeholders and end users
- Enabled engagement of stakeholders in the NS FRITS process (seen as a crucial component of NS FRITS)
- Enabled the NS FRITS profile to be raised, showcased and demonstrated
- NS FRITS Conference received particular praise

The following quotes detail some of these responses:

- "These events have enabled stakeholders to feedback to the NS FRITS partners and influence the future direction of the project" - NS FRITS partner February 2010
- "External events enable NS FRITS partners to promote the project and to identify opportunities to collaborate so as to not be working in isolation and to maximise on the return of investment" – NS FRITS partner, February 2011
- "These events have given the NS FRITS partners the best possible feedback on what the end user wants and how they want the system to develop and deliver." NS FRITS partner, February 2011
- "An opportunity to raise the profile of the project with external stakeholders and promote the achievements. Also an opportunity to engage external stakeholders in project activities and benefit from their skill and expertise" - NS FRITS partner, February 2011
- "The final presentation in Brussels was excellent. It presented the project both from a technical and a strategic point of view. It was probably quite easy to understand the concept and understand how the system could be used and how it could provide support in the daily work of a truck driver" NS FRITS partner, November 2011.

* "Attendance and presentations to external events have provided a platform to ensure the NS FRITS concept receives a level of support and feedback as to its activities not only from its directly involved stakeholders but from the freight industry as a whole". -NS FRITS partner, February 2011

The external events were deemed one of the major successes of the NS FRITS project. Some of the limitation identified events were:

- More time should be made available for discussions after presentations
- More effort could have been afforded to recruiting more participants at the events
- To make the events more themed (this was only an issue in evaluation year one)

The following quotes demonstrate this.

- "Too limited in time; too many presentations; no opportunity for round table discussions" NS FRITS partner February 2010
- "The stakeholder seminars should be made more thematic and attractive. Half a day is too short and an overload of presentations has to be avoided. More attractiveness can be achieved by organising thematic presentations within round table discussions to interact more with the stakeholders". NS FRITS partner February 2010
- "More attendees would have been an improvement, more effort required from all partners". NS FRITS partner November 2011
- "Although a lot of (trucker) organisations participated, it would have been fine to have more end users (truck drivers) getting involved". - NS FRITS partner November 2011

4.3.4 **SECTION C:**

This section of the questionnaire asked NS FRITS members about each of the six WPs. More specifically it focused on the following. Note members who responded that they were not involved in individual WPs have been removed from the below analysis.

- Overall how effective have you found the WP (1=not effective, 5 = highly effective)?
- How satisfied are you with the running of the WP (1=not satisfied, 5=very satisfied)?
- How valuable do you think the WP is to NS FRITS process (1=not important, 5=essential)?
- Are you satisfied with the level of involvement of other partners in this WP (1=not satisfied, 5=very satisfied)?
- How effective have you found the WP meetings (1=not effective, 5=highly effective)?
- How effective are the WP lines of communication 1=not effective, 5=highly effective)?
- How well you do think the WP links/interacts with other WPs in NS FRITS (1=no interaction, 5=high level of interaction?
- How involved do you feel in the WP (1=not involved, 5=highly involved)?

4.3.4.1 Overall satisfaction: WP1

Partners were asked about their overall views of WP1. Three key features of this WP were that it was seen as highly valuable to the project, lines of communication were seen as highly effective, and it was seen to interact extremely well with other WPs. On all aspects

examined, the majority of partners were very satisfied. A small proportion of partners thought that this WP was not effective overall and not all partners felt fully involved in this WP. This is a strange response based on other findings from other analyses in this evaluation as all partners attended a number of IMG meetings, as all partners were highly involved in this WP completing MFRs, HYWPs, and project plans and activity documents. This WP can be seen as a highly successful package. The results of the analysis are displayed in figure three.





4.3.4.2 Overall satisfaction: WP2

Partner responses to this WP were again highly positive, its key successes were seen as being highly valuable, having very effective meetings and interacting well with other WPs. A minority of partners did not feel involved with this WP. For all categories asked about, the average response was 3.5 (satisfied). A minority of partners suggested it could have been more effective overall, could have been ran better, that other partners could have engaged better in this WP, and that communication could have been improved. However, on the whole this was viewed as a successful WP. The results of this analysis are presented below in figure four.

Figure 4: Partner views of WP2

Partner views on WP2



4.3.4.3 Overall satisfaction: WP3

WP3 was seen as an effective WP. Its key successes were that it was seen as highly valuable to the project, meetings were very effective and partners felt highly involved. The main limitations with this WP were that not all partners engaged and the effectiveness of communication could have been slightly improved. For the majority of questions the average response was 3.5 (satisfied). The results of this analysis are shown in figure five.



Figure 5: Partner views of WP3

Partner views on WP3

4.3.4.4 Overall satisfaction: WP4

The majority of partners perceived WP4 as an effective WP. Its key successes were that it was seen as being highly valuable to the project, there was a good level of engagement from the majority of partners and the meetings were effective. The main limitations with this WP were that some partners did not feel highly involved and that the effectiveness of

communication could have been slightly improved. For the majority of questions the average response was 4.5 (quite satisfied). The results of this analysis are shown in figure six.



Figure 6: Partner views of WP4

Partner views on WP4

4.3.4.5 Overall satisfaction: WP5

Of all the WPs, perhaps the one with the least satisfaction was WP5. The main positive about this WP was how valuable it was seen to the project. There were very mixed views about how effective it was overall, ranging from not effective to highly effective. This WP had the least satisfaction with how it was run and over 70% of partners scored this 1 or 2 out of 5 (1 not being well run and 5 being well run). 60% of partners also scored this as 1 or 2 out of 5 in terms of effectiveness of communication. 40% of respondents scored the effectiveness of meetings as 1 or 2 out of 5, and 30% of respondents scored this as 1 or 2 for both interaction with other WPS, and for how involved they felt in this WP. These results are portrayed in figure seven.







WP6 was seen predominantly as a major success of the project. With the exception of satisfaction with involvement of some partners, for all other questions this scored an average of 4 out of 5. 50% scored it 5 for overall effectiveness, and effectiveness of communication, and 40% scored it a 5 for satisfaction with running. A minority of partners did not feel involved in this WP and felt it did not interact well with other WPs. Figure eight details the results of this analysis.



Figure 8: Partner views of WP6

4.3.5 **SECTION D**

This section of the questionnaire explores partners' perceptions of NS FRITS actual progress and potential future progress.

4.3.5.1 QD1: How satisfied are you with the overall progress of NS FRITS project? (1=not satisfied, 5= very satisfied)

In year one, there was a mixed response to levels of satisfaction with overall progress, ranging from not satisfied to quite satisfied, with approximately half of responses quite satisfied. Over time in years two and three this increased and in year two 60% felt quite or very satisfied with progress (10% very), and in year three over 70% felt quite or very satisfied, with over 20% very satisfied (figure nine)



Satisfaction with overall NS FRITS progress

Figure 9: Partner satisfaction with progress of NS FRITS

4.3.5.2 QD2: How satisfied are you that the direction of NS FRITS has met its overall aims and objectives? (1=not satisfied, 5= very satisfied)

Over the lifetime of the project 47% were very satisfied NS FRITS had met its aims and objectives and 35% were quite satisfied. Only 12% were slightly dissatisfied and no partners were not satisfied that the NS FRITS aims and objectives had not been met (figure ten).

Figure 10: Degree to which NS FRITS met overall aims and objectives (% responses)

Partner satisfaction that NS FRITS has met its overall aims and objectives (% responses)



4.3.5.3 QD3: How satisfied are you that NS FRITS is engaging with the right stakeholders? (1=not satisfied, 5= very satisfied)

Most partners agreed that NS FRITS had engaged with the right stakeholders and two thirds of respondents were very or quite satisfied with this. None of the partners were completely unsatisfied with which partners the project chose to engage with and only 7% were slightly unsatisfied with this (figure 11).

Figure 11: Partner satisfaction NS FRITS engaged with right stakeholders (% responses)



Partner Satisfaction that NS FRITS has engaged with the right stakeholders (% responses)

4.3.5.4 QD4: How satisfied are you with the level of engagement of external stakeholders over three year period? (1=not satisfied, 5= very satisfied)

The majority of partners were satisfied with the level of engagement of external stakeholders, although responses were slightly mixed. 20% were very satisfied and 40% quite satisfied. 20% were satisfied and 20% were slightly dissatisfied (figure 12). However, the results of this analysis were positive but not as positive as the responses for satisfaction with choice of end user and stakeholders to engage with.

Figure 12: Partner satisfaction with level of engagement of stakeholders (% responses)



Partner satisfaction with stakeholder engagement (% responses)

4.3.5.5 QD5: How satisfied are you with the future plans for NS FRITS beyond the project?

Mixed responses were received when partners were asked about future NS FRITS plans. 20% were not satisfied at all, nearly 30% were quite satisfied, and just over half were satisfied. At the time of the survey the funding body had introduced a freeze on payments, thus some partners were unsure of the financial difficulties that may arise as part of this at that time.



Figure 13: Partner satisfaction with future plans for NS FRITS (% responses)

53

5 very satisfied

Partner satisfaction with future plans beyond project (% responses)

4.3.5.6 QD7: NS FRITS capabilities (1=very unlikely, 5=very likely)

This question was perhaps a more difficult concept, as it examined the extent to which a rolled out and larger version of NS FRITS could achieve some of its more ambitious UGs (figure 14). Partners felt the strongest possibilities for this were in building the innovation capacity of businesses and services in the North Sea Region, in promoting the adoption and use of ICT applications and regional accessibility. Partners were less sure about its potential to promote the development of multi-modal transport corridors although some thought this could be achieved and for promoting sustainable growth solutions and energy efficiency in urban and rural communities.



Figure 14: Partner perceptions of NS FRITS capabilities

4.3.5.7 Degree to which NS FRITS IAs were met

This question aimed to examine the extent to which partners believed NS FRITS had met its IAs. The majority of partners felt all of these were at least partly met. The results are presented in figure 15. IAs seen as most successful were:

- Transmit and receive data in a series of languages to lone workers as they travel through NSR
- Provide live up to date information (traffic flow, congestion, safety and security)
- Develop a multi-lingual electronic communications and data capture system into an ITS

Other aspects seen as quite successful were: to build functionality and capacity into the system to enable compatibility for additional services to be introduced in the future and for the public and private sector to work in partnership to develop, populate, administer and benefit from the system.

Figure 15: Partner perceptions of degree to which IAs of NS FRITS were met

4.3.5.8 Summary of results of annual evaluation questionnaires

This section of the report has presented the key findings from the results of the annual questionnaires of the partners. This examined what partners saw as key strengths and limitations of the NS FRITS partnership and project, and what advantages have come about as a result of their participation. The majority of partners identified transnational partnership working, commitment of partners, development of the NS FRITS concept and that it achieved all its deliverables, as key successes of this project, although at times communication and none proactive approaches of some partners caused problems.

The survey also examined the IMG meetings, technical meetings and external events. Advantages included that they provided a forum for strategic decisions, provided updates, allowed interactions between partners and a place where ideas could be exchanged and this improved the understanding of the project as a whole. Limitations included repetition and sometimes meetings served an administrative function that perhaps detracted from the innovation and development of the system. However, the nature of the project required a high degree of administration imposed by the funding body. Key advantages of the external events were that they provided an excellent forum for networking and discussion with stakeholders and end users and also enabled engagement of stakeholders in the NS FRITS process. This was seen as a critical factor in the success of the project. The conference was deemed to be highly successful.

Overall partners were relatively satisfied with all WPs, although partners were mostly satisfied with WPs 1 and 6 and least happy with WP5. Over the lifetime of the project, the majority of partners were very satisfied with the overall achievements of NS FRITS and that is had engaged with the right stakeholders. There was a mixed response with plans beyond the lifetime of the projects and partners were less satisfied with future plans.

In terms of its capabilities, more partners were confident that NS FRITS could promote the adoption and use of ICT applications and build the innovation capacity of businesses and services. Partners were happy that all IAs were achieved, although the extent of this varied across IAs. IAs which most partners perceived to be fully met were to transmit and receive data in a series of languages to lone workers as they travel through NSR; provide live up to date information (traffic flow, congestion, safety and security) and develop a multi-lingual electronic communications and data capture system into an ITS.

4.4 **Evaluation of NS FRITS pilots**

This part is divided into a series of sections describing the internal testing (linked to WP4), desktop pilot exercise (WP5) and external pilots (WP5). Each of these will be described in turn. The key findings from the evaluation of the NS FRITS pilots are:

Summary of key findings from the evaluation of the NS FRITS pilots

- The pilots consisted of a number of elements including internal testing and external pilots spanning across both WP4 and WP5, as the system was continuously developed during the pilots
- Phase one was the NS FRITS concept verification and consisted of the Bremerhaven role-play simulated trial, Nordic Stakeholder day system simulation and stakeholder workshops (Hull and Rotterdam)
 - These were viewed as essential for development of the system concepts and specification of functionality
 - The role play exercise (Bremerhaven) was extremely valuable for system definition and this highlighted the importance of OD
 - This was also an early attempt at system demonstration which provided useful learning for development of the system
 - These activities enabled partners to understand about the logistics of the transport sector, particularly in relation to OD and the procedure when arriving at ports
- Phase two was the system simulations using the two Volvo simulations
 - A key benefit of the simulation was that they identified that the original device was not user friendly, icons were too small, and it was extremely difficult to navigate through the device. It also showed that devices such as smart phone were too small for on-board use.
- Phase three was the pilot preparation activities including: agreement on pilot specification; agreement on data sources; recruitment and engagement of pilot participants and eliciting real scenarios from participants
- Phase four was partner pilot activities including Avonwood Field Engineers, Humberside Police; KLPD. AVCIS and other partner field tests
 - This internal testing was crucial to the system development and perhaps should have commenced earlier
 - There were a number of frustrations expressed during the system tests but the technical partners afforded great effort to solving the problems that were experienced and it was key to improve the system to get it ready for end user testing
- This internal testing of the system was invaluable as the actual pilots would not have been achieved without them, due to the number of bugs and system refinements necessary before devices could be handed over to drivers to test during their normal actual working activities.

Summary of key findings from the evaluation of NS FRITS pilots continued

- The live pilots (phase five and six) consisted of the following: train the trainer; driver and operator training and live pilots (UK and Netherlands based). An additional Nordic trial was also carried out
- During the live pilots four aspects of the NS FRITS system were tested and these were
 - NS FRITS mobile driver device (Samsung Tablet)
 - NS FRITS web based desktop operator system
 - NS FRITS screen media
 - NS FRITS information hub
- The key findings from the live pilots were:
 - Most drivers were happy with the training they received and found the device relatively easy to use
 - Drivers identified pressure points on their journeys as time management and orders from the office, traffic and congestion and finding safe and secure resting places
 - The information viewed as most useful to drivers were crime hotspots, secure parking/truckstops and traffic updates.
 - It was difficult to glean meaningful results about the NS FRITS screen media and operator system due to its limited use, although some drivers and operators did comment positively on these
- Some of the limitations or areas for future development of the system were:
 - Most of the difficulties experienced related to technical issues such as connectivity and slow uploads and refresh rates and time taken to learn and use the system
 - \circ $\,$ Key limitation of the system was that it was not a turn by turn sat nav
 - Suggested areas for improvement included information on temporary road works, bridge heights that are programmable, ferry delay warnings, local police telephone numbers, programming with fuel card stops and a favourites location setting.
- More testing is required of:
 - Screen media
 - Use of OD
 - Web based desktop operator system

4.4.1 Phase one to four: lab and field testing and internal testing (pre-pilot activity)

This consisted of four phases that were:

- Phase 1: NS FRITS concept verification September 2010 November 2010
 - o Bremerhaven role-play simulated trial
 - Nordic stakeholder day system simulation
 - Stakeholder workshops (Hull and Rotterdam)
- Phase 2: System simulations December 2010 March 2011
 - Simulator -based evaluation (Volvo)
- Phase 3: Pilot preparation activities January 2011 August 2011
 - o Agreement on pilot specification
 - Agreement on data sources for use
 - Engagement of pilot participants
 - Elicit real scenarios from participants
- Phase 4: Partner pilot activities January 2011 August 2011
 - Avonwood Field Engineers tests
 - Humberside Police system tests
 - KLPD system tests

This consisted of two simulator trials and internal field testing by NS FRITS partners of the NS FRITS system. These activities are documented and reported under. They were not evaluated as part of pilot activity specifically. However, the nature of the development of the NS FRITS system meant that the system was continuously tested and refined during both the internal and external trials. This information contributed to the WP4 system specification and functionality document, thus there was no cut of point where WP4 ended and WP5 started as they both informed each other. The specific areas this field testing contributed to were:

- WP4.5 design and development of the system with continuous development feedback
- WP4.6 laboratory tests of the system
- WP4.7 pilot testing / development
- WP4.8 compilation and review of test / pilot results

The activities that these relate to are

- Bremerhaven desktop trial (June 2012)
- Volvo simulator 1 (February 2011)
- Volvo simulator 2 (June 2011)
- KLPD, Avonwood and Humberside Police (and other partner) field testing (January to August 2011)

The key findings of this were discussed under WP4 review of documents. Key successes of these were

- The role play exercise (Bremerhaven) was extremely valuable for systems definitions and highlighted the importance of OD
- It enabled partners to understand more about the logistics of the transport sector, particularly in relation to OD and the procedure when arriving at ports
- It was also an early attempt at system demonstration which provided useful learning for development of the system

- A key benefit of the Volvo simulation was that it identified that the original system was not user friendly, icons were too small and it was extremely difficult to navigate through the system. It also showed that devices such as smartphone were too small for on board use
- There were a number of frustrations that occurred during internal testing, partly as the license purchased as advised by the supplier of the route planning software was not correct. This caused a number of frustrations in testing
- This internal testing of the system was invaluable as the actual pilots would not have been achieved without them, due to the number of bugs and system refinements necessary before devices could be handed over to drivers to test during their normal actual working activities

4.4.2 Phase three: pre-pilot planning

Ten companies of varying sizes (small, medium and large freight operators) were recruited to participate in the pilots. The process for this was that operators were recruited who had expressed an interest to participate in the pilots at NS FRITS events and during interactions which occurred between NS FRITS partners and potential end users during WP2 (survey of end user needs), WP3 (obtaining relevant datasets) and during WP6 (external events). Companies were requested to complete a participation questionnaire (available in supplementary report: Pilot Evaluation Specification). When companies completed the company pilot participation questionnaires, it was important to ensure that the problems they experience concurred with the issues identified in the driver and operator surveys as the system was designed on these findings. If the problems were completely different, the feasibility of the company participating in the pilots would need to have been considered. However, for all operators recruited their problems were similar to those identified in the project. This suggests that the issues identified in WP2 were those relevant to end users.

20 drivers were recruited to participate in the pilots, ten from the Netherlands and ten from the UK. Ten operators were also recruited to participate in the pilots. All drivers signed a statement confirming they would take all reasonable steps to keep the Samsung Galaxy tablets in good condition, secure and would return them when they have completed the pilots. Each driver and operator was given an identification number for pilot evaluation purposes to retain their anonymity and confidentiality in the evaluation analysis. All drivers and operators received training before starting the pilots and were given a Quick User Guide. A helpdesk was also available during the pilots.

The task of recruitment was fairly successful and Humberside Police and KLPD afforded large efforts recruiting drivers and operators to participate in the pilots. Their success in achieving the required number of drivers and operators was a key factor in the delivery and running of the NS FRITS pilot.

4.4.3 Phase four: training

Two sets of training activities were arranged, the first was an exercise to train the trainers, in other words those individuals who would be responsible for handing over the tablets and training the drivers for the live pilots. The second was the actual driver and operator training.

4.4.3.1 Train the trainer

A training manual was produced as a step by step user guide. This is provided as a supplementary document available upon request. From interviews with drivers and based on discussions with the trainers, this was seen as highly successful. Moreover, the drivers all found the device relatively easy to use which suggests the train the trainer and driver training were successful.

4.4.3.2 Driver training

Most drivers were happy with the training they received and did not perceive problems with using the system. The only concerns they expressed were technical difficulties due to connection problems and this was fed back to the system developers and the system was refined. The training manual was also supplied to drivers and operators.

4.4.4 Phase five: live trials

These pilots were designed to run over a 12 week period. However, due to some hold ups, primarily due to the delay in producing the NS FRITS evaluation specification document in WP5, but also delays in creating the NS FRITS system (partly due to software difficulties with the route planner tool) the actual trials only occurred over a 4 week period. However, the NS FRITS partners and especially the system developers have agreed that this period was sufficient to test the NS FRITS system against the Intermediate Objectives of the project, and to obtain enough data to be confident in these results.

There were four key elements that were tested during the pilots

- NS FRITS mobile driver device (Samsung Tablet)
- NS FRITS web based operator desktop
- NS FRITS screen media
- NS FRITS information hub

4.4.4.1 Phase six: Nordic Trial

The Nordic Trial was conducted over a few days and enabled OD to be tested. This pilot was seen by partners as extremely useful and perhaps should have been extended, but delays in starting WP5 meant the extent of this was limited. This provided a proof of concept of the use of OD in the system. However, it is difficult to evaluate this in any more detail due to the limited extent and nature of this pilot.

4.4.4.2 Phase seven: pilot evaluation: pre pilot survey

The pre pilot driver and operator interview forms are available in the Pilot Evaluation Specification document (supplementary report available on request). The results of the pre pilot survey of drivers and operators are as follows:

• All drivers were male and most were aged 51+. The second highest category was 41-50. Some drivers were younger, aged 18-30. The average length they had been driving from was 17 years, although this ranged from one year to over 30 years. The

average length they had worked in their current job was six years, although this ranged from one year to 25 years. This is a good mix of new and experienced drivers, with a mixed age range. Unfortunately no female drivers were recruited for the pilots and this can be seen as a limitation, although this probably reflects the industry which is dominated by male drivers

- All drivers received training and none had heard of the NS FRITS system prior the training. They were all positive about the training they received. The only difficulties related to technical issues such as connectivity problems (this was fed into the refinement of the system). One driver in the +51 category was particularly concerned about the technology and has difficulties using the device. All other drivers found the device fairly easy to use. The average score for ease of use (1=very easy, 10 = hard) was 3.5. Removing the one driver who scored this a 10, this score was 3.
- All the drivers seemed to grasp the concept of the NS FRITS system. They understood it was a route planning tool that brought together a range of information onto a single device. This includes safer parking, traffic, crime hot spots and that its job was to assist the driver.
- There were few concerns about using the device, except for technical issues such as connection, with the exception of the one driver who struggled to use the device and suggested he would prefer to stop and ask. However, as this system is designed to improve the logistics of the transport journey it could be argued that this presents a delay that could be avoided. However, the concern over the use of the technology is an important issue raised here. Unfortunately due to health reasons the driver was not able to partake in the live trials, so it is unknown if he could have been persuaded to try the device, and how useful or not he would have found it.
- Drivers identified similar pressure points in their journey, and these included time management and orders from the office, traffic and congestion and finding safe and secure resting and parking places.
- Most drivers suggested the device would be useful for all aspects of their journey
- The drivers were asked if the following information was available to them and was automatically updated during their journey. These were: ferry information; traffic updates; crime hotspots; secure parking / truckstops; weather information and petrol stations. Drivers had access to different systems and some of them did have access to some of this information currently. Systems cited were NAVMAN and MOTO. Some drivers were also provided with lists (for example petrol stations). The only information that no drivers had access to was the crime information. It is not clear how readily the other forms of information were updated.
- The drivers were asked about how useful they thought this information would be. The scores for this are presented below in descending order (1= no use, 10 = very useful). It can be seen that crime information and secure parking were seen as the most useful. Customs and ferry information scored lowest, although some drivers only operate within national boundaries and do not use this.
 - Crime hotspots (9.7)
 Secure parking / truckstops (9.5)
 Traffic updates (8.4)
 - Weather information (7.9)
 - Petrol stations (7.8)

o Fer	ry information	(5.1)
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- Customs information (4.8)
- When asked what the drivers thought they would gain from the NS FRITS system, they primary responses were secure and safe parking, route planning, avoiding crime hot spots and multiple information sources in one device. One driver suggested it would be especially useful for route planning to avoid tunnels, particularly as he transported hazardous chemicals.
- When asked about what was missing, almost all drivers suggested that the system should have turn by turn satellite navigation capability

4.4.4.3 Phase seven: pilot evaluation: weekly monitoring

This was used to monitor the driver and operator use of the NS FRITS system during the four week pilots. It enabled activity to be monitored for the purpose of evaluation and also for problems experiences to be fed back to the system development team. It examined the routes used and purposes of use, whether NS FRITS was used in the journey, if NS FRITS was helpful or hindered the journey in any way, if they tried to use the helpdesk, and other comments the drivers wished to add. The weekly monitoring forms are available in the Pilot Evaluation Specification Document (supplementary report available on request). The key findings from this analysis were:

The geographical coverage of the pilots was fairly extensive in the UK, drivers used this for a range of areas including operations to Bournemouth, Home Counties, Salisbury, Warwick, Thirsk, Deeside in North Wales, the Immingham area of North Lincolnshire, Molden in Essex, several towns in Lancashire and Derbyshire areas, Buckingham, Birmingham, Wakefield, Milton Keynes, Blackwood in Wales, Hereford, Grimsby, Chorley and Cheadle. It was also used in the Netherlands and Germany although the exact routes were not specified.

Some of the benefits of the system were seen as the provision of regular traffic updates and crime hotspots and an example provided was when it saved the driver time with roadwork information. It was seen as a particularly helpful tool by operators and drivers for planning. An example of this was information about unsafe areas en route to a destination and at destination too, as one of the areas where they unload is deemed unsafe with low and medium crime. This enables the sales and planning team to advise clients to make other arrangements for loading and unloading times. Clients could be advised that arrival will only occur when the client is open to receive the product and that parking up for the 'night' as this unsafe area would not happen. This information was not available before and is very helpful for planning and advising the client.

There were benefits seen to all information sources provided and crime hot spots and secure parking information were again viewed most beneficial. For one operator the extra information provided to protect high value cargo was seen as a major benefit of the NS FRITS system. One driver commented that although it took a long time to become accustomed to the system and that there were a number of problems at start, by the end of the pilots they did not want to hand the device back.

Some of the problems experienced related to connection difficulties, for example one driver experienced traffic updates only in one direction and some service stations were not recognised during the route. Connectivity was intermittent and dropped out and information was lost. There were problems with the routing and re-routing that actually made the drivers' job harder. Also a further problem was that updated versions took time to install. There were also some difficulties for older drivers to understand and use the technology and it was identified that they may need additional training. They found it difficult to navigate through the different functions. This may be a matter of becoming accustomed to the system. They were willing to adapt and noticed the good information presented. There were also difficulties experienced initially with poor route planning that was not HGV friendly, although this was an issue with the software which was resolved. A further difficulty that related to connection was that the system took time to update and refresh along the route.

There were two useful quotes that explained some of the difficulties of the driver:

- "The concept is good but it needs a lot of work to make it user friendly. It could be good and if brought to the same level as my Snooper S7000 Sat-Nav that cost me £380 it would be spot on with the hotspots included and traffic updates via the radio is better and safer. This job is hard enough without making it harder and having to reset this when you make a route change and the time that takes, has caused me to lose patience with it and I'm handing back in." NS FRITS end user pilot driver, September 2011
- Sometimes when loaded up, the information symbols would not display and others they did. The route that it gave me frequently was not HGV friendly. On a route to Buckingham town, the route took me straight through the town centre through a 7.5 tonne restriction. A lot of the routes it selects are not HGV cost-effective. When the roadworks, crime hotspots and truckstop information is received, you have usually gone past already. I have been unable to follow many of the routes that it has planned for me over the last couple of weeks." - NS FRITS end user pilot driver, September 2011

4.4.4.4 Phase seven: pilot evaluation: automatic logging of activity

The activity log was used to monitor driver activity. The route information does not refer to actual routes used, but refers to the routes planned. The following information summarised this activity:

- Average number of routes planned was 45, and this ranged from 1 to 418
- Average route plan length was 177km, and this ranged from 65km to 202km
- Shortest average route plan length was 40km and this ranged from less than 1km to 182 km
- Longest average route plan length was 499km and this ranged from 199kn to 1500km
- Average number of searches was three and this ranged from 0 to 15.
- Most common search category was crime hotspots with truckstops second. Other searches were for terminals/company and traffic information

This revealed a mixed picture in terms of the extent of NS FRITS usage during the pilots, and shows how much planning and testing occurred. Over the four weeks there were an average of 45 routes planned by drivers using the device and they planned (although did not necessarily drive) a range of route distances. Some of the drivers used the search function, and this was primarily for truckstops (secure parking) and crime hotspot information.

4.4.4.5 Phase seven: pilot evaluation: post pilot survey

The post pilot driver and operator interview forms used are available in the Pilot Evaluation Specification Document (supplementary report available on request). The results of the analysis of the post pilot survey of drivers and operators identified the following:

- Over the four week pilot period there was a mixed range of uses. Some used daily in their work over the four weeks, some used every few days, and some drivers rarely used the system
- Main benefits were the use of crime data, followed by secure parking and information on traffic congestion. One driver commented it was useful to be able to zoom into the map in built up areas
- Main problems were with connection and occasional system crashes. Sometimes
 information was updated too slowly, especially traffic data. Some commented there
 were too many hotspots indicated and one driver suggested when travelling at over
 50mph it was not necessary to know you are in a hotspot area. A further problem
 was typing in locations, as it was suggested current locations should be found
 automatically and some addresses were not recognised by the system. There were
 also some problems with HGV specific route planning
- The system was seen as fairly easy to use, the average score being 2.8 (1=very easy, 10=very hard)
- The most important and/or useful information were crime data, secure parking and traffic and congestion
- The main limitation of the system was not having a SatNav
- Some suggestions for future developments included: automatic updates and speed limits on temporary roadworks; bridge heights that are programmable; better utilising of the display with ETA to destination, local police telephone numbers and ferry delay warnings. It was also suggested it could be programmed with fuel card stops

The following quotes provide evidence of some of these points:

- "The most useful point was the crime hotspots and truckstops. There were one or two truckstops I wasn't aware of which was good." NS FRITS end user pilot driver, September 2011
- "Crime hotspots and traffic updates. They didn't always come up quick enough, but I could zoom out and could see them more in advance." NS FRITS end user pilot driver, September 2011
- "It makes it a lot easier, having set your route; you do not have to stop to read a map. If you just pull up and tap the screen and enlarge the map, you've got an even better view when you're in towns, seeing road by road." NS FRITS end user pilot driver, September 2011
- Something that would be really good, which came with it but our manager didn't get the chance to use it which is the operator facility to give job changes. Quite often we will get a job change and the traffic coordinator will forget to tell us. I got sent to Birmingham from Leicester, when I got there I rang up for a reference number only to be told I should be in Pontefract. Things like that which can update automatically would be a great feature." NS FRITS end user pilot driver, September 2011
- "The main benefit for me was that I did have a couple of locations I had not been before and used a different route back in particular from Girvan and being able to enlarge the screen and zoom in to see corner by corner was particularly useful for me." NS FRITS end user pilot driver, September 2011
- "During the journey and not before or after especially the hassle of re-programming the device." NS FRITS end user pilot driver, September 2011
- "The crime hotspots area. I would be driving along and glance down and it would pick up a crime hotspot, most of the time I wouldn't realised it was a hotspot and one to avoid" NS FRITS end user pilot driver, September 2011

4.4.4.6 Phase seven: pilot evaluation: the evaluation of the screen media

Originally it was the intention to have two screen media sites, but due to technical difficulties only one screen media was operational during the pilots and this was situated at Ulceby, Immingham, UK. A questionnaire was left at this stop for drivers to compelte and this is provided in the Pilot Evaluation Specification (supplementary report available upon request). 16 drivers filled out the questionnaire which is a relatively small sample and it is difficult to generalise findings from this. However the following information could be distilled from analysing these responses:

- Six drivers were in the 51+ category, six in the 41-50 group and four in the 31-40 group
- 14 of the drivers had not heard of the NS FRITS system before, although 2 were aware of it
- When asked about the usefulness of the NS FRITS system (1= no use, 10 = very useful) the average score was 5.7
- When asked about the information presented on the screen media, (1= no use, 10 = very useful) the average score was 5.9
- When asked about the information that should be on the screen, 82% agreed crime hotspots would be useful, 82% agreed secure parking should be included, and 75% thought traffic information should be included

This presents a mixed picture and is not as positive as the responses to those drivers who used the NS FRITS tablets. However, these drivers only responded to information they saw on the screen media and did not experience using the system first hand. Again crime and safer parking came out as the most important factors. It was interesting that 10% of the drivers (although a small sample) had heard of the NS FRITS system before, especially considering it is still at the stage of proof of concept.

4.4.5 **Phase seven: pilot evaluation: evaluation of help desk activity**

An examination of the use of the helpdesk during the NS FRITS pilots revealed the following:

- There were approximately 50 requests for assistance during the four week period
- These can be broken into a number of categories including:
 - Errors with screen display, icons, and difficulties in reading text and fonts
 - Difficulties in navigating between menus on the device
 - Problems with planning routes
 - Problems with updates (for example traffic information and congestion)
 - Bugs and unexpected errors
 - Problems with the 'choose current location' function

Many of the errors experienced related to technical issues with the software or difficulties in using the device. Many of the difficulties faced by drivers were resolved in new updates to the NS FRITS system. Some of the early problems with routes, connectivity and a loss of maps were addressed and resolved by the system development team.

4.4.6 **Summary of pilot evaluation**

This section has summarised the key findings of the evaluation of the pilots. It is important to emphasise that this activity spans across WPs 4 and 5 and therefore this section of the report mainly concentrates on the activities in the external live pilots (phases five and six of this WP).

During the live pilots four aspects of the NS FRITS system were tested and these were:

- NS FRITS mobile driver device (Samsung Tablet)
- NS FRITS web based desktop operator system
- NS FRITS screen media
- NS FRITS information hub

Most drivers were happy with the training they received and found the system relatively easy to use. The key pressure points that drivers identified on their journeys were time management and orders from the office, traffic and congestion, and finding safe and secure resting places. The information viewed as most useful to drivers were crime hotspots, secure parking/truckstops and traffic updates. Most of the difficulties experienced related to technical issues such as connectivity and slow uploads and refresh rates, and time taken to learn and use the system. The key limitation of the system was that it was not a turn by turn SatNav. Suggested areas for improvements included information on temporary roadworks, bridge heights that are programmable, ferry delay warnings, local police telephone numbers, programming with fuel card stops and a favourites locations setting.

4.5 **Final interviews with partners**

This section of the report examines the results of the final partner interviews. 20 partners were interview from all ten partners during November and December 2011. A copy of the interview schedule is provided in appendix eight.

Summary of key findings from evaluation of final partner interviews

Overall experiences

- There has been a huge amount of learning throughout the project. A key success is that it has achieved all outputs and targets. Some of factors as identified as crucial for achieving this were:
 - Highly successful partnership working
 - Sharing of knowledge
 - Open communication channels
 - Engagement and hard work of partners
 - o Drive and steer of the project management team
- A unique feature of this project was this it was an example of a highly successful transnational public-private partnership working model
- The second key feature of this project was that is demonstrated a proof of concept, by creating a single integrated interface that brings together the range of information required by those working in the road transport sector in a cost efficient way including logistics and security
- Some of the obstacles that occurred though the project were:
 - A minority of partners were less engaged (although partners did not receive equal funding) and some could perhaps have managed their time better
 - o Different cultures and working styles of partners
 - Different motivations for being a part of the project and different partner agendas
 - Delays in actually acquiring datasets and difficulties initial problems in developing the mobile device due to the wrong routing software being supplied, which caused a number of frustrations between partners
 - o A lack of leadership and steer in WP5 and a delay in the launch of the pilots
 - Heavy administrative burden placed on this project by the funding body
- The fact the project met all its deliverables despite these obstacles demonstrates just how successful a partnership this was, the level of engagement and commitment of partners to overcome obstacles and the strength of this public-private transnational partnership.

WP1

- A key factor in project management was to set up a reporting mechanism and structure to ensure project remained within its original scope and aims. The majority of partners engaged with this reporting structure which has benefited the project and enabled monitoring of performance
- IMG meetings, technical meetings and external events were an important aspect of this, and overall were viewed as highly successful. Each of these is now discussed in turn.

Summary of key findings from evaluation of final partner interviews (continued)

IMG meetings

- Overall these were seen as a success, creating an environment were all partners could contribute to the strategic direction of the partnership and project
- Some of the early problems of duplication with technical meetings were quickly resolved
- There was slight disagreement in that some partners felt there was not enough room and flexibility at the meetings for discussion and that they were too streamlined, others felt they were not a forum for long discussions and that other forums existed for this

Technical meetings

 Across most WPs these were seen as very effective, although perhaps more of these could have occurred within WPs for; transparency and communication; monitoring of progress within WPs; discussion and sharing of knowledge, experiences and ideas; exploring innovation possibilities; and also resolving any difficulties that had occurred during the course of the WP

External events

- The Final Conference was seen as extremely successful and the content, presentations and demonstrations were seen as of a very high quality. This was commented on by all the partners
- Some events, for example Hull to Rotterdam event were viewed by some as disappointing and an opportunity missed, others suggested these were all part of the learning experience in terms of where the project was at that stage, and also the learning experience for improving future demonstrations.
- The support of an MEP and their positive stance on the project, and willingness to speak at external events, was seen as an indicator of the success of the project

WP2

- This was seen as a successful WP overall, that achieved its milestones and deliverables. It demonstrated the huge amount of learning required at the start of the partnership in order to develop the NS FRITS concept. This was despite the substantial knowledge and experience that already existed across the partnership
- Some partners suggested that this should have moved onto WP4 (system development) quicker than it did although others felt the concept was more important than the applications developed

WP3

- This was seen overall as a successful WP, which was well led and achieved all its objectives. It managed to obtain a wide range of relevant and critical data sources for pilot testing
- The lead partner for this was praised for challenging the partnership in a positive constructive way to deliver to best of its abilities
- There were some delays between agreement to supply data and data being obtained, and, whilst this was resolved, a learning for future roll out is the additional middle step between the agreement to supply data (in principle), agreeing detailed technical format to supply and actually providing data.

Summary of key findings from evaluation of final partner interviews (continued)

WP4

- This was also viewed overall as a successful WP and perhaps a limitation was a lack of understanding from some partners as to the complexity and amount of effort needed to develop a system and produce a format appropriate for testing in the real world
- This is further confounded by the complexities in adapting, refining and continually improving the system during the testing phases
- The Bremerhaven desktop exercise was seen as useful for developing the system concept
- The Volvo simulations were crucial for identifying limitations with the user friendliness of the original planned device
- The internal field testing was essential for continuous testing and refinement of the system to get it ready for live pilots

WP5

- This would have benefited from stronger leadership, clearer direction and more structure and this WP was viewed as the least successful of all WPs
- Despite the delays experienced in WP5, the fact that successful pilots were delivered and a range of end users were engaged in this process, demonstrated the strong levels of transnational partnership working and commitment by the majority of partners involved

NS FRITS pilots

- Despite delays in coordinating the pilots, they still provided adequate testing to demonstrate the proof of concept and met the projects objectives and deliverables
- Future learning would have been to run pilots for a few weeks to test the system, make refinements and developments, then run for few more weeks to test, then refine and improve, etc over a slightly longer time period

Nordic Trial

- This was extremely valuable for demonstrating the benefits of the use of OD in the NS FRITS system and added value to the project
- Future learning would be to roll this out over a longer time period with more users

WP6

- The communication and dissemination activities were viewed by all partners of a high standard and have raised awareness of the project
- A limitation is perhaps partners could have been more engaged in this process. However, this was not necessarily a strength or core activity of a number of the partners who were not marketing/publicity orientated
- An external company was brought in to assist with this process and the company used in years two and three of the partnership was seen as highly successful, especially in ensuring all PR targets were hit, or in some cases over achieved.

Summary of key findings from evaluation of final partner interviews (continued)

Final products/applications

• There were perhaps four applications or products developed in the NS FRITS project and each of these are reviewed below

NS FRITS driver tablet/handset device

- This demonstrated the proof of concept and can be described as prototype that can be used to demonstrate and test the NS FRITS proof of concept.
- Drivers found inputting routing information was perhaps laborious at times, for example the need to always add a start point when this could be automatically updated

NS FRITS web based operator system

• Whilst there were some positive comments and feedback from users about this system, there perhaps needed to be more testing of the operator desktop system.

Screen media

- This provided added value and most partners agreed it was an excellent concept, not only for providing users with information, but also for publicity and profile raising
- More thought in future should be given to where it should be placed both strategically in the transport network, and also the within site location to maximise its potential. Further thought should be given to its actual on screen content.

NS FRITS hub/information platform

- This is perhaps the essential part of NS FRITS as all other platforms are dependent on this. However, perhaps as it sits at the back end of NS FRITS and is not visible, the majority of partners did not recognise this as a key product of the project.
- This is an essential component to demonstrate the concept of NS FRITS, bringing together this range of information into a single system and should not be underestimated

IAs and UGs

• The project met all its deliverables and achieved its IAs. Most partners agreed that a full implementation of this system could meet all of the NS FRITS UGs

Other

- The project was not necessarily about creating new technology but using existing technology in an innovative and appropriate way for the problems identified in the road freight transport sector
- The unique selling point of NS FRITS is security, including crime data and secure parking data, and that it also offers everything that already exists but together into a single place/device. It is essential to have a public-private partnership in order to achieve this and incorporate security data
- Financial auditing of this project has been extremely onerous, and delays in payments and suspension of payments for period of time very difficult for some partners, especially SMEs
- The concepts devised in the NS FRITS project are perhaps more important than the actual applications that were developed
- The NS FRITS provided a proof of concept to the road freight industry, perhaps one of the most demanding environments for testing new software and technology

4.5.1 **Overall reflections: project strengths, limitations and benefits**

A number of partners spoke about the overall successes of the project and their positive experiences of being an NS FRITS partner. These related to the effectiveness of partnership working and the achievements that were made in terms of what it has been delivered. Partners agreed that the calibre of organisations that formed the partnerships has been excellent, for example the quality of the technical partners and the commitment and engagement of partners were key components in its success.

This is demonstrated by the following quotes:

- "There has been a huge amount of learning throughout the project. A key success factor is that it has achieved all of its outputs and targets" (NS FRITS partner, December 2011)
- "The key factors that have resulted in this highly successful partnership were mutual respect between partners, sharing of knowledge, open communication channels between all the partners, engagement and hard work of all partners, and the drive and steer of the project management team" (NS FRITS partner, November 2011).
- A major advantage of this project was that it was a highly successful public-private partnership and an excellent example of transnational partnership working (NS FRITS partner, December 2011).

An example of the added value was sharing security data with commercial partners for the purposes of this project, which was a unique feature of the NS FRITS project and this approach was seen as a highly novel and innovative achievement. This might appear a simple process to do, but it does not currently exist outside of NS FRITS, and certainly not at a national and transnational level.

"A further key benefit was developing the concept of having a single integrated interface that brings together the range of information required by those working in the transport sector in a cost efficient way including logistics and security" (NS FRITS partner, December 2011).

Partners identified a range of benefits from being part of the project, some of these were quite obvious and transparent and some perhaps less tangible but nonetheless still of high value. Benefits to the partner organisation include the learning of other organisations and knowledge gained and new technologies, creation of new and the extension of existing networks (particularly in countries outside of the partner country), strengthening of links and working relationships between the partners, reputational gain of organisations, and new skills and experiences developed and gained by individuals who have worked on the project. These skills encompassed a wide range of different areas, for example networking with end users and stakeholders, project management experience, training in new software products, producing newsletters and websites, arranging events and organising meetings and financial experience of working with large European funding projects.

There were a number of new relationships developed that partners thought could lead to future collaborative work in the future. Some partners have engaged end users from NS FRITS in other projects they have secured funding for.

Overall partners felt that the integration of the project with external stakeholders and end users has been excellent and all partners have afforded a lot of effort towards this. This was demonstrated by the successes of the NS FRITS Conference.

The technical partners were praised as being solution focused on the needs of the industry and not the needs of individual partners (although the nature of their participation has been that the partners involved were committed to this).

Partners identified a range of obstacles that caused difficulties and frustrations at times, but also highlighted that these were overcome through the partnership.

"There have been a number of obstacles to overcome throughout project and the partnership has adapted and evolved to a number of problems" (NS FRITS partner, November 2011).

Examples include: some of the early IMG meetings duplicated with other meetings; some concerns were expressed about the quality of some of the events particularly in year two; there were communication difficulties between identifying an appropriate data source, obtaining permission to access the data and actually acquiring the data and the handover of responsibility between partners; and there were delays in the specification and set up of WP5. Suggest that in all cases, conflicts were resolved and this is reflected in the achievements of the project. There was mutual respect due to open lines of communication.

Some of the difficulties experienced relates to partners not managing their time well and not perhaps engaging to the level expected, others relate to different cultures and working styles of the range of both the organisations and individuals involved, others relate to different reasons why partners became involved in project and their differing motivations, agendas and priorities" (NS FRITS partner, November 2011).

Examples included the differences in cultures and working styles between private sector partnerships, police forces and academic institutions.

It was commented by partners that it was important to maintain high quality work and keep within the scope of the project. At the same time some activity not originally envisaged, such as the Nordic trial and the use of screen media, were supported fully the by the project management team and partners as they fell within the remit of the project and could clearly be seen as adding value, and the time needed for these did not hinder the progress of other core objectives of the NS FRITS project.

Most partners felt NS FRITS had achieved about what was hoped for at the start of the three years, which was in itself fairly ambitious. Some partners felt perhaps there were underachievements, but this may be due to over ambitious expectations. Some partners felt the project had achieved more than they expected and that it exceeded expectation. This was perhaps due to partners who misunderstood the functionality of the system, that this would be a turn by turn "SatNav" and not an all in one planning tool. This was perhaps an issue of managing expectations. The way the system has developed does not preclude this becoming a future product. Additionally there were perhaps some misunderstandings about what a route planner actually was and was not. One of the partners suggested that perhaps the WPs could have been organised in a different way. It was highlighted that perhaps the technical requirements, the user requirements and the technical specification were separated across different WPs. Bringing these into a single WP might have been a more appropriate mechanism for developing the system architecture.

4.5.2 **WP1**

Overall this WP was viewed by partners as highly successful, milestones and deliverables were on time and the majority of partners were highly engaged in this WP.

4.5.2.1 Project management

This was seen as a successful element of the NS FRITS project.

"Key factor in project management was setting up a reporting mechanism and structure to ensure project stays within its original scope and aims. Vast majority of partners have engaged with this reporting structure which has benefited the project and enabled monitoring of performance" (NS FRITS partner, November 2011).

For example; encouraged accountability and monitoring through production and circulation of MFRs to all partners; encouraged forward planning through HYWPs; introduced the IMG meetings as a forum whereby partners can contribute to overall steering of the project. Individuals within the lead beneficiary organisation received training on project management software system that was introduced to monitor performance. However, some partners felt there were times when reports and documents were produced for the sake of ticking boxes and that sometimes this actually detracted from the work necessary to deliver the project outputs.

The approach of the project management team was to try and be rather subtle, by respecting individual privacy and also cultural and working styles, to try and accommodate range of transnational organisations from the public and private sector. They aimed to resolve difficulties amicably so that the whole partnership benefited. They tried to resolve problems and accommodate partner difficulties whilst maintaining high standards demanded by project management team.

It was suggested by both the project management team and other partners that perhaps they could have adopted a more formal approach holding partners to account when they have not delivered. The project management team suggested they tried to resolve issues amicably as much as possible as formal approaches would have changed the dynamics of the partnership. There were a number of frustrations expressed about the need for stronger management of WP5, and the role of the project management team in dealing with this and holding this organisation to account.

"It is important to take account of the skill set and experience that each partner can bring and to look and consider this as a whole across the partnership, to look at the areas a partner can contribute most to the benefit of the whole partnership, and also recognise limitations and provide assistance were appropriate" (NS FRITS partner, November 2011). There were concerns expressed by some partners that sometimes the project management team made rather unilateral decisions, although to some extent this was dictated by the need to remain focused on the project aims and objectives.

There were some concerns that at times the project management team were over focused on micro management, for example in the structure that reports should be presented in, and in the format of presentations to be delivered. Some partners were unhappy that the slides they were expecting to produce at some events had been slightly changed by the project management team. Whilst not a major issue, in isolated instances the slides were different to what they had been expecting to present and the partner had not been informed of this.

4.5.2.2 IMG meetings, technical meetings and external events

IMG meetings

- Overall these were seen as a success, creating an environment were all partners could contribute to the strategic direction of the partnership and project.
- There were some difficulties in the initial meetings with overlap and duplication early on, although this was resolved. Some felt this was too formalised and there was not enough room for discussions, some felt there were too many discussions and the meetings needed to be more businesslike. This is a difficult balance to achieve as the meetings may throw up problems that need to be discussed, but the question was whether the IMG meeting was the most appropriate for this, or if these discussions should then be taken away and debated in other forums and meetings.
- Overall the IMG meetings were seen as successful and improved over time (see results of section 4.1.4 of this report). They were viewed as necessary in a project of this type, due to the multi-national involvement of partners and also because of the high level of auditing required by the funding body.
- It was important to have the IMG meetings so that partners could appreciate the different priorities and agendas of organisations and understand their agendas, and trying to ensure the direction of NS FRITS fitted with both with the priorities of the partners and also fitted with the overall aims and objectives of the NS FRITS project.

Technical meetings

- By and large went very well, but at times the project management team imposed a very rigid structure on some of these when that occurred around IMG meetings and perhaps more time could have been made available for these meetings when all partners were all together for the IMG meetings.
- It was suggested by a number of partners that actually more WP meetings were needed both within and between individual WPs, for transparency and communication, monitoring of progress, discussion and sharing of knowledge, experiences and ideas, exploring innovation possibilities, and also resolving any difficulties that had occurred during the course of the WP.

External events

- The Final Conference was seen as extremely successful and the content, presentations and demonstrations were seen as of a very high quality. This was commented on by all the partners.
- Some events, for example Hull to Rotterdam event seen as disappointing, but perhaps they should be viewed as part of the learning experience in terms of where the project was at that stage and also the learning experience for improving future demonstrations. Additionally the fact that people were there and engaged from the industry and they had negative comments to make about the system (which was in its infancy) demonstrated to some extent that there were problems experienced by the industry and a willingness to find about what NS FRITS could offer and a need to deliver a solution to this.
- There were suggestions that partners could have been more proactive in engaging end users and stakeholders at external events. However it is important to understand that this is a niche area and arena, and we need to be realistic about time to attend these events and finance to travel to these events.
- The support of an MEP and their positive stance on the project, and willingness to speak at external events, was seen as an indicator of the success of the project.

4.5.3 **WP2**

Perhaps a limitation of this project was that the less technical partners did perhaps not engage well with this process at the start, and it is suggested that this was perhaps due to partners not understanding how they could input into this stage of the project, rather than a lack of willing. Often partners thought they were not a technical partner, thus they could not contribute which clearly was unhelpful and all partners had different areas of expertise that could have been harnessed and utilised in defining the NS FRITS concept

"It was led by a very skilled, very professional partner and there were some changes in the approaches adopted over time, and some difficulties experienced, partly as there was a lot of new learning needed in order to develop the most appropriate ICT solution for this project" (NS FRITS partner, November 2011).

The approach used to develop their solution was extremely thorough and the majority of partners were confident that what was developed was both appropriate and innovative, and has the potential for additionality.

"There was a lot of learning required at the start of this project and a sharing of knowledge and experiences was needed" (NS FRITS partner, December 2011).

Some of the delays were in defining and specifying what the needs of the end users and stakeholders were, what ICT currently existed, and what would be the most appropriate solution that could be implemented for this.

One of the areas of concern was that it took a lot of time to define "what is NS FRITS about", to define the NS FRITS concept, although perhaps this is understandable due to the nature of the project, the extent of new knowledge and learning that was needed, that it was a proof of concept, that existing technologies needed to be identified and reviewed, that existing data sources needed to be examined and assessed and obtained for the purposes of the

project, and that the new concepts and ideas developed also needed to tie in with the needs of the stakeholders and potential end users, which also had to be identified.

All deliverables were achieved, and the majority of milestones were produced on time, although some of the documentation could have been produced slightly earlier to give more transparency about this WP to all partners, and to give clear steer and direction to the partners about the direction of this WP. It was also suggested that perhaps too much time was afforded to developing strict definitions of the specification of the project, and not enough time was spent on the development of the actual system itself.

4.5.4 **WP3**

There was a successful, structured WP kick off meeting whereby roles and responsibilities were administered at the outset of the WP. Some difficulties as due to nature of this partner (working style) they expected other partners to deliver on roles allocated, but as a result of this they were perhaps not proactive in chasing up when tasks were delayed or something went wrong.

"This was overall a successful WP, which was well led. The lead partner for this also challenged the partnership in a positive constructive way to deliver to best of their abilities" (NS FRITS partner, December 2011).

The data sources identified were appropriate to problems expressed by end users, based on driver and end user surveys and events with external stakeholders. Many partners suggested that as a whole we managed to acquire a lot of relevant and high quality data for this project, despite some difficulties that were encountered in doing this.

"It is difficult to know both what data is available, its level of quality, whether it could be accessed for the project, whether it was relevant, and if it could be used until efforts have been made to examine this. This was not a straight forward process and required several steps and stages" (NS FRITS partner, December 2011).

There were delays in ingesting data into the system and the length of time this took was a learning experience for the partnership as these delays did generate some frustrations. There was perhaps an underestimation in the time it would take to identify, capture, and then manipulate data required for the NS FRITS system, and this is important learning for any future roll out of NS FRITS.

There were frustrations about the time lag between some partners responsible for arranging contact with potential data source providers and explaining the NS FRITS concept to these organisations and obtaining a willingness to participate, passing on this information to the WP leader, and then the technical partners acquiring this data. At times the partner who had originally established contact felt they had to duplicate effort by revisiting these end users as data had not been successfully obtained, and re-establishing the links they had already spend considerable time making, effectively duplicating their own efforts.

All deliverables were achieved and the majority of milestones were produced on time, although perhaps the lead partner could have been more proactive in monitoring deliverables being achieved (relate to working style and culture of this organisation).

4.5.5 **WP4**

All comments regarding leadership of this WP relate to WP2. Working relationships between technical partners in particular strengthened and became key component within this WP. Some examples include bringing in DED, OD and the idea of driver agreements.

"Perhaps a limitation was a lack of understanding from some partners in the complexity and amount of effort needed within this WP to develop a system and produce this in a format that is appropriate for testing in the real world, and then the further complexities in adapting, refining and continually improving the system during the testing phases" (NS FRITS partner, December 2011)

Some partners felt that the development of the system should have started at an earlier stage, and that this led to difficulties in rolling out the NS FRITS pilots.

Milestones and deliverables were achieved mostly on time and the majority of partners were highly engaged in this WP, although perhaps the development of the system could have started earlier and perhaps WP4 should have started earlier, with less time spend on WP2. Also there were some delays in producing documents as time was needed to develop the system.

4.5.5.1 Pre pilot testing

Bremerhaven Desktop Exercise (part of WP5 but has been reported here as it fits better with the internal development and testing of the system).

- One partner suggested these were of limited value, although others suggested these were very important
- The role play exercise was seen by the majority of partners as extremely valuable for systems definitions
- This highlighted the importance of the OD which perhaps not all partners appreciated this at the outset of the project
- Unfortunately it was hoped that more drivers would attend the event but a number of the operators in the area did attend. Problems were that the drivers found it difficult to make time to attend, but their views were expressed and known by the operators
- It was key to obtain feedback from drivers and operators and understand more about the transport and logistics sector for a number of the technical partners, particularly in relation to OD and the procedure when arriving at ports
- It was an early attempt at system demonstration and provided a lot of learning for the development of the system

Volvo simulations (part of WP5 but has been reported here as it fits better with the internal development and testing of the system).

• These were seen as a very useful learning exercise, particularly in identifying that the original device was not user friendly, icons were too small, and it was extremely difficult to navigate through the device. It also showed that devices such as smartphones were too small for this

- They perhaps occurred slightly early and the system was perhaps not ready for this simulation. However, a positive of this was to appreciate the amount of development required to improve the system
- This was extremely important to the system developers as the original development on mobile smartphones was too small and the interface needed altering to enable the icons and buttons to be made larger and user friendly

Internal testing (part of WP5 but has been reported here as it fits better with the internal development and testing of the system).

- This was extremely valuable and there was a lot done within this activity. There were a number of frustrations that occurred during this, partly as the license purchased as advised by the supplier of the route planning was not correct and this caused a number of problems in testing. This issue was resolved once it was recognised
- The technical partner was very solutions led in refining the product when problems were identified with the system. Many partners felt this was extremely problematic to use at times but this was a necessity to develop the system into a product that was fit for purpose for the pilots
- This internal testing of the system was invaluable as the actual pilots would not have been achieved without them, due to the number of bugs and system refinements necessary before devices could be handed over to drivers to test during their normal actual working activities

4.5.6 **WP5**

The delays in starting the system development, meant that the systems were perhaps not ready early enough to launch the pilots, which perhaps are due to an over-emphasis on WP2, the delays in starting WP4, and the lack of management, steer and clarity provided by the WP5 leader. The delay in producing the WP5 specification documents and clarity in having a formal kick off meeting meant there was a lack of direction provided to partners as to their roles and responsibilities. This meant that the time available to deliver the pilots was compressed into a shorter timescale than had originally been planned and anticipated.

"This would have benefited from stronger leadership, clearer direction and more structure, and this WP was probably the least successful of all WPs" (NS FRITS partner, December 2011)

There had been a need over time to adapt the pilots from the original proposals and this has become more apparent over the course of the project and during the learning that has occurred over the three years. Although perhaps more end users could have been recruited for the pilots, the system developers suggested the feedback received was sufficient for robust testing and examination to demonstrate this proof of concept project.

Some of the delays with WP5 could have led end users to have seen project seen as unprofessional, as end users were recruited and signed up to the project but then there were delays in when the project started, and this could have impacted on the partnership (and particularly those who set up contact) in a negative way. "Despite the delays experienced in this WP, the fact that successful pilots were delivered and a range of end users were engaged in this process demonstrated the strong levels of transnational partnership working and commitment by the majority of partners involved" (NS FRITS partner, December 2011).

4.5.6.1 NS FRITS pilots

Some partners commented that they would have preferred to have more small and medium size end users recruited for pilots, but they accepted that difficulties in getting them to take part, especially small sized operators. Also concerns were raised that the pilots only lasted four weeks as opposed to 12. Some partners felt more data could have been incorporated into the pilot testing (see comments regarding difficulties in accessing data and also need to ensure both quality and relevance of data included)

"Future learning would have been to run pilots for a few weeks to test the system, make refinements and develop, then run for few more weeks to test, then refine and improve, etc. over a slightly longer time period" (NS FRITS partner, December 2012).

Some partners suggested the steps between users and developers were to large, due to partners who were involved with communicating with drivers and then relaying information to developers rather than direct contact. The exception to this was the availability of the helpdesk.

4.5.6.2 Nordic Trial

There was an excellent response from potential stakeholders and end users who wished to be involved in this pilot. There were also high levels of engagement from partners who were involved in the day. However, unfortunately some partners commented that they were not aware of this so only some partners were involved, but those that participated were extremely engaged.

"It would have been useful to have been able to do an extended Nordic Trial as opposed to running this only over a few days but difficulties in logistics, partly due to delays in specifying WP5, partly due to logistics, and partly didn't realise perhaps just how useful this event would be until after it had been run" (NS FRITS partner, December 2011).

4.5.7 **WP6**

All partners highlighted this as a highly successful WP.

"The communication and dissemination activities have been of a high standard and have raised awareness of the project" (NS FRITS partner, November 2011)

Examples include: the website as both a repository of information for partners and a source of information for stakeholders, project newsletters; over achievement on targets for press releases (radio; TV; website hits (over 100,000)); involvement of end users at various events and conferences; and the animation film produced.

"A limitation is perhaps partners could have been more engaged in this process. However, this was not necessarily a strength or core activity of a number of the partners who were not marketing/publicity orientated. An external company was brought in to assist with this process and the company used in years two and three of the partnership was seen as highly successful, especially in ensuring all PR targets were hit, or in some cases over achieved" (NS FRITS Partner, November 2011).

It was a requirement of the funding body to interact with other EU projects. Efforts were made by the partners to do this, and a range of projects were reviewed, and relevant ones identified. It was difficult to engage with some partners despite the efforts made, relating to willingness to liaise and the differing timescales and priorities of other projects. There were some examples of this, for example links to Dryport and StratMoS (presentations at each other's conferences).

4.5.8 Final products

Four key products were produced to test the NS FRITS proof of concept and these were the driver table device, the operator web based desktop system, the screen media, and the information hub.

4.5.8.1 Driver tablet/ mobile device application

Partners felt the tablet is excellent for demonstration purposes and can be described as a prototype that can be used to demonstrate and test for NS FRITS proof of concept. Many partners reflected that this was recognisably improved over time in terms of updated software versions, particularly in terms of user friendliness.

Drivers found inputting the routing information was perhaps more difficult than it could be. It was a process that drivers found a little laborious at times, for example the need to always add a start point when this could be automatically updated based on current location.

4.5.8.2 Operator desktop

One of the operators experienced a number of problems downloading the operator system, thus did not get to trial this to the extent they had hoped for. There perhaps needs to be more testing of the operator desktop system to comment further on this.

4.5.8.3 Screen media

The screen media was viewed as added value as this was not seen as part of original concept, but was integral and developed within remit and scope, as one of the aims of NS FRITS was to place communication hubs placed at key strategic points in transport corridors. Partners on the whole felt this concept was an excellent one, not only for providing users with information, but also it could also be used as a publicity and profile raising tool. There was a technical issue due to the screen used, as after period of inactivity it switched itself off. Also it was suggested by partners that more thought was needed in the future as to where it would be placed both strategically in the transport network, and also the within site location to maximise its potential. Further thought should be given to the content of the screen media also to maximise its impact.

4.5.8.4 Information platform

The NS FRITS hub or information platform is something the majority of partners did not recognise as a key product of the NS FRITS project. However, all other applications and the information on all other applications (portable tablet, web based operator system, and the screen media) is based on this. Without this there would be no NS FRITS. However, as this was perhaps unseen as it happened in the background few partners recognised this as one of key and essential products of NS FRITS.

"This is extremely valuable as it demonstrated the concept rather than the applications as perhaps the concept of NS FRITS is more important than the applications, bringing together this range of information into a single system, is one of the major benefits of the NS FRITS proof of concept and should not be underestimated" (NS FRITS partner, December 2011).

4.5.9 **IAs, UGs and future direction**

Overall, most partners were very happy that NS FRITS had achieved its aims and objectives, as demonstrated by the project attaining all its IAs. Most partners also felt that over time all UGS could potentially be achieved.

"We have proved the concept, and some of UGs would only come out of full implementation" (NS FRITS partner, November 2011).

Partners identified how NS FRITS can achieve improved accessibility, for example viewing a map and zooming into built up areas and the fact that the system developed can make it easier for people to get from A to B. It was also suggested that, after three years, the UGs of the project are still very much relevant (i.e. still on the European agenda) which is important for future roll out.

One partner questioned or argued that what is needed is a way to ensure that this information (as provided in NS FRITS) is recognised by government and policy makers as so crucial to those working in road freight sector, that it is made available to all through government agencies as standard.

Partners agreed that on the whole, all deliverables and milestones were in the main hit, although there were some delays, but that these did not hinder the overall progress of the NS FRITS project.

A critical success for the future is that NS FRITS has proved a concept. The next steps are to identify what are the priorities and what is achievable within this timeframe. It is argued that there needs to be a clear strategy for what the next project or product is.

"The unique selling point of NS FRITS is security, including crime data and secure parking data, and that it also offers everything that already exists but together into a single place/device. It is essential to have a public-private partnership in order to incorporate the security aspect" (NS FRITS partner, December 2011)

Questions were raised by partners as to whether it is more important in future pilots to add additional functionality and more data sources, to extend the current data sources identified

into more geographical regions or both. There were mixed opinions on this and no strong consensus of agreement.

4.5.10 Other factors

The structured nature of the evaluation and the challenges the collaborative evaluation team posed to partners were seen to definitely add value to project and was a learning experience for some partners as something they would use in future projects.

Partners felt the concept was extremely important and should not be lost in the applications developed (which would change rapidly as technology progresses)

- "The project was not necessarily about creating new technology but using existing technology in an innovative and appropriate way for the problems identified in the road freight transport sector" (NS FRITS partner, November 2011).
- "The concepts devised in the NS FRITS project are more important than the actual applications that were developed" (NS FRITS partner, December 2012)

Many partners expressed their concern in working in similar projects due to the level of reporting required which, for some partners, was a relatively small financial claim compared to the work required for this. Also financial reporting was highly complex and extremely difficult. A question asked was for some partners who were claiming relatively small sums, was the auditing and reporting mechanism appropriate to the level of funding being received.

"Financial auditing of this project has been extremely onerous and has been very well managed by the lead partner, but this process has been extremely difficult for a number of partners.... and delays in payments and suspension of payments for period of time is extremely difficult for some partners, especially SMEs" (NS FRITS partner, December 2011)

There could have been better integration between WPs during the lifetime of the project and there was a need for both vertical and horizontal integration between these which did occur although perhaps more as a response to problems that arose than as planned activity. Perhaps a better structure was needed for the integration of the WPs. However, at the same time as a number of partners were involved across WPs, there was a degree of natural integration between WPs as a result of this. A key aspect identified is the multi-modal possibilities of NS FRITS (beyond just road freight sector), for example rail.

The successes of NS FRITS were described by one partner in relation to the nature of the road freight industry.

"I can't think of a more demanding system to test new software and technology products than truck drivers. They are people who are used to having systems that work, and are very conscious of the need for delivering on time so to try out a new system and technology in this arena, and the successes achieved, reflects the successes of this proof of concept" (NS FRITS partner, December 2011).

Managing expectations of the functionality of the NS FRITS system could perhaps have been improved, especially as some partners and end users up until perhaps the last six months of the project thought the system would have had more functionality, including turn Page **77** of **136** by turn satellite navigation. This would have removed some of the disappointment expressed by partners who felt the final product did not match their expectations at the outset due to the additional functionality they thought would be included. Also some partners perhaps expected this to go beyond a proof of concept which was neither feasible nor realistic within the funding and time available.

4.5.11 Overall summary of evaluation of final partner interviews

This section has presented the findings from the analysis of the final partner interviews. It has described the partners' responses when asked to reflect on the NS FRITS project as a whole and also each of the key individual stages of the project. It discusses each WP in turn including; management, monitoring and evaluation in WP1; development of the system concepts in WP2; identification and access of data in WP3; specification and development of the system in WP4; piloting the system in WP5; and dissemination of the project in WP6. It also reviewed the thoughts of partners on some key events including IMG meetings, technical meetings and external events, Bremerhaven desktop trial, Volvo simulations, internal field testing of the system, and live pilots. It elicited partner feedback on the four key products, driver tablet, operator desktop, screen media and information hub. Finally it reflected on overall achievements of the project and potential future development.

Overall there were a remarkable number of successes discussed by all partners, and a number of factors were identified that contributed to this. There were limitations and concerns expressed, but most of the obstacles encountered during the NS FRITS project were overcome by partners.

4.6 Synthesis of evaluation findings

This section summarises the findings from the five strands of the evaluation discussed in sections 4.1 to 4.5, which includes participant observation at meetings and external events, review of project documentation, annual partner questionnaires, evaluation of the NS FRITS pilots and final partner interviews. The findings are summarised under the key evaluation questions identified during the construction of the Evaluation Framework for this project. These were:

- What were the achievements and results of the NS FRITS project (4.6.1)?
- To what extent did the NS FRITS project achieve a transnational approach to partnership working (4.6.2)?
- To what extent was the NS FRITS project innovative (4.6.3)?
- To what extent did the NS FRITS project achieve knowledge transfer (4.6.4)?
- What is the potential and long term perspective for future NS FRITS activity to meet the UGs of NS FRITS (4.6.5)?

4.6.1 What were the achievements and results of the NS FRITS project?

One of the major success factors for the NS FRITS project is evidenced by the fact that it achieved all of its deliverables and project milestones (appendix nine). In addition, NS FRITS was also successful in meeting and exceeding all but one of its project indicators (appendix nine) and these are discussed in WP6 Final Report.

NS FRITS produced a number of key final products and these are:

NS FRITS concept

 Creating a single integrated interface which brings together the range of information required by those working in the road freight sector in a cost efficient way including logistics and security should not be underestimated and some partners argued that this was more important that the actual applications developed.

NS FRITS hub/information platform

 This is essential part of NS FRITS as all other platforms and applications are dependent on this. However, perhaps as it sits at the back end of NS FRITS and is not visible, the majority of partners did not recognise this as a key product of the project.

NS FRITS driver tablet/handset device

 This demonstrated the proof of concept, and can be described as prototype that can be used to demonstrate and test the NS FRITS proof of concept. It was evaluated through the use of pilots and received a number of positive responses from the user community. A range of future developments are considered elsewhere (see future recommendations).

• NS FRITS user guide/manual

 This document provided detailed instructions of how to install and use the NS FRITS software. It was used by trainers, drivers and operators in the live pilots (WP5). It describes how to use the route planner, search function and device in driver mode. It also describes communication between driver and fleet manager and has a quick start guide. All of these are provided with screen shots and step by step guides. As evidenced by the evaluation of the pilots, most users found this instructive and found the NS FRITS products fairly straightforward to use.

- NS FRITS web based operator system
 - Whilst there were some positive comments and feedback from users about this system, there perhaps needed to be more testing of the operator desktop. Again this was a prototype to demonstrate the NS FRITS proof of concept.
- NS FRITS screen media
 - This provided added value and most partners agreed it was an excellent application, not only for providing users with information, but also for publicity and profile raising. This product requires further evaluation, but again is a prototype to develop the NS FRITS concept.

One of the questions this evaluation attempts to address is to examine the impact of the NS FRITS project. As discussed in section two of this report, the NS FRITS project consisted of a range of high level objectives, which attempted to tackle a number of security and logistical challenges faced by the road freight sector. However, as the NS FRITS project was a proof of concept, many of these are difficult to measure and during the lifetime of a project such as this (with its limited scope and geographical nature, and the fact that only pilot activities were undertaken) it was not possible for such goals to be achieved, and, moreover, highly problematic to measure the extent to which the project has achieved these goals, during the lifetime of the project. Therefore, a series of goals or high level objectives of the NS FRITS were defined and these are UGs for the purposes of this project. This approach (Hirschfield, 2005) refers to the desired eventual outcomes of a project (appendix three).

Therefore a series of intended IAs of the NS FRITS project were defined (appendix three), which could be tested and measured within the scope of the NS FRITS project. These IAs can be described as the mechanisms through which NS FRITS may reach its UGs.

A further success factor is that the project managed to meet all of its IAs in full. The evidence for each of the IAs being met is presented in the above evaluation analysis findings (4.1 to 4.5) and table three summarises this evidence, by matching IAs with the project deliverables.

Table three: supporting evidence for meeting IAs

	IA	Deliverable	Evidence	Supplementary evidence
1	To utilise the most relevant Information Communication Technology (ICT) for the freight supply chain	2.1,2.2,3.6,4.3,4. 4,4.5,5.1,5.4,5.6, 5.7,5.8	WP2 Final Report; WP4 Final Report; WP3.6 Supplementary Report; WP5 Business Case; WP5 Final Report	Supported by development of system in conjunction with end users, external stakeholder events; online partner surveys, the final partner interviews; and feedback from drivers during the live trials
2	To establish an ICT solution that includes telecommunications and the increasing range of sensory, location, security identification and data capture leading edge technologies within the supply chain, which will transmit data at ports and other critical transport corridor points	2.3,2.7,3.6,4.1,4. 2,4.3,4.4,4.5,4.6, 4.7,4.8,5.2,5.4,5. 6,5.7,5.8	WP2 Final Report, WP3.6 Supplementary Report, WP4 Final report, WP5 Final Report and WP5 Business Case	Supported by development of system in conjunction with end users, external stakeholder events; the final partner interviews; and feedback from drivers during the live trials, and the evaluation of the pilots and the use of screen media
3	To develop a multi-lingual electronic communications and data capture system into an intelligent transport solution (ITS)	2.3,2.4,2.6,4.1,4. 3,4.4,4.5,4.6,4.7, 4.8,5.2,5.4,5.6,5. 8	WP2 Final Report, WP3.6 Supplementary Report, WP4 Final report, WP4 Supplementary Report User Manual, WP5 Final Report and WP5 Business Case	Supported by development of system in conjunction with end users, external stakeholder events; the final partner interviews; and feedback from drivers during the live trials, and the evaluation of the pilots
4	Identify and prioritise the nature of the information that is to be transmitted considering quality, quantity and format of the data	3.1,3.2,3.3,3.4,3. 5,4.2,4.7,4.8,5.1, 5.2,5.4,5.6,5.8, 6.1	WP3 Final report, WP4 Final report, WP5 Final Report and WP5 Business Case, WP6 Final Report	Supported by evaluation of pilots, final partner interviews, external events and feedback
5	To place the ITS at strategic positions in the transport network	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.3,5.4, 5.5,5.6,5.6,5.8	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials, and final conference demonstrations
6	To transmit and receive data in a series of languages to lone workers as they travel through NSR	4.3,4.4,4.5,4.6,4. 7,4.8,5.2,5.4,5.6	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials
7	To pilot and develop information hubs to test if they			
а	Improve the liaison between multimodal and multinational operators in the NSR	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.2,5.3, 5.4,5.6,5.7,5.8,6. 1	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials. Applies to multinational but not multimodal
b	Improve traffic flow and dispersal throughout the NSR	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.2,5.3, 5.4,5.6,5.7,5.8,6. 1	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials
с	Improve predictability for the 'just in time' movement of goods	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.2,5.3, 5.4,5.6,5.7,5.8,6.	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials

		1		
d	Improve driver safety and reduce road casualties.	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.2,5.3, 5.4,5.6,5.7,5.8,6. 1	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials
е	Transmit and receive data in a series of languages to lone workers as they travel through NSR	see IA 6	see IA 6	see IA 6
f	Provide live up to date information (traffic flow, congestion, safety and security)	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.2,5.3, 5.4,5.6,5.7,5.8,6. 1	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials
g	Provide interoperability and integration between transnational and secondary networks providing visibility across supply chains, sharing data, so that all elements of the supply chain benefit	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.2,5.3, 5.4,5.6,5.7,5.8,6. 1	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials
h	Reduce economic and social risks that exist in the supply chain, specifically related to losses, late deliveries, security, road safety and driver conditions of service	4.3,4.4,4.5,4.6,4. 7,4.8,5.1,5.2,5.3, 5.4,5.6,5.7,5.8,6. 1	WP4 Final Report, WP5 Final Report and Business Case	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials
8	Build functionality and capacity into the system to enable compatibility for additional services to be introduced in the future to meet the changing needs of logistics operators and the growing challenges within the freight supply chain throughout Europe	2.3,2.4,2.5,2.6,2. 7,2.8,3.5,3.6,3.7, 4.2,4.3,4.4,4.5,4. 6,4.7,4.8,5.1,5.2, 5.4,5.6,5.8,6.1,6. 2,6.3,6.4,6.5	WP2 Final Report, WP3 Final Report, WP3.6 Supplementary Report, WP4 Final Report, WP5 Final report, WP5 Business Case, WP6 Final Report	Supported by evaluation of pilots, final partner interviews, testing of system in real world trials and Nordic trials
9	For the public and private sector to work in partnership to develop, populate, administer and benefit from the system			
а	This will enable the wider adoption and use of ICT applications to enable NSR to further develop efficient and effective logistics solutions.	1.1,1.2,1.3,1.4,1. 7,4.1,4.2,5.1,5.3, 5.5,5.7,6.1,6.2,6. 3,6.4,6.5	WP1 Documents, WP4 Final Report, WP 5 Final Report, WP5 Business Case, WP6 Final Report	Supported by observation and attendance at external events, final partner interviews, online partner surveys, and evaluation of the pilots
b	This also requires a sustainable cross-sectoral partnership for the collection and transmission of relevant data that will be used to	1.1,1.2,1.3,1.4,1. 7,4.1,4.2,5.1,5.3, 5.5,5.7,6.1,6.2,6. 3,6.4,6.5	WP1 Documents, WP4 Final Report, WP 5 Final Report, WP5 Business Case, WP6 Final Report	Supported by observation and attendance at external events, final partner interviews, online partner surveys, and evaluation of the pilots

	inform the freight supply chain and other relevant agencies			
10	To learn from, add value, support and co-operate with other EU projects	1.6,4.2,5.3,5.7,5. 8,6.1,6.3	WP1 Documents, WP5 Final Report, WP6 Final Report	Supported by observation and attendance at external events, final partner interviews, and online partner surveys,

4.6.2 To what extent did the NS FRITS project achieve a transnational approach to partnership working?

There are a number of ways in which NS FRITS achieved a transnational approach to partnership working and this is evidenced by the findings of the evaluation. Some of the key examples of this are:

- It is evident from participant observation at the NS FRITS meetings and external events that NS FRITS was an excellent example of transnational partnership working demonstrated by participation, attendance, communication and discussions observed at these meetings.
- IMG and technical WP meetings served a range of functions including the provision of a forum for; exchange of knowledge and ideas; an environment that fostered working relationships and transnational partnership working; provided a means for strategic decisions to be made and progress updates to be reported; and enabled a systematic transparent approach to be developed for partnership working
- It was further evident from external events, workshops and conferences that this transnational partnership working extended beyond the partnership, by including and engaging potential stakeholders and end users
- A unique feature of this project was that this was an example of a highly successful transnational public-private partnership working model. This is supported by the fact that it achieved all its deliverables and milestones and met its IAs, whilst recognising different cultures and working styles of transnational partners across the public and private sector, and their differing motivations for being a part of the project and different partner agendas and priorities
- The review of project documents provided further substantial support to the high level of transnational partnership working achieved by the NS FRITS project
- The level of detail produced and the high quality of these reports could not have been achieved without the mechanisms needed for highly successful transnational partnership working, including a high degree of partnership engagement, interaction, communication and discussion, and commitment to transnational partnership working across all ten partners in the four participating countries.
- One of the key factors that enabled this transnational partnership were the structures set in place by the project management team, to set up a reporting mechanism and structure to ensure project remained within its original scope and aims and that partners engaged with this reporting structure has benefited the project and enabled monitoring of performance. This was supported by the continuous evaluation of the project throughout its lifetime
- The data acquired in WP3 and the engagement of stakeholders in defining the case scenarios for system development across a range of countries could not have been achieved without a high degree of transnational partnership working between partners, potential end users and stakeholders
- The evaluation of the pilots demonstrated that this activity further enhanced the transnational partnership working of NS FRITS, by the internal testing of the system, and then by engaging the end user community in four countries (UK, Germany, the Netherlands and Sweden) to participate in the live pilots that tested the range of products produced by the NS FRITS project and provide feedback for future refinement.

- The evaluation of the annual questionnaires and final interviews with partners suggested that all partners involved believed that NS FRITS achieved a high degree of transnational partnership working
- The final partner interviews demonstrated some of the advantages the partners experienced as being part of the NS FRITS project, and through transnational partnership working some of these included:
 - Profile raising and strengthening reputation both nationally and internationally
 - Opportunity to network with organisations in both the private and public sector
 - Provide a gateway for opportunity for further European collaborative work
- Positive feedback received after the NS FRITS Final Conference by all those who attended demonstrated the successful transnational partnership approach that occurred during the project, both by the partners involved and through engagement with end users and stakeholders

4.6.3 **To what extent was the NS FRITS project innovative?**

There are a number of examples of innovation achieved by NS FRITS and these are discussed below with supporting evidence:

- One of the key features of the project is the actual NS FRITS concept that was developed. The project was not necessarily about creating new technology but using existing technology in an innovative and appropriate way for the problems identified in the road freight transport sector
- In order to achieve this, there was a substantial amount of learning required, despite the substantial knowledge of individuals and organisation involved in the project
- Evidence of ways by which this learning and innovation are met is provided by observation of the IMG and technical meetings. These provided:
 - A forum for the discussion, sharing and exchange of knowledge, experiences and ideas and exploring innovative possibilities
 - An environment that fostered trust and encouraged constructive criticism and innovation
 - A forum where ideas could be tested and discussed, constructive criticism to be raised, and new solutions to be considered
 - A forum for solving obstacles and problems encountered during the project
- The review of project documents also suggested a number of innovations achieved by the NS FRITS project including:
 - Thorough review of existing ICT
 - Engagement of stakeholders and potential end users through the use of case scenarios
 - Identification and acquisition of appropriate and reliable data (including legal, technical and data sharing protocols)
 - Design of the system
- The evaluation of the pilots which tested the products developed (WPs 4 and 5 both internal testing and the external live pilots) also demonstrated the innovative successes of the project including:

- Development of a leading edge and innovative ITS that can be delivered across a range of platforms to combine multiple data sources in a cost effective way across a single platform
- A system that provides targeted and relevant information to lone drivers and other users of the road freight transport system
- Engagement of the user community in engaging in real world pilots to test the relevance of the innovative concepts devised
- Bremerhaven desktop exercise was seen as useful for developing the system concept
- Volvo simulations were crucial for identifying limitations with the user friendliness of the original planned device
- Internal field testing was essential for continuous testing and refinement of the system to get it ready for live user pilots
- Positive findings of the evaluation of the live pilots demonstrated the relevance and applicability of this innovative proof of concept project
- Nordic Trial was extremely valuable for demonstrating the benefits of the use of OD in the NS FRITS system, and an added value of the project.
- Screen media was also an example of how technology can be used and adopted in an innovative way to assist the transport freight sector
- Analysis of the partner questionnaires and final partner interviews revealed further innovations of the NS FRITS project
 - For some partners being involved with the NS FRITS project afforded them new potential opportunities to incorporate new developments and technical solutions within their organisation
 - The unique selling point of NS FRITS i security, including crime data and secure parking data, and that it offers everything that already exists but together into a single place/device
 - An innovative aspect of the partnership is that it successfully implemented a public-private partnership approach, and this is essential in order to incorporate security data
 - The concepts devised in the NS FRITS project are perhaps more important than the actual applications that were developed
 - The NS FRITS provided a proof of concept to the road freight industry, perhaps one of the most demanding environments for testing new software and technology

4.6.4 **To what extent did the NS FRITS project achieve knowledge transfer?**

There are a number of examples as a result of this evaluation which demonstrate the high level of knowledge transfer achieved by the NS FRITS project, and examples and supporting evidence for this are summarised below:

- Observation of NS FRITS meetings (IMG and Technical WP) revealed that at these meetings partners shared knowledge, tested and discussed ideas and raised constructive criticism to the strategic partnership to challenge the direction of the NS FRITS project. They provided a forum for honest and open knowledge transfer between partners
- In addition, external workshops and events provided an arena for the engagement of potential stakeholders and end users for interaction and discussion between partners, providing excellent networking opportunities, eliciting the views of end users and

stakeholders in system design and development and for the exchange of ideas to improve the understanding of the project as a whole

- Analysis of the NS FRITS project reports shows a thorough review of existing ICT and of appropriate and reliable data (including legal, technical and data sharing protocols), which required both research and knowledge transfer across the partnership and with the end user community
- The design and specification of the system, internal testing and external pilots resulted in extensive knowledge transfer. The technical partners commented that the input of end users experiences of the freight logistics and security industry were a crucial component of the case scenarios required when designing the system
- The extent of new learning required for experienced partners is also evidence of the knowledge transfer that occurred in the project
- During the system testing phases there was much sharing of knowledge to adapt, refine and continually improving the system
- The communication and dissemination activities of WP6 were viewed by all partners of a high standard and have raised awareness of the project
- The Bremerhaven event, Volvo simulations, Nordic Trial and live pilots provided a high level of end user engagement and further knowledge transfer
- Products produced (user manual, driver tablet, screen media and operator desktop) all provided further avenues through which there was knowledge transfer in NS FRITS
- During the partner questionnaires and final interviews it was evident that NS FRITS created new working relationships which have the potential for future partnerships to be developed and also for technical partners this developed their knowledge and experience in the areas of safety and security in the road freight sector
- The NS FRITS Conference was seen as extremely successful and the content, presentations and demonstrations were seen as of a very high quality. This was commented on by all the partners
- The support of an MEP and their positive stance on the project and willingness to speak at external events, was seen as an indicator of the success of the project

4.6.5 What is the potential and long term perspective for future NS FRITS activity to meet the UGs of NS FRITS?

The NS FRITS project has a number of high level goals which are to:

- Improve accessibility to places in the North Sea Region
- Contribute to economic development and growth
- Increase performance, profitability and competitiveness for road freight sector
- Improve the quality of life for people living and working within the North Sea Region
- Have a positive impact on the environment as emissions are reduced

From analysis of the online annual partner questionnaires, there were a number of areas that the partners felt NS FRITS could most likely achieve, with a full out of the NS FRITS system. These were in building the innovation capacity of businesses and services in the North Sea Region, in promoting the adoption and use of ICT applications, and in promoting regional accessibility. Partners were less sure about its potential to promote the development of multi-modal transport corridors although the design of the system that

enables additional functionality to be built in, and the Nordic Trial and Bremerhaven desktop pilots suggest that this could also be achieved. There was a more mixed response from partners about its ability to promote sustainable growth solutions and energy efficiency in urban and rural communities. It was also noticeable that over time, from years one to three of the project, partners became more positive about the ability of NS FRITS to meet its UGs in the future.

The analysis of the final interviews found that all partners believed NS FRITS had achieved its IAs and that these provided evidence to support the claim that over time all UGs could be achieved. The project has proved the NS FRITS concept, and for UGs to be achieved would require a full implementation of the system. A critical success for future is that now NS FRITS has proved a concept, the next steps are to identify what are the priorities and what is achievable within this timeframe in next stage. It is argued that there needs to be a clear strategy for what the next project or product is.

The unique selling point of NS FRITS that was identified by a number of partners was that it brings security data, including crime data and secure parking data, alongside everything that already exists, but together into a single place/device and that it is essential to have a public-private partnership in order to incorporate the security aspect.

Questions were raised by partners as to whether it is more important in future pilots to add additional functionality and more data sources or to extend the current data sources identified into more geographical regions, or both. There were mixed opinions on this and no strong consensus of agreement.

This section of the report has discussed the findings of the evaluation of the NS FRITS project. The final section of this report will now offer some concluding remarks and potential avenues for future direction.

5 **Conclusions and recommendations**

This final section reviews some of the main findings in the report and summarises the key areas of the evaluation.

5.1 Summary of the report

This report has presented the findings of the evaluation of the NS FRITS system. It briefly summarised what NS FRITS was, a single integrated all in one device that aimed to provide users with information they required to improve the logistics and security of their roles within the transport freight sector. This was a proof of concept idea and it was designed and developed in conjunction with end users and stakeholders, thus driven by end user needs. A range of potential ICTs were examined and the most useful brought together and adopted for system development. A range of potential data sources were examined and the most appropriate were selected for this system. There was extensive internal testing of the system, followed by real world live pilots with evaluation and feedback from end users and further system development. A number of products were produced including the NS FRITS concept itself, information hub, driver system, operator desktop, screen media, and user manual. Each of these devices was examined through the evaluation of the pilots.

The evaluation of NS FRITS occurred in a number of phases and it was designed to include both process and impact evaluation. This examined the partnership and the impact of the products developed. As this was a proof of concept with limited scope, addressing a fairly extensive problem in the transport freight sector, the aims of the project were broken down into more high level UGs (that would only be achieved with a full implementation of the system) and IAs (used to demonstrate the potential of this approach to meet its UGs). The role of the Applied Criminology Centre, University of Huddersfield was to act as a collaborative evaluator due to the nature of the funding.

The evaluation occurred in five strands and these were participant observation at partnership meetings and external events, a review of all project documentation across each of the six NS FRITS WPs, annual questionnaires of partners, evaluation of the NS FRITS pilot activity (both internal and external testing) and final partner interviews. The information from all these strands were synthesises in section 4.6.

NS FRITS can overall be seen as a highly successful project that met all its deliverables and milestones on time and within budget. It also met all its indicators. The evaluation examined the extent to which it reached its IAs and all of these were fully reached. This demonstrates the potential success of a fully rolled out NS FRITS system. The system was also designed to allow additional functionality to be built in easily which should facilitate future development of the system. There were perhaps some key areas identified by this evaluation in terms of the factors that made this project successful, the limitations and key areas for learning, and also some recommendations for future activity. Each of these will now be discussed in turn.

5.2 Critical factors in the success of NS FRITS

The evaluation of the NS FRITS project has identified that this was a highly successful project that defined the NS FRITS concept, provided proof of its need and relevance to the freight transport sector, and met all its indicators and deliverables. It also achieved all of its IAs which suggests that a full implementation of the NS FRITS system could deliver on its higher level ultimate objectives and goals. Some critical success factors can be identified in achieving this and these include:

- A project management team that developed a clear strategy for project steer, feedback on progress and activities and continuously monitoring of performance
- The expertise, engagement and high level of commitment of all partners
- The creation of a multi-disciplinary cross sector transnational partnership that was based on trust and mutual respect and encouraged innovation, sharing of knowledge and the generation and discussion of new learning, ideas and approaches
- Open and transparent lines of communication and a process for the partnership to agree on strategic decisions about the direction of the project
- Effective transnational partnership working across both the public and private sector with different cultures and working styles
- The majority of partners were involved in multiple WPs which helped with vertical transitions between WPs
- A structured framework for evaluation built in at the outset of the project and continuous evaluation over the lifetime of the project
- A clear definition of the NS FRITS concept
- Through engagement of end users and stakeholders to identify user needs and problems to ensure the project was driven by and focused upon the needs of end users
- A thorough review and selection of the most relevant and most appropriate ICT
- Identification, agreement to share, acquisition, analysis of the appropriateness and final selection and ingestion of appropriate datasets
- The engagement and consultation with end users, through the use of case scenarios, and the relation of these to priority areas identified through driver and operator surveys have ensured that system requirements and functionality specifications are appropriate to the needs of the user
- Internal development and extensive refinement and testing of the system by partners through the Bremerhaven desktop exercise, laboratory system tests, simulations and partner field testing enabled prototypes to be developed that were fit for real world pilots
- The real world pilots enabled prototypes and products developed to be tested though live pilots using actual end users, which tested the appropriateness and relevance of the NS FRITS concept and enabled testing and refinement of the system with actual end users
- The dissemination activities and external events were essential to raise the profile of the NS FRITS partnership and project

5.3 **Project limitations**

Despite the clear successes evident in the NS FRITS project, there were a number of difficulties and obstacles to overcome during the three year project, some that were resolved

more successfully than others. The main limitations of the NS FRITS project are summarised below:

- One of the difficulties found was finding a balance between having formalised structured meetings and enabling discussions around issues that evolved during the course of meetings. In the early days of the project there was repetition between IMG and WP meetings
- It was found that the best method for resolving this was to reserve IMG meetings for formalised discussion and where more detailed debate was needed to move this into the technical WP meetings. Whilst most partners approved of this, a few felt the IMG meetings were still too formal. Some felt more WP meetings should have occurred but there were logistical issues and resource constraints to achieving this due to the transnational partnership
- Some partners suggested that at times there was a lack of communication between partners. Other options used to improve communication channels outside of WP and IMG meetings were to use teleconferences and also the website forums. The majority of partners felt the teleconferences were extremely useful, although some found these difficult as partners sometimes spoke at the same time. There was limited uptake of the website forum
- Some partners felt that IMG meetings served only as an administrative function and that a minority of partners could perhaps have contributed more to these
- At times the project suffered in making vertical links needed between WPs 2, 3, and 4
- Some partners felt there was a lack of clarity at the outset as to the definition of the NS FRITS concept. However, the amount of learning and knowledge sharing required, particularly in the first 18 months of this project, meant it was difficult to foresee this. This is perhaps not unexpected in a proof of concept project which required input from end users and partners from a range of sectors
- There were delays experienced in obtaining and testing suitable data. Perhaps more consideration was needed for the additional step from obtaining permissions and agreement to use data, to actually receiving data, namely agreeing and specifying the technical format of data required and available
- Some partners felt a minority of partners were less engaged in the project than others. However, as partners did not receive equal funding not commit equal resources to the project, this might contribute to this
- There were difficulties for the partnership due to:
 - Different cultures and working styles of transnational partners across both the public and private sector
 - Differing motivations for being a part of the project
 - Different partner agendas and priorities
- There were initial problems in the field testing of the mobile system due to the wrong routing software being supplied, which caused a number of frustrations between partners and perhaps a lack of understanding about the complexities involved in the system design by none technical partners
- There was a lack of leadership and steer provided in WP5 and this contributed to a delay in the launch of the pilots. Some felt they should have included more functionality, some more data, and some more geographic scope and operators

- Future learning would have been to run pilots for a few weeks to test the system, make refinements and develop, then run for few more weeks to test, then refine and improve, etc. over a slightly longer time period
- The funding body placed a large administrative burden on this project, and the interruption of payments caused severe financial difficulties, particularly for SME partners who the funding body were keen to include
- There was a mixed response with plans beyond the lifetime of the projects and partners were less satisfied with future plans
- Most of the difficulties experienced in the pilots related to technical issues such as connectivity and slow uploads and refresh rates, and the time it takes to learn and use the system
- The key limitation of the system was that it was not a turn by turn SatNav. There was an issue of managing expectations here and perhaps a lack of understanding as to what a route planner was and was not. Some partners thought a route planner included turn by turn SatNav guidance which it does not

5.4 Future recommendations

There are a range of recommendations for future activity that have arisen from the evaluation of the NS FRITS report and these are summarised below.

- NS FRITS has thus far proved a concept and its key strengths are crime and security data, which are brought together in a single platform with other relevant logistical data sources appropriate to end user needs. Future activity should include crime and security data
- In order to secure this data, a public-private partnership will be necessary for future activity
- In the final interviews, partners were unsure if the priorities for future implementations should be to build additional data sources in existing geographical regions or extend current data sets to a wider geographical extent. Appropriate discussions should be afforded to this at the outset of any future development
- There are a range of additional functionalities that were suggested by drivers that could be built into future applications. The key limitation of the system is that it is not a turn by turn SatNav and this should be given priority for future development
- Additional suggestions for future development include:
 - Information on temporary road works
 - Ferry delay warnings
 - Local police telephone numbers
 - Programming with fuel card stops
 - Route specific settings that are programmable (based on truck dimensions so that bridge heights are programmable)
 - A favourites location setting
 - \circ $\;$ Being able to include multiple pick up and drop off points $\;$
 - Improving connectivity issues
 - Incorporating OD
 - o Trailer tracking, temperature monitoring and access restriction
 - Trace and track of cargo (for example if a driver deviates from a route)

- Accurate time to destination
- It is important that end users are engaged with deciding the priorities for further development of system functionality to ensure NS FRITS remains driven by user needs. Clear priorities need to be set out for any future development as a range of the above could be implemented
- Future partners need to be committed, with a range of expertise in this area, relevant to the priority areas set for future development
- Additional platforms should also be considered, such as non-Android based tablets
- More testing is needed of the operator desktop system and screen media
- More testing is required using OD
- Other transport freight modes beyond the road sector should be considered for future development, for example rail
- Future pilots should test the system for a few weeks, then refine, then test again, over a longer time period and a wider geographical scale.
- A final suggestion is to develop the NS FRITS platform as a publicly available service to allow a registered user to provide transport information to the system. The platform could be provided as a web application to the public as a legacy for the project

Appendix one: NS FRITS Evaluation Framework Summary

NS FRITS Evaluation Framework Summary

Overall project objectives

- Improve accessibility to places in the North Sea Region
- Contribute to economic development and growth
- Increase performance, profitability and competitiveness for road freight sector
- Improve the quality of life for people living and working within the North Sea Region
- Have a positive impact on the environment as emissions are reduced

Overall questions for evaluation

- 1. What were the achievements and results of the NS FRITS project?
- 2. To what extent did the NS FRITS project achieve a transnational approach to partnership working?
- 3. To what extent was the NS FRITS project innovative?
- 4. To what extent did the NS FRITS project achieve Knowledge Transfer?
- 5. What is the potential and long term perspective for future NS FRITS activity to meet the ultimate goals

Impact evaluation (questions 1 and 5)

Due to the nature of the project as a proof of concept, these objectives were subdivided into the following

- UGs high level goals relating to project objectives (see Evaluation Mind Map)
- IAs used to assess the extent to which a fully rolled out NS FRITS might meet its UGs (see Evaluation Mind Map)

The impact, results and outputs of NS FRITS will be examined by the following questions:

- > Did NS FRITS meet its deliverables, milestones and project indicators (WP1 to 6)
- > To what extent did NS FRITS meet its Intermediate Achievements
- > What is the evidence that a fully rolled out NS FRITS will meet its UGs

Process evaluation (Qs 2-4)

For each of the WPs, an evaluation matrix was produced. This included:

WP description, activity type, responsible partner, deliverables and milestones

WP activities - linked to the deliverables and project plan

The following questions were asked for each activity:

- > What is the evidence that the deliverables were met?
- How did these meet or partially meet the IAs?
- What is the evidence for transnational partnership working, innovation, and knowledge transfer within these activities?
- > What were the limitations of these activities?

Appendix two: Evaluation Mind Map



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Appendix three: Intermediate Achievements (IAs) and Ultimate Goals (UGs)

¹NS FRITS: INTERREG PRIORITY AREAS

INTERREG PRIORITIES

Priority 3:

As specified in the application

• Improving the accessibility of places in the NSR

Intervention 3.3:

• To promote the development of efficient and effective logistics solutions

Interventions As specified in the application

- 1.1: Building the innovation-capacity of businesses and services
- 1.4: Promoting the adoption and use of ICT applications
- 3.1: To promote regional accessibility
- 3.2: To promote the development of multi-modal transport corridors
- 4.2: Promoting sustainable growth solution for expanding areas
- 4.3: Promoting energy-efficiency in urban and rural communities

Programme Level Impacts As specified in Application: Appendix 1

1: Increased innovation based business development and supporting public and academic infrastructures across the NSR.

3: Improved accessibility and more efficient and sustainable means of communication (including transport) within the NSR and between the NSR, including its more remote or congested areas, and countries and regions outside it.

5: A transnational knowledge bank and infrastructure for further knowledge transfer and exchange for all stakeholders

7: A higher profile for the NSR as a global leader and increased demand for NSR business products and expertise.

²NS FRITS: ULTIMATE PROJECT GOALS

The following goals can be identified as "high level" objectives of the NS FRITS. "Ultimate Project Goals" (Hirschfield, 2005) refer to the desired eventual outcomes of a project. However, many of these are difficult to measure and during the lifetime of a project such as this it will be difficult for such goals to be achieved, and, moreover, highly problematic to measure the extent to which the project has achieved these goals. Therefore the evaluation will test and measure the intended "intermediate achievements"³ of NS FRITS, as defined in the next section. These intermediate achievements can be described as the mechanisms through which NS FRITS may reach its ultimate goals. Therefore, this evaluation will seek to assess the extent to which these intermediate achievements have or have not been met, to assess the reasons why they have or have not been met, and to use these intermediate achievements to suggest whether an expanded NS FRITS could achieve its ultimate objectives, emphasising some of the reasons for its successes and failures and offering suggestions for future advancement.

The ultimate project goals of NS FRITS (based on the application) that can be identified are as follows:

- 1. To build the innovation-capacity of businesses and services
- 2. To enhance the competitiveness of the NSR region
- 3. To promote sustainable growth solution for expanding areas
- 4. To support the development of a knowledge-based economy
- 5. To provide sustainable economic, social and environmental benefits to the NSR
 - including improved quality of life and job opportunities and promoting energyefficiency in urban and rural communities
- 6. To promote the adoption and use of innovative ICT applications
 - and to support the wider use of ICT in businesses of all sizes
- 7. To promote regional accessibility and increased efficiency gains
 - Including the development of multi-modal transport corridors and to encourage transnational and cross-sectoral integration and co-operation.
- 8. To contribute to increased efficiencies in the supply chain and improved performance, profitability and competitiveness of long distance and intermodal services
 - By reducing educe economic and social risks that exist in the supply chain, specifically related to losses, late deliveries, transport congestion, traffic flow, road safety and security and driver conditions of service.
 - A bi-product will be a reduction in criminal activity that is highly disruptive to the economy, business and people.
- 9. To support, influence and enable government and EU policies
 - By raising awareness of difficulties that exist within multimodal transport and logistics operations, and to provide a legacy of good practice for the logistics sector. The subsequent learning of this project may be used to influence future government policy to protect the social and economic integrity of the good supply chain.
- 10. To build in additionality and scalability

The above objectives will all contribute to ensure that NSFRTS meets with the aims of the Lisbon and Gothenburg Strategies

Hirschfield, A. (2005) 'Analysis for Intervention'. In Tilley. N. (ed.) Handbook of Crime Prevention and Community Safety, Willan Publishing, 629-673.

³INTERMEDIATE ACHIEVEMENTS

The intermediate objectives identified below are all taken from the NS FRITS application. These can be described as the measurable outputs and outcomes of NS FRITS, and the mechanisms that can be used to demonstrate how NS FRITS can achieve its ultimate objectives. The intermediate objectives identified are:

- 1. To utilise the most relevant Information Communication Technology (ICT) for the freight supply chain
- 2. To establish an ICT solution that includes telecommunications and the increasing range of sensory, location, security identification and data capture leading edge technologies within the supply chain, which will transmit data at ports and other critical transport corridor points
- 3. To develop a multi-lingual electronic communications and data capture system into an intelligent transport solution (ITS)
- 4. Identify and prioritise the nature of the information that is to be transmitted considering quality, quantity and format of the data
- 5. To place the ITS at strategic positions in the transport network
- 6. To transmit and receive data in a series of languages to lone workers as they travel through NSR
- 7. To pilot and develop information hubs to test if they
 - a. Improve the liaison between multimodal and multinational operators in the NSR
 - b. Improve traffic flow and dispersal throughout the NSR
 - c. Improve predictability for the 'just in time' movement of goods
 - d. Improve driver safety and reduce road casualties.
 - e. Transmit and receive data in a series of languages to lone workers as they travel through NSR
 - f. Provide live up to date information (traffic flow, congestion, safety and security)
 - g. Provide interoperability and integration between transnational and secondary networks providing visibility across supply chains, sharing data, so that all elements of the supply chain benefit
 - h. Reduce economic and social risks that exist in the supply chain, specifically related to losses, late deliveries, security, road safety and driver conditions of service
- 8. Build functionality and capacity into the system to enable compatibility for additional services to be introduced in the future to meet the changing needs of logistics operators and the growing challenges within the freight supply chain throughout Europe
- 9. For the public and private sector to work in partnership to develop, populate, administer and benefit from the system
 - a. This will enable the wider adoption and use of ICT applications to enable NSR to further develop efficient and effective logistics solutions.
 - b. This also requires a sustainable cross-sectoral partnership for the collection and transmission of relevant data that will be used to inform the freight supply chain and other relevant agencies
- 10. To learn from, add value, support and co-operate with other EU projects

⁴EVALUATION FRAMEWORK

The evaluation methodology to be used, the evaluation questions developed to be answered, and the defined evaluation measures (project outputs and project outcomes) are all detailed in the evaluation framework

⁵EVALUATION RESULTS

The results of this evaluation will be detailed in three evaluation reports (each produced annually.) These are as follows:

- Evaluation Interim Report 1 (March 2010)
- Evaluation Interim Report 2(March 2011)
- Evaluation Final Report (March 2012)

Appendix four: List of evaluation meetings

- 1st April 2009: Evaluation Meeting 1 (Interim Evaluation Report 1)
- 6th May 2009: Evaluation Meeting 2 (Interim Evaluation Report 1)
- 1st July 2009: Evaluation Meeting 3 (Interim Evaluation Report 1)
- 2nd September 2009: Evaluation Meeting 4 (Interim Evaluation Report 1)
- 7th December 2009: Evaluation Meeting 5 (Interim Evaluation Report 1)
- 3rd February 2010: Evaluation Meeting 6 (Interim Evaluation Report 1)
- 21st April 2010: Evaluation Meeting 7 (Interim Evaluation Report 2)
- 23rd June 2010: Evaluation Meeting 8 (Interim Evaluation Report 2)
- 1st September 2010: Evaluation Meeting 9 (Interim Evaluation Report 2)
- 15th November 2010: Evaluation Meeting 10 (Interim Evaluation Report 2)
- 12th January 2011: Evaluation Meeting 11 (Interim Evaluation Report 2)
- 9th March 2011: Evaluation Meeting 12 (Interim Evaluation Report 2)
- 8th April 2011: Evaluation Meeting 13 (Final Evaluation Report)
- 11th May 2011: Evaluation Meeting 14 (Final Evaluation Report)
- 22nd June 2011: Evaluation Meeting 15 (Final Evaluation Report)
- 17th August 2011: Evaluation Meeting 16 (Final Evaluation Report)
- 1st November 2011: Evaluation meeting 17 (Final Evaluation Report)
- 30th November 2011: Evaluation Meeting 18 (Final Evaluation Report)

Appendix five: List of project meetings

IMG Meetings

It was agreed that there would be nine IMG meetings for the NS FRITS project. All nine meetings were held and a list of dates and venues is provided below.

Interim Evaluation Report 1

IMG meeting 1

• 24th and 25th February 2009 at the Logistics Institute, University of Hull, UK

IMG meeting 2

• 8th June 2009 at Central Hall Westminster, London, UK

IMG meeting 3

• 29th September 2009 at the Institute for Shipping Economics and Logistics (ISL) offices, Bremerhaven, Germany

IMG meeting 4

• 16th February 2010, Golden Tulip Hotel, Rotterdam, Netherlands

Interim Evaluation Report 2

IMG meeting 5

• 16th June 2010, ISL offices, Bremerhaven, Germany

IMG meeting 6

• 11th October 2010, the Logistics Institute, University of Hull, UK

IMG meeting 7

• 21st March 2011. East Hotel, Hamburg, Germany

Final Evaluation Report

IMG meeting 8

• 6th July, 2011, the Logistics Institute, University of Hull, UK

IMG meeting 9

• 8th November 2011, Lazaat Hotel, Beverley, UK

Stakeholder seminars and workshops:

It was agreed that there would be eight seminars and two workshops during the NS FRITS project. All of these have been completed to date.

Interim Report One

Seminar one - Project introduction

• 9th June 2009 at Central Hall Westminster, London, UK.

Seminar two - Data sharing

• 16th September 2009 at South Yorkshire Police Training Centre, Sheffield, UK in collaboration with the UK Highways Agency, National Traffic Control Centre (NTCC)

Seminar three - Transnational cooperation to support seaport-related traffic

• 30th September 2009 at Port of Bremerhaven, Germany.

Seminar four -- Ways of improving transnational transport security and how NS FRITS supports this

• 17th February 2010, Golden Tulip hotel, Rotterdam, Netherlands.

Interim Report 2

Seminar five /workshop one - Bremerhaven Pilot

• 16th June 2010, ISL offices, Bremerhaven, Germany

Seminar six - NS FRITS Nordic Stakeholder Day

• 23 September 2010, Volvo Technology, Gothenburg, Sweden

Seminar seven/workshop 2 - NS FRITS system demonstration and evaluation seminar

• 12th October 2010, Pride of Hull, King George Dock, Hull, UK

Seminar eight/workshop 2 - NS FRITS system demonstration and evaluation seminar

• 13th October 2010, Education Information Centre, Port of Rotterdam, Netherlands

Final Evaluation Report

Final NS FRITS Conference

• 23rd November 2011, Renaissance Hotel, Brussels, Belgium

Table of Meetings

Date	Organisations attending Reason for meeting		
	L	2009	
24+25/02/2009	All partners	IMG meeting 1	1
04/03/2009	PUAC and AVCIS	AVCIS Implementation Meeting	1
01/04/2009	PUAC and the University of Huddersfield	the University of Evaluation meeting	
6+7/04/2009	All partners	ers WP 3 Kick off meeting	
06/05/2009	PUAC and the University of Huddersfield	Evaluation meeting	1
13/05/2009	All partners	WP 2 Kick off meeting	2
08/06/2009	All partners	IMG meeting 2	2
01/07/2009	PUAC and the University of Huddersfield	Evaluation meeting	1
13/08/2009	All partners	WP 5 Kick off meeting	5
02/09/2009	PUAC and the University of Huddersfield	Evaluation meeting	1
10/09/2009	PUAC and Humberside Police	Project planning meeting	1,2,3,6
29/09/2009	All partners	IMG meeting 3	3
05/10/2009	PUAC and Easyway	Where feasible collaborate / integrate NS FRITS activities with EasyWay	1
06/10/2009	PUAC, University of Hull and Hull City Council	To raise awareness of NS FRITS with Hull City Council	6
16/10/2009	Department for Transport	To introduce the DfT to NS FRITS and to engage DfT as a stakeholder	6.1
16/10/2009	PUAC,The Home Office,The Co- operative Society, Greater Manchester Police	To raise awareness of NS FRITS	6.1
21/10/2009	QuickLine Communications University of Hull	To discuss the opportunity to join NS FRITS as a beneficiary to replace Evaris Ltd	1.3
03/11/2009	KLPD and BVOM	Stakeholder acquisition	3
03/11/2009	PUAC, IBI Group	To explore the possibility of IBI Group becoming a partner in NS FRITS	1
05/11/2009	KLPD, Teleroute	Stakeholder and data source acquisition	3
11/11/2009	Avonwood Developments Ltd (AVD) and PUAC	To visit AVD's operation, continue discussions re AVD becoming an NS FRITS partner and to discuss budget in more detail	
24+25/11/09	All partners	Technical Workshop Meeting	2,3,4
30/11/2009	PUAC, DHL	Stakeholder acquisition	6
30/11/2009	Atkins Global, Humberside Police	Data Source/Stakeholder	3
07/12/2009	PUAC and the University of Huddersfield	Evaluation meeting	1

2010				
19/01/2010	KLPD, VCNL	Acquisition NL data source on road – traffic – weather conditions commercial road transport	3	
27/01/2011	Avanti ,PUAC	WP2 and WP3 Data and systems	2,3	
29/01/2010	PUAC , Humberside Police	Review of year 1 and an action plan for year 2	1	
03/02/2010	PUAC and the University of Huddersfield	Evaluation meeting	1	
04/02/2010	Humberside Police , Department for Transport	To introduce the concept of NS FRITS and engage with the Department for Transport as a potential stakeholder.	6	
16/02/2011	All partners	IMG meeting 4	1	
04/03/2010	KLPD , IRU	Discussion with IRU to become a stakeholder and Data source on Secure Parking within the project and possibly beyond.	3	
23/03/2010	DBH Logistics IT Ag, NTB, Bremenports,Avanti,KLPD, Volvo, University of Hull	Preparation of Bremerhaven pilot test in June. Clear available data sources in preparation of June workshop regarding Bremerhaven pilot test.	3,4+5	
29/03/2010	Avanti, BT, Nicander	Technical Collaboration Meeting	2,4	
12/04/2010	Humber Police Avanti ,Gaist Ltd	To introduce Gaist Ltd to Avanti Communications and discuss the potential data supplier/provider status of Gaist Ltd.	3	
14/04/2010	PUAC , Smartfreight	To establish the potential for collaborative working between NS FRITS and Smartfreight	1,6	
21/04/2010	PUAC and the University of Huddersfield	Evaluation meeting	1	
29/04/2010	Avanti , KLPD	TDS/TDW Data Ingestion Meeting	3	
12/05/2010	ISL	Pilot Bremerhaven Preparation Meeting WP2	5	
25/05/2010	Avanti, AVCIS	Data and system development meeting	3	
27/05/2010	Avanti , Volvo	System development and technical collaboration workshop	4	
04/06/2010	KLPD , Rotterdam seaport Police	Initial meeting with the Rotterdam Seaport Police to explore the Rotterdam – Hull scenario in WP5	3	
16/06/2010	All partners	IMG meeting 5	1	
23/06/2010	PUAC and the University of Huddersfield	Evaluation meeting	1	
28/06/2010	PUAC, University of Hull Humberside Police	To begin the process of the Humber-Rotterdam pilots, to capture the learning from the previous pilots and to begin planning the October workshops	5	
01/07/2010	Volvo , KGH Customs	Presenting and ask for feedback on the NS FRITS idea. Check relevance of scenarios and discuss participation in Nordic Stakeholder Day.	3	
09/07/2010	Humberside Police PUAC, University of Hull ABP, P&O Ferries	To introduce the concept of NS FRITS and engage with ABP and P&O Ferries at Hull Port regarding the intended Pilot/Trials and explore possible data sources used by these organisations that could be part of the Pilot/Trial as part of WP5	5	

22/07/2010	Verkehrsinfo.de-Index Information Services/Lifestyle Software Gmbh , KLPD	Data Source and stakeholder acquisition	3
29/07/2010	PUAC, Avanti, KLPD, Volvo, University of Hull, Humberside Police Avonwood	To begin the preparations for the NS FRITS Humber/Rotterdam pilots	5
02/08/2010	P&O Ferries, PUAC, Humberside Police	To arrange NS FRITS seminar / workshop event in October 2010 using the Pride of Hull ferry as a venue.	6
02/08/2010	AVCIS, Avanti, UK Highways Agency	Additional Freight Specific Data acquisition	3
03/08/2010	PUAC, Circle Marketing	To establish the current PR position and to plan for future activities	6
04/08/2010	Humberside Police, University of Hull, Port of Felixstowe, Hutchison Ports (UK)	To introduce the concept of NS FRITS and engage with Senior management from Hutchison Ports (UK) at Felixstowe Port regarding the intended Pilot/Trials and explore the possible use of the Vehicle Booking System (VBS) data operated by this organisation throughout Felixstowe Port, as part of the Pilot/Trial for WP5	5
04/08/2010	Avanti , Volvo	To agree what needs to be implemented for a successful Nordic stakeholder event	4
05/08/2010	Avanti, Volvo	To agree what needs to be implemented for a successful Nordic stakeholder event	4
09/08/2010	KLPD , Rotterdam seaport Police	Preparation NL part in the Rotterdam – Hull pilot	6
24/08/2010	Humberside Police , ABP	To introduce the concept of NS FRITS and engage with ABP at Hull Port regarding the intended Pilot/Trials and explore possible data sources used by the organisation that could be part of the Pilot/Trial as part of WP5	5
31/08/2010	Humberside Police, University of Hull , RHA	HP and UHLI met with the RHA to facilitate support in the identification of suitable freight operators for inclusion in the NS FRITS Pilot/Trials during 2011.	5
01/09/2010	PUAC and the University of Huddersfield	Evaluation meeting	1
01/09/2010	Humberside Police , Unite the Union	HP and UNITE met to promote support of the NS FRITS project concept and to enlist the union's assistance in the identification of suitable freight operators for inclusion in the NS FRITS Pilot/Trials during 2011.	5
03/09/2010	Humberside Police , ABP, DSV, PUAC	To introduce the concept of NS FRITS and engage with ABP and other relevant operators within Immingham Port regarding the intended Pilot/Trials and explore possible data sources used by the organisation that could be part of the Pilot/Trial as part of WP5	5
06/09/2010	Humberside Police, PUAC, University of Hull,PD Ports	To introduce the concept of NS FRITS and engage with PD Ports and other relevant operators within TeesPort regarding the intended Pilot/Trials and explore possible data sources used by the Port organisations that could be part of the Pilot/Trial as part of WP5	5
23/09/2010	All partners	WP4 Kick off meeting	4

04/10/2010	Avanti, KLPD, TLN	Data link NS FRITS – Route planner TLN.	3
08/10/2010	Humberside Police, Containerport Ltd, Merseyside Maritime Group	HP and Mersey Maritime met to promote support of the NS FRITS project concept and to evaluate the feasibility of using Mersey Maritime Simulators within the pilot trials of NS FRITS during 2011.	5
11/10/2010	All partners	IMG meeting 6	1
21/10/2010	PUAC, KLPD. Avanti	To establish the issues surrounding non-UK data access	3
15/11/2010	PUAC and the University of Huddersfield	Evaluation meeting	1
18/11/2010	PUAC, KLPD. Avanti	To review NS FRITS system development, To access the position regarding data supply, To consider NS FRITS II	3
19/11/2010	Avanti, KLPD, INDEX	Provision of data from German traffic information provider to NS FRITS	3
09/12/2010	PUAC , AVCIS	Provide an update on AVCIS data supply and discuss the AVCIS workload	1,4
10/12/2010	All partners	WP 5 Technical Meeting	5
21/12/2010	Volvo Idevio	Discuss how NS FRITS could benefit from applications provided by Idevio	
		2011	
10/01/2011	Humberside Police, P&O Ferrymasters	To introduce the concept of NS FRITS and engage with P&O Ferrymasters at Hull Port regarding the intended Pilot/Trials an explore their participation within it together with the inclusion of possible data sources used by the organisation that could be part of the Pilot/Trial as part of WP5	
10+11/01/11	Volvo, Avanti	Technical workshop to advance NS FRITS system development	4
11/01/2011	Humberside Police, DSV Humberside Police, DSV		5
12/01/2011	PUAC, University of Hull, University of Huddersfield, Humberside Police	To discuss the pilot action plan and future activities relating to the pilots	5
12/01/2011	PUAC and the University of Huddersfield	Evaluation meeting	1
14/01/2011	KLPD, TNL	Status on the route planner from PTV • Acquiring transport companies for the pilot • Modification of the Data Service Agreement	3+5
17/01/2011	KLPD , Mobycon	Brainstorming about traffic info and route planning for commercial heavy vehicles.• Interest for a follow-up on NS FRITS • Identification of cross reference to other projects Mobycon is involved in.	

24/01/2011	Humberside Police, DHL	To update and reinforce the concept of NS FRITS and engage with DHL to capture their interest in participating with NS FRITS and other relevant operators within Hull/Immingham Ports regarding the intended Pilot/Trials and explore possible data sources used by the organisation that could be part of the Pilot/Trial as part of WP5.	
02/02/2011	KLPD, PUAC(phone) Avonwood(phone) Business school Hull University (phone)	Progress on the pilot preparation for the NL part.	4
07/02/2011	Avanti, AVCIS ,Avonwood	To discuss the NS FRITS App Operating manual and Quick Reference Guide	5
09/02/2011	Volvo, Avanti	The purpose of the event was to perform a simulator test of the NS FRITS system, where users not familiar with the NS FRITS system could evaluate the usability of the system. A scenario had been created with a number of steps covering different aspects of NS FRITS.	4
16/02/2011	AVCIS,PUAC, Avanti,BT The Cambridge MIT Institute	The purpose of the meeting was to explore areas of synergy between NS FRITS and EETI, and also look at prospective collaboration opportunities	
09/03/2011	PUAC and the University of Huddersfield	Evaluation meeting	1
15/03/2011	Humberside Police, FTA	To update and reinforce the concept of NS FRITS and engage with the FTA to capture their interest in supporting the NS FRITS project throughout the planning and implementation of the Hull/Immingham Ports Pilot/Trials with particular regard to their respective trade association members as part of	5
21/03/2011	All partners	IMG meeting 7	1
25/03/2011	AVCIS, NYK	Provide an overview of the NS FRITS project to date and the proposed trials for 2011. Explore potential for NYK to become a Trials Participant, Explore potential for NYK to introduce their SME sub-contractors to the project with a view to becoming a Trials Participant	5
06/04/2011	Humberside Police TIR Training Services	To introduce the concept of NS FRITS and engage with TIR to capture their interest in participating with NS FRITS regarding the intended Pilot/Trials.	5
08/04/2011	PUAC and the University of Huddersfield	Evaluation meeting	1
13/04/2011	Humberside Police, Nestle Operations	To introduce the concept of NS FRITS and engage with Nestle Operations to capture their interest in participating with NS FRITS regarding the intended Pilot/Trials.	
21/04/2011	PUAC, University of Hull	To discuss the developments and agree actions for the NS FRITS pilots	5
03/05/2011	TLN Netherlands ,KLPD	Update NL pilot part	5
04/05/2011	AVCIS, Avanti, Avonwood	 Generation of a quick user guide – format and content 2. Discussion of NS FRITS system Human Machine Interface (HMI) and functionality. 	4,5

06/05/2011	PUAC, AVCIS, Avanti, KLPD University of Hull, Humberside Police, University of Huddersfield	To discuss the developments and agree actions for the NS FRITS pilots	5
11/05/2011	PUAC and the University of Huddersfield	Evaluation meeting	1
18/05/2011	KLPD, GE Capital/TIP Trailers	Pilot participation and further commitment to the NS FRITS principle	5
30/05/2011	A1 Expeditions, and chairman foundation "Brug te weinig". KLPD	To discuss the installation of NS FRITS screen media at the NL/German border	5
22/06/2011	PUAC and the University of Huddersfield	Evaluation meeting	1
24/06/2011	PUAC, Avanti,KLPD Humberside Police University of Hull	To discuss the ongoing internal system testing and to agree future actions regarding the external pilots	5
06/07/2011	All partners	IMG meeting 8	1
26/07/2011	Humberside Police, Masternaut Three X	WP3 Potential Data Source Identification	3
27/07/2011	PUAC, KLPD, ISL	To discuss leadership and funding streams for NS FRITS II	1
02/08/2011	PUAC, Avanti	To discuss the NS FRITS system development and the potential activities involved in the project extension	1,4+5
03/08/2011	KLPD, ISL	To discuss follow-up of NS FRITS in the EU FP	6
17/08/2011	PUAC and the University of Huddersfield	Evaluation meeting	1
05/09/2011	Humberside Police and KLPD	To discuss the strategy for the Hull to Rotterdam and Rotterdam to Immingham pilots	5
14/09/2011	Humberside Police and Smedley Transport	To introduce NS FRITS and confirm their participation in the NS FRITS pilots	5
12/10/2011	Volvo, Avanti, Stena Line, KGH Customs and Byrknes Autos	To prepare and test the NS FRITS system in readiness for the Nordic Trial	5
12/10/2011	PUAC and Avanti	To discuss NS FRITS sustem development, pilots and the proposed extension	1,4+5
17/10/2011	PUAC and the University of Hull	To discuss the current position of WP5, future commitments and the delivery of WP5	5
01/11/2011	PUAC and the University of Huddersfield	Evaluation meeting	1
08/11/2011	All partners	IMG meeting 9	1
30/11/2011	PUAC and the University of Huddersfield	Evaluation meeting	1

Appendix six: List of project documentation reviewed

A list of NS FRITS documentation reviewed that is related to evaluation and project deliverables. This relates to all formal documents that are produced and uploaded onto the NS FRITS website. Some additional documents have been circulated for discussion but have not been included in this evaluation at present, primarily as they have been used to inform the above documentation and thus they are picked up within the below documentation.

WP 1

- Monthly Flash Reports (MFRs)
- Half Year Work Plans (HYWPs)
- Activity Frameworks (for each WP)
- Interreg Appendix 10a progress reports
- Project Milestones and Deliverables Report
- Interim Evaluation Report 1,2 and Final Evaluation Report
- Project Work Plan

In addition to the above the Interreg Appendix 7 Finance Reports and the Expenditure Analysis are not considered in this Evaluation Report.

WP2:

• WP2 Final Report: NS FRITS Technical Concepts and System Requirements

WP3:

- WP3 Final Report: Identification of NS FRITS data sources and stakeholders, identification of Data types and negotiation of Data supply and legal issues
- WP3 Supplementary Report: (WP3.6) To Study And Analyse How Data Capture/ Transmission Can Encourage Innovation And Increased Use Of Information And Communication Technologies Within The North Sea Region

WP4:

- WP4 Final report: NS FRITS System Services and Functionalities Description
- WP4 Supplementary Report: NS FRITS System Manual

WP5:

- Data Classification Report
- Bremerhaven Pilot Report
- Trials Specification
- Evaluation Pilot Specification
- NS FRITS Business Case
- NS FRITS WP5 Final Report

WP 6:

• WP6 Final Report

Two newsletters were produced each year to enable a wide range of stakeholders to have easy access to information regarding NS FRITS. Again these are not evaluated here as the dissemination evaluation is beyond this evaluation.

- Newsletter 1: Summer 2009
- Newsletter 2: Winter 2009
- Newsletter 3: Summer 2010
- Newsletter 4: Winter 2010
- Newsletter 5: Summer 2011
- Newsletter 6: Winter 2011

Press Releases

No.	Торіс	Date	Partner	Hit
1	Avanti contract win	May 2009	Avanti	satNews.com; Interactive investor; Compute Scotland; ADVFN; Bestinvest; Stockopedia; Bloomberg; Telecom Paper
2	NS FRITS launch	June 2009	PUAC	Motor Transport; Transport Brief; AVCIS newsletter; University of Huddersfield newsletter
3	Media response to Barrie Towzer	30 th July 2009	AVCIS	No
4	Fighting crime with technology	September 2009	PUAC	Motor Transport
5	Bremerhaven seminar	September 2009	ISL	Awaiting confirmation
6	NS FRITS hosts Data Sharing seminar with the UK Highways Agency	October 2009	PUAC	No
7	Humberside Police using international ideas in innovative European project	October 2009	PUAC / Humberside Police	Scunthorpe Telegraph
8	European technology set to cross border travel	December 2009	PUAC	No
9	European project signals new age in Telematics	January 2010	PUAC	No
10	Transport Security seminar	January 2010	KLPD	Awaiting confirmation
11	Battle Against Freight Crime Continues	January 2010	AVCIS	Freight Industry Times
12 and 13	Freight Crime (national and regional)	May 2010	PUAC	Ridings FM, Dearne FM, KCFM, Rother FM, Trax FM and Lincs FM (Radio) Traffic Technology Today

14, 15 and 16	Technology campaign (freight, technology and specific Traffic Technology Today release)	June 2010	PUAC	Haulnet Newsletter, Traffic Technology Today
17 and 18	Bremerhaven Pilot (Highways Agency specific article and freight trade)	June 2010	PUAC	Highways Agency newsletter
19	Bremerhaven Pilot	June 2010	ISL	ISL website, DVZ Deutsche Verkehrszeitung, My Logistics,
20 and 21	Secure parking (national and regional)	July 2010	PUAC	IFW, Congoo, Business News Desk, Freight Industry Times
22, 23 and 24	Economy (national, regional and freight specific)	August 2010	PUAC	Hull Daily Mail, Yorkshire Post, The Huddersfield Examiner,
25 and 26	Hull and Rotterdam (national and regional)	September 2010	PUAC	Calendar TV, Haulnet Newsletter
27 and 28	Hull and Rotterdam follow up (national and regional)	October 2010	PUAC	Diana Wallis' website (and subsequent Liberal Democrat websites), Transport News
29 and 30	Climate change (national and regional)	November 2010	PUAC	The Huddersfield Examiner
31 and 32	Crime (national and regional)	January 2011	PUAC	Dearne FM, BBC Radio Sheffield (radio) Yorkshire Post, Professional Security Magazine, Freight Industry Times,
33,				
34 and 35	Logistics Security Network (national, regional and freight trade specific)	January 2011	PUAC	
34 and 35 36, 37 and 38	Logistics Security Network (national, regional and freight trade specific) Technology (national, regional and trade specific)	January 2011 February 2011	PUAC PUAC	Mobile Marketing Magazine
34 and 35 36, 37 and 38 39 and 40	Logistics Security Network (national, regional and freight trade specific) Technology (national, regional and trade specific) AVCIS National Vehicle Crime (regional and national)	January 2011 February 2011 May 2011	PUAC PUAC PUAC	Mobile Marketing Magazine
34 and 35 36, 37 and 38 39 and 40 41	Logistics Security Network (national, regional and freight trade specific) Technology (national, regional and trade specific) AVCIS National Vehicle Crime (regional and national) Economy	January 2011 February 2011 May 2011 May 2011	PUAC PUAC PUAC PUAC	Mobile Marketing Magazine Mobile Phone Reviews, Commercial Vehicle How, Transport News Brief / Road Transport Professional Security Magazine and Traffic Technology Today
34 and 35 36, 37 and 38 39 and 40 41 41 42 and 43	Logistics Security Network (national, regional and freight trade specific) Technology (national, regional and trade specific) AVCIS National Vehicle Crime (regional and national) Economy Safe parking (regional and national	January 2011 February 2011 May 2011 May 2011 July 2011	PUAC PUAC PUAC PUAC	Mobile Marketing Magazine Mobile Phone Reviews, Commercial Vehicle How, Transport News Brief / Road Transport Professional Security Magazine and Traffic Technology Today Transport News Brief / Road Transport, Professional Security Magazine, Huddersfield Examiner, Kirklees Business News, Commercial Motor and Freight Exchange

45				
46	Look North	September 2011	PUAC	Look North (television)
47 and 48	TruckPol (regional and national)	September 2011	PUAC	
49, 50 and 51	NS FRITS Conference (regional, national and trade specific)	September 2011	PUAC	Professional Security Magazine, Foodport website, Maritime Port Cluster website, Transport News Brief / Road Transport and Commercial Motor
52	NS FRITS Conference – media call	October 2011	PUAC	
53 and 54	NS FRITS pilots (regional and national)	November 2011	PUAC	One News Page, Haulnet, Mobile Marketing Magazine and World Mobile Marketing
55	NS FRITS Conference	November 2011	PUAC	Yorkshire Coast radio, Minster FM and KCFM (radio) ITV News (television)
56	Festive campaign	December 2011	PUAC	Professional Security Magazine and Handy Shipping Guide

Website

A website has been set up to facilitate the dissemination of the project. The address for this is <u>www.nsfrits.eu</u>. This contains materials for partners (restricted access) and also for stakeholders.

Partner forum

There has been a forum created to aid partner communication. To date the following information is available on this:

There have been seven discussions/threads:

- 1. NS FRITS 2 (4 comments)
- 2. Welcome to the NS FRITS forum (3 comments)
- 3. Easyway Green light for Easyway phase 2 decision signed! (1 comment)
- 4. Stakeholder workshops in Hull 12/10/10 (1 comment)
- 5. WP5 pilot planning meeting (5 comments)
- 6. WPA3.6 and WPA5.1 (1 comment)
- 7. Bremerhaven Pilot Workshop feedback (1 comment)

Appendix seven: Annual partner questionnaire schedule

Section one:

1. What are the main strengths of NS FRITS (related to lifetime of the project)?

2. What have you found less than satisfactory about NS FRITS (related to lifetime of the project)?

3. How does NS FRITS benefit your organisation (related to lifetime of project)?

Section two:

- 1. How many of each of the following events have you attended?
- 2. Overall, how would you rate events organised through NS FRITS?
- 3. What have been the main strengths of IMG meetings?
- 4. What have been the main strengths of WP technical meetings?
- 5. What have been the main strengths of external practitioner/stakeholder events?
- 6. What has been less satisfactory about the IMG meetings?
- 7. What has been less satisfactory about the of WP technical meetings?
- 8. What has been less than satisfactory about the external practitioner/stakeholder events?

Section three:

Please complete this for each work package you are involved in

- 1. Overall how effective have you found the WP?
- 2. How satisfied are you with the running of the WP?
- 3. How valuable do you think the WP is to NS FRITS?
- 4. Are you satisfied with the level of involvement of other partners in this WP?
- 5. How effective have you found the WP meetings?
- 6. How effective are the WP lines of communication?
- 7. How well you do think the WP links/interacts with other WPs in NS FRITS?
- 8. How involved do you feel in the Project's Work Packages?
- 9. How do you think the Work Packages might be improved or changed for future?
- 10. Please enter any additional comments you wish to make about each WP1-6

Section four:

1. How satisfied are you with the overall progress of NS FRITS over the past 12 months 2. How satisfied are you that the direction of NS FRITS over past three years has met its overall aims and objectives?

3. How satisfied are you that NS FRITS has engaged with the right stakeholders?

4. How satisfied are you with the level of engagement of external stakeholders 5. How satisfied are you with the future plans for NS FRITS2? Please rate:

6. How far do you think NS FRITS has contributed to the following in the North Sea Region?

- Building the innovation capacity of businesses and services
- Promoting the adoption and use of ICT applications
- Promoting regional accessibility
- Promoting the development of multimodal transport corridors
- Promoting sustainable growth solution for expanding areas
- Promoting energy efficiency in urban and rural communities

7. To what extent do you think NS FRITS2 could achieve the following goals?

- Building the innovation capacity of businesses and services
- Promoting the adoption and use of ICT applications
- Promoting regional accessibility
- Promoting the development of multimodal transport corridors
- Promoting sustainable growth solution for expanding areas
- Promoting energy efficiency in urban and rural communities

8. For each of Intermediate Achievements, how far do you think NS FRITS has achieved its objective?

Appendix eight: Final partner interview schedule

- 1) What are your overall reflections of NS FRITS over past three years/lifetime of project.
 - Main advantages and limitations, expand on reasons for this
 - NOTE: This can relate to partnership, process, system, or other
 - NOTE: What are key factors contributing to this (based on responses)
 - How in keeping has project kept with original aims and intentions, if move away why? If not why?
 - Achievements to date (more/less/about what hoped for) and why?
- 2) For each WP individually discuss
 - Overall successes and limitations and reasons for this
 - If timescales appropriate
 - Interaction with other WPs, partnership leadership and steering, partner involvement
 - WP1 Project Management; WP2 System concept and spec; WP3 data; WP4 system design; WP5 Pilots; WP6 Dissemination
- 3) If not covered in WP1 discussion specifically discuss (strengths, weaknesses and lessons learned)
 - IMG meetings involved in
 - WP meetings and technical meetings involved in
 - Seminars, workshops and conferences involved in
 - Are you happy with the level of interaction of the project with other EU projects (elaborate on response)
- 4) Pilots and WP4 and WP5 (if not discuss in 2)
 - Bremerhaven desktop/internal testing/live trials/Nordic trial
 - What were successes of these and limitations
 - What were key lessons learnt
 - Did we have the right data sources (happy with how these were chosen, selected, acquired
 - Were you happy with the partners/stakeholders selected for this and their levels of involvement/engagement etc.
- 5) Product itself
 - Have you used/seen handset/operator interface/screen media
 - Overall impression
 - What like about/what change or how improve
- 6) We are now moving towards next steps and future activity beyond the project.
 - Do you think we can achieve some of fairly ambitious targets (intermediate achievements and ultimate goals). Elaborate on what need to do this?
 - Thinking about business model and promotion of "NS FRITS2", do you think we have achieved all on intermediate achievements and to what extent?
 - What is your vision for the next steps/development "NS FRITS "2 or otherwise

• What factors are critical to its future development and what are potential pitfalls we need to try to avoid?

Appendix nine: Project deliverables, milestones and indicators

Del no.	Deliverable	Partner responsible	Achieved through	Deadline
1.2	Produce a Project Performance Framework	PUAC	HYWPs	December 2011
1.3a	Develop a Partnership Agreement	PUAC	Partnership Agreement	August 2009
1.3b	Produce an interim report for Interreg IVB NSR Secretariat	PUAC	Periodic Reports on Activities and Finance	Submitted every six months
1.3c	Produce a final report for Interreg IVB NSR Secretariat	PUAC	NS FRITS final report	December 2011
1.4	Produce a project work plan	PUAC	Project Work Plan	December 2011
1.6	Produce a report on collaborative working with other EU projects	PUAC	NS FRITS final report	December 2011
1.7	Produce interim and final project evaluation reports	University of Huddersfield	Interim and final evaluation reports	December 2011
2.1	Produce a technical concepts documents	Avanti	NS FRITS Technical Concepts document	September 2009
2.2	Produce a system requirements document including mission requirements	Avanti	NS FRITS System Requirements document	December 2011
2.3	Report on the recommendations for the development of NS FRITS including data editing, warehousing and mining, maintenance routines, legal / licensing issues and the capacity for future expansion	Avanti	NS FRITS System Requirements document	December 2011
3.1	Produce a report on the methodology used by NS FRITS to identify and select data supply stakeholders	KLPD	Data Source and Information providers document	March 2011
3.2	Produce a report on how data is identified as appropriate for the NS FRITS system and how data is negotiated with suppliers	KLPD	Data Source and Information providers document	March 2011
3.5	Document the legal / licensing issues and	KLPD / PUAC	Data Source and Information	March 2011

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	recommended solutions relating to data sources and data types to be included in NS FRITS		providers document including the Data Sharing Agreement	
3.6	Produce a report on how NS FRITS will encourage innovation and increase the use of ICT within the NSR	KLPD / Volvo	WP3.6 document / Business Plan	August 2011
3.7	Contribute to the NS FRITS final report including an indication of likely application costs of the NS FRITS system	KLPD	NS FRITS final report	December 2011
4.3	Produce a report that defines the NS FRITS system architecture and system engineering	Avanti	NS FRITS System Design document	December 2011
4.6	Document ongoing system developments including the results of laboratory testing and pilot results in collaboration with the WP5 leader	Avanti / University of Hull	NS FRITS System Design document	December 2011
5.1	Produce a report justifying further investment in NS FRITS taking into consideration operational and maintenance costs	University of Hull	Business Plan	October 2011
5.2	Deliver three demonstration activities which test the viability of the ITS and the quality and appropriateness of the data provided	University of Hull	WP final report	December 2011
5.3	Document negotiations between stakeholders and other external bodies to form agreements which facilitate the pilots	University of Hull	WP final report	December 2011
5.4a	Produce a report on the long term viability and sustainability of the proposed ITS	University of Hull	Business Case / WP final report	October 2011 / December 2011
5.4b	Document the processes and systems involved in the delivery of three pilots for inclusion in the final report	University of Hull	WP final report	December 2011
5.5	Coordinate two workshops in preparation for the three pilot demonstrations	University of Hull	WP final report	December 2011
5.6	Document how emerging technological challenges were identified and resolved to ensure NS FRITS is a robust system fit for purpose and future expansion	University of Hull	WP final report	December 2011
5.7	Document how NS FRITS interfaces and compares with other ITS and contributes to other projects that	University of Hull	Business Case	October 2011

	will support future EU roll-out			
6.1	Record all internal and external individuals and organisations that are involved with / aware of NS FRITS	PUAC	Indicators report included in the Periodic Reports on Activities	Submitted every twelve months
6.3	Document how NS FRITS identifies projects for collaboration and report on outcomes from the collaboration	PUAC	WP final report	December 2011
6.4	Develop and maintain the NS FRITS website	PUAC	NS FRITS website	July 2009
6.5a	Coordinate press releases, TV and radio appearances, newsletters, seminars and conference in accordance with the project indicators	PUAC	Indicators report included in the Periodic Reports on Activities	Submitted every twelve months
6.5b	Produce interim and a final evaluation of the Communications and Publicity strategy	PUAC	WP final report	December 2011

Project Indicators:

Output/Result/ImpactProject: please specify/descriptionAchieved by March 2011TargetHit/missWPAoutputVisits on the website1237435000Hit6.4outputConference / seminars88Hit6.1outputPresentations at external seminars / and redio1510Hit6.1outputTelevision and radio and redio1510Hit6.5outputTelevision and radio and redio41Hit6.1outputProduce animation time to demonstrate41Hit6.5outputProduce newsletters66Hit6.5outputPress releases5625Hit6.1resultNS FRITS conference / seminars / workshops (male)133125Hit6.1resultNS FRITS conference / seminars / workshops (temale)3225Hit6.1resultOrganisations reached by open conference / seminars and workshops (temale)1712100Hit6.1resultOrganisations reached by open conference / seminars and workshops14682000Miss6.1resultOrganisations from the partnership, reached by open conferences, seminars and workshopsHit6.16.1resultOrganisations from the partnership, stakeholder Group and other EU projects contributing to the project60570Hit6.1 </th <th>1. Compulsory Indicate</th> <th>ors - each of the indica</th> <th>tors must be e</th> <th>established for the</th> <th>e project</th> <th></th>	1. Compulsory Indicate	ors - each of the indica	tors must be e	established for the	e project	
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output Conference / seminars 8 8 Hit 6.1 output Presentations at external seminars / congresses 45 10 Hit 6.1 output Television and radio appearances 15 10 Hit 6.1 output Television and radio appearances 15 10 Hit 6.1 output Findowice newsletters 6 6 Hit 6.5 output Produce newsletters 6 6 Hit 6.5 output Press releases 56 25 Hit 6.1 result Partnership reached by NS FRITS conference / seminars / workshops (male) 133 125 Hit 6.1 result Organisations reached by open conference / seminars and workshops 32 25 Hit 6.1 organisations from the partnership, Stakeholder Group and other EU projects contributing to the project 1712 100 Hit 6.1 output Transational partner meetings 605 70 Hit 6.1 output	output	Visits on the website	123743	5000	Hit	6.4
outputPresentations at external seminars / congresses4510Hit6.1outputTelevision and radio appearances1510Hit6.5outputTelevision and radio im to demonstrate11Hit6.1outputProduce animation film to demonstrate41Hit6.1outputProduce newsletters66Hit6.5outputPress releases5625Hit6.1resultIndividuals within the partnership reached by NS FRITS conference / seminars / workshops (male)133125Hit6.1resultIndividuals within the NS FRITS partnership reached by NS FRITS conference / seminars / workshops (female)3225Hit6.1resultOrganisations resultOrganisations result114682000Hit6.1resultOrganisations from the partnership projects contributing to the project42240Hit6.1resultIndividuals within the partnership, and other EU projects contributing to the project60570Hit6.1resultTransnational partner meetings99Hit1.11.1resultRegions involved in projects contributing to the project60570Hit6.1resultRegions involved in projects contributing to the project1887Hit6.1resultRegions involved in project scontrib	output	Conference / seminars	8	8	Hit	6.1
output Television and radio appearances 15 10 Hit 6.5 output Produce animation film to demonstrate ITS 4 1 Hit 6.1 output Produce newsletters 6 6 Hit 6.5 output Press releases 56 25 Hit 6.5 output Press releases 56 25 Hit 6.1 result by NS FRITS partnership reached seminars / workshops (male) 133 125 Hit 6.1 result by NS FRITS conference / seminars / workshops (female) 32 25 Hit 6.1 result by NS FRITS partnership reached workshops (female) 32 25 Hit 6.1 result Organisations reached by open conference / seminars and workshops 1712 100 Hit 6.1 result Organisations reached by open conferences, seminars and workshops 1468 2000 Miss 6.1 result Organisations from the partnership, o the project contributing to the project contributing to the project contributing 605	output	Presentations at external seminars / congresses	45	10	Hit	6.1
outputProduce animation film to demonstrate ITS41Hit6.1outputProduce newsletters66Hit6.5outputPress releases5625Hit6.5outputPress releases5625Hit6.1individuals within the NS FRITS partnership reached workshops (male)133125Hit6.1resultIndividuals within the NS FRITS partnership reached by NS FRITS partnership reached by open conference / seminars / workshops (female)3225Hit6.1resultOrganisations result011682000Miss6.1resultOrganisations from result14682000Miss6.1resultOrganisations from result42240Hit6.1resultOrganisations from result42240Hit6.1resultOrganisations from result42240Hit6.1resultOrganisations from result60570Hit6.1resultCountries involved in projects contributing to the project60570Hit6.1resultCountries involved in projects contributing to the project18<	output	Television and radio appearances	15	10	Hit	6.5
outputProduce newsletters66Hit6.5outputPress releases5625Hit6.5ndividuals within the partnership reached by NS FRITS133125Hit6.1resultIndividuals within the NS FRITS133125Hit6.1resultIndividuals within the NS FRITS3225Hit6.1resultOrganisations reached by NS FRITS3225Hit6.1resultOrganisations reached by Open conference / seminars and workshops1712100Hit6.1resultOrganisations reached by open conferences, seminars and workshops14682000Miss6.1resultOrganisations reached by newsletters42240Hit6.1resultTransational partner result99Hit1.1resultTransational partner result99Hit1.1resultRegions involved in project activities and its ended bir newsletters187Hit6.1	output	Produce animation film to demonstrate ITS	4	1	Hit	6.1
outputPress releases5625Hit6.5resultIndividuals within the NS FRITS conference / seminars / workshops (male)133125Hit6.1resultIndividuals within the NS FRITS conference / 	output	Produce newsletters	6	6	Hit	6.5
Individuals within the NS FRITS conference / seminars / workshops (male)133125Hit6.1resultIndividuals within the NS FRITS conference / seminars / workshops (male)3225Hit6.1resultby NS FRITS partnership reached by NS FRITS conference / seminars / workshops (male)3225Hit6.1resultOrganisations reached by open conferences, seminars and workshops1712100Hit6.1resultOrganisations reached by open conferences, seminars and workshops14682000Miss6.1resultOrganisations reached by open result0.114682000Miss6.1resultOrganisations reached by projects contributing to the project42240Hit6.1resultCountries involved and other EU projects contributing to the project60570Hit6.1resultCountries involved in project activities and impacted countries187Hit6.1resultRegions involved with project activities7112HitPage.120 of 1	output	Press releases	56	25	Hit	6.5
Individuals within the NS FRITS partnership reached by NS FRITS conference / seminars / workshops (female)3225Hit6.1Organisations reached by open conferences, seminars and workshops07ganisations reached by open conferences, seminars and workshops1712100Hit6.1resultOrganisations reached by open conferences, seminars and workshops1712100Hit6.1resultOrganisations reached by newsletters14682000Miss6.1resultOrganisations from the partnership, Stakeholder Group and other EU projects contributing to the project42240Hit6.1resultIndividuals within the partnership, Stakeholder Group and other EU projects contributing to the project60570Hit6.1outputTransnational partner meetings99Hit1.11.1resultRegions involved in project activities and impacted countries7112HitPage.120 of 1	result	Individuals within the NS FRITS partnership reached by NS FRITS conference / seminars / workshops (male)	133	125	Hit	6.1
Organisations reached by open conferences, and workshops1712100Hit6.1resultOrganisations reached by newsletters000000000000000000000000000000000	result	Individuals within the NS FRITS partnership reached by NS FRITS conference / seminars / workshops (female)	32	25	Hit	6.1
resultOrganisations reached by newsletters14682000Miss6.1Organisations from the partnership, Stakeholder Group and other EU projects contributing to the project42240Hit6.1resultIndividuals within the partnership, Stakeholder Group and other EU projects contributing to the project42240Hit6.1resultIndividuals within the partnership, Stakeholder Group and other EU projects contributing to the project60570Hit6.1outputTransnational partner meetings99Hit1.11.1resultCountries involved in impacted countries187Hit6.1resultRegions involved with project activities7112HitPage.120 of 1	result	Organisations reached by open conferences, seminars and workshops	1712	100	Hit	6.1
InstantOrganisations from the partnership, Stakeholder Group and other EU projects contributing to the project42240Hit6.1resultIndividuals within the partnership, Stakeholder Group and other EU projects contributing to the project60570Hit6.1resultIndividuals within the partnership, Stakeholder Group 	result	Organisations reached by newsletters	1468	2000	Miss	6.1
Individuals within the partnership, Stakeholder Group and other EU projects contributing to the project60570Hit6.1outputTransnational partner meetings99Hit1.1resultCountries involved in 	result	Organisations from the partnership, Stakeholder Group and other EU projects contributing to the project	422	40	Hit	6.1
outputTransnational partner meetings99Hit1.1resultCountries involved in project activities and impacted countries187Hit6.1resultRegions involved with project activities7112HitPage.120 of 1	result	Individuals within the partnership, Stakeholder Group and other EU projects contributing to the project	605	70	Hit	6.1
Countries involved in project activities and impacted countries 18 7 Hit 6.1 result Regions involved with project activities 71 12 Hit Page.120 of 1	output	Transnational partner meetings	9	9	Hit	1.1
result Regions involved 71 12 Hit Page.120 of 1	result	Countries involved in project activities and impacted countries	18	7	Hit	6.1
	result	Regions involved with project activities	71	12	Hit	Pag e . 120 of 1

output	Transnational staff	7	2	Hit	5.4	
result	Transnational staff					
	training programme					
	male attendees	16	15	Hit	5.4	
	between 25 and 54					
result	Transnational staff		2			
	training programme	5		Hit	54	
	female attendees	5		1 110	5.4	
	between 25 and 54					
	Transnational staff	10	6	Hit		
result	training programme				5.4	
	male attendees aged					
	Produce a business					
output	plan to present to 5	1	1	Hit	51	
output	potential investors				0.1	
	Pilot projects will test					
	the ITS technology				5.4	
output	and applications	4	3	Hit		
	recommended within					
	NS FRITS					
	Specific transnational				4.5	
output	and multi modal	1	1	Hit		
	knowledge base for					
	Treight supply chain			+		
	centre for electronic	1	1	Hit	4.5	
output	communications					
	system					
	IT based guidelines					
tra t	and practices for		4	1.154	0.0	
output	utilising knowledge	1	1	Ηιτ	2.2	
	transfer systems					
	Non-project					
	delegates attending					
impact	open conferences /	1865	1000	Hit	6.1	
	seminars /					
	workshops (male)					
	Non-project	646	200	Hit	61	
impact						
impaci	seminars /		200		0.1	
	workshops (female)				1	
	Non-project	4470	200	Lit		
	organisations					
impact	attending				6 1	
	conferences /	1170		пі	0.1	
	seminars /					
-	workshops					
output	Shared II systems to					
	develop transnational			1.1:4	4.5	
	electronic	1	1	HI	4.5	
	system					
	Integrated half-year					
output	work plans	6	6	Hit	1.2	
3. Priority Indicators - chose at least 1 output and 1 result indicator for the project						
within the priority you have chosen in part 3.1 of the main application form						
	Alliance formed with					
	StratMoS, SETPOS,	10	10	Hit		
output	LABEL, SISTER,				1.6	
	RISING and within					
1		1		1		

	the NS FRITS partnership				
output	Conference, Seminars, workshops held throughout the project	8	8	Hit	6.1
result	Private and public bodies work in collaboration to enable future investment in RTD to achieve the project objectives *revised in business case	400000	800000	Miss	5.1
output	Strategies / recommendations for the development and implementation of electronic transport communications networks (ITS)	1	1	Hit	4.5
result	Development of transnational management system utilising common databases and model approaches, piloted to improve accessibility strategies and logistics solutions in NSR	1	1	Hit	4.5
result	New logistics electronic communication technologies developed with pilot projects implemented transnationally	4	3	Hit	5.4

Appendix ten: List of supplementary reports available

A range of additional reports have been referred to in this evaluation. A list of these is provided below.

- WP1 Monthly Flash Reports (MFRs)
- WP1 Half Year Work Plans (HYWPs)
- WP1 Activity Frameworks (for each WP)
- WP1 Interreg Appendix 10a progress reports
- WP1 Project Plan
- WP1 Interim Evaluation Report 1
- WP1 Interim Evaluation Report 2
- WP2 Final Report: NS FRITS Technical Concepts and System Requirements
- WP3 Final Report: Identification of NS FRITS data sources and stakeholders, identification of Data types and negotiation of Data supply and legal issues
- WP3 Supplementary Report: (WP3.6) To Study And Analyse How Data Capture/ Transmission Can Encourage Innovation And Increased Use Of Information And Communication Technologies Within The North Sea Region
- WP4 Final Report: NS FRITS System Services and Functionalities Description
- WP4 Supplementary Report: NS FRITS System Manual
- WP5 Data Classification Report
- WP5 Bremerhaven Pilot Report
- WP5 Trials Specification
- WP5 Evaluation Pilot Specification
- WP5 NS FRITS Business Case
- WP5 Final Report
- WP6 Final Report