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**FOT-Net Data
Field Operational Tests Networking and Data Sharing Support**



Report on the first workshop of FOT-Net Data

Date: Tuesday, 18 March 2014

Place: EYE, IJpromenade 1, 1031 KT Amsterdam, Netherlands



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www.fot-net.eu

First workshop of FOT-Net Data

The workshop focused on the benefits of re-using data from other FOTs, the need to remove obstacles for opening a database to other researchers and to make data sharing profitable for both data owners and future data users.

FOT-Net Data is a 3-year support action that will develop a data sharing framework, a framework to describe available datasets, recommendations for data protection, strategies to facilitate data sharing and awareness about the value of data sharing. It will also continue building the FOT community, revise and promote the FESTA methodology for FOTs and data sharing, and foster international cooperation. It is the follow-up project to FOT-Net 1 and 2.

On 18 March 2014, FOT-Net 2 had its final event. The report and presentations of this event are available at:

http://www.fot-net.eu/en/networking/stakeholders_meetings/fot-net_final_event_and_first_fot-net_data_workshop.htm

On the 19th we continued our networking activities, but now under the umbrella of FOT-Net Data. We started with an identification of the problems of sharing data from FOTs, directions on how these can be solved, and the benefits of re-using data. The workplan of this new support action was presented. Associated partners from different backgrounds told us about their needs, expectations and contributions. And all participants were invited to join in this discussion. Examples were given from both the point of view of data owners and of data re-use. Finally it was outlined how FOT-Net Data will develop its data sharing framework and identify data-sets and tools for data sharing.

Agenda

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| 09:00 – 09:30 | Welcome coffee and registrations | |
| 9:30 | Opening by Myriam Coulon | Myriam Coulon-Cantuer, European Commission, DG Connect |
| 9:40 | Introduction: why should we share data and why is it so difficult? | Yvonne Barnard, ERTICO – ITS Europe |
| 9:45 | Overview of FOT-Net Data | Sami Koskinen, VTT |

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| 10:05 | <p>FOT-Net associated partners:</p> <ul style="list-style-type: none"> • What do they expect from FOT-Net Data? • What do they have to offer? • What will be the benefits and the obstacles of data sharing? <p>The audience: what do they expect?</p> | <p>associated partners:</p> <ul style="list-style-type: none"> • Mats Jonsson, Netport • Lars Hannawald, University of Technology Dresden • Nicole van Nes, SWOV • Tom Alkim, Rijkswaterstaat • Jorge Alfonso Kurano, UPM • Ruth Welsh, University of Loughborough • Niels Agerholm, Aalborg University • Roberto Brignolo, CRF |
| 10:55 | International collaboration: Research Data Exchange (RDE) and an example from the Safety Pilot data set | Dale Thompson, US DOT |
| 11:10-11:30 | Coffee break | |
| 11:30 | How can a data-owner make their data available? | Mats Petersson, Volvo |
| 11:45 | For what purposes can we re-use data? | Clement Val, CEESAR |
| 12:00 | Developing a data sharing framework | Helena Gellerman, SAFER |
| 12:15 | Data and tools for data sharing | Adrian Zlocki, IKA |
| 12:30 | Questions and wrap-up | Satu Innamaa, VTT |
| 13:00 | Workshop close and sandwiches | |

There were 46 seminar participants (the list of attendees can be found at the end of this document).

Opening: (Myriam Coulon, European Commission, DG Connect). Myriam stated that the success of the bid for FOT-Net Data was largely down to the added value that was seen by the Commission, in a project that would build upon the existing successful FOT-Net network and the FESTA methodology. Open data must be the norm for future public projects and Open Data is a key theme for Horizon 2020. The Horizon 2020 lead for Open Data is Marta Nagy-Rothengass, who Myriam recommended to attendees as being the best future contact.

Introduction (Yvonne Barnard, ERTICO – ITS Europe): Yvonne began by posing the questions: Why should we share data and why is it so difficult? The participants provided some of the answers.

Why does a FOT not analyse its own data? – because there is often too much data, too little time and too little money to do so. Yvonne questioned whether this could be addressed by each FOT simply applying to do another follow-on FOT? This is of course a very expensive option. Or could data be simply put on the Cloud together with some metadata and guidance for its use? However, it is more complicated than that. Often, people lack the infrastructure and expertise to do this and potential users do not know whether they would benefit from accessing such data or how they would go about accessing it. FOT-Net Data will address this by providing a framework, communicating the benefits, removing the obstacles, and hopefully, making data sharing profitable for data owners and users alike.

Overview of FOT-Net Data (Sami Koskinen, VTT): Sami described that a big part of the problem with sharing large data sets is that analysts may not have the necessary IT skills to manage the scale of the data. There is great potential in re-use of data leading to further research, enhanced cooperation, support for education and contribution to business through the introduction of improved vehicle ICT. Sharers of data gain collaborative opportunities, plus the opportunity for others to supplement your research findings. Benefits that make data sharing attractive include financial gains, time savings and the development of shared tools. The Commission might consider making the subsequent sharing of data mandatory in contracts for funded research projects.

Project objectives of FOT-Net Data include:

- Develop a data sharing framework
- Addressing financial aspects (e.g. data release costs)
- Give recommendations for documentation to ensure that re-use is possible
- Give recommendations for data protection
- Provide a catalogue of available data (via the FOT Wiki)
- Maintain the momentum of the existing FOT network
- Update the FESTA handbook (especially data sharing sections).

FOT-Net associated partners: associated partners provided a brief summary on the following questions:

1. What they expect from FOT-Net Data
2. What they have to offer?
3. What they consider will be the benefits of data sharing
4. What they consider are the potential obstacles to data sharing?

The responses from each of the partners are summarised in the following table:

| Assoc. Partner | 1.Expectations | 2. Offer | 3. Benefits | 4.Obstacles |
|--|--|---|---|--|
| Mats Jonsson, Netport Science Park, Sweden. | Sharing competence and joint activities. | Experience of data sharing and open data. Information broker. | Improved source for research and decision making. | Legal ownership and data quality. |
| Lars Hannawald, University of Technology Dresden | Network. Discussion of data formats and sampling. Joint activities. | Traffic/accident research experience. Processing and providing data. | International overview of data and research. Common methodology, comparability and common understanding. | Ownership and property rights. Gaps in data. |
| Nicole van Nes, SWOV | Support to share data. Share safety critical events and definitions of SCE. | Expertise and data protection concept development. | Data protection and regulation. Documentation to prevent misinterpretation of data | Problems maintaining the database. |
| Jorge Alfonso Kurano, UPM | General guidance for common data gathering and storage. Improve mechanisms for data sharing. | Providing infrastructure-based data via FOTsis (different data to what most projects have). | Common agreement that reduce time for studies and increase efficiency. Common understanding of requirements from all ITS entities. | Legal, privacy and data sharing issues. |
| Ruth Welsh, University of Loughborough | Sharing forum and collaboration opportunities. Support in re-use and merging of data. Inventory of available FOT and NDS data. | Experience in FOT and NDS studies and data including video annotation. Accident investigation, causation and analysis. TeleFOT data to share. | Increased potential for pure and applied research. Provision of a long-term database. Third party access beyond initial project partners. | Comparability and compatibility of data. |
| Niels Agerholm, Aalborg University | International network. Sharing experiences. New project development (e.g. through | FOT data to offer (through the 'ITS Platform' project). | Network. Scientific discussions. On-going development. | Privacy. Data quality. |



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| | Horizon 2020) | | | |
| Roberto Brignolo (CRF) | Proposal for standardisation of the data acquisition and storage process. | | Avoid wastefully re-collecting data. Professional chain for analysis and results. Data store against which to validate new data. | Legal and privacy. Data quality (if re-use is not planned at the outset, it is difficult to do later. Standardised formats and tools. Solutions for data download. |
| Tom Alkim, Rijkswaterstaat | State of the Art. Knowledge about technical and non-technical issues re. data sharing. | Experience, plus a national data warehouse and a NL action programme with a commitment to move towards open data. | Reduced costs (but for whom?). | Open data is not in every stakeholder's interest. Need strict conditions for data sharing (privacy and security). Need to explore new business models. |

In the follow-up Q&A, one question related to the long-term guardianship of the FOT data sets (given that FOT-Net Data is only a 3-year project). Maxime Flament (ERTICO), indicated that FOT-Net Data is the latest project within a long-term initiative and that discussions to continue FOT-Net activities beyond the next three years will continue. Myriam Coulon also stressed that there is Euro 300million in Horizon 2020 for data management. Long-term maintenance and management could also be undertaken by a separate company or entity funded either by government or through fee-paying users. Sami Koskinen (VTT) reminded participants that funding for a data warehouse is not included in FOT-Net Data. It was asked how access could be made to data from past major FOTs of recent years. FOT-Net Data partners have access to much of that data and would be looking at whether it could be prepared / processed for sharing.

International collaboration: Research Data Exchange (RDE) and an example from the Safety Pilot data set (Dale Thompson, US DOT): Dale Thompson described how a research data exchange has been developed in the US (covering mobility, environment and safety areas). The 'Research Data Exchange' (RDE) is a research portal requiring registration and secure login. Challenges have included:

- Data Governance
- Distribution rights
- Personally identifiable data
- Size of datasets / files

Concerning privacy, Dale Thompson described how, for example, Origin-Destination trajectories are truncated to prevent the identification of individuals based on the start and end points of their journeys.

The RDE currently houses 11 Data Environments with data from different locations throughout the US. The SHRP 2 Naturalistic Driving Study (NDS), containing huge datasets – including the demographics of 3,100 participants – will be added to the RDE in the coming months.

The RDE has mixed data environments, one for research and one for corporations to use as it is accepted that down-time may be more acceptable to researchers.

What is the long-term future and business model for the RDE? Many bigger, more complex projects are planned so how complex can the RDE be made? The US DOT does not have the central funds for this, but a coalition of states might enable this. Dale compared such a coalition of US states to a coalition of EC countries.

How can a data-owner make their data available? (Mats Petersson, Volvo): Mats Petersson described how there had been many FOTs since 2006, all with different content and research questions (though 80-90% of the data is the same).

To date, protection of data has been achieved by only making data available to institutional users in locked rooms at the data owner's site. Data must not violate personal integrity laws, but there are questions such as how to anonymise data, and more specifically with regard to handling GPS data and driver video and external views.



Agreements for sharing data must also consider storage issues, including how long the data should be stored and in what format, what metadata will also be stored and security of the storage.

Mats explained that Volvo have already shared data with university partners and worked with suppliers (e.g. on eye-tracker data) and are very open to this kind of project. He also advised not to change the people in charge of the data too often so there is consistency.

For what purposes can we re-use data? (Clement Val, CEESAR): Clement Val described how FOTs and NDS cover all types of realities and different kinds of data – some of which will inevitably be too specialised to be re-usable. Differences include:

- Data from large versus small fleets
- Vehicle data versus infrastructure data
- Continuous versus event-based data
- Video and/or sensors and signals

Clement continued, suggesting potential areas for the re-use of data:

- Focus on specific topics (e.g. children passenger data; night driving)
- Perception and detection algorithms
- Detection of infrastructure defects / black-spots
- Use of probe data and (in future), massive real-time field data
- Simulations to derive the impact of a change based on real driving conditions (e.g. the potential impact of a speed limit reduction).

Developing a data sharing framework (Helena Gellerman, SAFER). Helena Gellerman has been the Working Group leader for data sharing in FOT-Net 2. She described how huge datasets are being collected by FOTs in the US, Europe, Australia, Korea, Japan and China – but who will own and manage the data and be the data provider to the app writers and other business applications?

Helena referred participants to the detail of the data sharing framework developed in and presented in FOT-Net 2 Deliverable 3.2 (available at: http://www.fot-net.eu/en/networking/working_groups/working_groups.htm). This comprised seven elements:

1. Data sharing in project documents
2. Valid data and metadata descriptions
3. Data protection
4. Education on data protection
5. Support and research services
6. Financial models for post-project funding
7. Procedures for applying to access data

UDRIVE is the test-bed for this framework, as it has promised the EC that the data will be open to further research (the central data centre for UDRIVE is based at SAFER in Sweden).

FOT-Net Data will involve a 2-step approach:

1. Elaborate on the FOT-Net 2 platform – procedures and metadata

2. Obtain support for the framework with the aim of getting endorsement for it by at least 20 organisations globally.

Data and tools for data sharing (Adrian Zlocki, IKA): Adrian Zlocki explained that the project will develop a FOT data catalogue and determine what it is possible to share (including tools for sharing, post-processing, aggregating etc).

The project will also develop a catalogue of tools for data enrichment and aim to include useful tools from other disciplines (e.g. the medical sector), and add them to the FOT Wiki (http://wiki.fot-net.eu/index.php?title=Tools_for_FOTs). These tools will be linked to the data catalogue. Tools to facilitate data sharing itself will also be identified (e.g. tools for data transfer, anonymisation, security).

Questions and wrap-up (Satu Innamaa, VTT): Satu Innamaa stressed that good documentation and metadata is needed to make data sharing work (especially when the information is being stored in many languages and with abbreviations!)

Maxime Flament informed the group that the iMobility Probe Data Working Group is now linked to FOT-Net (see for further information: <http://www.imobilitysupport.eu/working-groups/probe-data>).

All presentations are available at:

http://www.fot-net.eu/en/networking/stakeholders_meetings/first_fot-net_data_workshop.htm

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