



Smartfusion

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Dear reader,

After more than three years of work, Smartfusion came to an end in September 2015 and, right now, we are rounding everything up and getting ready to write the final reports. In this newsletter we are pleased to present the last of the project's three City-Regions: Berlin, Germany. The city demonstrated integrated technology solutions in urban freight delivery, directly in line with Berlin's strategic plans - for example Berlin's urban transport development plan, noise reduction plan, and air quality management plan. The Berlin trial aimed to increase the market share and use of larger hybrid trucks for inner city deliveries. You'll find here an update of the results achieved in Berlin.

A demo of the Smart Urban Freight Designer, developed by project partner PTV group, is now available online at www.smartfusion.eu. The Smart Urban Freight Designer is a tried and tested professional planning tool, used to calculate and optimise inter-urban shipment and make comparisons between different scenarios, based on cost efficiency. Also, take a look at the project website to find final public deliverables, exploitation resources, papers, articles and presentations as we continue to disseminate the project, beyond its formal end date.

Enjoy reading!

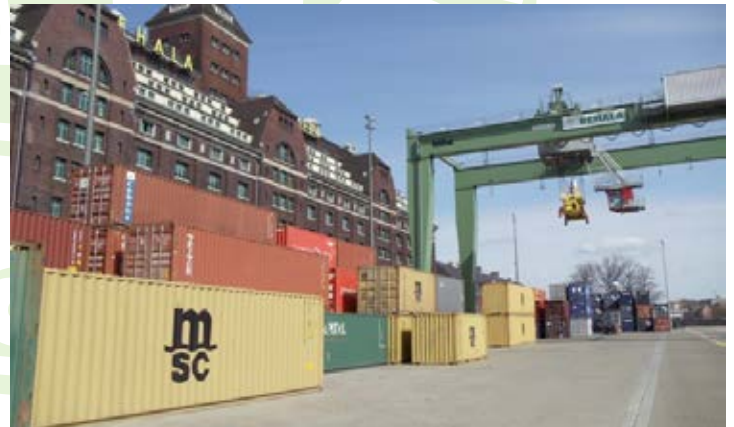
Tom Zunder
Principal Investigator
Smartfusion

In the spotlight: Berlin

1. Berlin Background

Berlin is the capital city of Germany, and is one of the sixteen states (Bundesland) of Germany. It has a population of 3.5 million people, and is Germany's largest city. Berlin's urban transport development plan ("Stadtentwicklungsplan Verkehr") sets the course for a modern mobility policy in Berlin for the coming years. This integrated transport strategy considers the mobility needs of all traffic participants and it provides a policy framework for concrete measures to achieve sustainable mobility.

Berlin is currently growing significantly – and will grow further over the coming years. The economy is well-positioned; the population is on the rise. From a transport perspective this growth must be used for a systematic, high-quality development of Berlin's transport infrastructure for walking, cycling, driving and public transport. The urban transport development plan picks up on this within different fields of urban mobility.



Operations at Berlin's harbour in the Westhafen area.

In Smartfusion, Berlin demonstrated integrated technology solutions in urban freight delivery (directly in line with the Berlin's strategic plans, for example Berlin's urban transport development plan, noise reduction plan, air quality management plan). Emission threshold information, along delivery corridors from the urban interurban transshipment centre Berlin-Westhafen, to the inner city, were linked with the propulsion steering of 2nd generation hybrid trucks and also shipment planning optimisation approaches.

2. Design and monitoring framework process: Berlin

The first 2-day workshop took place on November 22nd and 23rd 2012. The workshop was hosted by the city of Berlin at the tri-modal terminal and freight village BEHALA-Westhafen. A wide range of stakeholders was present. Local authorities, the Chamber of Commerce, a vehicle manufacturer (VOLVO Trucks), the Road Transport Association, Meyer & Meyer (logistic service provider) and others contributed with presentations and intensive discussions.

The workshop was intended to show how alternative fuels and drive technologies in urban-interurban commercial transport can make a tangible contribution to the reduction of emission levels, the lowering of fuel consumption, and assuring and improving the quality of urban life in Berlin. As a result, the workshop identified the detailed stakeholders' interests and provided an insight into individual challenges and needs. Foremost in mind was the fact that commercial transport in Berlin is the vital backbone of the urban economy.

The second day was devoted to the consolidation of the results from the stakeholder consultation on the previous day, and to structuring the input according to the Design and Monitoring Framework (DMF) methodology. This workshop was an internal project meeting, hosted by the Senate Department of Urban Development and Environment in Berlin at "Am Köllnischen Park". The aim of the second day of the stakeholder workshop was to further fine-tune and detail the approach for the demonstration in Berlin.

The second stakeholder workshop took place on 18th February 2013. The project discussed the developed problem tree for Berlin and "translated" this multi-stakeholder output into the aims and specific focus for the Smartfusion

The pilot took place at the tri-modal terminal and freight village of the BEHALA (Berlin's harbour and storage company) located in the Westhafen area. Westhafen is one of the historical tri-modal city terminals in Berlin that has seen significant redevelopments in recent years. The site houses a fully functioning consolidation centre within the heart of a European capital city, which is quite unique in Europe. Last year (2014) more than 110,000 TEU were handled in the inner city of Berlin, coming in mostly by train and waterway. This location is ideally situated to serve as the basis for experimentation and demonstration of an electric or diesel-electric hybrid truck.



SWOT analysis constructed by local Stakeholders as part of the DMF process.

demonstration in Berlin. This included questions about the intended effects of the telematics solution, necessary interfaces between the different processes (logistics, truck, telematics) and how to include stakeholders in the demonstration process.

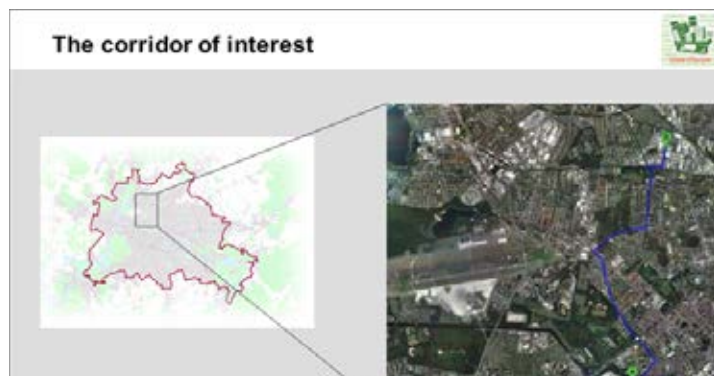
It also included the important, but sometimes difficult to answer question, of which data can be used to monitor the developments according to the DMF results. The workshop output was therefore the most important step in setting up the demonstration, using the feedback from the stakeholders.

3. Demonstration in Berlin

The Berlin trial aimed to increase the market share and use of larger electric trucks for inner city deliveries. Since large full electric trucks are not yet commercially available in Germany, the Berlin test used VOLVO hybrid electric trucks for inner city freight movements between the logistics centre and the final customers, located in the city centre — a distance of about 8 km.

The demonstration focused on coffee distribution. In 2014, about 100,000 tons of raw coffee arrived, in full container loads, on trains through Westhafen. Currently coffee beans are transported on heavy-duty trucks with a 27 tonne payload and are stored in Montanstrasse. It is easy to imagine the traffic resulting from this tonnage: about 3,700 loaded trips per year, plus empty returns. Just handling these beans on the real last mile results in more than 7,000 trips.

Coffee beans are handled in a commercial facility within an industrial area, where they are roasted and sold to customers (grocery chains). The 8 km route or corridor of interest from Westhafen to Montanstrasse runs through a densely populated residential area, with schools, parks and playgrounds nearby. Berlin has long monitored the current situation in relation to traffic conditions, noise nuisance (both day and night), sources and types of emissions and air pollutants. What has emerged from these analyses is that there are people constantly affected by these freight delivery trips.



The 8 km route or corridor of interest from Westhafen to Montanstrasse.



The VOLVO hybrid electric truck tested in Berlin.

The key objective of Smartfusion in Berlin was twofold:

- Piloting innovations about how to handle heavy freight in urban/inter-urban relations in the city;
- Reducing noise and GHG emissions, aiming to improve quality of life for people in the target area.

Another crucial element was the exact definition of such conflicts, along the route, where it was found that many are time bound and spatially located. For example, there are two playgrounds and parks along the corridor (northern segment) which are deserted early in the morning and at night, but are populated during daylight hours by playing children – the segment of population most at risk by being exposed to noise and air emissions from heavy-duty trucks.

The field test lasted for two weeks from September 22nd to October 2nd 2014, in real business conditions, meaning that no changes were made to the logistics operation at BEHALA - the VOLVO vehicle was planned to meet BEHALA's needs.

Advanced driving training was offered to all BEHALA drivers prior to the 2-week piloting phase. They learned how to handle the vehicle and work with the IT interface provided by PTV. The on-board unit displayed information about when to switch on – off full electric mode. The full electric test zone was about 400 metres, near to the school, where the truck ran at a maximum speed of 30km/h. After leaving an electric zone, the diesel engine was used, while the battery was recharged to maximum (usually within 1 to 2 km).

This demonstration allowed Berlin to collect real numbers and make real time measurement. Data are very important to gather and show to decision makers, politicians and stakeholders who need measurable data to gauge the impact of a transport measure and make a case for investment.

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The on-board unit interface.

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4. Outcomes

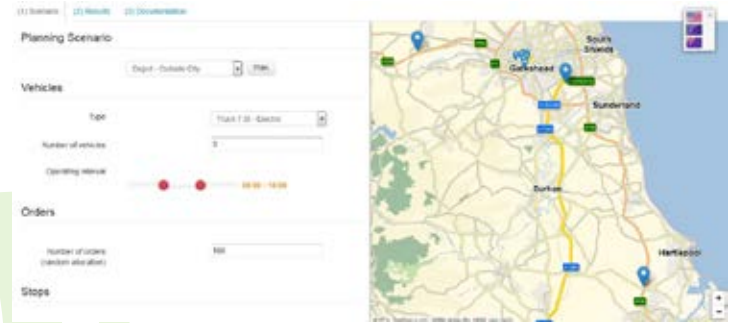
- Current status is the proof that by implementing the developed and tested Smartfusion solutions (if a company invests in a hybrid truck) the benefits for society can be increased, for the same cost. The solution works technically, though it must - and easily can - be adjusted to specific local needs and it is a perfect approach to directly communicate transport related political aims to drivers.
- The Berlin demonstration successfully tested the deployment of the Smartfusion Navigation, for example on a mobile tablet device. Just some of the successfully tested and demonstrated elements have been: route calculation, navigation guidance, and featured layers (full electric zones, charging zones, and speed reduced zones).
- The vehicle and logistics related output successfully showed that hybrid technology can reduce fuel consumption, although the (currently) relatively low fuel price means this reduction will not fully compensate the additional cost of the hybrid technology. However, during the Berlin demonstration valuable insight was gained in how to motivate logistics companies to make use of hybrid vehicles, even when the fuel consumption argument alone is not enough.
- Fuel savings go hand in hand with reduced emissions. The hybrid vehicle generates less noise, as the electric engine supports the diesel engine, e.g. during acceleration.
- Adding the concept of geofencing, where the vehicle adapts to different regulations in different areas, makes even more out of the positive effects and can be focused where they make most sense. It is even possible to guarantee positive effects in certain areas, e.g. zero emissions when passing a residential area, or driving through an indoor terminal, and a maximum speed of 15 km/h when passing a school. This combination of hybrid and geofencing technology opens up new possibilities for the use of hybrid trucks.



Smart Urban Freight Designer – Online!

The Smart Urban Freight Designer, developed in Smartfusion by PTV, is an IT-based tool which simulates logistics scenarios in order to promote discussion between actors and present potential solutions for electro mobility. The in-built objectives modelled by the tool can be varied according to the target audience: e.g. optimising transport costs per km and per hour; reaching a certain service level; reducing air emissions; reducing noise; increasing safety.

The Smart Urban Freight Designer is a professional planning tool used to calculate and optimise inter-urban shipment and make comparisons between different scenarios, based on cost efficiency. Such tools can be very complex and often require professional training for the user. Especially for SME customers, or city authorities, simplicity of use is crucial. Smartfusion has geared the solution design towards an easy to use tool, based on a simplified graphical user interface that will work for non-IT experts. The tool can be used online at <http://80.146.239.140:50000/samplebrowser/samples/tour-planning-electro-mobility/>



Screenshot of the Smart Urban Freight Designer tool.

Upcoming Events:

If you would like to find out more or ask questions please come and see Smartfusion being presented at:

BESTFACT Final Conference

Kaunas / Klaipeda, 22-23 October 2015

www.bestfact.net

2015 Polis Annual Conference

Brussels, 19-20 November 2015

www.polisnetwork.eu

EU Electric Vehicles Conference (EEVC)

Brussels, 1-4 December 2015

www.eevc.eu

Transport Research Arena 2016

Warsaw, 18-21 April 2016

www.traconference.eu

Further information

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Disclaimer

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