GOFER

- a cooperative system for freight management and regulation

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GOFER - Project objective and idea

- The main objective for the GOFER project is to contribute to a reduction in emissions, queues, accidents and operator costs related to heavy freight, by introducing new technical solutions and ways of cooperation.
- The GOFER project idea is to develop concepts which facilitate control and management of heavy freight vehicles, much the same way as the air control manages airplanes approaching or leaving an airport.
- The desired effect is fewer freight vehicles in queues on roads and at terminals, and relocation of queues from terminal areas to more suited and adapted areas

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GOFER - Demonstration activities

After a study of user needs and requirements in the early phase of the project, the last phase of the project has been dedicated to three separate demonstration activities:

- Live demonstration on the 500 km route from Oslo to Trondheim
- Heavy vehicle driving simulator, study of measures prioritizing heavy vehicles
- Simulation model for access to the Alnabru terminal area in Oslo

The demonstration activities in GOFER are not primarily tests of technology, but demonstrations of services and functionality. This was an important basis for the prioritizing and delimitations made during the design of the demonstrations.

At the same time, the objective was to establish a "win-win"-situation, where all participants could benefit from taking part.

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GOFER Live demonstration - Layout and functionality

Eight heavy duty vehicles on the 500 km route from Oslo to Trondheim, for ten weeks, mid November 2011 - January 2012

Functionality:

- Communication between drivers, operator and data system, with updated information about conditions along the route
- Distribution of driver-initiated messages; ”road messages for professionals”
- Directions/recommendations of route, based on information about vehicle, cargo and destination in Trondheim
- Predictions of driving time/time of arrival, based on formulas developed in the Speed model project
- Remaining required resting time, based on the logged GPS data
- Example of booking of resources (gate/slot time at terminal)
- Information to terminal about approaching vehicles, including estimated time of arrival (web site)
- Logging of GPS data for calculation of environmental indicators

© Google Maps

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GOFER Live demonstration - Equipment and data system

- On board equipment (OBE): Samsung Galaxy Tab 7.0
- Data system developed in the project,
  based on free or open source software:
  - Android, Java, PostGIS
- No "down-time" during the test period (16.11.11 – 31.01.12)
- Data system included:
  - detailed information about the vehicle, destinations and road links
  - public road messages, made available through the information platform TRIP
  - pre-defined "driver messages"
- Web site showing active vehicles

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GOFER Live demonstration - The drivers' tasks

In Oslo:

- Start the OBE and the GOFER software
- Give information about planned route, destination in Trondheim and weight of cargo
- Receive important road messages for the chosen route

During the trip from Oslo to Trondheim:

- Send messages to colleagues when appropriate
- Receive messages from other drivers, and regular road messages
- Register resting time
- Receive notification of recommended route in Trondheim and booked space at terminal

In Trondheim:

- End the assignment and turn off the equipment

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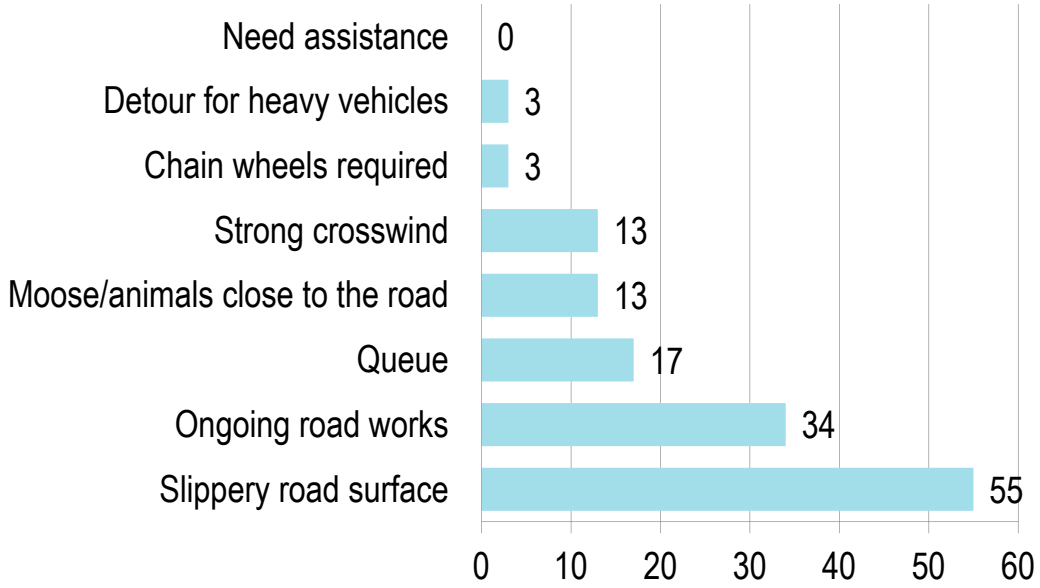
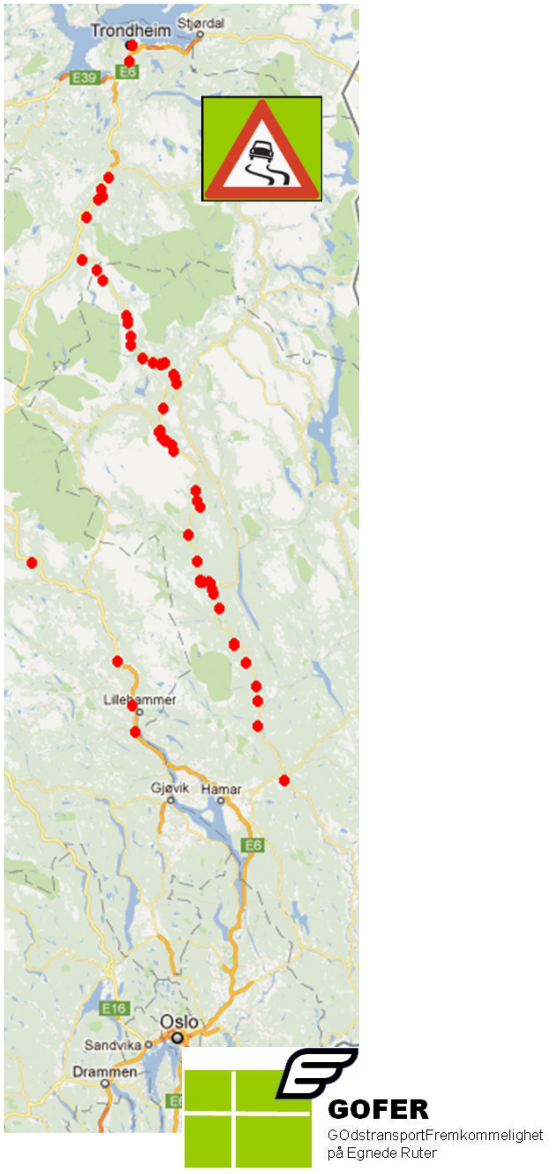
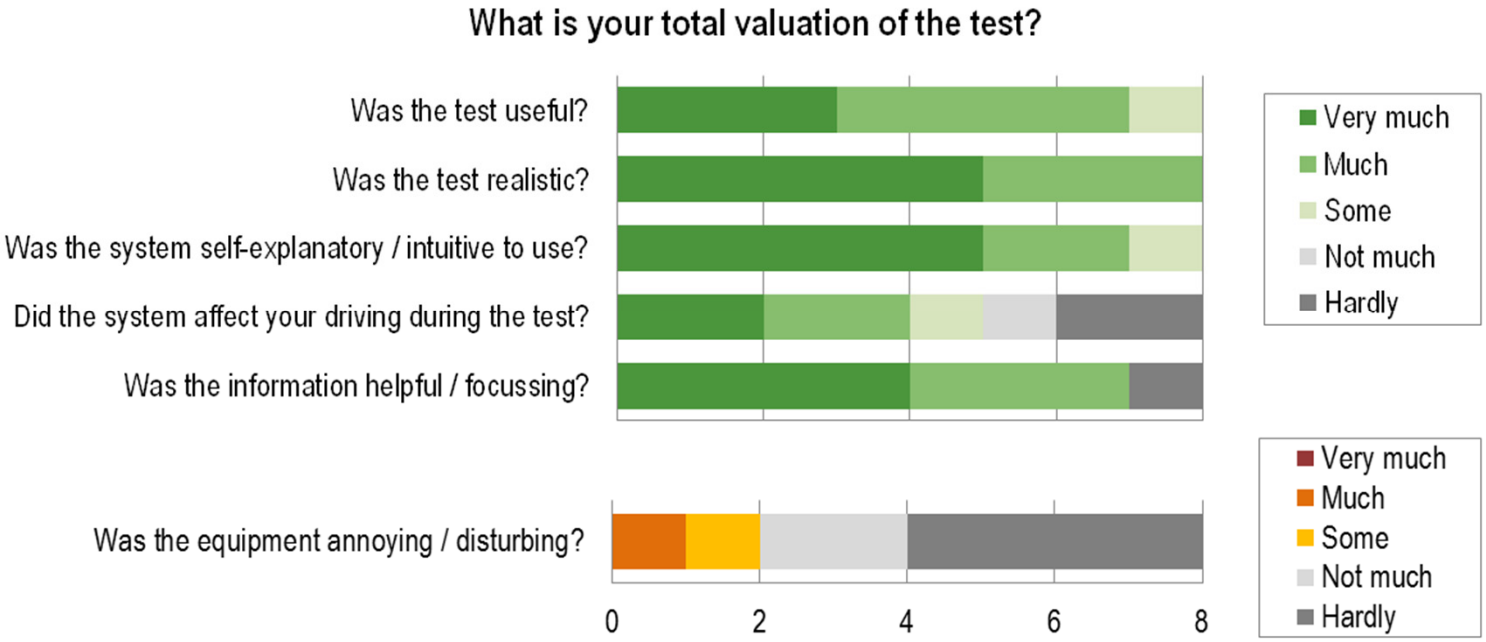
GOFER Live demonstration - Statistics

- 135 trips registered
- 138 driver-initiated messages sent
- 1 to 44 messages sent per driver - average of 17





GOFER Live demonstration - Drivers' view (n=8)



- Introduction of a full scale system expected to have positive effects on the drivers' work situation, traffic safety and the environment.
- All the drivers would have advised his employer/others to adopt this system, but only half of them would request this system in the vehicle

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GOFER Live demonstration - Drivers' view (n=8)

- All pre-defined messages were considered to be useful by a majority of the drivers. The message "Slippery road surface" was considered to be "Very useful" by all drivers.
- The majority found information about recommended route and holding/waiting areas and slot-times to be very useful.
- Access to public transport lanes got the highest rate as measure to "compensate" for any ordered waiting, while service facilities ate the holding area was rated second.

Suggested improvements :

- Possibility for the drivers to cancel obsolete messages
- Information about precise stretch of road the message applies to - especially for regular road messages
- Extra alerts related to traffic accidents
- Information about who submitted the message (using a driver's alias?)
- Reduction of general light emission from the OBE - alert for new messages by increased light and/or audio signal

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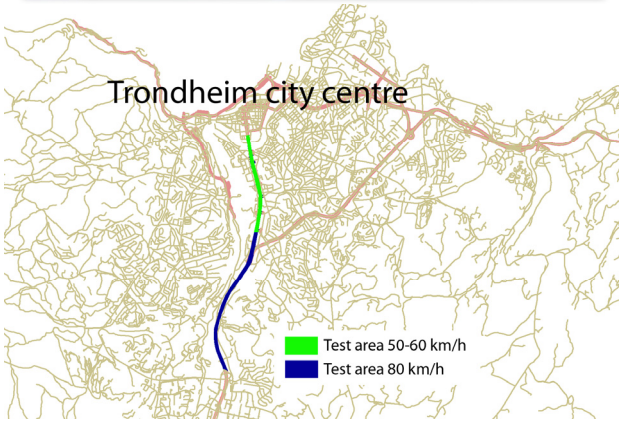
GOFER Driving simulator test - Purpose and functionality

A driving simulator for heavy vehicles was used as a supplement to the ”live”-demonstration, and included functionality which is hard to demonstrate in real traffic.

The test focussed on effects of prioritizing heavy vehicles through:

- Access to PT lanes during between-peaks periods
- Green wave in traffic lights during low traffic periods



The test was conducted with seven experienced drivers, using updated description of road network and traffic conditions for a 7 km section of the southern main access road to Trondheim

The test was carried out in January 2012

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GOFER Driving simulator test - Scenarios

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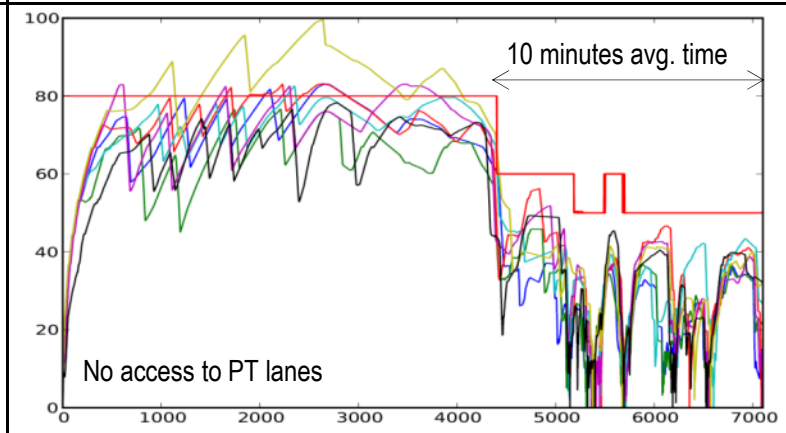
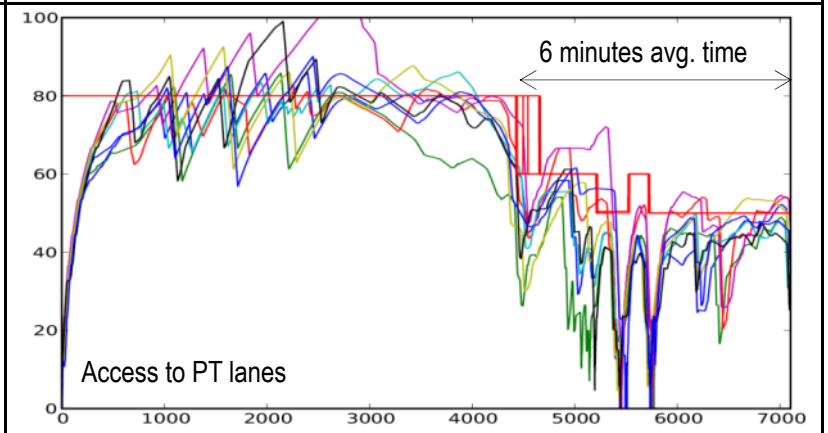
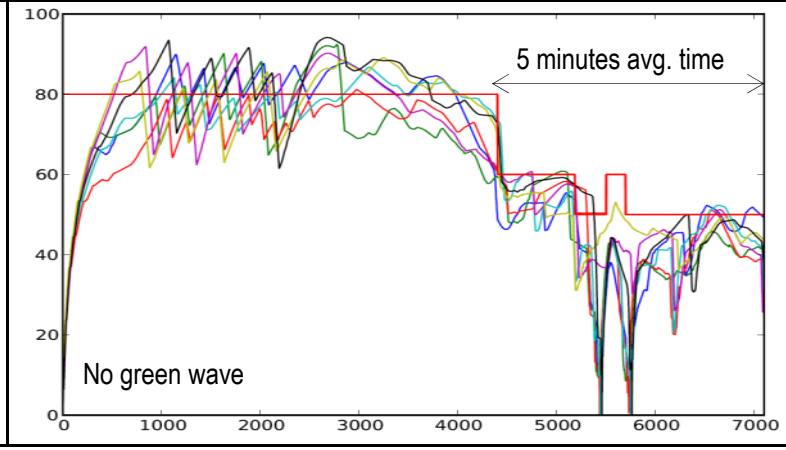
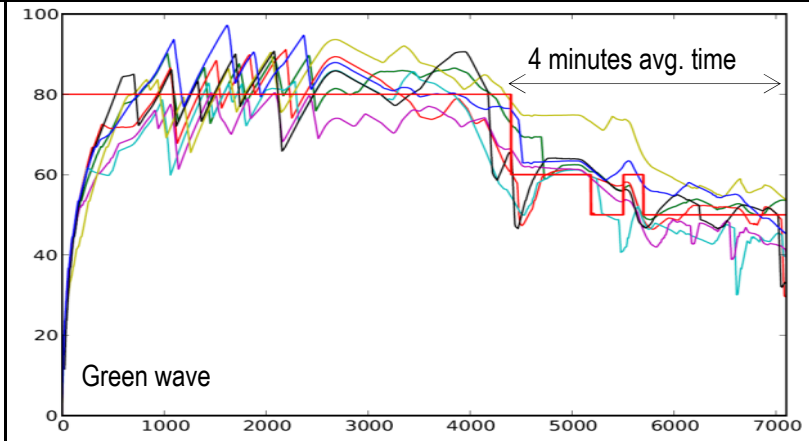
GOFER Driving simulator test - Resulting speed

	No priority	Priority
Between peak situation		
Low traffic situation		

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GOFER - Some conclusions

Findings from the project suggests that:

- it is feasible to establish a system which allows the public authorities to manage heavy vehicles in urban areas, while at the same time securing acceptance by providing the drivers and transport operators with information or services to compensate for regulatory measures
- the test drivers' assessment of a range of information types and measures giving priority to heavy vehicles, suggest several options for compensating for restrictions inflicted on them by a truck management system
- such a system holds a potential for positive effects on efficiency and predictability for the transport industry, urban environmental issues, and work conditions for the drivers
- still a large number of issues and requirements must be dealt with and resolved before a system like this can be introduced in an urban area

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GOFER - Possible future activities

- Further develop the tool for calculating driving time for heavy vehicles on the Norwegian road network.
- Driver-initiated messages about the road conditions, especially during winter time, can be a useful source of information to identify the need for winter maintenance measures for the NPRA.
- A follow-up demonstration is considered by the NPRA, distributing information about friction conditions in the road network, to the public.
- The NPRA are interested in following up the possibilities to use a GOFER-like system to facilitate booking for safe and secure truck parking facilities.
- "Road information system for the freight industry", with predictions of driving time for heavy vehicles, and driver-initiated messages?

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GOFER - Contact information

Project owner:

- ITS Norway (http://www.its-norway.no/), Trond Hovland (trond.hovland@its-norway.no)

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Project web site (with video from the demonstration):

- English: www.sintef.no/gofereng
- Norwegian: www.sintef.no/gofer

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