

Safe Operation for Large Vehicles Initiative SOLVI

Presented on behalf of the SOLVI Project Team

by

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Project Manager

The Partners

Project Start: 1 October 2005
Project Finish: 31 March 2008
Budget: 32 MSEK (€ 3.5 million)

Appello

Michael L. Sena Consulting AB

Navigation Technologies AB (Navteq)

Scania CV AB

Swedish Road Administration

Triona

Volvo Technology Corporation

The Presentation

The Problem

The SOLVI Premise

Looking for Solutions

The Project

- Collect Data

- Build Applications

- Deliver Data to the Applications

The Participants

What we are doing

Expected Results and Schedule



The Problem

Heavy truck traffic has increased by 60% in Sweden during the past 20 years, and now comprises 8% of road traffic... but trucks are involved in 22% of traffic-related deaths in Sweden.

10% of the 40,000 deaths on Western European roads involve heavy trucks.

More heavy trucks on the roads is a worldwide phenomenon due to the logistics solutions developed over the past decade.



The top of a truck is given a shaving because of a mismatch between the height of the truck and the clearance of the overpass.

The SOLVI Premise

Information that could help heavy vehicle drivers perform more safely and effectively is not available to them in the vehicle when they need it. It is just starting to be collected.

Applications that could use this improved information are now possible using advanced driver assistance technologies, navigation systems and communications technologies.



SOLVI: Looking for part of the solution

Integrate static and dynamic information from both public and private sources in a detailed truck attribute database.






Help to improve driver safety performance—perhaps in some cases without the driver’s knowledge—with ADAS.

Deliver both static and dynamic data directly to the vehicle.







Detailed road slope and curvature information are two of the most important attributes for both safety and performance applications.

Sample Truck Attributes: Legal Restrictions

Attribute Name		Relevant for		Priority (1 – 5)
		light commercial vehicles	heavy trucks	
All trucks forbidden			X	1
No left turn for trucks			X	2
No right turn for trucks			X	2
No U-turn for trucks			X	2
Trailer forbidden		X	X	2

Sample Truck Attributes: Physical Restrictions

Attribute Name	Relevant for		Priority (1 – 5)
	Light commercial vehicles	Heavy trucks	
Height  riction	X	X	1
Weight  riction	X	X	1
Width  riction		X	2
Length  riction		X	3

SOLVI – The Project



Navteq and **SRA** will focus on the collection, processing and quality assurance of road information for safety and performance improvements in heavy truck operations.

Navteq
SRA

Triona and **Appello** will focus on the delivery and dynamic updating of the data.

Triona
Appello

Scania and **Volvo** will demonstrate the use of these safety attributes in Advanced Driver Assistance Systems (ADAS) and navigation system applications for heavy trucks developed within the project

Scania
Volvo

Michael L. Sena is responsible for project management.

MLS Consulting AB

SOLVI – The Project Area

Älvsjö
ITS World
Congress 2009

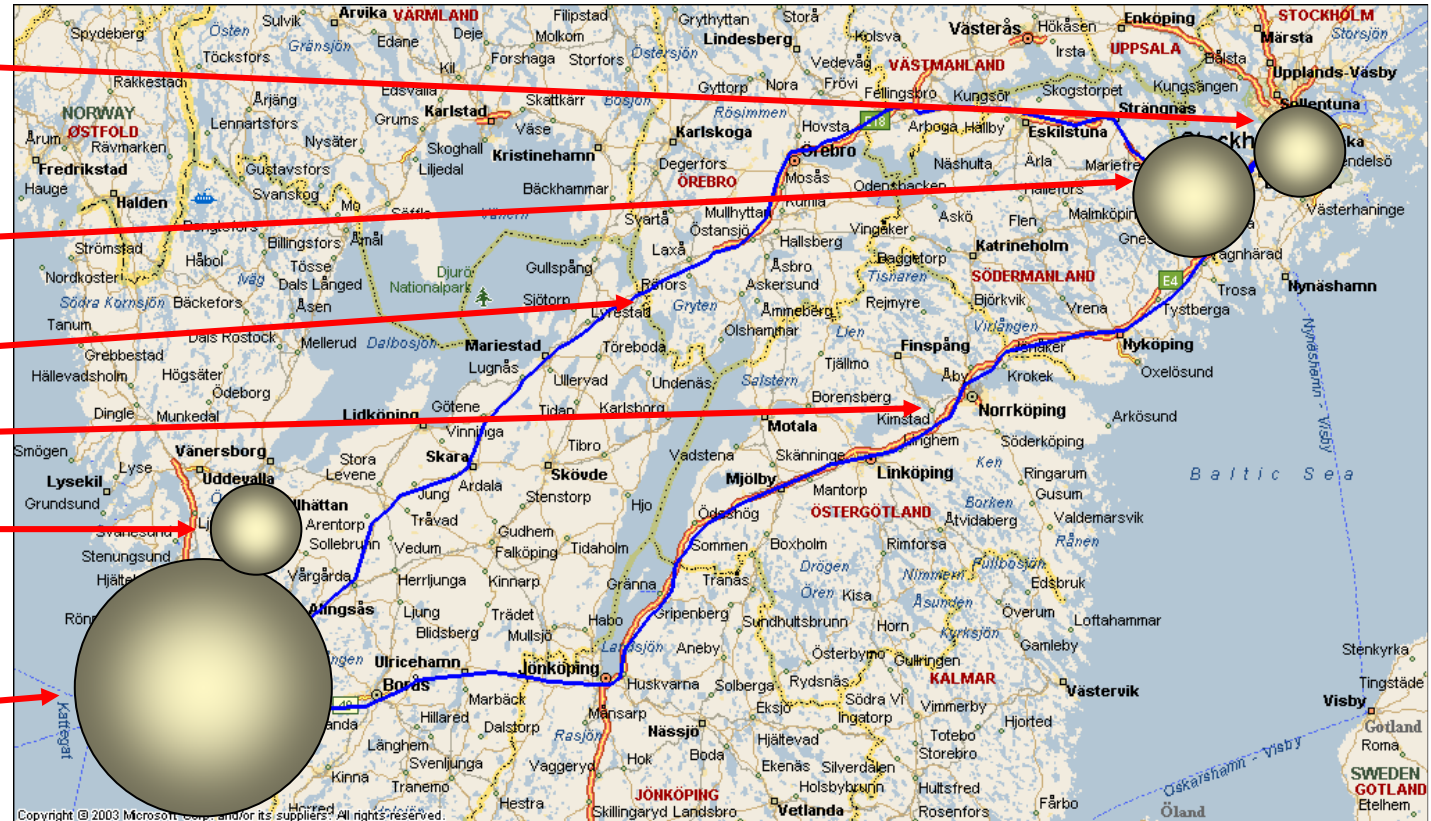
Södertälje
Scania

E20

E4

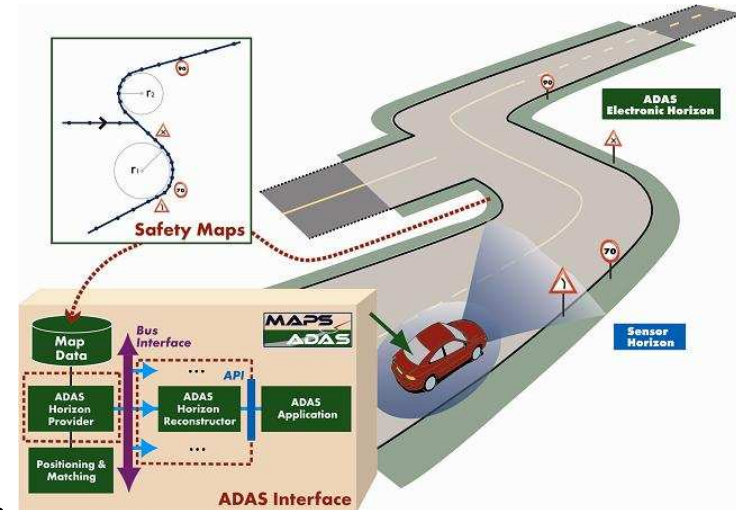
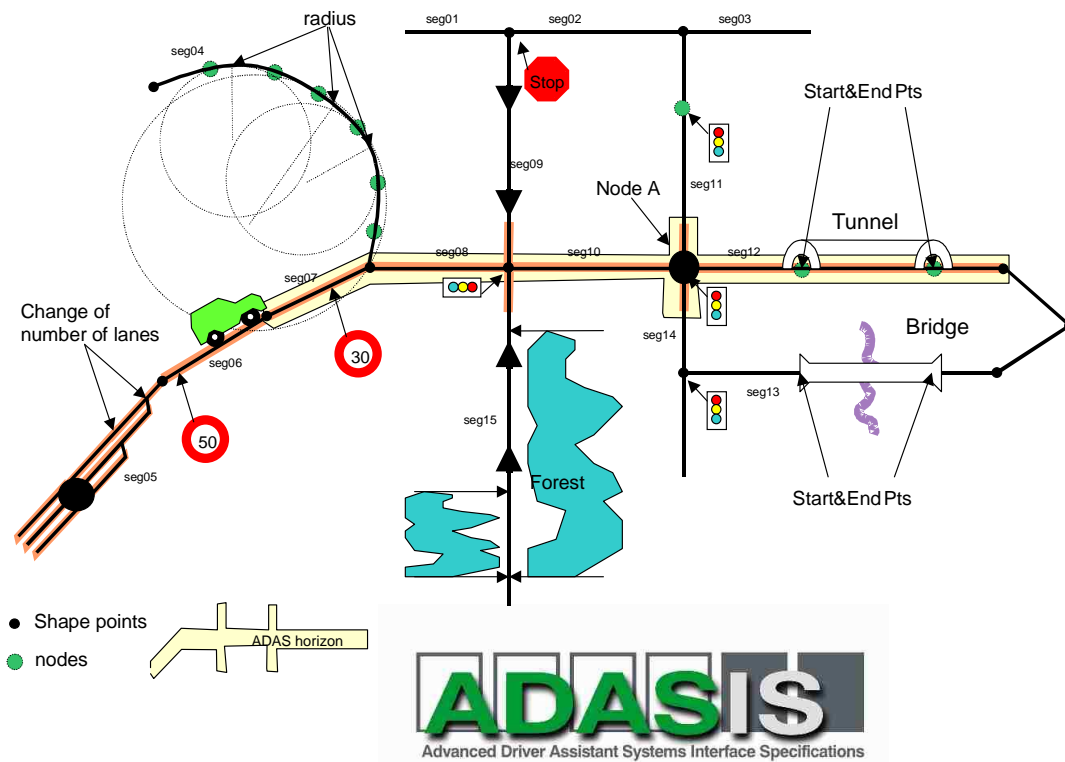
R45
Highway Project
Arena

Göteborg
Volvo Trucks
Lindholmen



ADASIS Architecture

SOLVI will use the ADASIS Architecture



Electronic Horizon: List of points corresponding to the road path in front of the vehicle up to a determined distance

- Vehicle Position
- Network Topology
- Attributes

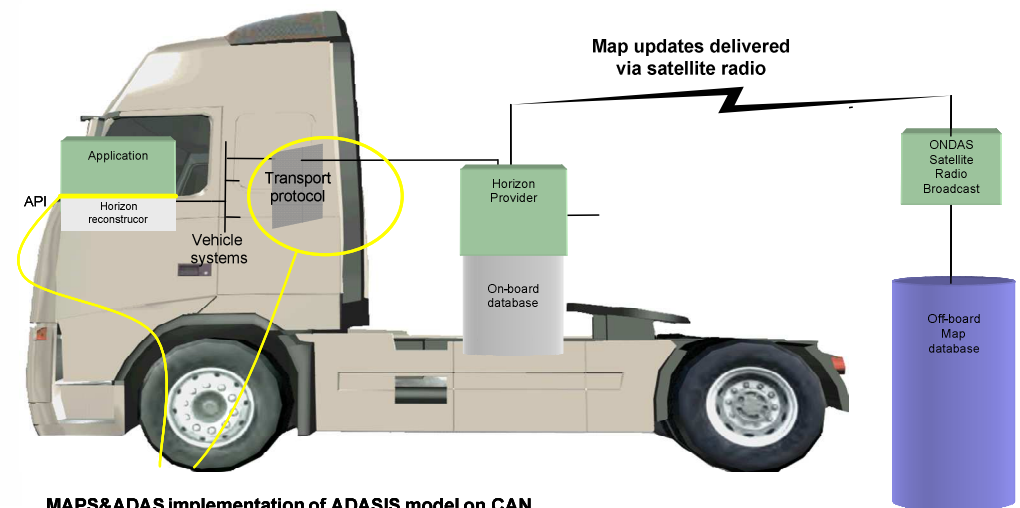
Volvo - Vehicle Information Management

Static Data - Traditional navigation map data + ADAS and truck-specific data.

Dynamic Data - Variable- and semi static data (like variable speed signs and weather conditions).

In vehicle e-horizon distribution on CAN using ADASIS architecture-- extended for truck attributes and dynamic data.

Handling and using e-horizon content



MAPS&ADAS implementation of ADASIS model on CAN

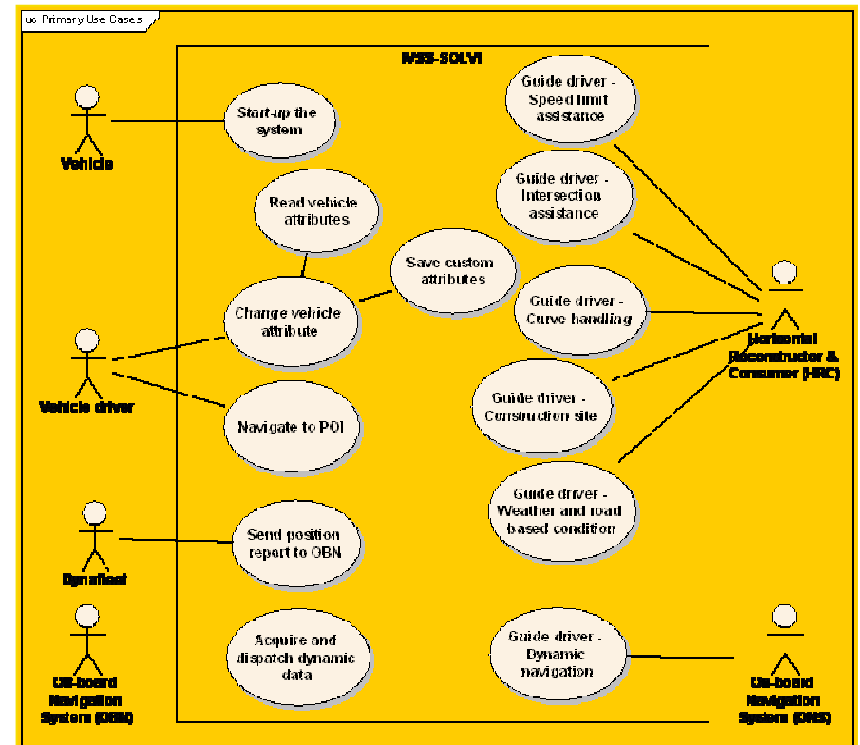
Transmission of dynamic data via GPRS through Volvo telematics gateway (Dynafleet) to navigation system and e-horizon provider.

Using Truck Attributes in the Volvo Application

Potential gain of performance for Cruise Control, gear change, drivetrain, brake blending, auxillary systems, etc.

Identify requirements for different levels of safety- and cost reduction benefits:

- Coverage
- Range
- Accuracy
- Resolution
- Integrity
- Reliability



SOLVI use cases and actors

Scania – ADAS for Longitudinal Control

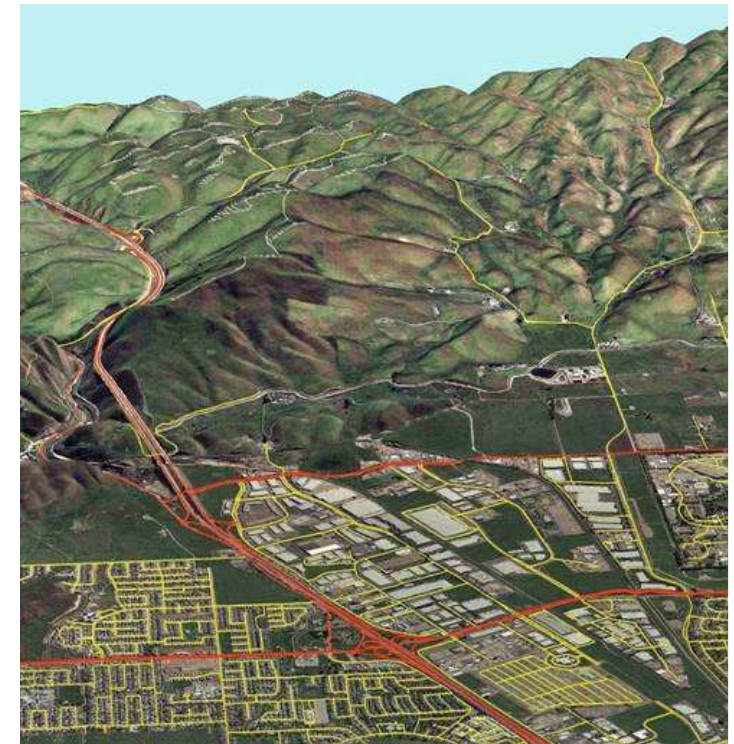
Set initial requirements for quality of slope data to be used for longitudinal control.

- Spatial resolution
- Error tolerance

Implement experimental map based longitudinal control.

Investigate slope data quality requirements for other applications e.g. auxiliary control.

Verify map interface for applications using slope data.



SOLVI – Expected Results

Identify the safety and performance benefits that would accrue from integrating the road attributes and using ADAS in truck operations.

Help to determine how a European truck attribute road database can best be created, and how ADAS can apply these attributes to improve the safe performance of commercial vehicles, particularly heavy trucks.

Goals of IVSS met by SOLVI

Road Safety

- Fewer truck-related accidents and deaths

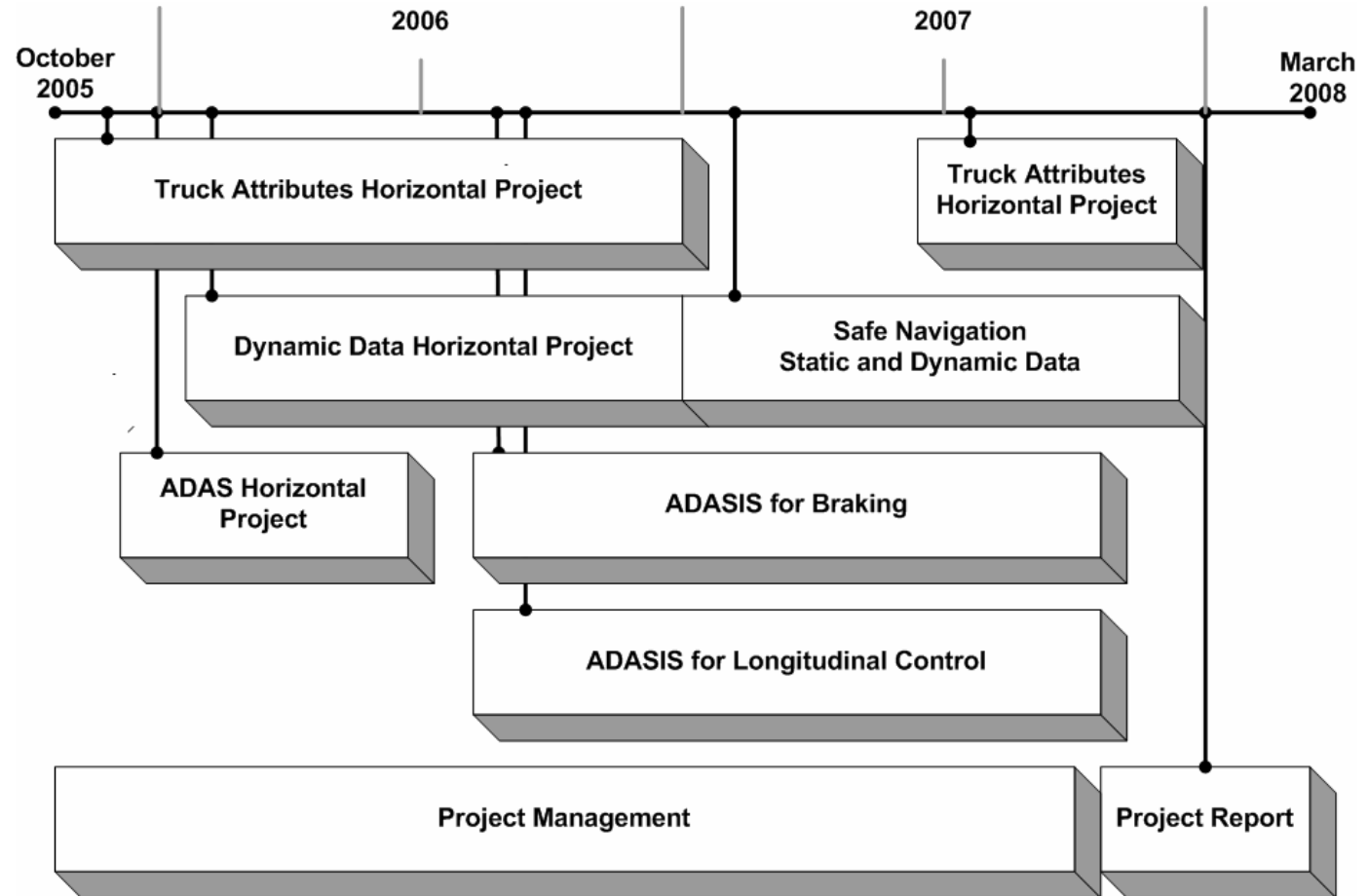
Economic Growth

- Reduced fuel usage
- More effective routing

Technology Development

- Advanced systems for truck safety and performance improvements

Schedule



Thank you

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