



Summary of ARENA RUC Seminar 3

A market-based approach
13th of March 2008



The ARENA project

ARENA is a national project that aims to build competence for a future introduction of a kilometre tax system for heavy goods vehicles (HGVs) in Sweden. The project was started when Swedish public authorities began considering the introduction of a kilometre tax for HGVs and as a means of harmonising the national development with the European. ARENA started in 2006 and is financed by the Swedish Road Administration and VINNOVA. NetPort.Karlshamn is the project coordinator.

The approach of ARENA is to take a broad view. Innovation potential, consequences and possibilities related to the introduction of a kilometre tax are just as important as the technical solutions as well as respecting that different stakeholders have different needs and requirements from the system. The role of the ARENA project includes the following elements:

- serving as the meeting point for all stakeholders in the industry – both nationally and internationally
- developing and supporting knowledge within the project and serving as coordinator between other projects

A concept for a kilometre tax system in Sweden is developed with a functional approach, which does not prescribe any technical solutions. The concept is generic rather than specific, in the sense that it should be possible to implement the result in several ways. Hence, the system must be flexible to meet the dynamics of technical development. The time horizon for realisation is 3-6 years in the future, and we can expect considerable changes in technical preconditions over this period. The concept, developed by ARENA, differs from existing systems in Germany, Austria, Switzerland and the Czech

Republic. The ARENA concept allows more toll service providers, which is not accepted in the systems already in operation but is anticipated in the EU's work. ARENA believes that greater openness will reduce costs and increase flexibility. When it comes to checking for compliance with the regulations, ARENA has also forged its own path to reduce system costs.

Swedish Road Administration

The Swedish Road Administration (SRA) is the national authority assigned the overall responsibility for the entire road transport system in Sweden. SRA's task is to co-operate with others to develop an efficient road transport network in the direction stipulated by the Swedish Government and Parliament. SRA has been commissioned to create a safe, environmentally sound and gender-equal road transport system that contribute to regional development and offers individuals and the business community easy accessibility and high transport quality.

VINNOVA

VINNOVA (Swedish Governmental Agency for Innovation Systems) is a State authority that aims to promote growth and prosperity throughout Sweden. VINNOVA's particular area of responsibility comprises innovations linked to research and development. The tasks are to fund the needs-driven research required by a competitive business and industrial sector, and to strengthen the networks that are such a necessary part of this work.



Abstract

This report provides an overview of the third seminar in the ARENA Seminar sequel arranged 13 March 2008 in Malmö. The seminar was the last within the framework of the ARENA project. A continuation is scheduled in ARENA 2.0, which will continue the development of the functional concept for a kilometre tax in collaboration with researchers, authorities and industries – both nationally and internationally.

Previous seminars were held in February 2007 and in May 2007. In February the concept of a “thin client” and a proxy as the key interface with the Toll Charger (TC)¹ was discussed. The second seminar in May 2007 focused on enforcement with the purpose to highlight options for reducing future operation costs.

The present report summarizes opinions and comments from a number of stakeholders on the market based business model proposed by ARENA. Some of the participants are already deeply involved in road user charging while others were potential providers of related services on an open market for RUC. The overhead slides presented can be downloaded from the web site www.arena-ruc.com/eng (downloads).

The discussion indicated that the presented market based business model seemed to be a realistic concept and provide the necessary flexibility to cope with the European dimension. The concept also has the potential to attract new service providers, although it was also emphasized that any organisation aiming to act as a Toll Service Provider must have considerable financial strength which limits the potential candidates. The feasibility of the concept also requires careful consideration of the interoperability aspects and the cost-driving administrative routines.

¹ For more details on the concept, see ARENA REPORT 2008:1, 2008:2, 2008:3 and 2008:12



Contents

Agenda.....	5
Presentations	6
Welcome and launch of ARENA 2.0	6
An open market for road user charging.....	7
New players as Toll Service Providers	8
Existing Toll Service Providers	9
Concluding discussion.....	10
References	12



Agenda

The ARENA project's seminar sequel focuses on the development of a road user charging system for Sweden in a European context. Since the seminars last year we have further developed the business model for road charges. ARENA recently proposed a market-based EFC approach, which we during this seminar wanted to prove against different actors.

The program included comments and responses to the approach from some companies active in RUC (existing TSPs) and possible future Service Providers as well as a policy discussion.

Moderator: Jonas Sundberg, SWECO VBB

Welcome and launch of ARENA 2.0

Inger Gustafsson, Project Manager ARENA

An open market for road user charging

Carl Hamilton, Policy Technology

New players as Toll Service Providers

Octo Telematics, Davide De Sanctis

Volvo Technology, Mats Rosenquist

Telenor, Per Lindberg

PayEx, Mikael Hellberg

Info24, Björn Sabel

Existing Toll Service Providers

EGIS Projects, Steve Morello

Satellitic Management, Uwe Leinberger

IBM Svenska, Gunnar Johansson

Continental Corporation, Harry Krickl

Comments and discussion with the policy sector moderated by Prof Eric Sampson, Newcastle University

Concluding discussion

Presentations

The overhead slides presented can be downloaded from the web site www.arena-ruc.com/eng (downloads). Below follows a summary of the presentations.

Welcome and launch of ARENA 2.0

Inger Gustafsson, NetPort.Karlshamn (at this time project manager of ARENA) and Jonas Sundberg, Sweco VBB (moderator)

Inger Gustafsson explained that this seminar was the last within the framework of the present ARENA project and introduced the ARENA 2.0 project, which will continue the development of the functional concept for a kilometre tax in collaboration with researchers, authorities and industries – both nationally and internationally. A demonstration of kilometre tax and associated applications will be made in conjunction with the ITS World Congress in Stockholm in September 2009 based on a number of field trials including tests of interoperability. ARENA 2.0 also aims to set up a research environment in ITS and eTransactions based on the knowledge gained during the course of the project. For more information about the ARENA project Ms Gustafsson recommended the audience to read the report from the first part of the project (“ARENA REPORT 2008:1 – Kilometre tax in Sweden”), which is available on the project website (www.arena-ruc.com/eng).

Jonas Sundberg explained the ARENA seminar sequel, which started in Malmö February 2007, with discussions on the concept. The core message at

this time was the preference for a thin client and identification of the proxy as the key interface with the Toll Charger (TC)². The second seminar in May 2007 was about enforcement, with the purpose to highlight options for reducing future operation cost. The “new approach to control”³, were based on trust between the different actors involved in combination with road side random checks were discussed. The objective of the present third seminar was to present and discuss a business model based on competition between different Toll Service Providers (TSP's), which implies the full split between TSP and TC.



² For more details on the concept, see ARENA REPORT 2008:1, 2008:2, 2008:3 and 2008:12

³ For more details on the control concept, see ARENA REPORT 2008:1, 2008:4 and 2008:12

⁴ For more details on the market-based approach, see ARENA REPORT 2008:5

An open market for road user charging

Carl Hamilton, Policy Technology

Carl Hamilton presented the ARENA concept for “An open market for road user charging”⁴. The prevalent market for road user charging is characterized by a bilateral relation between a User and a TSP in union with a TC. An introduction of the EETS service will force an organisational split between the TSP and the TC since the later must be able to handle several competing TSP’s. Mr Hamilton presented the market-based approach assuming that users have:

1. The duty to declare road usage to the responsible road authority (or TC).
2. Possibility to declare road usage through a third party (Toll Service Provider) that offers an automated reporting service, which is authorised by the authorities/TCs.

The TSP must have a contract with the TC and be authorised for reporting road usage on behalf of its customers. Without connection to one or several TCs there’s no business case! Companies that already are providing services to road hauliers should also be able to offer a service to declare road usage as the business relation with the user opens up for a range of service related to e.g. navigation, vehicle financing and security services. It’s possible that companies choose to offer their road usage declaration service free of charge, when providing additional existing services. This approach opens up for integration of the in-vehicle applications that really fit the interior as well as the integration with current administrative systems. The TSP must carefully consider the commercial implications of where it wants to operate. It should be possible to cover one country, several countries or a region, all depending on what business the companies want. Incentives for interoperability are generated as companies want to sell services in many different countries. TSP also has to monitor its users to make sure they fulfil all

requirements stated in their agreement, for instance to check if the user has provided consistent and complete road usage declarations.

On the users side the main advantage is that there is a choice; do I want road usage declaration as a service package or a stand-alone-solution? What mix of services fit my needs?

The TC defines criteria and authorises different TSP’s to operate within its domain. The TC also has to do compliance control of the TSP’s operating in the domain. Random checks for subscribing users as well as checks whether the actual TSP is handling data correctly must be made by the TC. The TC should also develop methods to control and monitor non-subscribers.

Benefits with an open market for road user charging:

- The users have a real choice of what services they want
- New technologies can be introduced as they appear
- A minimum of regulations are needed
- Relations between users and service providers are voluntary and commercially-based
- Toll Chargers and Service Providers have incentives for interoperability



New players as Toll Service Providers

New players in the market of road user charging presented their view on the proposed ARENA concept on an open market solution for road user charging. The invited companies are active in areas related to charging, but not currently involved in the RUC-sector.

- **Octo Telematics, Davide De Sanctis**

Octo Telematics is doing 'Pay As You Drive'-solutions and have partnerships with insurance companies. Octo is offering a "clear box" in co-operation with partners. Services are for instance, Pay As You Drive insurance, Environmental impact Estimation, Floating Car Data, Theft Management and there have also been trials with RUC on a motorway in south of Italy.

- **Volvo Technology, Mats Rosenquist**

Volvo Technology is part of the Volvo Group. Volvo offers telematics services based on Dynafleet, which is a vehicle integrated telematics platform. The service offer consists of for instance, fleet management, driver time management and vehicle positioning. As the platform today has capabilities of integrating other applications, Mr Rosenquist said that offering a road user charging service as well is technically easy, but that the administrative costs in a market based approach could be a crucial issue.

- **Telenor, Per Lindberg**

Telenor is offering mobile services in 12 countries; Telenor Telematics is the largest business area in number of customers/SIM-cards and is growing rapidly. Telenor Telematics has delivered mobile communication to several fleet management systems sold in Europe, for example Daimler Chrysler. Mr Lindberg strongly believes in open standards as a means to create a positive cost pressure and stimulate innovation in value added services. He also said that any business driven from a sound market based business approach is always the strongest alternative.

- **PayEx, Mikael Hellberg**

PayEx offers payment solutions and has offices in the Scandinavian countries. The company is divided in three segments, Solutions, Finance and Collection. In a possible RUC system PayEx would strictly focus on managing payments in cooperation with a TSP. Payments can be offered both pre and post.

- **Info24, Björn Sabel**

Info24 offers secure services in information and media exchange, among others for major credit card organisations. The company's contribution in road user charging would be a device and system neutral exchange that would also facilitate interoperability among systems in operation today. Info24 has experience as an integrator of traffic information in the congestion charging project in Stockholm.



Existing Toll Service Providers

This section of the seminar included comments from actors already doing business with road user charging. Some of the companies have many years experience of managing and developing road user charging systems and components.

- **EGIS Projects, Steve Morello**

EGIS Projects has under the name eTrip developed an independent service provider to road users in Ireland. eTrip is a specialised company for road charging services and tag distribution and is fully independent from the infrastructure operators. Car parking services are offered as well as the actual toll collection.

- **Satellic Management, Uwe Leinberger**

Satellic is the integrator behind the German Toll Collect system. Mr Leinberger argued that the cost per subscriber is very important when considering the market-based approach. The cost per subscriber falls dramatically with number of subscribers / OBE handled by a single operator, even the cost per unit falls dramatically with number of identical units built. Therefore Mr Leinberger believed that large TSPs will operate for several TCs in the early market. A market based approach will also limit the actors which can become a TSP. Only organisations of a substantial size and financial standing can ever undertake to become TSP, argued Mr Leinberger. He also emphasized the importance of standards. They give new market entrants a real chance, since they ensure that the implementation will function in the existing environment. All successful mass market applications, like the Internet and GSM for instance, are based on technical and procedural standardisation. He also argued that many TSPs make it difficult for the government or the TCs. The more TSPs a TC (or Government) has to deal with, the more complex and thus costly becomes the management of the whole scheme.

- **IBM Svenska, Gunnar Johansson**

IBM was the contractor of the Stockholm Congestion Charging system (both in trial and final implementation). Mr Johansson said that the market-based approach thinking fits IBM well and that less technical restrictions will lead to innovative solutions and lower cost. He also commented on lessons learned from the introduction of the Stockholm congestion charging system and emphasized the importance of getting authorities involved early on in the process, for instance the Tax Authority. While implementing the Stockholm trial, the tax authority got involved at a too late a stage resulting in several costly adjustments. If the Swedish Parliament decides to implement a kilometre tax, it might have a rather tight time plan. Coordination with UK and the Netherland is essential to have interoperable solutions, said Mr Johansson.

- **Continental Corporation, Harry Krickl**

Recently Continental acquired Siemens VDO Automotive, an automotive supplier. Mr Krickl had focus on the OBU in his presentation. The enforcement technology has to be harmonized, so that the TSP will not have to install different control systems in the same TC area. It is also important that the TC sets precise quality standards for all parties and components. He agreed with Mr Leinberger that a TSP needs a strong financial background to take financial risks in case of quality problems. It should be possible to for the TSP to provide further services beside the tolling service, which would increase the market for telematics. A wide range of different telematic services will be generated and the competition between the TSPs will have a very positive impact on the service costs.

Concluding discussion

Concluding comments and discussion with the policy sector moderated by Professor Eric Sampson, Newcastle University

Jan Willem Tierolf, Christer Rydmell, Árpád Siposs, Armi Vilkmán and Neil Schofield were invited to present the views in their countries on the business model. The Netherlands, Hungary and UK have experienced how plans to introduce road user charging for heavy goods vehicles have been cancelled. Netherlands and Hungary have a clear political ambition to introduce such charges in the following years. The political agenda in Sweden, UK and Finland is not clear to the same extent.

Prof Sampson introduced the last section of the seminar by presenting some key statements for the remaining speakers' consideration:

- Tolling is done for 3 reasons: recover costs, manage demand and tax
- The truck & bus market is not the same as the car market
- Tolling traditionally not an open market as TCs issued the kit. EETS attacks this monopoly and enables other functions
- The speakers during the seminar have shown that on-board systems for non-toll services can supply reliable tolling data. TCs must recognise this
- The interoperability of DSRC and autonomous systems requires different solutions but both need good output standards
- A market based on competing multi-service providers is emerging; a market based on variable toll charge is impossible until someone tries to buy, or offers to sell, 2M "passages" at a 20% discount
- Market forces are unlikely to drive tolling interoperability as proprietary solutions are more profitable: tolling is not user to user (cellphones) but user to retailer

Neil Schofield

Road Pricing Framework Division, Department for Transport, United Kingdom

Mr Schofield argued that if RUC is implemented in UK, the presented market approach should be used. But on the other hand he did not believe that it is possible to leave the issue of interoperability to the market forces. In UK congestion is the key transport issue for the moment. There are also discussions about the question of privacy and integrity. These two questions are extremely important to consider for any type of RUC implementation. Accuracy of the On-Board Unit is also crucial, as well as a definition of the type of information output.

Armi Vilkmán

Senior Engineer, Ministry of Transport and Communications, Finland

Ms Vilkmán presented the current situation in Finland. There's currently no tax or fee for HGVs in Finland except the vehicle tax and petrol tax. There are problems with foreign vehicles near the eastern borders. The Ministry is studying the subject of RUC for the moment. Much like other countries, Finland has started to investigate solutions for heavy goods vehicles. There is also an on-going study how a congestion charging scheme could be implemented in Helsinki.

Ms Vilkmán stressed that Finland is more concerned about policy than technology and that she thinks the progress with EETS in EC is currently too slow. She asked for a standard throughout Europe, which should make implementation of policy instruments like road user charging easier.

Árpád Siposs

Head of Toll Strategy, Road Administration, Hungary

Hungary has a recent history of stopping procurement processes; three have actually been cancelled. Currently Hungary has an Electronic Vignette system, but the government wants to introduce the concept of Pay per Usage instead. This is basically due to a high and increasing share of international HGV traffic. Approximately one third of the traffic on the motorways is foreign. Mr Siposs said he is convinced that future tolling systems will be based on the open market business model. The key issue for the moment is the fact that the regular user will pay more than today. He also stressed that enforcement is very important for a successful scheme implementation.

Jan Willem Tierolf

Ministry of Transport, the Netherlands

The Netherlands has 20 years experience of plans of tolling, but still no implementation. The key issue is the huge congestion all over the country. There is today a wide support in the society for kilometre taxation (of all vehicles) and he said that the implementation will really be a political instrument. "To introduce a tax is not the goal – the tax is the tool!"

This time there is belief in the project, which is scheduled to introduce kilometre charges for HGVs in 2011 and for cars in 2012. All vehicles will be charged not later than 2016. A tendering process is scheduled in 2009 for 8 million cars and covering all roads. The issue of integrity is very important.

Mr Tierolf said that he does not believe TSP monopoly will disappear immediately when EETS is taken into service and that interoperability will probably also not be solved in the beginning.

Christer Rydmell

Service Development Manager, Road Administration, Sweden

In Sweden there's still no go to introduce kilometre tax for HGVs. Recently a Climate Committee raised the option of introducing kilometre tax as one instrument to reduce the environmental effects of road transport. The question of how the tax would influence society as well as how regions and business will be affected is still being discussed. The requirement for a system with a low cost is essential. Mr Rydmell believed that an open market will provide more services and that this could be beneficial not only for the haulier companies, but also to the road authorities. In the long run this could also improve safety and transport network quality.



References

Presentations and discussion during the seminar were mainly based on the document below. More information about the ARENA project can be found on <http://www.arena-ruc.com/> (Swedish) and <http://www.arena-ruc.com/eng> (English)

Note: The documentation below isn't a statement. Neither this report nor the one below claim to represent the opinions or views of any government authority or stakeholder.

ARENA REPORT 2008:5. "A market based approach to achieve EFC interoperability in Europe"., Hamilton, C J. Policy Technology

List of ARENA reports

ARENA REPORT 2008:1. "Kilometre tax for heavy goods vehicles in Sweden. A proposal for a functional concept". Sundberg, J., Forss, M., Källström, L., and Gustafsson, I

ARENA REPORT 2008:2. "A kilometre tax for heavy goods vehicles in Sweden – A conceptual systems design. Part 1: Requirements and preconditions". Sundberg, J., Janusson, U., and Sjöström, T., SWECO VBB

ARENA REPORT 2008:3. "A kilometre tax for heavy goods vehicles in Sweden – A conceptual systems design. Part 2: Proposals for systems design.", Sundberg, J., Janusson, U., and Sjöström, T., SWECO VBB

ARENA REPORT 2008:4. "A New Approach to Control in the ARENA concept for HGV kilometre tax in Sweden". Sundberg, J., SWECO VBB

ARENA REPORT 2008:5. "A market based approach to achieve EFC interoperability in Europe". Hamilton, C J. Policy Technology

ARENA REPORT 2008:6. "Dimensioning study for road user charging". Eliasson, C and Fiedler, M., Blekinge Institute of Technology.

ARENA REPORT 2008:7. "Hotanalys för positionsangivelsekedjan", Boldt, M and Carlsson, B., Blekinge Institute of Technology. (No English translation available)

ARENA REPORT 2008:8. "A Criteria-Based Approach to Evaluating Road User Charging Systems". Davidsson, P and Persson, J., Blekinge Institute of Technology

ARENA REPORT 2008:9. "PM kring legala frågeställningar", Sundberg, J., SWECO VBB (No English translation available)

ARENA REPORT 2008:10. "ARENA DEMO", Janusson, U. Berg, P and Udin, C., SWECO VBB (No English translation available)

ARENA REPORT 2008:11. "PM kring kostnadsberäkning", Sundberg, J., SWECO VBB (No English translation available)

ARENA REPORT 2008:12. "ARENA RUC Seminar 1 & 2 – Summary of the seminars". Forss, M., Gustafsson, I., and Källström, L., NetPort.Karlshamn

ARENA REPORT 2008:13 "Published papers produced within the project" (phase one)

ARENA REPORT 2008:14 "Summary of ARENA RUC Seminar 3 – A market-based approach", Forss, M and Källström, L. NetPort.Karlshamn



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