



Podcars – new travel on track

A sustainable travel option



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Ministry of Enterprise
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Sweden

In April 2009 an inquiry was launched by the Swedish Government to examine the possibility of introducing podcar systems in Sweden. Its task is to gather existing knowledge about such systems and to identify which of the interested municipalities would be the most suitable for establishing pioneer lines.

Podcars are an untested technology with many unanswered questions. The following pages provide a brief summary of the results of the inquiry and outline the next steps for building pioneer lines.



The ULTra podcar has been introduced at London Heathrow Airport.

What is a podcar?

A podcar can be described as something in between an individual car and traditional public rail transport. The passenger walks to a podcar stop and calls for an individual or group trip to a certain station. The destination can also be changed from inside the podcar.

Podcars permit direct travel from origin to destination without changes and stops at stations during the journey. They are car-sized vehicles and passengers can choose to travel alone or with others. The trip is on-demand rather than governed by a timetable. Podcars are fully automated and available around the clock.

The track is typically elevated and used exclusively by podcars that ride the entire network and can be called to any station.

A vision for the future – or a realistic idea?

A recent analysis of the international development of podcars (Frost & Sullivan 2009) predicts that about 50 systems will be built within ten years. The main applications are expected to be around airports and as complements to existing public transport systems within the next few years, but they could become a real alternative to transport systems in urban settings within ten years.

Several recent studies (e.g. Bly, Bucha-

nan, van Zuylen; SIKA 2008:5) show the value-added to society and profitability at firm or operator level of introducing podcar systems in the UK, the Netherlands and Sweden. In a fresh report by WSP Sverige AB, a comparison has been made of bus routes and podcars. The analysis shows that podcars can be more beneficial in towns of 40 000 or more inhabitants. Population density appears to be the most important factor for achieving social profitability.

Does the inquiry support an introduction of podcars in Sweden?

Podcars are a possible solution to certain transport problems that are difficult to manage with existing traffic solutions. They can be a sustainable alternative to private car transport. However, podcars have only been tested on a small scale and there are no commercial systems currently in operation. Studies do show, however, that this type of transport system can be profitable both from a societal and firm perspective.

An appropriate way of determining

how well podcars could function would be to test one or several pioneer systems under real-life operation. Full-scale pioneer tracks would give decision makers, planners and suppliers the necessary experience to further develop podcar technology. The Swedish Rail Administration has built a demonstration model of a podcar station, which it is now exhibiting throughout Sweden to gather views and comments on the technology. The model provides opportunities for discussions on how the technology can be further developed and help to solve problems in the transport sector.

Today there is a lack of basic data to enable a detailed analysis of costs for establishing podcar systems or for drawing any conclusions about future passenger concerns about podcars as a means of transport. There is also a need for knowledge regarding the formulation of output specifications when contracting suppliers and operators for the design, construction and operation of the lines.

The pioneer lines would be a way of filling the knowledge gap.

Can podcar systems support the overall transport objectives?

Societal efficiency is one of the overall policy objectives of the transport sector in Sweden. Long-term sustainability is another, both from an ecological and social perspective. Podcars show advantages in both cases. They are energy-efficient and emission-free. They can also contribute to increasing gender equality and improving accessibility for all, irrespective of age and gender.

However, there are also critical voices. Concerns exist about the visual impact in towns and investments in podcar systems

possibly jeopardising other necessary public investments.

From an industrial policy perspective, the impact of a Swedish commitment to podcar systems is important. Sweden is well positioned to pioneer this technology. Podcar network Kompass and the Institute for Sustainable Transport (IST) are actively supporting its development and have placed Sweden in a leading international position with regard to broad local interest in pioneer systems and the organisation of three international podcar conferences in Sweden and the US.

Suggested pioneer podcar systems in Sweden

Akademiska Hus AB, Via Academica, KTH – Albano – Frescati, Stockholm.
Södertälje, Tom Tits Experiment – town centre – Slussen – Östertälje.
Värmdö, Munkmora – Gustavsberg – Charlottendal – bus stop by motorway – Hålludden.
Sigtuna, Märsta C – Arlandastad – Arlanda.
Uppsala, travel centre – Boländerna.
Eskilstuna, Tuna Park – Parken Zoo – travel centre/town centre – Mälarsjukhuset.
Linköping (no study of pioneer system).
Uddevalla, Torp trade estate.
Trollhättan, travel centre/town centre – Överby trade estate.
Hofors, test/pilot track for technical development.
Åre, Central Loop and Rödkullens – Tegefjälls ski lift stations.
Umeå, airport – Ålidhem – Carlshem – university – hospital – Strömpilen.



Vectus testing podcars in Uppsala, Sweden.

Are local municipalities interested?

All Sweden's 290 local municipalities have been asked about their interest in pioneer systems; around ten per cent have expressed an interest in them:

The largest interest in podcar development exists in our middle-sized towns and some smaller municipalities. In general, tram lines are seen as being too expensive for the traveller base in these towns and podcar systems are regarded as offering a higher level of service and accessibility around the clock.

Twelve projects have been analysed in more detail and the defining criteria for further analysis were:

- at least one preliminary study carried out
- strong political support for the project at municipality level

- the proposed system will produce real traffic flows

How to establish funding and procurement solutions?

The inquiry has requested consulting and auditing firm Ernst & Young AB to analyse suitable funding and procurement structures.

Several forms of public private partnerships have been evaluated. These are characterised by services such as design, construction, operations, maintenance and funding etc. being procured at the same time. The future provider of these services will be a consortium of contractors and suppliers and contracts will be long-term so as to ensure stability and continuity. Furthermore, risks and responsibilities are to be distributed efficiently between the

public and private parties throughout the lifecycle of the system. Solutions of this kind are especially suitable for large and capital intensive projects where the focus is on keeping to schedules and budgets.

The inquiry supports a public private partnership model with major commitments from private parties regarding the operational phase of the project but slightly less commitment regarding financing. On the other hand, it proposes that the state takes an active role in both procurement and financing. The proposal is a funding structure involving the government through some form of state financial guarantee.

Can competitive dialogue be used?

The procurement of pioneer systems can be classified as an innovation procurement and hence there is good reason to use the relatively new guidelines and possibilities offered by public procurement. Competitive dialogue is a procurement form introduced in the new European procurement directive, which is voluntary for Member States, and can be used for complex procurements, where normal open or selective procedures are not suitable. The procuring authority is allowed to enter into an extensive dialogue with selected suppliers to identify how the procurement objectives can best be fulfilled.

Suppliers of podcar systems (total or parts)

Beamways AB
Bombardier Inc
PRT International LLC
2getthere (Cyber Cab)
Skycab
Unimodal Systems (SkyTran)
Vectus Ltd

When the competitive dialogue procedure is transposed into Swedish law, it will be valuable to use it in the procurement of pioneer podcar systems.

Podcars can bring advantages to the Swedish transport market

Podcar technology appears to have reached the right level of maturity to enter a market that is seeking sustainable, safe and accessible alternatives to existing transport systems. Technical and financial analyses show good functionality and profitability that can match established forms of transport. Podcars can contribute considerably to the policy objectives set for the transport sector.

Following further analysis, several projects may be suitable as pioneer systems. Those of particular interest are:

- Akademiska Hus AB, which owns a large part of the 'Science City' in Stockholm, the Royal Institute of Technology and Stockholm University, and which together with Stockholms Lokaltrafik (the regional



purchaser of collective transport) has conducted a preliminary study of a nine-kilometre track with 17 stations. The system is expected to have 27 000 travellers per day. Calculations show a benefit-cost ratio of more than 3.4 and a cost per trip of SEK 8.10.

The "2gether" podcar has been proposed as a transport alternative in Masdar, United Arab Emirates, which is being planned as an ecological car-free city.

- Uppsala's new major travel centre can be linked to the trade and industrial estate Boländerna through a nine-kilometre pioneer podcar system with 18 stations, which would reach as far as the new IKEA store. It is estimated that the system would have over 15 000 travellers per day and a benefit-cost ratio of 1.2. The cost per trip would be SEK 15.90.

- Södertälje has conducted both preliminary studies and projects regarding several different stages of a podcar system in the town. The podcar track will connect the commuter train station of Östertälje with central Södertälje in a more efficient way than the existing arrangement of trains via Södertälje Hamn. The first two stages comprise a 10-kilometre track and 17 stations and run from Östertälje via Slussen through the centre to Tom Tits Experiment (a major attraction) in Södertälje. The system is expected to have 5 400 daily travellers and a benefit-cost ratio of 1.0. The cost per trip is estimated at SEK 18.80.
- Umeå, in the north of Sweden, has been designated European Cultural Capital 2014. The new Bothnia railway line and two travel centres in the city will soon be open. A podcar system would connect the airport, the

new Umeå Östra travel centre across the river, the hospital, the university and housing and trade estates. The system would be 12 kilometres long and have 16 stations. Close to 12 000 travellers are expected to use it daily. The benefit-cost ratio would be 0.4 and the cost per trip SEK 22.50.

In summary, there are a number of possible projects and a number of possible suppliers of pioneer systems. If a project is to be realised, effective financial and procurement solutions are required that are suitable for the current stage of development of podcars. Both public parties (the State, the EU, municipalities, regions and public-owned companies) and private parties (contractors, suppliers, real estate owners, and private equity funds and companies) are important players in this context. If this is efficiently managed, pioneer lines for podcar traffic could be a reality in 2014.



Questions or comments?

The dialogue on podcar systems continues. If you have any questions or comments, please feel free to contact Kjell Dahlström, the Government's Inquiry Chair, at kjell@kjellgdahlstrom.se



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