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## SCENARIOS FOR ITS SERVICES DEPLOYMENT IN POLAND

The article deals with the process of ITS services deployment in the road transport. The process is full of uncertainties. Scenario thinking is most helpful in clarifying the possible environment, in which the process has to be developed. The methodology of creating alternative scenarios and strategies is presented. The starting point for the scenarios is the model of ITS deployment process in Poland presented at the first Transport Systems Telematics Seminar in November 2001.

## SCENARIUSZE UPOWSZECHNIANIA USŁUG TELEMATYCZNYCH W POLSCE

W artykule przedstawia się proces upowszechniania usług telematycznych w transporcie drogowym. Proces ten jest pełen niepewności. Myślenie w kategoriach scenariuszy jest bardzo pomocne w objaśnieniu możliwych warunków, w jakich się będzie on odbywał. Przedstawiono metodologię tworzenia alternatywnych scenariuszy oraz strategii. Punktem wyjścia dla tworzenia tych scenariuszy jest model upowszechniania inteligentnych systemów transportowych (ITS), zaprezentowany na pierwszej Międzynarodowej Konferencji Telematyka Systemów Transportowych w listopadzie 2001 r.

### 1. INTRODUCTION

ITS is a global phenomenon attracting world-wide interest from various groups of people in the field of transport. Why? Transport planners and engineers have always faced a certain dilemma in respect of the transport process. Transport is a vital part of society, providing numerous benefits such as mobility and accessibility, but it causes many disbenefits to the environment particularly. ITS seems to be a balanced solution that gives us the mobility and accessibility we want. ITS presents an opportunity for solving many problems in the field of transport.

There are several different ways of looking at the ITS field. One of them is to consider it from the ITS user's point of view, especially end-users. A user-driven approach to ITS is central.

Each ITS performs a certain function or functions. From the user's point of view it may be said that the system deliver a service or services to its users. An ITS user service is a clear, unambiguous statement of user needs. They are very numerous and not too easy to make a good list of them. They are changeable to some extent and their deployment depends on many factors. However it is possible to construct several basic scenarios of their deployment. In the article we try to formulate a scenario-based approach to deployment of ITS services.

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## 2. ITS SERVICES

There are several lists of ITS services in the world. The ISO list of services (ISO/TC204/WG1) includes 32 services. Similar to the ISO list of services is the US list of services. In Europe a list of ITS services was carried out within the KAREN project (Keystone Architecture Required for European Networks) and published in 2000 (2). The Karen List of services is known as a European reference list of users needs for ITS and has to be a minimum stable framework that is necessary for the deployment of ITS solutions within the European Union until at least 2010.

The European list of user needs (The KAREN project) contains about 500 entries that may be categorised into nine major groups of services. The percentage structure of the entries in the list is as follows.

- Infrastructure Planning and Maintenance - 4%
- Law Enforcement (the enforcement of traffic laws and regulations, and the collection of evidence) - 2%
- Financial Transactions (the payment for traffic or travel services) - 4%
- Emergency Services ("May Day" and stolen vehicle management, etc.) - 6%
- Travel Information and Guidance (the handling of pre-trip and on-trip information, route guidance) - 24%
- Traffic, Incidents and Demand Management (traffic control, incident management, parking management, access control, etc.) - 24%
- Intelligent Vehicle Systems (electronic systems within a vehicle for collision avoidance, speed control, etc.) - 16%
- Freight and Fleet Management (driver, vehicle and cargo management) - 11%
- Public Transport Management - 8% .

If we assume that the percentage structure expresses the priority of user's interest in ITS, we can notice that the priority for traffic management and travel information services can be considered as taking the highest position.

## 3. USERS OF ITS

According to the KAREN project the European users may be grouped into seven categories:

- Private Consumers - Travellers, incl. commuters, travellers on business or at leisure, tourists, etc.
- Commercial Consumers - Freight and Transport Industry, incl. transport operators
- Companies using ITS, providing their customers with information produced by ITS as part of their overall services
- Local Authorities, responsible for transport policy in their areas
- High level Ministries, responsible for transport policy at that level
- Operators applying the ITS (Exploitation Level)
- Companies developing and producing ITS (Industrial level).

Some of the users categories can be further grouped into two super-categories as belonging to the public sector and to the private sector. Public sector organisations are those which are part of the state and are funded, at least in part, by the government. It also means that the government has a high level of direct control over the organisations. They are accountable to the public. Private sector organisations are those over which the public have no direct influence. They are owned and controlled by private individuals or groups. In the transport sector some organisations within the same category of the users, for example transport operators, may belong to one or the other sector.

The public sector in transport has a regulatory role to safeguard the general interest of the public. First of all, public administration, e.i. high level ministers and local authorities plays the most vital role. They should at least create an organisational framework for telematics applications for the rest of the users. However each public authorities across Europe has a different vision of the public interest within the framework of its responsibility. Conventionally the public sector is responsible for road safety and traffic management. The public sector can adopt one or more of the following roles:

- monitor of emerging technologies in transport telematics
- R&D sponsor in transport telematics
- regulator of operations which are subject to licensing rules
- operator of telematics systems, for example in road traffic control, infrastructure maintenance, etc.

In Poland, there are several high level ministerial organisations and their agencies, for example - Ministry of Infrastructure, General Agency of Public Roads and Motorways. The number of local authorities is rather large. Telematics services have been generally overlooked by the central and self-government authorities.

The private sector includes the users that use ITS for profit. It covers transport and logistic operators using ITS, producers of ITS elements and systems, and ITS services suppliers. Each group of ITS users in the private sector is determined by the commercial objectives and functions that they have to fulfil. The number of commercial consumers in Poland is about 100 000, mostly small and medium-sized enterprises (SMEs).

#### 4. USERS OF ITS AND ITS SERVICES PREFERENCES

According to the KAREN project each group of users is specially interested in one or more ITS services development. Public administrations are mostly involved in traffic management, travel information, freight and fleet management and infrastructure planning and maintenance services. Private Consumers prefer intelligent vehicle systems for safety reasons and travel information and guidance in the network of roads and streets. Commercial Consumers are interested in freight and fleet management, and intelligent vehicles systems services. The main interest of information provider is to deliver on-line information to private consumers and commercial consumers. Operator of the ITS are mainly involved in traffic management services. Finally, producers are especially interested in intelligent vehicles systems and traffic management services.

It is worth considering that some groups of users are sometimes interested in the same categories of ITS services. It gives bases for would-be co-operation in the field of ITS deployment. Sometimes it can lead to public-private partnership (PPP) in application of ITS solutions in the transport sector. A public-private partnership in ITS deployment can be understood as a pooling of resources between public- and private sector organisations to provide ITS services to others in such a way to achieve objectives of the individual partners. The pooling may be formal or informal, and need not be a true partnership at law.

## 5. INCENTIVES OF ITS SERVICE DEPLOYMENT PROCESS

In the comprehensive model of ITS deployment (1) we can find two groups of incentives that may influence ITS deployment in Poland. The first group of incentives is called - external incentives, the other group - internal incentives. It is possible to rank them according to the strength of the influence on ITS services deployment. It seems that in the group of external incentives the most important are European Initiatives, for example *eEurope Action Plan* and enforcement of high level of transport services in passenger and goods transport in the Polish main corridors. The group of internal incentives is very numerous. However we can distinguish two key incentives - public budget restrictions and low level of awareness of ITS net benefits.

## 6. SCENARIOS FOR ITS SERVICES DEPLOYMENT

A scenario can be described as a coherent picture of a plausible future, but the picture is just a means to an end. Scenarios may be used for various purposes. One of them is decision making in strategic management. Generally speaking, scenarios are used to dealing with the uncertainty about the future. The practice of constructing stories of the future has no single method and dozens of techniques. One of them is based on the GBN-approach (4). According to the approach scenarios are not predictions about a future, they help to perceive different futures in the present. The scenario method is not based on probability, but on qualitative casual thinking. The scenarios describe the environment in which some strategic decisions can be made.

Without going into detail, first of all, we have to look for "driving forces". They are the elements that move the plot of a scenario. The driving forces are usually outside our personal control. One way to generate scenarios is to cross two driving forces (dimensions) in a two-axis matrix. It gives four possible scenarios, based on the values attributed to the dimensions. The dimensions are considered to be both very important and highly uncertain.

In case of ITS services we may assume that the driving forces are public and private sectors in transport, and external and internal incentives. It helps to construct four alternative scenarios. They are named: the EU Accession scenario; the Budget scenario; the Competition scenario; the Profit scenario.

The short description of them is given below.

### The EU Accession scenario

It is based on two dimensions - public administration as an element of the public sector diminution and accession to the UE as an element of the external incentives dimensions. The accession to the EU will cause the political commitment of the public administration, especially by legal regulations. The public administration will be interesting in ITS solution that refer to international obligations within the EU area. One of them is planning and maintenance of road infrastructure.

### The Budget scenario

It is based on two dimensions - public administration as an element of the public sector diminution and the state budget as an element of the internal incentives dimension. The state budget has a great influence on the ITS infrastructure deployment. The public administration will be interested in the ITS services that help them reduce cost of infrastructure maintenance and collect fares and fees for infrastructure usage.

### The Competition scenario

It is based on two dimensions - private sector organisations as an element of the private sector dimension and competition as an element of the external incentives dimension. The competitiveness of the Polish commercial organisations will be crucial to ITS deployment. The private sector organisation will apply the ITS services that help them improve the quality of transport services.

### The Profit scenario

It is based on two dimensions - private sector organisations as an element of the private sector dimension and opportunity of making profits when using ITS. The users of ITS in the private sector can quickly benefits from applying ITS. One of them is travel information services supplied by information service providers.

## 8. SCENARIOS AND STRATEGIES FOR ITS SERVICES DEPLOYMENT

In sum there are two basic strategies that can be applied in the environment described in the form of scenarios. The first one is called:

(a) do-nothing,

(b) do-something, in the field of ITS deployment. Each group of the users may perform its strategy. The results of taken actions depends on which sector will take actions and which incentives will be active. An scenario/strategies matrix can be constructed and considered to describe future implications of assumed assumptions.

The do-nothing strategy in the field of transport telematics deployment means that we do not take any new actions and try to be passive. The do-something strategy expresses some active attitude by taking projects. Of course we can undertake only some limited actions. The users of ITS may undertake some projects to have mutual benefits as well.

In general, any project in transport telematics should be undertaken only if it is both economically and financially justified (3). Sometimes there are wide discrepancies between the financial and economic analyses. The resolution of such a conflict involves a difficult balancing of the two conflicting values. For the public sector the most important is economic analysis, but for the private sector – the financial analysis.

## 9. CONCLUDING REMARKS

Future scenario development is not designed to determine a “most likely” scenario, nor is it designed to build a number of scenarios with “high-low-medium growth scenarios”. The objectives is to develop several plausible stories that describe how the world may in fact develop. We want to anticipate futures and imagine alternate strategic responses to the futures (6). Such an approach is very useful in today’s situation in transport telematics systems and services deployment in Poland.

Now we are at a starting point of ITS services deployment in Poland. The approach presented in the article may be useful to choose a good strategy for ITS service deployment when joining the UE within a few coming years. We can repeat after Alvin Toffler that if we do not develop a strategy of your own, we become a part of someone else’s strategy.

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