ITS Developments in Poland - ITS Architecture through the Business Perspective

Marek Litwin
ITS Polska
mlitwin@itspolska.pl, mobile +48 509-792-729

MULTIMODAL ITS
Smart transport solutions:
from Policy Framework to Deployment Strategies
12 May 2010, Vilnius
Presentation Outline

- Issues in Transportation
- The role and benefits of ITS Architecture
- Strategy for ITS Development in Poland
- Summary
Issues in Transportation

- Increased mobility and traffic congestion
- Limited capacity of transportation network and frequent construction closures
- Traffic safety
- Travel time loses
- Environment pollution
- Social issues
Demand for transport, energy consumption and emissions trends

Changing approach to transport

Do you get stuck in traffic snarls every time you drive to work? Here’s why

All aboard Photos from a report by the Canadian Urban Transit Association illustrate how dramatically gridlock can be reduced if all single drivers took the streetcar instead of driving. The report concluded that increased funding of public transit is crucial to the competitiveness of Canadian cities. Story, 65
Alternative solutions

- New construction to increase supply (expensive, time consuming and space consuming, compromising environment)
- Traffic Management to use existing supply in more efficient manner (e.g. Ramp metering, hard shoulder usage, route guidance)
- Demand management through advanced travelers' information services and user charging
Early adopters problems

- Unable to provide expected services
- Difficult to extend or modify
- Impossible to adapt to new technologies
- High costs
- Limitations of service delivery
- Lack of inter-operability (island applications)
- Failure to develop full potential of ITS
ITS Architectures

- Framework - to identify components and interconnections (internal and external)
- Vocabulary - to better communicate (internally and externally)
- Guidance - to help to develop a “regional” ITS architecture, and to identify integration opportunities during project definition
ITS Architecture for Canada
Benefits of ITS Architecture

- Open market
- Economies of scale
- Consistency of information
- Encourages investment
- Inter-operability
- Technology independence
- Common understanding
ITS Strategy in Poland

- 2003: Discussion initiated in May at “Karta Poznańska” International Conference
- 2005: The need for the Development of National ITS Architecture introduced to the National Transport Policy 2005 - 2025
- 2007: Operational Program 2007-2013 Infrastructure and Environment
- 2009: Strategy for Development of ITS in Poland - work in progress
MT Consultation Meeting 2006 highlights

- National ITS Standards are needed for public procurements (specification documents and offer evaluation)
- Lack of communication standards costs extra time and money for interfacing different ITS products
- Lack of ITS Architecture promotes black box solutions and unable seamless data access for R&D
- ITS Standards enable future system expansion in a competitive market environment
MT Consultation Meeting 2006 recommendations

- Create dedicated internet based public consultation service
- Introduce continuing education requirement for public administration into the ITS Strategy
- Create flexible but formalized National ITS Architecture
- Accommodate existing *de facto* standards
Strategy for ITS Development in Poland

- World Bank funded project to a Ministry of Transportation
- Objective to develop Strategy for ITS Development in Poland and assumptions for future ITS National Architecture
- QCBS (80% quality and 20% price)
- Six international consortiums bidding, three shortlisted
- Winning consortium: Egis Poland, Egis Mobilite (France), IBI Group (Canada/UK)
- Agreement signed in July, 2009
- Budget of about 370k EURO
- Work in Progress
Strategy for ITS Development in Poland

Stage I:

Task 1 – Analysis and assessment of the current state of application of technologies covered by the Intelligent Transport Systems in Poland and leading European countries, possibilities of their development, initial analysis of results of the environmental impact and performing a SWOT analysis – detailed guidelines – point 3.1.;

Stage II:

- Task 2 – Proposal on the strategy for development of the Intelligent Transport Systems in Poland – detailed guidelines – point 3.2.;
- Task 3 – Proposal of the set up of the National ITS Architecture divided into stages – detailed guidelines – point 3.3.;

Stage III:

- Task 4 – Plan of implementation of the Intelligent Transport Systems and National ITS Architecture in Poland – detailed guidelines – point 3.4.;
  I. Proposal of the legislation guidelines setting up the National ITS Architecture and supporting the strategy for development of ITS in Poland;
  II. Guidelines for designing of specific National ITS Architecture elements;
  III. Justification to selection of particular technological solutions (in case of non-standard solutions).
Stage I

1. Analysis of the ITS systems currently used in Poland and Europe, Identification of specific groups of ITS users, determining their expectations, glossary of terms

2. Analysis and assessment of possible for implementation technological solutions, systems, equipment, products, and services

3. Analysis and assessment of the binding legal, financial, economic and social conditions

4. Comparison of the implementation strategies for ITS realized in Europe and the world, Identification of patterns appropriate for application in Poland

5. SWOT analysis concerning the development possibilities of the market of ITS with EIA

6. Stakeholder consultations
Conclusions

- Push for ITS Development Strategy
- Develop local ITS Architecture
- Promote open standards
- Support regional ITS developments
- Implement ITS training programs for public administration
- Cooperate with academic institutions
- Secure founding
- Encounter indirect benefits of ITS
ITS Developments in Poland - ITS Architecture through the Business Perspective

THANK YOU FOR YOUR ATTENTION

Marek Litwin
ITS Polska
mlitwin@itspolska.pl, mobile +48 509-792-729

MULTIMODAL ITS
Smart transport solutions:
from Policy Framework to Deployment Strategies
12 May 2010, Vilnius
# Intelligent Transport Maturity Model

## Level 1: Single mode

**Governance**
- Strategic planning
- Performance management
- Demand management

**Transport network optimization**
- Data collection, integration and analysis
- Network operational responsiveness
- Incident management

**Integrated transport services**
- Customer management
- Payment systems
- Traveler information

## Level 2: Coordinated modes

**Governance**
- Single mode planning with little coordination between various transport providers.

**Transport network optimization**

**Integrated transport services**
- Minimal; mostly cash collection. Limited and static traveler information.

## Level 3: Partially integrated

**Governance**
- A transport vision is articulated. Single overarching regulator but with limited planning and management powers.

**Transport network optimization**
- Data collection for major routes. Periodic data collection and analysis. Network and incident response mostly by individual modes.

**Integrated transport services**
- Customer accounts by mode. Mostly cash collection. Static trip planning with limited realtime alerts.

## Level 4: Multimodal integration

**Governance**
- Integrated multimodal transport authority. Coordinated demand management measures.

**Transport network optimization**
- Realtime collection of multiple data sources with high-level analysis. Automated network and incident response systems.

**Integrated transport services**
- Electronic payments. Multichannel trip planning and account-based alert subscription.

## Level 5: Multimodal optimized

**Governance**
- Integrated corridor-based multimodal planning. Dynamic demand management schemes.

**Transport network optimization**
- Realtime multimodal coverage for most corridors. Detailed realtime data analysis. Automated preplanned multimodal incident response.

**Integrated transport services**
- Multimodal integrated transport card. On journey, multimodal information services.

**Source:** IBM Institute for Business Value analysis.

**Integrated regional multimodal planning. Continuous system-wide performance measures with dynamic pricing.**
<table>
<thead>
<tr>
<th>Governance</th>
<th>Level 1</th>
<th>Single mode</th>
<th>Level 2</th>
<th>Coordinated modes</th>
<th>Level 3</th>
<th>Partially integrated</th>
<th>Level 4</th>
<th>Multimodal integration</th>
<th>Level 5</th>
<th>Multimodal optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic planning</td>
<td>Functional area planning (single mode)</td>
<td>Project-based planning (single mode)</td>
<td>Integrated agency-wide planning (single mode)</td>
<td>Integrated corridor-based multimodal planning</td>
<td>Integrated regional multimodal planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance measurement</td>
<td>Minimal</td>
<td>Defined metrics by mode</td>
<td>Limited integration across organizational silos</td>
<td>Shared multimodal system-wide metrics</td>
<td>Continuous system-wide performance measurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand management</td>
<td>Individual static measures</td>
<td>Individual measures, with long-term variability</td>
<td>Coordinated measures, with short-term variability</td>
<td>Dynamic pricing</td>
<td>Multimodal dynamic pricing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection</td>
<td>Limited or manual input</td>
<td>Near real-time for major routes</td>
<td>Real-time for major routes using multiple inputs</td>
<td>Real-time coverage for major corridors, all significant modes</td>
<td>System-wide real-time data collection across all modes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data integration</td>
<td>Limited with ad hoc analysis</td>
<td>Networked but periodic analysis</td>
<td>Common user interface with high-level analysis</td>
<td>Two-way system integration and analysis in real-time</td>
<td>Extended integration with multimodal analysis in real-time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network operations response</td>
<td>Ad hoc, single mode</td>
<td>Centralized single mode</td>
<td>Automated, single mode</td>
<td>Automated, multimodal</td>
<td>Multimodal, real-time optimized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incident management</td>
<td>Manual detection, response and recovery</td>
<td>Manual detection, coordinated response, manual recovery</td>
<td>Automated detection, coordinated response, and manual recovery</td>
<td>Automated pre-planned multimodal recovery plans</td>
<td>Dynamic multimodal recovery plans based on real-time data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer relationships</td>
<td>Minimal capability, no customer accounts</td>
<td>Customer accounts managed separately for each system/mode</td>
<td>Multichannel account interaction by mode</td>
<td>Unified customer account across multiple modes</td>
<td>Integrated multimodal incentives to optimize multimodal use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payment systems</td>
<td>Manual cash collection</td>
<td>Automatic cash machines</td>
<td>Electronic payments</td>
<td>Multimodal integrated fare card</td>
<td>Multimodal, multi-channel (fare cards, cell phones, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traveler information</td>
<td>Static information</td>
<td>Static trip planning with limited real-time alerts</td>
<td>Multichannel trip planning and account-based alert subscription</td>
<td>Location-based, on-journey multimodal information</td>
<td>Location-based, multimodal proactive rerouting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: IBM Institute for Business Value analysis.
City of Warsaw

- 1995: City Council Resolution “Transportation Policy” with prioritized Traffic Management System
- 1997: Feasibility Study for Centralized Traffic Management System CEZAR
- 2007: City Council Resolution for commencement of implementation and a multi year financial program for Traffic Management System development program
- 1998-2001: public procurement preparation activities
- 2002 - work ceased
- 2008: Stage I complete
Warsaw TM System summary

- 37 intersections in two corridors plus one tunnel
- Tramway signal priority in one corridor and tunnel monitoring
- Video monitoring coverage
- TT improvements and minimized number of stops
- Decreased emission
- Total costs: 37,6M PLN
- UE funding: 14,2M PLN