MÁV ERTMS
Strategy and Rollout
ERTMS Rollout

European Rationale

- European Transport Policy demands redefinition of current transport concepts
- European Rail Deregulation increases need for railway operators to dramatically improve their competitiveness
- Opportunity for railway operators to play a new and pivotal role within the transport value chain
- Thus, new standards of excellence need to be reached by rail operators for main drivers of competitiveness: Time; Cost; Quality of Service
- However: a standardized Trans European Rail Backbone is prerequisite to meet these objectives
- ERTMS (GSM-R and ETCS Level 2) provide the key elements of that standardized Backbone
ERTMS Rollout

MÁV Rationale

- Legacy from past 4 decades (basically no investment in new Information and Communication Technologies) need to be compensated very fast

- Hungary joining the European Union increased considerably the need to dramatically improve on competitiveness for International Freight and Passenger (Tourism!) Traffic and to equally improve on Commuter Traffic capacities and resources to offset the negative impact of individual road traffic

- Despite early ISPA Community Support current financial shortcomings restrict heavily the development of ICT in the rail sector in Hungary

- Hence, MÁV has to have the financial support of the Community/Commission

- However: experience gained in international ICT cooperation makes MÁV confident to master the introduction of ERTMS in their rail network
ERTMS Rollout

MÁV ERTMS Strategy & Deployment Plans

- Current European ERTMS Deployment (GSM-R, ETCS Level 2) and the deployment by its neighbors and major business partners force MÁV to leapfrog intermediate technologies and to move straight forward to deploy GSM-R and ETCS L2 at a considerably accelerated pace.

- Although being successful, MÁV need to convert ETCS Level 1 projects to ETCS Level 2.

- Pilot Lines for GSM-R and ETCS L2 will concentrate primarily on the assessment of the applicability of current national railway operation procedures than to technology tests.

- Define implementation priorities and reclassify railway network.

- Assess financial resources and funds required for the accelerated introduction of ERTMS.
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MÁV Network Reassessment

- Reassess Rail Network, currently totaling 7727 km
  - Primary (approx. 37% of the total network)
    - encompassing International Rail Corridors, National Primaries, Commuter lines for densely populated suburban areas and Primary Shunt Yards
  - Secondary (approx. 22% of the total network)
    - encompassing railway lines of national interest, other commuter lines and other shunt yards
  - Tertiary (approx. 41% of the network)
    - encompassing the remaining rail network
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GSM-R Deployment - Primary

1. International Rail Corridors crossing the territory, namely
   - Corridor IV
   - Corridor V a, V b; V c (South East Europe)
   - Corridor X b (South East Europe)

2. Primary National Lines

3. Commuter Lines not covered by Corridors and National Primary

4. Major Shunt Yards

Totaling 2709 km and 5 shunt yards
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GSM-R Deployment - Secondary

1. Secondary National Lines
2. Commuter Lines not covered by Primary
3. Complementary Shunt Yards

Totaling 1739 km
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ETCS Level 2 Deployment - Pilot

- Pilot to be installed in International Rail Corridor IV (or on a suburban line) on the MÁV GSM-R Pilot; section Budapest West – Szolnok (approx. 100 km) with the objective to NOT assess the technology, but to concentrate on the assessment of the applicability of current railway operational (signaling) procedures and operational processes for ETCS L2. This will be greatly facilitated by the experience gained from the ISPA funded transnational ETCS L1 pilot with the Austrian Railways ÖBB.

- Pilot to encompass commuter traffic from Budapest West to Szolnok in a rather densely populated suburban area and thus to include dynamic track change on the line.
ETCS L2 Deployment – Primary and Major Commuter

- Deployment will be limited to Primary Network and high traffic Commuter Lines to attract new customer potentials in densely populated suburban areas within a perimeter of approx 60/100 km around Budapest.

- From the results of the Swiss Olten – Luzern ETCS L2 pilot a major improvement on throughput capacity and quality of service of commuter traffic is expected and shall be verified through the MÁV pilot.
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ERTMS Migration Strategy (Survival Strategy)

- For GSM-R dual mode operation required for a limited period of time (very few dual mode cab radio terminals)

- Conversion of ETCS L1 projects to L2 and the deployment of ETCS L2 in the Primary Network necessitate the implementation of an interim [survival] signaling technology on the pilot line which was originally planned to be equipped with ETCS L1.
IV. Trans-European Freight Lines

Hungarian State Railway Co. Ltd.
Infrastructure Business Unit

Brussels
January 24th, 2006

Dr. László Mosóczi
Chief Director
**Time schedule GSM-R Pilot**

**Hungarian Railway (MÁV)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 2006</td>
<td>Creation project documentation for planning decisions</td>
</tr>
<tr>
<td>Jan. 2007</td>
<td>Creation the project documentation for building permit</td>
</tr>
<tr>
<td>Aug. 2006</td>
<td>Creation of the implementation project documentation</td>
</tr>
<tr>
<td>Sep. 2006</td>
<td>Implementation &amp; Acceptance Phase</td>
</tr>
<tr>
<td>Nov. 2006</td>
<td>NSS Site Operations</td>
</tr>
<tr>
<td>Dec. 2006</td>
<td>BTS Site Operations</td>
</tr>
<tr>
<td>Jan. 2007</td>
<td>NSS I&amp;C</td>
</tr>
<tr>
<td>Feb. 2007</td>
<td>BTS I&amp;C</td>
</tr>
<tr>
<td>Mar. 2007</td>
<td>NSS Integration</td>
</tr>
<tr>
<td>Apr. 2007</td>
<td>BTS Integration</td>
</tr>
<tr>
<td>May. 2007</td>
<td>End to end Acceptance</td>
</tr>
<tr>
<td>Jun. 2007</td>
<td>Launch 1 year Pilot operation</td>
</tr>
</tbody>
</table>

**Planning Phase**
- Creation project documentation for planning decisions
  - Public Law authorisation
  - Frequency Band authorisation
  - Numbering Plan
  - Approval oper. frequency
  - Technical docu MAV Standard
  - Technical docu EIRENE

**Implementation & Acceptance Phase**
- Creation of the project documentation for building permit
  - Cell planning
  - Site Acquisition
  - Site Engineering
  - Site survey

**Abbreviations:**
- NSS – Network Switching Subsystem
- BSS – Base Station Subsystem

**Project documentation**
- On site Technical Support
- GSM-R know-how transfer for Operation & 1 line support

**Hungarian State Railway Co. Ltd.**
**Infrastructure Business Unit**

**Brussels**
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**Chief Director**
ERTMS Rollout

GSM-R & ETCS L2 Deployment

GSM-R
- GSM-R Pilot deployment
- MÁV GSM-R pilot operation
- GSM-R roll out, primary network
- First section commercial operational
- First commuter section operational

ETCS L2
- ETCS L2 Pilot
- MÁV ETCS L2 Pilot operation
- ETCS L2 roll out, primary network
- First commercial section operational
- First commuter section operational
Our results

To the Austrian border:

TODAY

ALTRAC - European Train Control System (ETCS) of Alcatel:

ETCS Level 1, UNISIG SRS Class 1 Version 2.2.2

Trackside Equipment for 155 km Influence Points with LEU and Balises (appr. 600)

Onboard Equipment for 17 Locomotives (type V63) Interoperable with Hungarian Train Control System EVM (STM)

Hungarian State Railway Co. Ltd. Infrastructure Business Unit
Brussels
January 24th, 2006

Dr. László Mosóczi
Chief Director
To the Slovenian border:

Corridor V
Murska Sobota
Hodos Zalalövö
Koper, Triest
Zagreb
Budapest
Croatia
Hungary
Austria
Slovenia

Today

ALTRAC - European Train Control System (ETCS) of Alcatel:

ETCS Level 1, UNISIG SRS Class 1 Version 2.0.0
Trackside Equipment for 26 km Influence Points with LEU and Balises (appr. 180)
Onboard Equipment for 6 Locomotives (Type M41)
Interoperable with Hungarian Train Control System EVM (STM)

Our results

Hungarian State Railway Co. Ltd.
Infrastructure Business Unit
Brussels
January 24th, 2006

Dr. László Mosóczi
Chief Director
Thank you for your attention!