Egis, a global approach to infrastructure development

**Engineering**
- Project Management
- Engineering Procurement
- Construction Project Management
- Works Supervision

**Consulting & Design**
- Assistance to Owner
- Project Management Consulting, Programming
- Architecture, Urban Planning & Landscaping
- Expertise, Audits, Certifications

**Project Development & Turnkey Solutions**
- PPP project structuring & investment
- Turnkey delivery of ITS/ Tolling systems

**Operation & Road Mobility Services**
- Road operation & maintenance
- Airport Operation
- Electronic road charging solutions
- Road mobility services
Egis operating companies

- **Dublin Tunnel**, **Northlink**, **Midlink** & **Southlink**, ITS Road Services, Egis Lagan Services
- **UK**: M25 London orbital, Transpax
- **France**: A63, A28 & A88 toll roads
- **Poland**: A2 & A4 toll roads
- **India**: Delhi-Gurgaon, Lucknow-Sitapur
- **Korea**: Daejeon Riverside Expressway
- **Philippines**: Easytrip Services, North Luzon Expressway, Subic-Clark Tarlac
- **Hungary**: M6 motorway
- **Turkey**: Istanbul Eurasia tunnel
- **Croatia**: Zagreb-Macelj motorway
- **Cyprus airports**: Cyprus Ring Road
- **Cyprus airports**: Athens City Link ORT road
- **Australia**: M2 Sydney
- **Australia**: Melbourne City Link ORT road
- **Canada**: Golden Ears Bridge ORT, Port Mann Bridge Free-Flow Tolling

**Countries and Regions:**
- Germany: A8 (first A-Model)
- Austria: A5 (first PPP road)
- Portugal: A24 Interior Norte
- Hungary: M6 motorway
- Germany: A8 (first A-Model)
- Austria: A5 (first PPP road)
- Greece: Athens Ring Road
- Croatia: Zagreb-Macelj motorway
- Cyprus airports
- Cyprus airports
- Australia: M2 Sydney
- Canada: Golden Ears Bridge ORT, Port Mann Bridge Free-Flow Tolling
The European context

EC Directive 2004/52/EC on interoperable road toll systems across Europe including the EETS (European Electronic Toll Service)

2009: EETS decision: all member states to offer interoperability
   • For HGVs: by October 2012
   • For light vehicles: 2014

2013: Mostly intra-national interoperability
The “One approach”

“One account – One bill – One OBU”

Prerequisites

• Technical interoperability (systems)
• Functional interoperability (procedures)
• Commercial interoperability (contracts between players)
Technical features

Varied technologies
• Varied protocols
• Hybrid OBUs (satellite & mobile, DSRC & satellite)

Communications & interfaces
• DSRC OBU ↔ Roadside equipment
• Satellite-based OBU ↔ Computing center

Protocols adopted in ETC schemes in Europe

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Light vehicles</th>
<th>Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite positioning</td>
<td>Not used</td>
<td>X</td>
</tr>
<tr>
<td>5,8 GHz microwave (DSRC tags)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mobile communications GSM/GPRS</td>
<td>Not used</td>
<td>X</td>
</tr>
<tr>
<td>Video tolling</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>NFC / RFID</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Procedures

Considering varied operational contexts

- ETC lanes / Non stop lanes / Multilane free-flow
- Vehicle classification, Euro-class
- Control and enforcement methods
- Prepaid / postpaid commercial schemes

Organization of data exchanges

- Between toll operators
- Between toll chargers and ETC tag issuers
Commercial agreements

Set of business rules to be established

- By a central regulating authority (eg. Ireland)
- Or as agreement between toll players (eg. toll chargers in France & Greece)

Commercial agreements include

- Performance levels to be achieved
- Level of fees (eg. percentage on gross revenue) Liabilities in respect of toll amounts payments
Case studies

Hub Network
Ireland: central clearing-house (Information Exchange Agent IEA)

Peer-to-Peer Network
France (meshed concession companies network): TIS
Ireland (IEA)

Centralized clearing-house system

IEA Service Agreement (outsourced System Supply and Operations through a single Service Contract)

• Exchange & processing of interoperable data (ETC tag and charging information) as a unique agent

• Revenue settlement statements between operators Provision of a one-stop helpdesk to operators
Irish IEA - Functional aspects

From COs to IEA
- Black / Grey / White Lists
- Charging and Enforcement Information

Information Exchange Agent

From IEA to COs
- Consolidated Black / Grey / White Lists
- Consolidated and Individual Charging and Enforcement Information
- Monthly Settlement Statements

Compatible Operator 1

Compatible Operator 2

Compatible Operator 3

Information flow

Settlement Statements

€
Ireland (IEA)

- Centralized clearing-house system
- Provided by the National Road Authority to toll road operators
- Multiple parties agreement
  - National Road Authority, IEA, all Irish Compatible Operators, independent tag service providers
- Contractual obligations set in concession contracts
IEA Experience

Integration: 15 Road operators integrated until now

Continuous System Integration: 17 System Variations

2005 2006 2007 2008 2009 2010 2011 2012
Conclusions

Technologies should not act as a brake. Centralized clearing house model has proven effectiveness Key success factors:

- Interoperability platform shall enable the timely exchange of information
- Simple architectures
- cost-efficient operations & seamless integration of new players
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