Right on Track towards a safe and interoperable Europe

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1. BELGIUM AT THE HEART OF EUROPE – INFRABEL IN A NUTSHELL
1.1 Infrabel: Belgian rail infrastructure manager with two public service missions

- Build, renew and manage rail infrastructure
- Ensure smooth, reliable and safe railway traffic

- **3,595 km** railway lines
- **1,848** level crossings
- **1 Traffic Control and 177 signalling boxes**
- **85%** of our network is electrified
- **12,457** employees on 1/7/2014
- **10,466** signals
- **12,609** civil engineering works
- **4,450** train paths each day
1.2 We serve two market segments

**Train services ~ public service contract**
- At the service of society
- Close cooperation with the historical operator only

**Commercial train services**
- Open market
- Non-discrimination between different operators

**Domestic passenger operations**

**Freight and international passenger operations**
1.3 Managing competitive international rail traffic for both passenger and freight simultaneously

Freight traffic in Belgium increasingly runs on international routes (rail freight corridors)

Belgium is a hub in a rapidly expanding European high-speed passenger network

An independent and unbiased infrastructure manager in a single and competitive European railway area
1.4 Our rail network at the heart of the Trans-European Network for Transport

Infrabel is on 3 out of 9 multimodal TEN-T “core network corridors”

- North Sea Mediterranean
- Rhine Alpine
- North Sea Baltic
1.5 Our organization structure – a fully fledged rail infrastructure manager

- **Traffic Management & Services**
  - Network planning, incl. freight/TEN-T corridors
  - Capacity management
  - Timetabling
  - Charging
  - Traffic management (incl. TAF/TAP)
  - Safety/interoperability & punctuality
  - Account management/customer relations

- **Build**
  - Infrastructure design
  - Program management (investment and financial planning)
  - Build new infrastructure
  - Upgrade existing infrastructure
  - Deploy ERTMS/ETCS

- **Asset Management**
  - Life cycle management
  - Supply chain management
  - Maintenance of tracks, energy and signalling systems

- **Finance & Business Administration**

- **HR & Organization**

- **Corporate & Public Affairs**

- **Information & Communication Technology**

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1.6 Infrabel’s strategy: focus on 5 priorities

1. SAFETY
2. PUNCTUALITY
3. CAPACITY
4. FINANCIALLY SOUND COMPANY
5. IN TUNE WITH SOCIETY
2. THE NEED FOR A SAFE EUROPE – THE BENEFIT OF AN INTEROPERABLE EUROPE
2.1 The challenge of interoperability in Europe

Voltage: 5 different systems

Track gauge: 4 different systems

Signalling: > 26 (!) different systems
2.2 Interoperability: 1 unique European railway system, instead of over 26 national ones

PARLEZ-VOUS ERTMS?

NO, DO YOU?
2.3 ERTMS: main components

European Rail Traffic Management System
(EERTMS)

European Train Control System
(ETCS)

Global System for Mobile Communications – Railway
(GSM-R)
## 2.4 ETCS: a requirement for a safe and interoperable network

<table>
<thead>
<tr>
<th>ATP</th>
<th>ETCS</th>
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<tbody>
<tr>
<td><strong>Automatic Train Protection</strong></td>
<td><strong>European Train Control System</strong></td>
</tr>
<tr>
<td>National systems (TBL1+, ATB, BACC, ASFA, …)</td>
<td>One single European system</td>
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**ATP**

Working as an **automatic emergency brake**, i.e. (for TBL1+):

- When a train passes a red signal
- When a train drives at more than 40km/h at a distance of 300 m before a red signal (= control of breaking curve)

**ETCS**

Complete and permanent control of speed + automatic emergency break, i.e.:

- When a train passes a red signal or does not respect its braking curve
- When a train does not respect the maximum allowed speed
3. BELGIUM: WHERE ETCS IS A PRIORITY
3.1 Timeline of ETCS deployment

Overview of ETCS migration strategy – key milestones

**Current situation:**
Further deployment of TBL1+ and ETCS level 1

**TBL1+ program completed**

**Entire network equipped with ETCS**

**Network accessible for ETCS-equipped trains only**

**Entire network equipped with ETCS level 2**

**Goal achieved:**
all railway traffic ETCS protected

- **2014:** TBL1+ program completed
- **2015:** Entire network equipped with ETCS
- **2022:** Network accessible for ETCS-equipped trains only
- **2025:** Entire network equipped with ETCS level 2
- **2030:** TO BE DECIDED
- **2035:** Entire network equipped with ETCS level 2

**TBL 1+, a first step to ETCS**
- A system which controls the speed of the train 300 m ahead of the signal.
- Speed > 40km/h, then the train’s emergency brake is applied.
- The train passes the sign, then it will be brought to a complete stop.
3.2 Rollout ETCS in Belgium: status by end of 2015
3.3 Rollout ETCS in Belgium: future projects
3.4 ETCS is pivotal to realizing Infrabel’s strategy

ETCS underpins all 5 strategic objectives

1. SAFETY
2. PUNCTUALITY
3. CAPACITY
4. BREAK EVEN COMPANY
5. IN LINE WITH SOCIETY
4. INFRABEL AND SUSTAINABILITY
4.1 Sustainability initiatives: key objectives

- Optimise energy efficiency and CO$_2$ emissions reduction
- Increase the share of renewable energy
- Improve energy efficiency of buildings and equipment
- Ecological management of railway banks
4.2 Example: solar rail tunnel north of Antwerp

- 16,000 solar panels
- Capacity of 4MW (at peak)
- Annual production of 3.3GWh = the average annual electricity consumption of about 950 families
- 4,000 trains per year running on green energy
- **Annual** reduction of 2,400 tonnes of CO$_2$ emissions
- Up to 47.3 million kg of CO$_2$ emissions over a period of 20 years
4.3 Example: trains “sailing” along high-speed line Leuven - Liège

Park of **20 wind turbines being build along the high-speed line**
- In cooperation with several local authorities and with Electrabel
- Possibility to connect turbines to high voltage network via existing electrical supply equipment of the rail network

- Annual capacity of 36GWh, or **2.5% of all traction energy**
- **Reduction of 60,000 tons of CO₂ emissions**
4.4 Example: biker’s highways along railway lines Brussels area