WP6 : Evaluation and decision support tools

NetIRail-INFRA Final Conference, Ljubljana, Slovenia

UIC and WP6 partners
WP6: EVALUATION & DECISION SUPPORT TOOLS

WP Leader

The University Of Sheffield.

UNIVERSITY OF LEEDS

Slovenske železnice

Arc Trans
WP6 : EVALUATION & DECISION SUPPORT TOOLS

1. OVERVIEW OF THE WP6

2. METHODOLOGY FOR THE INCORPORATION OF THE COST BENEFIT AND SOCIAL IMPACT ANALYSIS RESULTS INTO THE GIS TOOL

3. FEATURES OF THE WEB APPLICATION

4. PRESENTATION OF THE WEB APPLICATION

5. DEMONSTRATION OF THE WEB APPLICATION

6. QUESTIONS
1. **Overview of the WP6**

2. **Methodology for the incorporation of the Cost Benefit and Social Impact Analysis results into the GIS tool**

3. **Features of the Web Application**

4. **Presentation of the Web Application**

5. **Demonstration of the Web Application**

6. **Questions**
WP6 Problematic:
Create an evaluation and decision support tool (web application) for the innovations proposed within the NeTIRail project.

How did we do it?
HOW DID WE DO IT?

- **Engineer:** Airy MAGNIEN (UIC)
- **Social Scientist:** Elisa Orrù (ALU)
- **Railway specialist:** Miklavzín Vlasta (SZ)
- **Professional development:**
  - Lucian Emanuel ANGHEL (ADS)
  - Olivier BOUDOU (UIC)
- **Geomatician:** Kardelen KARATAS (UIC)
How did we do it?

- Setting a **groundwork for our work**
- **Actor**: Airy, Lucian, Olivier
We undertook two parallel works:

- **Research of Methodology for the incorporation** of the Cost Benefit and Social Impact Analysis results into the GIS tool
  - **Input:** other WP
  - **Actor:** Airy, Elisa, Vlasta
  - **Deliverables:** D6.5 D6.6 D6.7

- **Imagine and specify a solution** that meets business demand
  - **Actor:** Lucian, Kardelen, Olivier
  - **Available:** D6.1 D6.2, D6.3
• **Refine the specification**
  • **Actor**: Kardelen, Olivier
  • **Deliverable**: D6.4

• **Implement** the development:
  • **Actor**: Kardelen, Lucian, Olivier
  • **Deliverable**: Application
RESULT OF WP6

METHODOLOGY FOR THE INCORPORATION OF THE COST BENEFIT AND SOCIAL IMPACT ANALYSIS

A GIS WEB APPLICATION

REST SERVICES (SERVICE AVAILABLE FOR OTHER APPLICATIONS)
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Cost impacts

We care about **average maintenance costs:**

**Estimated**
- we care about **orders of magnitude**

**Calculated**
- Using a Log-Log functional form, with
  - **Variables**: selected line parameters provided by RINF or by the user, and
  - **Coefficients**: derived from various public sources
- **Function can be re-written** on the fly by advanced users

**Stored**
- by the web application

**Compared**
- with the same costs, **reduced by NeTIRail innovations**
Social impact analysis, generalization

Six relevant criteria

- Personal experience: Crowding, Comfort, Safety
- Service quality: Punctuality, Frequency, Journey time

Impact of innovation(s)

- Are not monetarized
- Cannot be generalized basing on questionnaires
- For each criterion, estimated benefits are input by users
- Results are compounded and displayed on selected lines by color code
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FEATURES OF THE WEB APPLICATION

1 GIS-REST APPLICATION
- REST Services: access tools to filter GIS data for each layer
- REST Services: access tools to serialize layers
- Admin User: manage layers
- Admin User: manage GIS Data

2 Parameter and formula WEB-APPLICATION

3 GIS WEB APPLICATION
FEATURES OF THE WEB APPLICATION

1 GIS-REST APPLICATION

2 Parameter and formula WEB-APPLICATION

• Admin User + REST Services: manage and access infrastructure data
• Admin User + REST Services: manage and access NEW PARAMETER
• Admin User + REST Services: manage, access and use FORMULA based on value of parameter (Infrastructure data Parameter and New Parameter)

• 3 GIS WEB APPLICATION
FEATURES OF THE WEB APPLICATION

1 GIS-REST APPLICATION

2 Parameter and formula WEB-APPLICATION

3 GIS WEB APPLICATION

• Final user: **visualize a map of the railway network**
• Final user: **log in, navigate** on the map
• Final user: **select and save a set of data of SECTION OF LINE**
• Final user: **add value for NEW PARAMETER for SECTION OF LINE**
• Final user: **view information (parameter value / result formula)** on a set of SECTION OF LINE
WP6: Evaluation & Decision Support Tools

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WEB APPLICATION: REGULAR USER & ADMINISTRATOR INTERFACES

Regular User Interface

Administrator Interface
WEB APPLICATION: NAVIGATE GIS-BASED WEB APPLICATION
WEB APPLICATION: NAVIGATE GIS-BASED WEB APPLICATION
WEB APPLICATION: NAVIGATE GIS-BASED WEB APPLICATION
WEB APPLICATION: NAVIGATE GIS-BASED WEB APPLICATION
WEB APPLICATION: NAVIGATE GIS-BASED WEB APPLICATION

Regular User Interface
WEB APPLICATION: INFRASTRUCTURE DATA IMPORT

Administrator Interface
WEB APPLICATION: INFRASTRUCTURE DATA IMPORT

Existing RINF XML files

Local files

Uploading XML file from local repository
WEB APPLICATION: INFRASTRUCTURE DATA IMPORT

RINF Infrastructure data in XML file format are available on [https://rinf.era.europa.eu/rinf](https://rinf.era.europa.eu/rinf)
WEB APPLICATION: MANAGING FORMULAS

Administrator Interface
WEB APPLICATION: MANAGING FORMULAS

Formula:

```
sum(1.2*ln(p1)+exp(p2))
```

Choice of infrastructure parameter:
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Questions

Thank you for your attention

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