Preventing railway suicide and trespass: A toolbox for evaluation and implementation of measures

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Background

- Train-person collisions (intentional / unintentional)

**Suicides = 70% of all fatalities**

**Trespassing accidents = 18%**

**TOTAL = 88% of all fatalities within the railway system**

*Figure 12: Unauthorised person fatalities and suicides on railway premises (EU-28 in 2006–2012) (14)*
Reduction of Suicides and Trespassing on the Railways: A collaborative project

www.restrail.eu
Consortium

17 partners from 12 countries

- Coordinator: UIC
- 6 UIC members (IMs, RUs)
- 4 research centres
- 3 universities
- 3 industries, SME
Objectives

To help reduce

Suicides & trespassing accidents (prevention)

Post-incident consequences (mitigation)

To provide

An analysis and identification of cost effective measures

Recommendations and guidance

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Method (Step1 – State-of-the-art)

- Literature reviews
- Collection of good practice from the railway industry
- 86 measures grouped in 38 families
Method (Step2 – Assessment)


- Separate evaluations for suicide and trespass on 14 criteria (SUPREME Project, 2007)

- Based on the total scores, some measures were selected as *recommended* or *promising*
Method (Step 3 – Draft versions and evaluation)


- min = 30
- max = 95
- n=15 acceptable
- n=11 marginally high
- n=4 marginally low
- n=2 not acceptable

General guidance (how to analyse) Specific guidance (how to implement)
General guidance

Multi-step process

1. Describing and understanding the problem
   - Problem identification (what, where)?
   - Further details (how, why?)
   - Partners & stakeholders
   - Resources

2. Analysis of target situation
   - Target location
   - Problem behaviour
   - Existing measures
   - Objectives of new measures

3. Selection of measures
   - Which measures could fit the problem?
   - Focus on families of measures
   - Consult Specific guidance

4. Implementation plan
   - Select specific measures
   - Expected effects
   - Involved organisations
   - Estimated costs
   - Funding
   - Schedule
   - Evaluation planning

5. Implementation
   - Follow implementation plan
   - Execution
   - Maintenance

6. Evaluation
   - Follow evaluation plan
   - Effects
   - Costs and problems
   - Whole process
   - Implications
   - Publication of results

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## Checklist example

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>QUESTIONS TO BE ANSWERED</th>
<th>ISSUES TO BE CONSIDERED</th>
</tr>
</thead>
</table>
| **Problem identification** | **What is the nature of the problem?** | - suicides  
- attempted suicides  
- trespassing accidents  
- trespassing behaviour |
| | **Which are the motives of trespassing?** | - trespassing with suicide intent  
- shortcut, time saving  
- graffiti / vandalism  
- theft  
- leisure, walking around / loitering |
| | **In which part(s) of the railway system does the problem occur?** | - station (which platform, which part of the platform, etc.)  
- marshalling yard  
- railway line (open line)  
- level crossing  
- bridge  
- tunnel  
- some other location |
| | **Where is the problem location?** | - preliminary identification of the location  
- location marked in a map |
| | **What are the characteristics of the surrounding areas?** | - facilities attracting pedestrians  
- schools  
- mental hospitals  
- outdoor routes  
- stadiums  
- shopping centres |
| | **What do the accident statistics tell about the problem in the area?** | - available statistics of suicides, suicide attempts  
- available statistics of fatal and non-fatal trespassing accidents  
- number of events preferably for several years  
- do the statistics cover all targeted incidents or some are excluded (e.g. incidents with minor consequences) |
Specific guidance

70 Specific measures
25 Families
3 Types

Organisational & procedural
Physical & technological
P. awareness & educational

Indexed on several keywords
Specific guidance: content

Description
Measure profile
Recommendations
Warning points
Observations
Study results
Gallery

EXAMPLE:
Lighting linked to a movement sensor
EXAMPLE:

Lighting linked to a movement sensor

It refers to technologies to influence people at risk by lighting when motion is detected in a specific perimeter. Useful to provide a warning to people who move into an area that they should not enter, or behave in a way that places them at risk. The intention of influencing the person to modify their behaviour and move to a place of safety.
### Specific guidance: content

<table>
<thead>
<tr>
<th>Description</th>
<th>Measure profile</th>
<th>Recommendations</th>
<th>Warning points</th>
<th>Observations</th>
<th>Study results</th>
<th>Gallery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of measure</strong></td>
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<td>Organisational and procedural</td>
<td>Physical and technological</td>
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<td>Public awareness and educational</td>
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<td><strong>Target problem</strong></td>
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<td>Suicide</td>
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<td>Trespass</td>
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<td><strong>Effect mechanism</strong></td>
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<td>Improve practice and processes</td>
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<td>Influence decision</td>
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<td>Deter access</td>
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<td><strong>Influence behaviour in track area</strong></td>
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<td>Reduce consequences</td>
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<td><strong>Family</strong></td>
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<td>Lighting devices to influence behaviour</td>
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<td><strong>Evaluation studies</strong></td>
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<tr>
<td>RESTRAIL</td>
<td>Other</td>
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</tbody>
</table>
Specific guidance: content

<table>
<thead>
<tr>
<th>Measure profile</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Check the laws on human integrity in your country before making the plans.</td>
</tr>
<tr>
<td><strong>Warning points</strong></td>
<td>The sensor needs to be able to react only to persons who are in its range.</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>The effect will increase when combined with a follow-up measure as surveillance or sound warnings.</td>
</tr>
<tr>
<td><strong>Study results</strong></td>
<td>May need support from staff to attend when alarms are operated.</td>
</tr>
</tbody>
</table>
**Description**

**Measure profile**

**Recommendations**

**Warning points**

- Blinding of train drivers by lights should be prevented.
- Be aware that light pollution can cause acceptance risks with neighbours and nature conservation organisations. Communicate before installing. Maybe not to be used in rural nature areas because of light pollution. For further details on how to reduce light pollution you may check: [www.sustainablefairfax.org/content/view/321/27](http://www.sustainablefairfax.org/content/view/321/27)

**Observations**

**Study results**

**Gallery**

- Impact of the spotlights for the people living in the direct environment could be an issue. For dispelling light sources there can be problems with national laws on human integrity.
- Effective only during night time.
Specific guidance: content

Observations

• It is expected that the effects are durable.
Specific guidance: content

- Anti-suicide lighting is used in The Netherlands on a broader scale. There have been positive results with a 40% reduction when used at hotspots.
- South Korean authorities report that the suicide rate has dropped with more than 70% at Mapo bridge in Seoul, where inspirational messages of hope light up as people walk by.
- In Japan, introduction of blue LED lights at 11 stations resulted in 84% decrease in the number of suicides between 2000-2010 compared to other 60 stations without blue light (Matsubayashi et al., 2012).
- The installation of blue lights on platforms, even were they to have some effect in preventing railway suicides at night, would have a much smaller impact than previously estimated (Ichikawa, Inada, & Kumeji, 2014).

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Specific guidance: content

Example from the Netherlands. Source: ProRail

**Description**

Example of the Duwamish bridge in USA (WA) equipped with blue LEDs, electronics, steel, train signaling system. The blue LED lights turn on as the trains are crossing the bridge. Source: [http://dancorson.com/duwamish-bridge](http://dancorson.com/duwamish-bridge) Copyright © Dan Corson 1989-2014.

**Measure profile**

**Recommendations**

**Warning points**

**Observations**

**Study results**

**Gallery**

Further information

- Website [www.restrail.eu](http://www.restrail.eu)
- Brochures, Newsletters, Conferences and Workshops
- Contact havarneanu@uic.org
- Registration: [http://www.restrail.eu/RESTRAIL-Final-Conference.html](http://www.restrail.eu/RESTRAIL-Final-Conference.html)