Welcome to the RESTRAIL Toolbox!
– a free online tool that helps saving lives along the railways
RESTRAIL 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

RESTRAIL Final conference, 18 September 2014, Paris
Toolbox organisation

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

Toolbox organisation

General guidance 
(how to analyse)

Specific guidance 
(how to implement)
First part: General guidance

Structures the problem analysis through a multi-step approach which helps decision-makers with the process of selecting from a wide range of measures.
General guidance

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

Multi-step process

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## Checklist example

### Problem identification

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>QUESTIONS TO BE ANSWERED</th>
<th>ISSUES TO BE CONSIDERED</th>
</tr>
</thead>
</table>
| 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) | |
Selection of measures

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Second part: Specific guidance

70 Specific measures
25 Families
3 Types

Indexed on several keywords

Organisational & procedural
Physical & technological
P. awareness & educational
These are measures related to engineering or technology such as fencing, landscaping, detection systems, lighting devices, etc.

<table>
<thead>
<tr>
<th>8. Fences at stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Intermediate fencing between tracks</td>
</tr>
<tr>
<td>8.2 Mid platform fencing</td>
</tr>
<tr>
<td>8.3 Fencing platform ends</td>
</tr>
<tr>
<td>8.4 Sliding doors at platforms</td>
</tr>
<tr>
<td>8.5 Anti-trespass grids</td>
</tr>
<tr>
<td>8.6 Symbolic deterrent fencing</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Fences outside stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1 Fencing at hotspots</td>
</tr>
<tr>
<td>9.2 Nets at bridges</td>
</tr>
<tr>
<td>9.3 Fencing off objects close to the tracks</td>
</tr>
<tr>
<td>9.4 Measures to soil clothes</td>
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<table>
<thead>
<tr>
<th>10. Landscaping</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1 Removal of vegetation to increase visibility</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>11. Detection and surveillance systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1 Intelligent CCTV combined with sound warnings</td>
</tr>
<tr>
<td>11.2 Detection systems combined with sound warnings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. Lighting devices to influence behaviour</th>
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</thead>
<tbody>
<tr>
<td>12.1 Dispelling light source</td>
</tr>
<tr>
<td>12.2 Lighting linked to a movement sensor</td>
</tr>
<tr>
<td>12.3 Tracking spotlight linked to a movement sensor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. Light to increase visibility at hotspots</th>
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</thead>
<tbody>
<tr>
<td>13.1 Increased visibility by lighting at specific identified hotspots</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. Safety and emergency devices at stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 Emergency information at stations to ensure rapid intervention</td>
</tr>
<tr>
<td>14.2 Information encouraging help seeking for people with suicide intent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15. Incident management and information platform</th>
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<tbody>
<tr>
<td>15.1 Geo-data relating to the incident location and access points</td>
</tr>
<tr>
<td>15.2 Incident information, including third party involvement</td>
</tr>
<tr>
<td>15.3 Essential response actions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16. Forward facing CCTV</th>
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<tbody>
<tr>
<td>16.1 Forward facing CCTV</td>
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</table>
### Description

**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.
## Measure profile

<table>
<thead>
<tr>
<th>Type of measure</th>
<th>Organisational and procedural Physical and technological Public awareness and educational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target problem</td>
<td>Suicide Trespass Mitigation</td>
</tr>
<tr>
<td>Effect mechanism</td>
<td>Improve practice and processes Influence decision Deter access</td>
</tr>
<tr>
<td>Family</td>
<td>Lighting devices to influence behaviour</td>
</tr>
<tr>
<td>Evaluation studies</td>
<td>RESTRAIL Other None</td>
</tr>
</tbody>
</table>

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Specific guidance: content

Description

Measure profile

**Recommendations**

• Check the laws on human integrity in your country before making the plans.

Warning points

• The sensor needs to be able to react only to persons who are in its range.

Observations

• The effect will increase when combined with a follow-up measure as surveillance or sound warnings.

Study results

• May need support from staff to attend when alarms are operated.
Specific guidance: content

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

Description

- 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.

Measure profile

- 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.

Recommendations

- 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).

Warning points

- 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).

Observations

Study results
specific guidance: content

example from the netherlands. source: prorail

description

measure profile

recommendations

warning points

observations

study results

gallery

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

copyright © dan corson 1989-2014.

example of the mapo bridge in seoul, south korea. source: http://www.pri.org/stories/2012-09-27/bridge-signs-used-south-korea-anti-suicide-efforts
Other examples: Symbolic fencing...
...VS. fencing at hotspots
Systematic development


- max = 95
- min = 30

- n=15 acceptable
- n=11 marginally high
- n=4 marginally low
- n=2 not acceptable
Toolbox format

Paper version (260 pages)
Practical guide (44 pages)
Website www.restrail.eu/toolbox

Better perspective
Better functionality
### Analyse the problem

#### Action plan for

<table>
<thead>
<tr>
<th>Prevention of incidents</th>
<th>Mitigation of consequences</th>
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</table>

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<tr>
<th>Type</th>
<th>Target problem</th>
<th>Effect mechanism</th>
<th>Study results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational &amp; procedural</td>
<td>Suicide</td>
<td>Improve practice &amp; processes</td>
<td>No studies</td>
</tr>
<tr>
<td>Physical &amp; technological</td>
<td>Trespass</td>
<td>Influence decision</td>
<td>Yes (general)</td>
</tr>
<tr>
<td>Public awareness &amp; educational</td>
<td>Suicide &amp; Trespass</td>
<td>Deter access</td>
<td>Yes (RESTRAIL)</td>
</tr>
<tr>
<td></td>
<td>Mitigation</td>
<td>Influence behaviour</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce consequences</td>
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**The RESTRAIL Toolbox** is a problem-solving guide for implementation of measures to prevent railway suicides and trespassing accidents and to mitigate the post incident consequences. It is the main output of the RESTRAIL research project and it aims to be a helpful, intuitive and user-friendly tool. It summarises practical information collected and produced during the project (synthesis, guidelines, best practice, lessons learned and empirical evidence for effectiveness). The content also (...)
Conclusions: main features (1)

Systematic development
• Periodical evaluation (Internal & external feedback)

Double orientation
• Practical & Scientific (framework for collecting and structuring information)

Content (two parts)
• User-friendly & Complex

Two formats
• Paper-based & Web-based (www.restrail.eu/toolbox)
Conclusions: main features (2)

Keyword classification system
• Simple & advanced search

Easy referencing + printing
• Scientific bibliography & Glossary

Mobile ready
• Adjusts to any Tablet or Smartphone

Feedback submission system
• Built in Contact form
Conclusions: way forward

Imbalanced content
- Little information or weak evidence (for some of the measures)

Combination of measures
- No clear guidance

Galleries
- More examples

Design
- More ergonomic, new features...
Thank you!
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