SAFER-LC

SAFER LEVEL CROSSING BY INTEGRATING AND OPTIMIZING ROAD-RAIL INFRASTRUCTURE MANAGEMENT AND DESIGN

SAFER-LC Toolbox: A decision-support tool to increase safety at level crossings

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Research Advisor – UIC Security Division

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723205

Objectives

Improve safety and minimize risks at and around LCs

Focus on **technical solutions** (early detection, communication between vechicles)

Focus on **human processes** (adapt the infrastructure to end-users, human centred measures, VRUs)

Develop a toolbox which will integrate all the project results and solutions


TOOLBOX ?

Support in selecting the most appropriate measures

Detailed guidance on measure implementation

Framework for structuring documented resources

Systematic process

Keyword index

Tips & examples

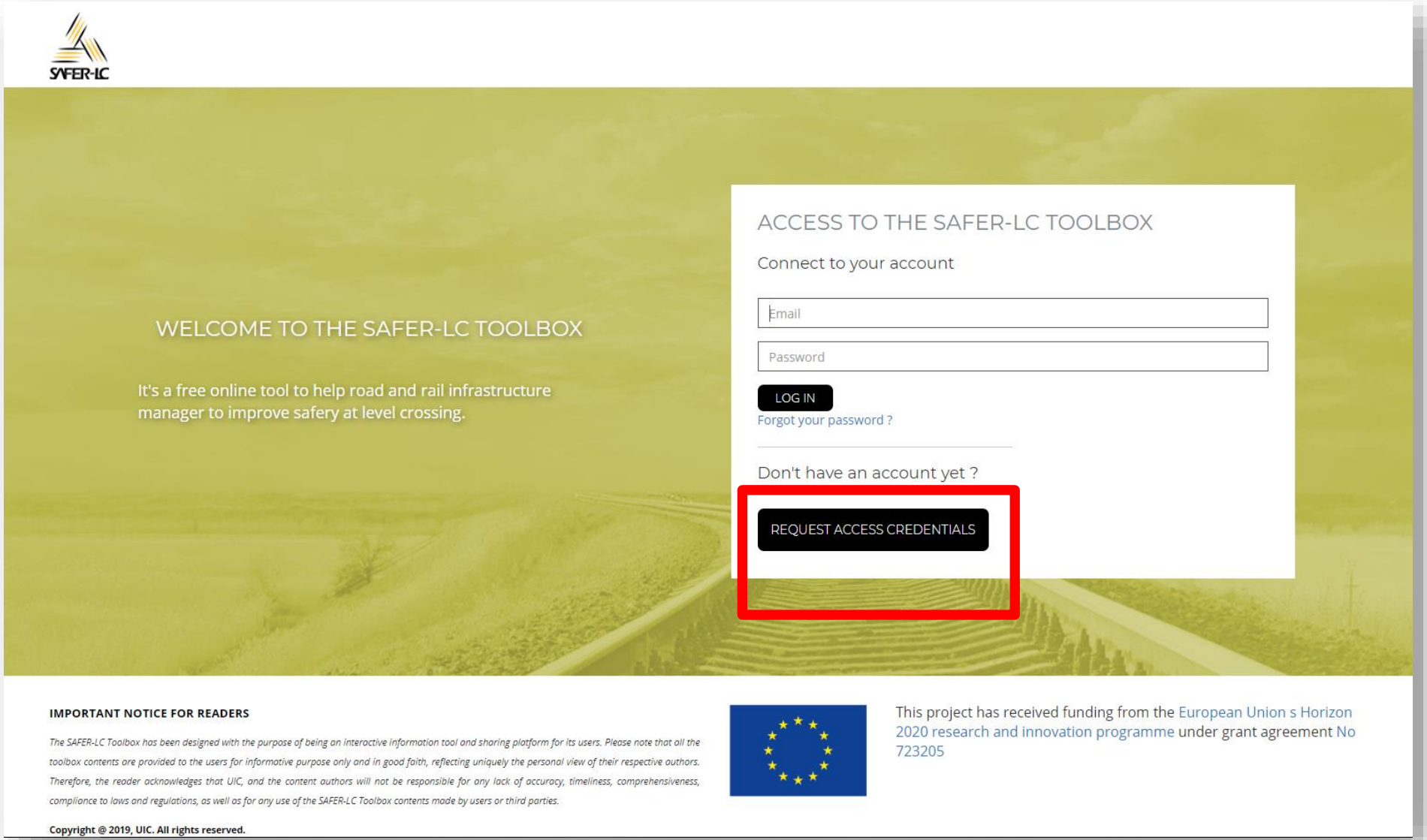
Evaluation studies

Attached resources

User feedback

Before we start…

- Toolbox development is still work in progress
- Workshop objectives:
    1. Get new expert input, ideas to improve the existing content
    2. Get expert feedback about the user interface
- Short tutorial on how to use the toolbox
- Evaluation exercice
- Evaluation and feedback collection (Inputs and feedback will be used to improve the tool)


SAFER-LC
WELCOME TO THE SAFER-LC TOOLBOX
It's a free online tool to help road and rail infrastructure manager to improve safery at level crossing.
ACCESS TO THE SAFER-LC TOOLBOX
Connect to your account
Email
Password
LOG IN
Forgot your password ?
Don't have an account yet ?
REQUEST ACCESS CREDENTIALS
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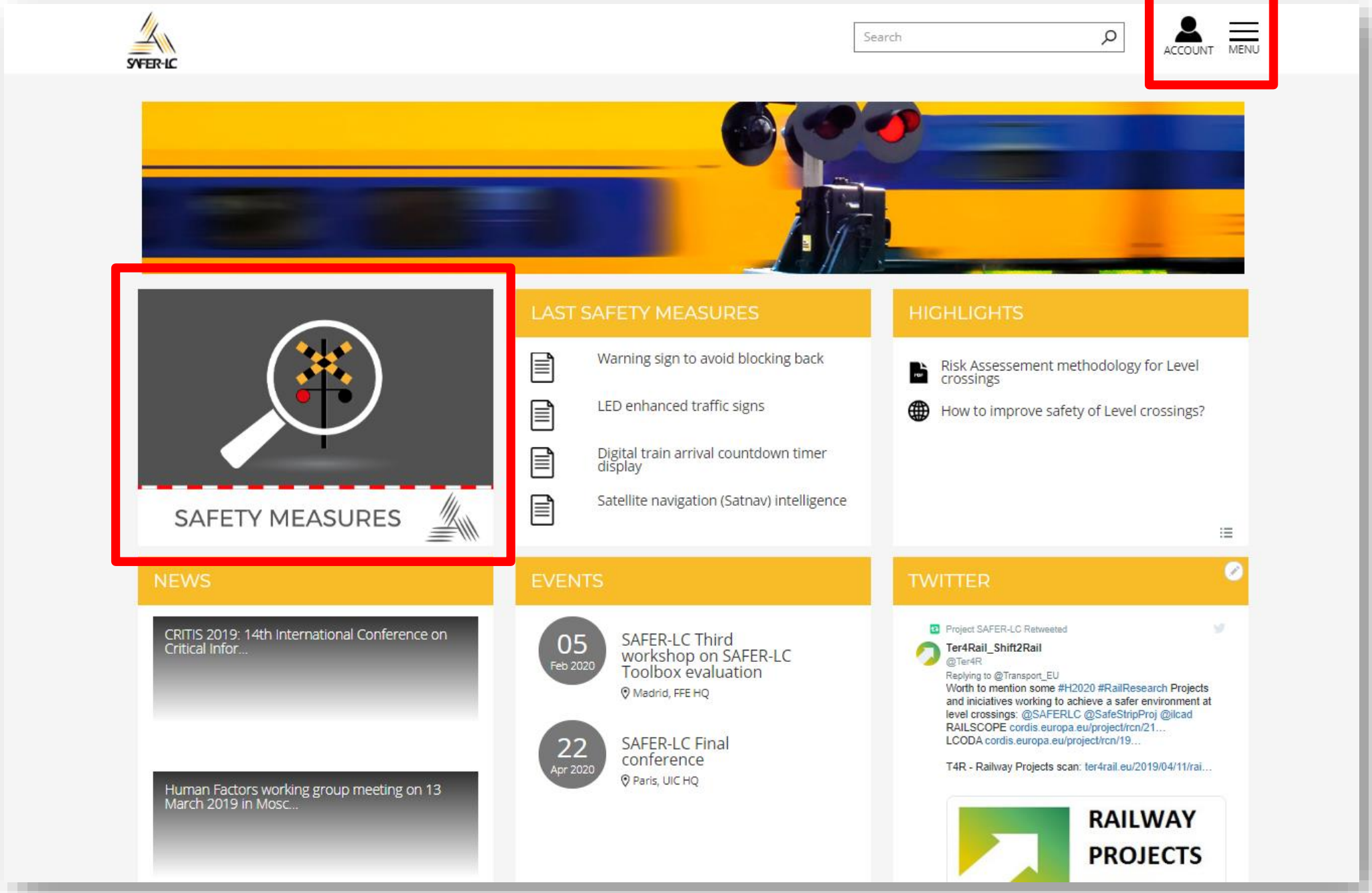
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Risk Assessement methodology for Level crossings
How to improve safety of Level crossings?
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05 Feb 2020
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Madrid, FFE HQ
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Project SAFER-LC Retweeted
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@Ter4R
Replying to @Transport_EU
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RAILSCOPE cordis.europa.eu/project/rcn/21...
LCODA cordis.europa.eu/project/rcn/19...
T4R - Railway Projects scan: ter4rail.eu/2019/04/11/rai...
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TER4RAIL RAILWAY PROJECTS SCAN

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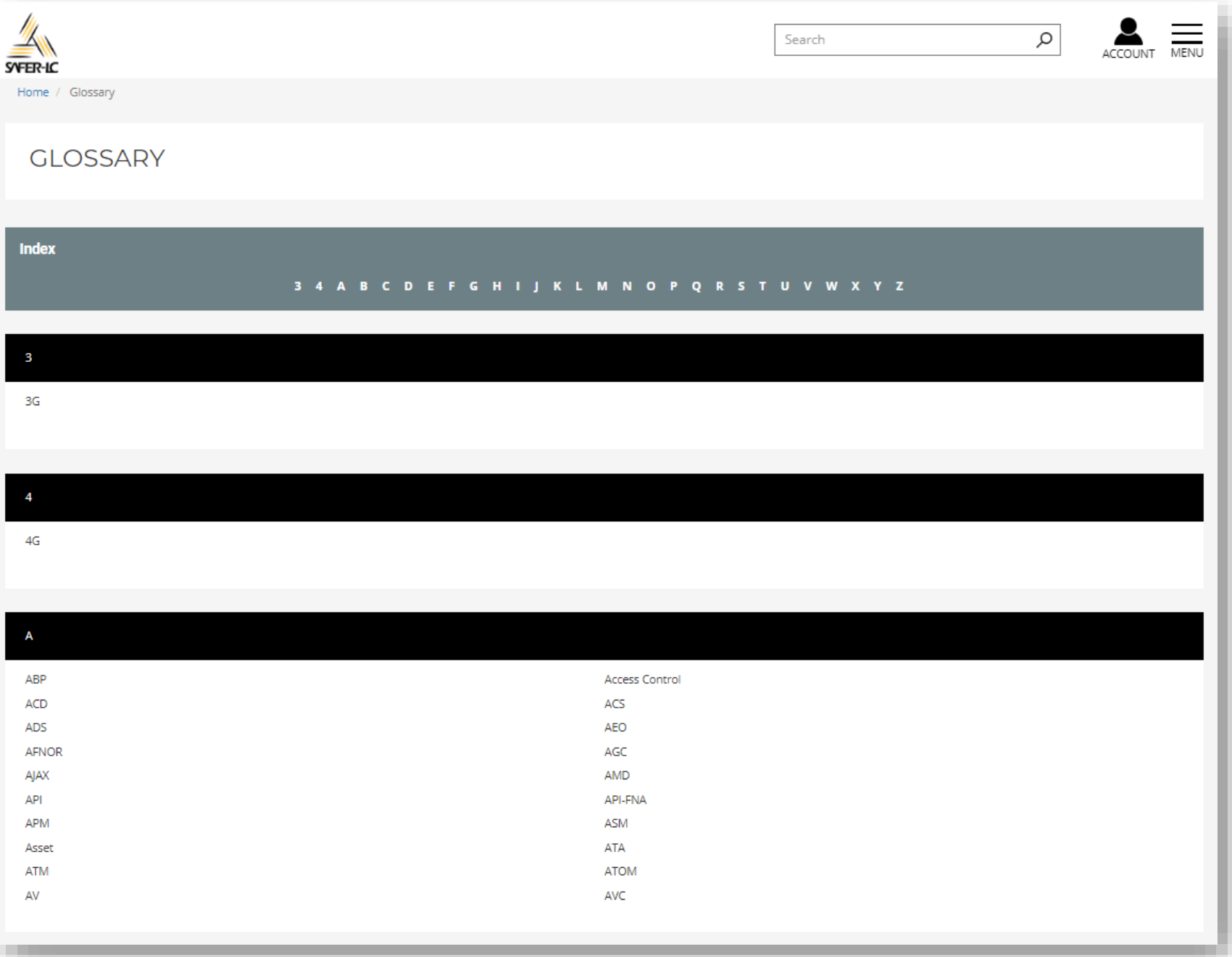
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ATA
ATOM
AVC

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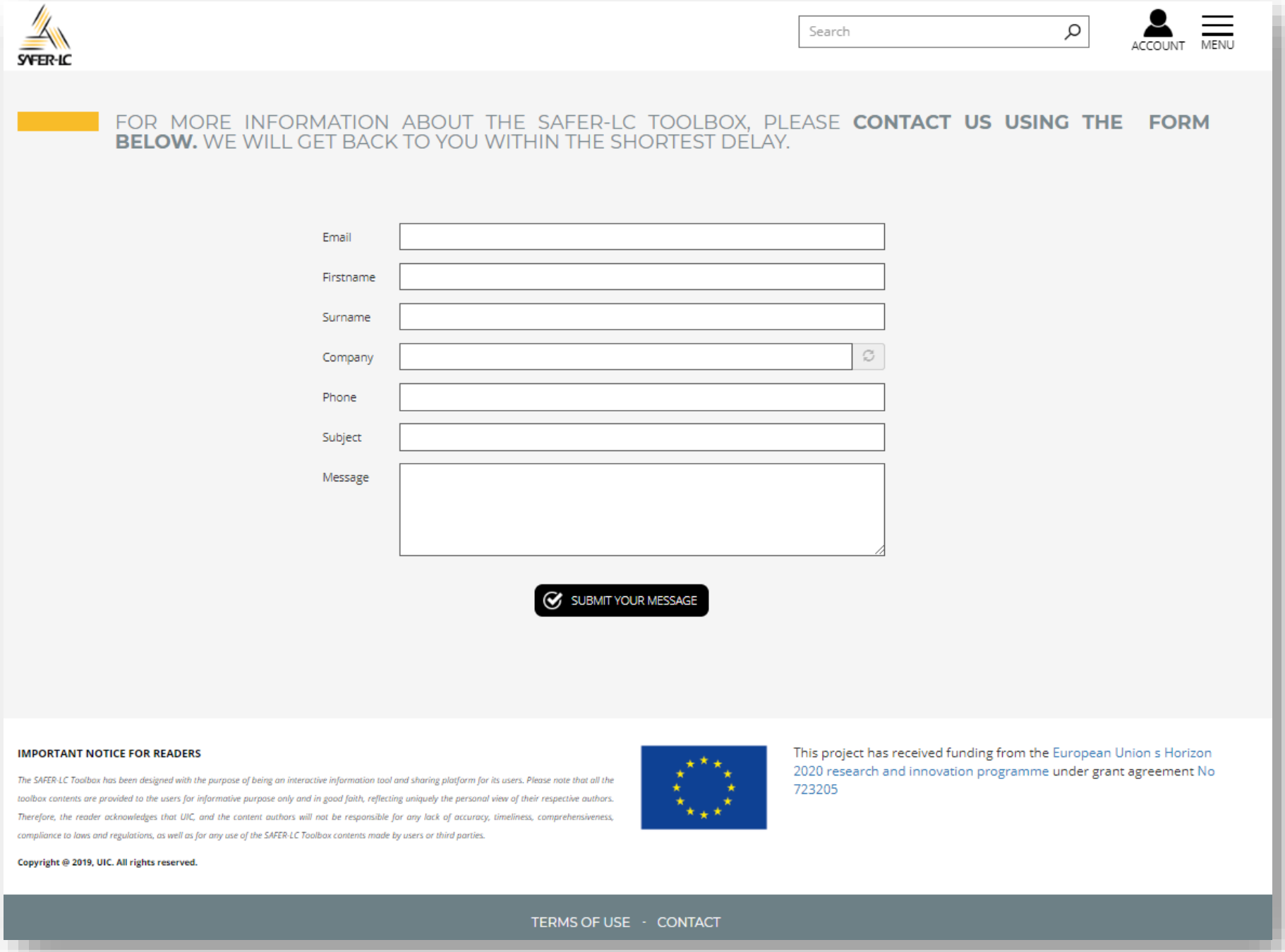
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Search
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FOR MORE INFORMATION ABOUT THE SAFER-LC TOOLBOX, PLEASE CONTACT US USING THE FORM BELOW. WE WILL GET BACK TO YOU WITHIN THE SHORTEST DELAY.
Email
Firstname
Surname
Company
Phone
Subject
Message
SUBMIT YOUR MESSAGE
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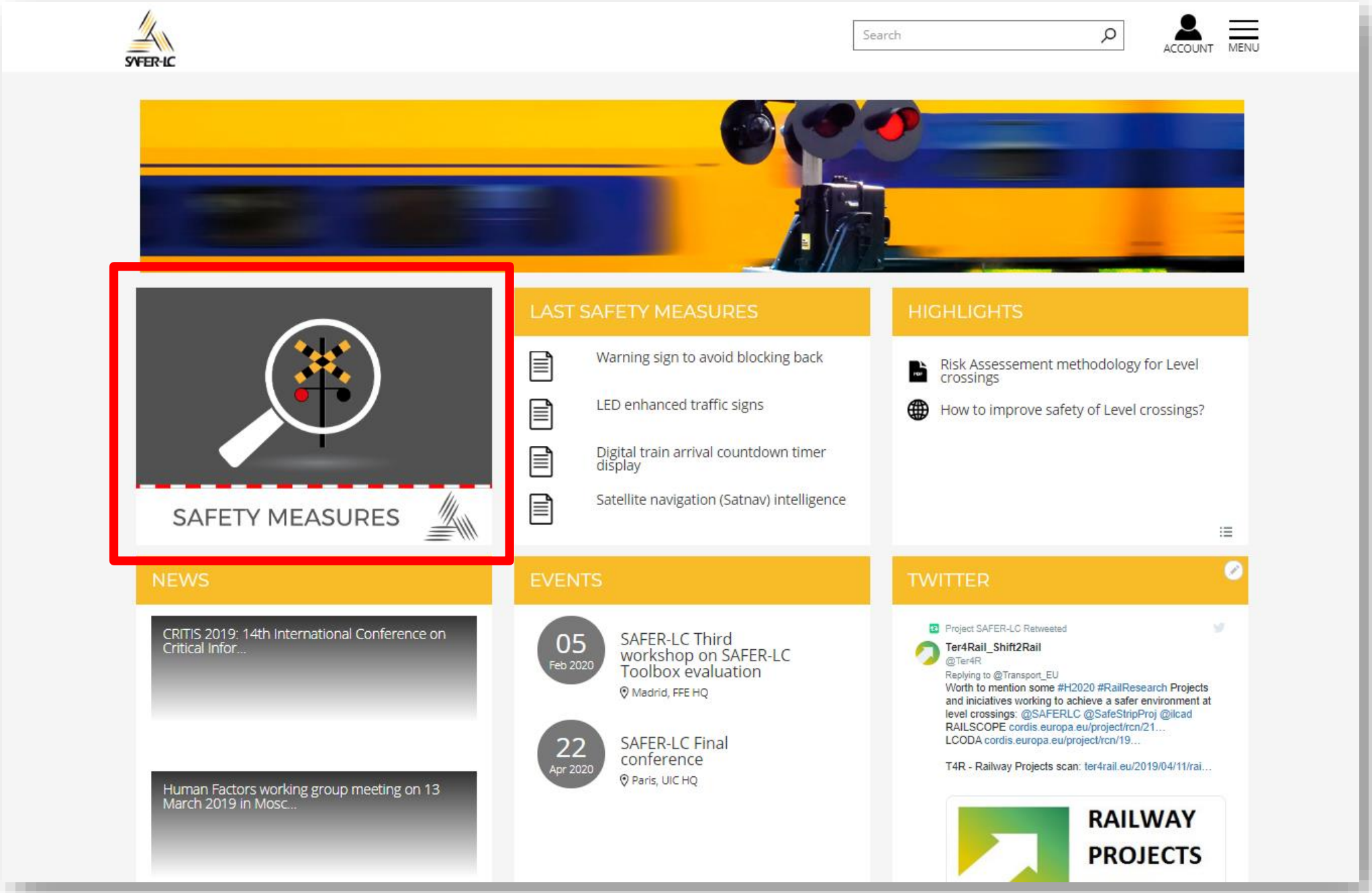
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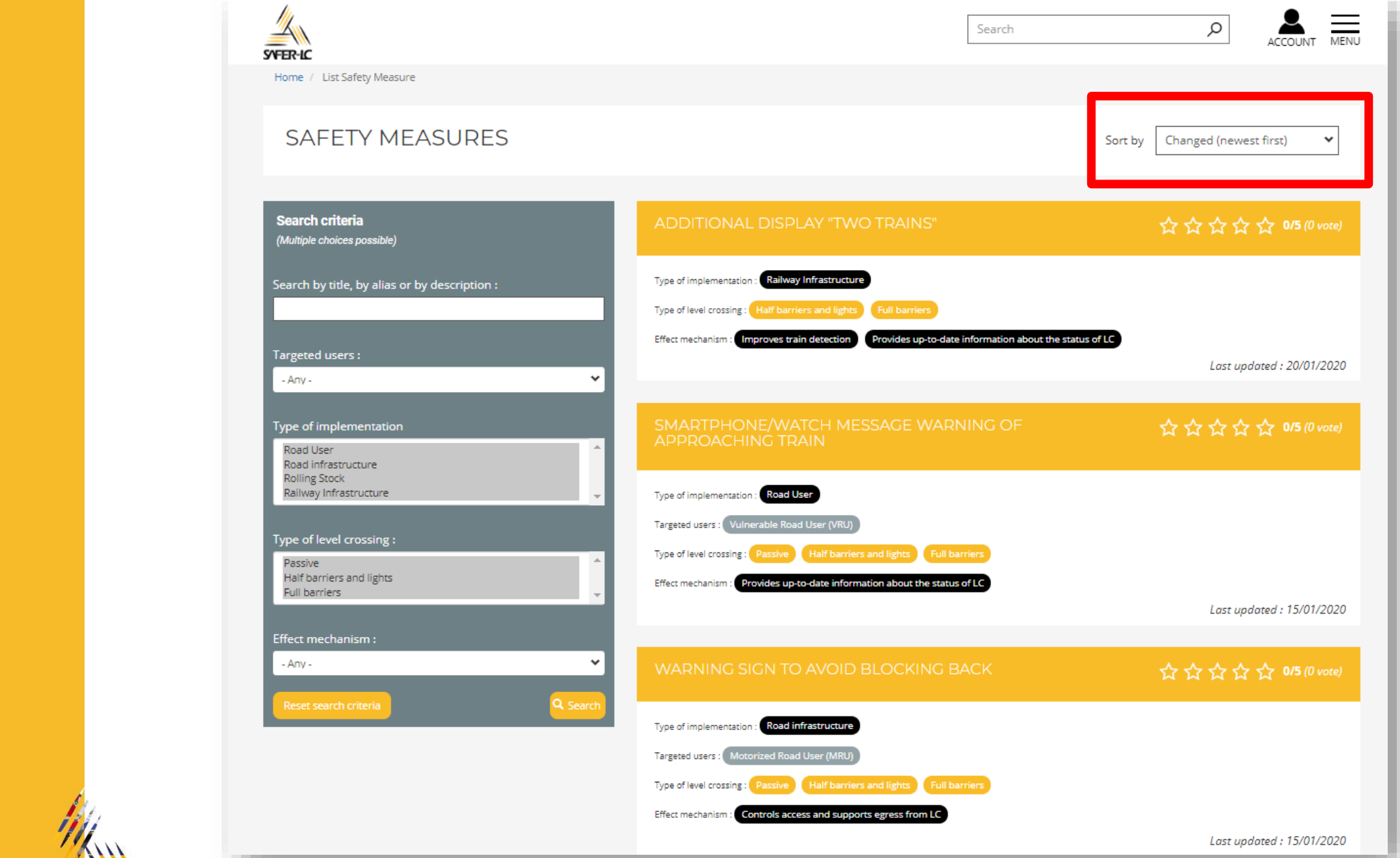
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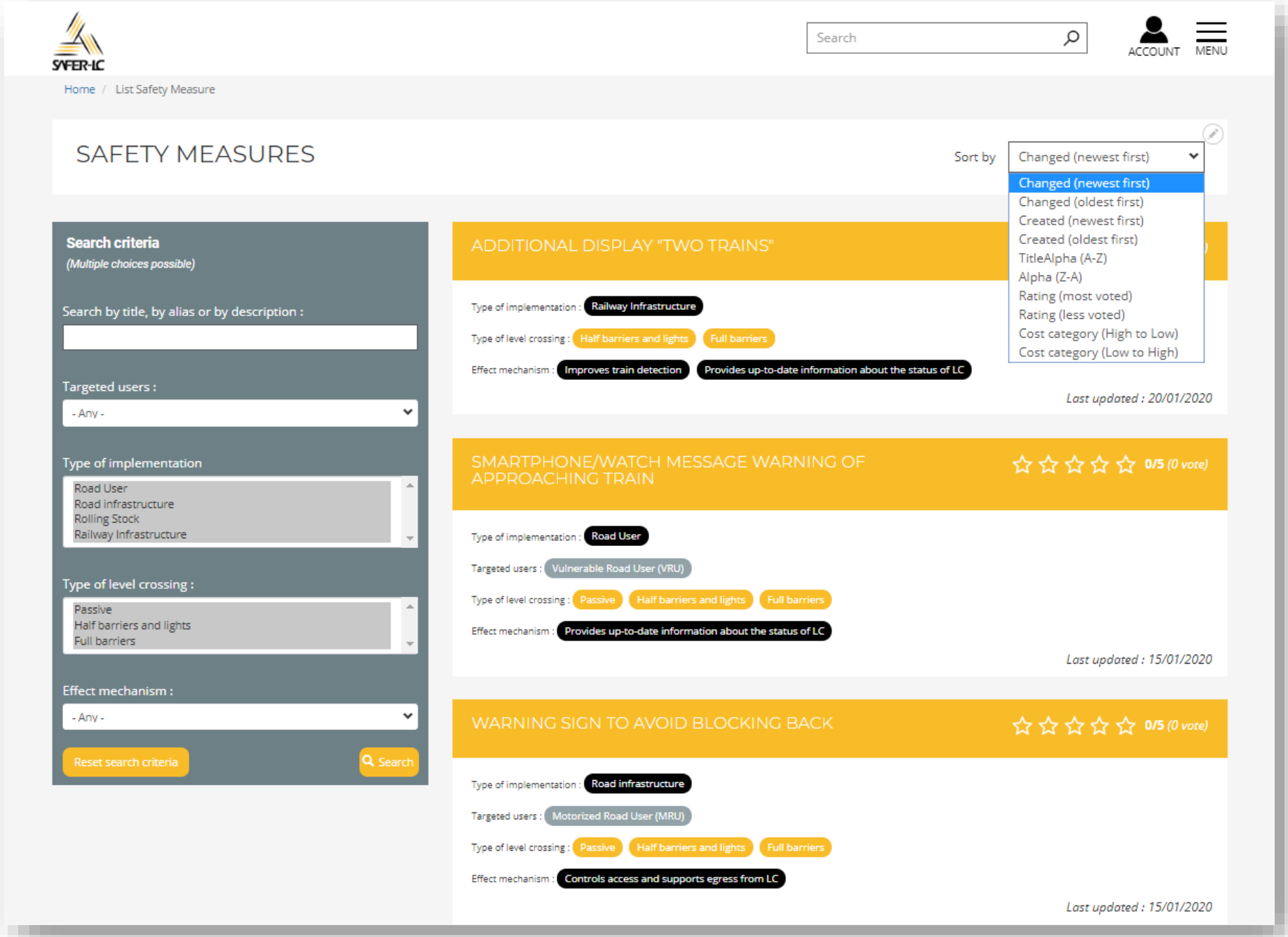
SAFETY MEASURES
Sort by
Changed (newest first)
Search criteria
(Multiple choices possible)
Search by title, by alias or by description :
Targeted users :
- Any -
Type of implementation
Road User
Road infrastructure
Rolling Stock
Railway Infrastructure
Type of level crossing :
Passive
Half barriers and lights
Full barriers
Effect mechanism :
- Any -
Reset search criteria
Search
ADDITIONAL DISPLAY "TWO TRAINS"
0/5 (0 vote)
Type of implementation : Railway Infrastructure
Type of level crossing : Half barriers and lights Full barriers
Effect mechanism : Improves train detection Provides up-to-date information about the status of LC
Last updated : 20/01/2020
SMARTPHONE/WATCH MESSAGE WARNING OF APPROACHING TRAIN
0/5 (0 vote)
Type of implementation : Road User
Targeted users : Vulnerable Road User (VRU)
Type of level crossing : Passive Half barriers and lights Full barriers
Effect mechanism : Provides up-to-date information about the status of LC
Last updated : 15/01/2020
WARNING SIGN TO AVOID BLOCKING BACK
0/5 (0 vote)
Type of implementation : Road infrastructure
Targeted users : Motorized Road User (MRU)
Type of level crossing : Passive Half barriers and lights Full barriers
Effect mechanism : Controls access and supports egress from LC
Last updated : 15/01/2020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Sort by
Changed (newest first)
Changed (newest first)
Changed (oldest first)
Created (newest first)
Created (oldest first)
TitleAlpha (A-Z)
Alpha (Z-A)
Rating (most voted)
Rating (less voted)
Cost category (High to Low)
Cost category (Low to High)
Search criteria
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0/5 (0 vote)
Type of implementation : Road infrastructure
Targeted users : Motorized Road User (MRU)
Type of level crossing : Passive Half barriers and lights Full barriers
Effect mechanism : Controls access and supports egress from LC
Last updated : 15/01/2020

Search

ACCOUNT MENU

Home / List Safety Measure

SAFETY MEASURES

Sort by Changed (newest first)

Search criteria
(Multiple choices possible)

Search by title, by alias or by description :

Targeted users :
- Any -

Type of implementation
Train
Road User
Road infrastructure
LC environment

Type of level crossing :
Passive
Half barriers and lights
Full barriers

Effect mechanism :
- Any -

Reset search criteria | Search

PROXIMITY MESSAGE - INFORMATION SHARING VIA CONNECTED DEVICE

0/5 *(0 vote)*

IN-VEHICLE DISPLAY, SATNAV, MOBILE DEVICE, ETC.

Type of implementation : Road User
Type of level crossing : Passive | Half barriers and lights | Full barriers
Effect mechanism : Provides up-to-date information about the status of LC

Last updated : 23/05/2019

PHYSICAL LANE SEPARATION IN FRONT OF HALF BARRIERS

0/5 *(0 vote)*

Type of implementation : Road User | LC environment
Type of level crossing : Half barriers and lights
Effect mechanism : Improves the detection of LC

Last updated : 23/05/2019

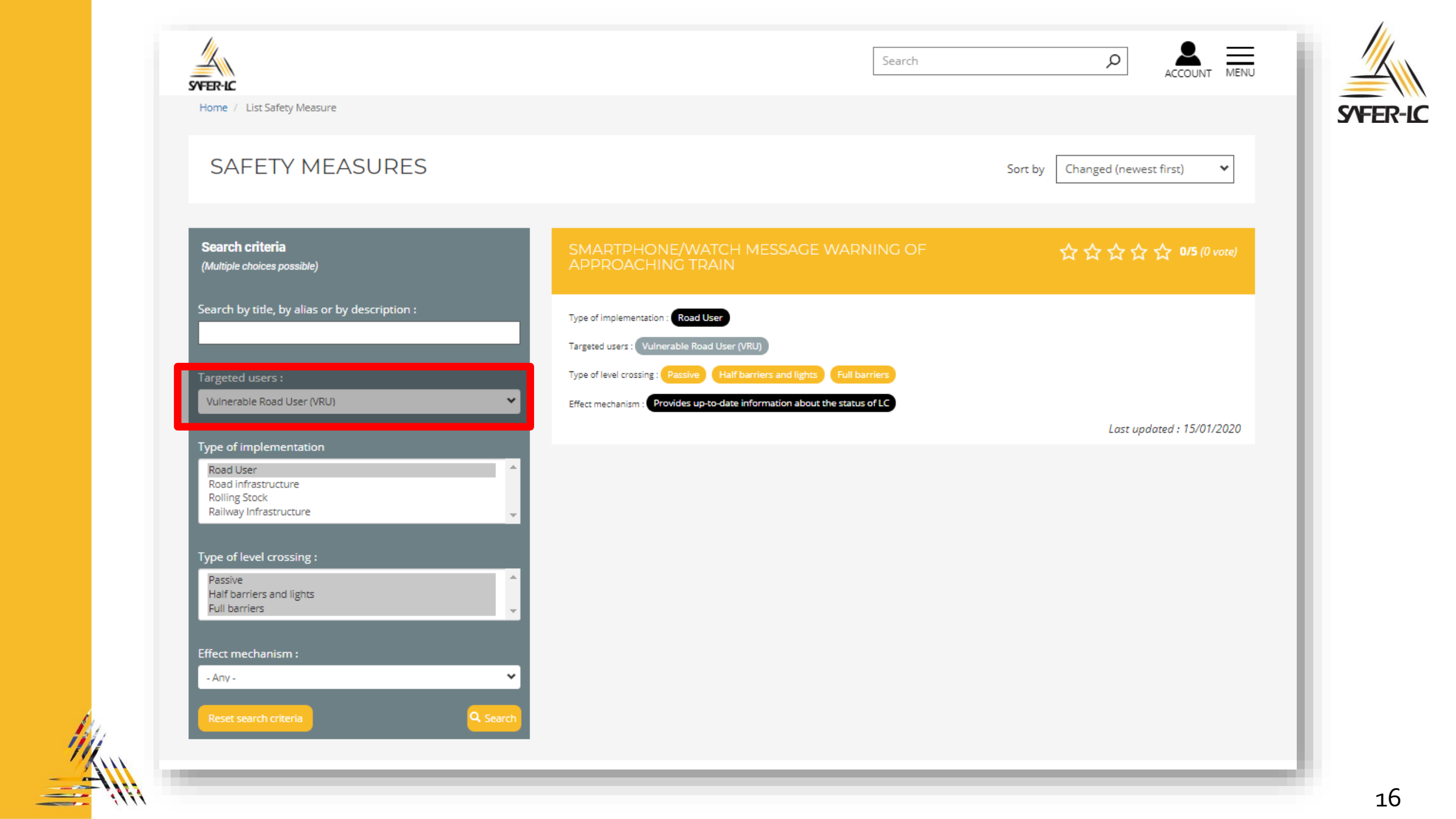
INTRUSION DETECTION SYSTEMS

2/5 *(1 vote)*

OFTEN LITTER BINS ARE CLOSED/OPAQUE, AND THEIR CONTENT IS HIDDEN FROM SIGHT, WHILE VERY FEW PEOPLE TAKE NOTICE OF WHAT IS PUT INSIDE TRASH CANS.

Type of implementation : Train | LC environment
Targeted users : MRU
Type of level crossing : Passive | Half barriers and lights
Effect mechanism : Increases awareness of correct behaviour

Last updated : 23/05/2019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Search by title, by alias or by description :
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Vulnerable Road User (VRU)
Type of implementation
Road User
Road infrastructure
Rolling Stock
Railway Infrastructure
Type of level crossing :
Passive
Half barriers and lights
Full barriers
Effect mechanism :
- Any -
Reset search criteria
Search
SMARTPHONE/WATCH MESSAGE WARNING OF APPROACHING TRAIN
0/5 (0 vote)
Type of implementation : Road User
Targeted users : Vulnerable Road User (VRU)
Type of level crossing : Passive Half barriers and lights Full barriers
Effect mechanism : Provides up-to-date information about the status of LC
Last updated : 15/01/2020

SMARTPHONE/WATCH MESSAGE WARNING OF APPROACHING TRAIN

☆ ☆ ☆ ☆ ☆ 0/5 (0 vote)

Add to Bookmarks

Publication : 05/09/2019 - Last updated: 15/01/2020

Type of implementation : Road User

Targeted users : Vulnerable Road User (VRU)

Type of level crossing : Passive | Half barriers and lights | Full barriers

Effect mechanism :

Provides up-to-date information about the status of LC

DESCRIPTION

Message to smartphone/-watch warning road users of an approaching train. Message could interrupt all other applications (such as radio) or transmissions (such as Wifi, Bluetooth) and sound an alarm (and/or jam the connections) when it detects an "approaching train". Measure aimed at vulnerable road users.

POTENTIAL BENEFITS

- Warn road users of nearby **LC** via personal smart device. Disruptive nature of warning could effectively reach users concentrating on their devices instead of traffic.

POTENTIAL CRITICALITIES

- The application could create an additional source of distraction in road users who are not already looking at the mobile device.
- Potential overreliance on this type of measure could take the road user`s attention away from observing the road and level crossing.
- Users would have to download an application.

RECOMMENDATIONS

- To avoid negative side effects, the technology could contain a use detection and issue a warning only in case the device is currently being handled by the user.
- Moreover, the output should optimally not stress visual processing resources (Wickens & McCarley, 2008), but should facilitate a quick orientation of visual attention to the **LC** (e.g. by arrows, speech output).
- Users should be reminded that the system is not fail-safe (e.g. when starting the application).

MAIN PSYCHOLOGICAL FUNCTIONS INVOLVED

Identification (focus on attention and workload)

DOCUMENTS

Submit a document

COMMENTS

Comment ...

Submit comment

Quick Access

PHYSICAL LANE SEPARATION IN FRONT OF HALF BARRIERS

☆ ☆ ☆ ☆ ☆ **0/5** *(0 vote)*

Add to Bookmarks

Publication : 23/05/2019 - Last updated: 15/01/2020

Type of implementation : Road infrastructure

Railway Infrastructure

Targeted users : Motorized Road User (MRU)

Type of level crossing : Half barriers and lights

Effect mechanism :

Controls access and supports egress from LC

Improves the physical environment of LC

DESCRIPTION

Installation of elements (delineator posts, rods, traffic islands, etc.) to physically separate lanes immediately in front of half-barriers to prevent road users from driving around closed or closing half-barriers (prevention of zig-zagging).

POTENTIAL BENEFITS

Reduces violations at LCs by increasing difficulty of passing barriers.

POTENTIAL CRITICALITIES

- Possible problems with winter maintenance (i.e. possible challenges in snow clearance).

RECOMMENDATIONS

- The elements used should be designed such as not to disrupt normal traffic flow or introduce a new danger.

Quick Access

Search

ACCOUNT MENU

Home / List Safety Measure

SAFETY MEASURES

Sort by: Changed (newest first)

Search criteria
(Multiple choices possible)

Search by title, by alias or by description :

Targeted users :
- Any -

Type of implementation
- Road User
- Road infrastructure
- Rolling Stock
- Railway Infrastructure

Type of level crossing :
- Passive
- Half barriers and lights
- Full barriers

Effect mechanism :
- Any -
- Any -
- Support LC safety action
- Improves the detection of LC
- Improves train detection
- Reduces the approach speeds of vehicles
- Controls access and supports egress from LC
- Increases awareness of correct behaviour
- Improve access for vulnerable user
- Improves the physical environment of LC
- Makes waiting time more tolerable
- Provides up-to-date information about the status of LC

ADDITIONAL DISPLAY "TWO TRAINS"

0/5 (0 vote)

Type of implementation : Railway Infrastructure
Type of level crossing : Half barriers and lights, Full barriers
Effect mechanism : Improves train detection, Provides up-to-date information about the status of LC

Last updated : 20/01/2020

SMARTPHONE/WATCH MESSAGE WARNING OF APPROACHING TRAIN

0/5 (0 vote)

Type of implementation : Road User
Targeted users : Vulnerable Road User (VRU)
Type of level crossing : Passive, Half barriers and lights, Full barriers
Effect mechanism : Provides up-to-date information about the status of LC

Last updated : 15/01/2020

WARNING SIGN TO AVOID BLOCKING BACK

0/5 (0 vote)

Type of implementation : Road infrastructure
Targeted users : Motorized Road User (MRU)
Type of level crossing : Passive, Half barriers and lights, Full barriers
Effect mechanism : Controls access and supports egress from LC

Last updated : 15/01/2020

Thank you for your kind attention

havarneanu@uic.org

Evaluation group exercise (10.15 – 11.15)

Organisation

- Participants are organised in 6 small groups (about 7 persons / group)
- Each group moderated by one consortium partner (with one computer)
  - Group 1 – Aida
  - Group 2 – Anne
  - Group 3 – Annika
  - Group 4 – Francisco
  - Group 5 – Marie-Helene
  - Group 6 – Grigore
- Each group receives a generic description of a problem (unsafe LC) to be solved (scenario composed of an image and a short text).
- Each scenario is different (LC vary by type, environment, and user behaviour type)

Tasks

- The moderator presents the scenario (**2 min**)
- Each group discusses the problem and possible solutions to solve it (and documents 3 recommended measures) (**15 min**)
- The moderator asks the participants to discuss the same problem again – but now with the SAFER-LC toolbox, and participants are asked to propose against 3 solutions (**35 min**)
- Participants decide if they hold on their original solution(s) or whether they changed their mind after using SAFER-LC toolbox. (**5 min**)

Coffee break (11.15 – 11.45)

Individual evaluation session (11.45 - 12.15)

- Each participant fills in a feedback questionnaire (closed and open questions)
- Each group moderator distributes and collects the questionnaires making sure they are complete

Interactive session (12.15 - 13.00)

- Debriefing and reporting from each group regarding the toolbox

- Each moderator or a member of the group gives an overview of the group exercise (5 min per group):
  - Scenario
  - 3 solutions without the toolbox
  - 3 solutions with the toolbox (and if the toolbox gave new ideas)