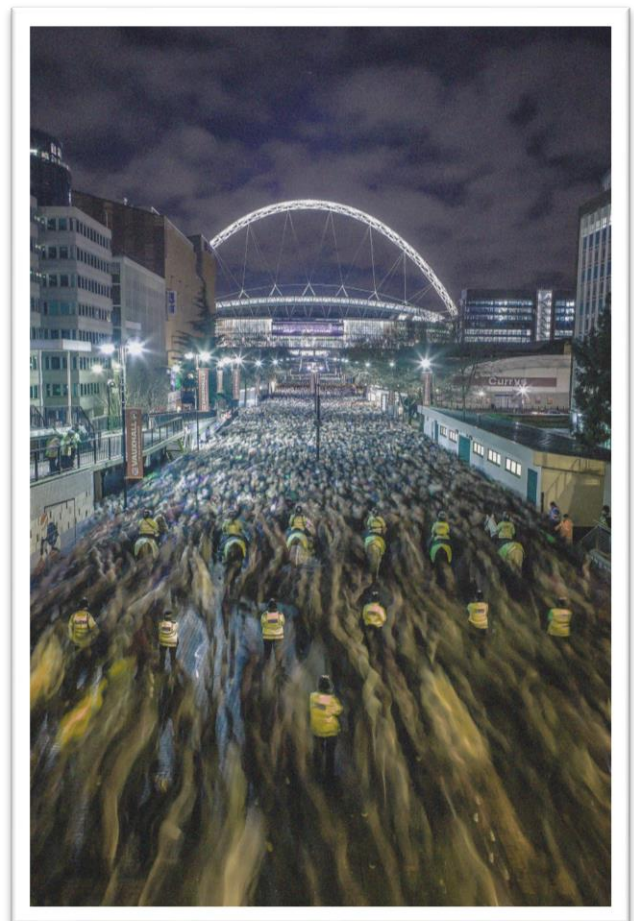




**Law Enforcement agencies human factor methods and Toolkit
for the Security and protection of CROWDs in mass gatherings**

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LETSCROWD Newsletter 2. May 2019

Dear Friend,

With the recent conclusion of the second year of work in LETSCROWD we are glad to share part of the outcomes of the second phase of the project with the community, a step forward in the protection of crowds in mass gathering events.

The focus during the second year of the project was put in practice the overall technologies, tools and methodologies to assess the LETSCROWD outcomes. During this second phase, the scenarios to be demonstrate the outcomes have been identified, analysing in detail the different practical demonstrations carried out during this last year, namely: MTV European Music Awards 2018 in Bilbao (Spain), Rome Champions League (Italy), Cyclocross Malle (Belgium) and the evacuation scenarios with volunteers in Germany.

It is worth to mention that during this second year was developed a training package for crowd protection based on human factor. The main goal of the training package was to enhance trainees' capabilities and skills in identification of suspicious signs in behaviour and appearance that might indicate a possible connection of an individual or group to intentional criminal or terrorist activity. The LETSCROWD validation approach of all this technologies and methodologies was based on the principles of the Human centred design approach that aims to integrate the LEA's perspective and how citizens in Europe perceive risk related to security. This is a continuous evaluation process obtained thanks to the feedback of LETSCROWD survey on European citizens.

Finally, various actions have been performed at a national or local level by LETSCROWD partners in their own countries and at international level mainly focused on the scientific community. This include scientific papers, publications and poster presentations.

In order to be updated on these, and other, developments in LETSCROWD I would to ask for you again to subscribe to our emailing list, and/or your organization to our stakeholders list ([contact us!](#)).

I am sure you will find interesting the contents of this second newsletter, and hence I would like to invite you to read on.



Jordi Arias Martí
Project Coordinator
ETRA Investigación y Desarrollo SA

How citizens in Europe perceive risk related to security: review of Special Eurobarometer reports

Alexis Gizikis – EENA

What is risk perception?

Citizens' risk perception refers to the subjective assessment that people make about how likely they will be affected by a threatening or dangerous situation (the probability of the risk) and how much the potential consequences will affect them (the severity of the risk). In the context of security threats, citizens' risk perception applies to natural and manmade disasters and also threats that have started to appear more frequently in recent years, such as terrorism, organized crime, cybercrime, threats to the environment and public health.

Special Eurobarometer public opinion surveys

Citizens' security risk perception across the 28 EU member states has been surveyed by different Special Eurobarometer public opinion surveys. The latest survey, the [Special Eurobarometer 464b](#) published in December 2017, surveys citizens' overall awareness, experiences and perceptions of security. The survey questions are based on those asked in previous surveys and describes how risk perception has changed over the years by comparing the responses of the latest survey to the previous.

In this review we look at 4 questions surveyed by the Special Eurobarometer:

- Where do Europeans feel safer? Do they perceive the EU a safe place to live in?
- What do Europeans perceive as important challenges to security?
- Do Europeans perceive that national authorities are doing enough to tackle security challenges?
- What do Europeans believe about law enforcement agencies exchange information with other EU countries?

Key Findings

In the review of the Special Eurobarometer survey, we observe that:

- The majority of **citizens in Europe feel safe** in their immediate surroundings but concerns are raised when the question extends to Europe as a safe place to live in.
- There is a general consensus that **terrorism, organised crime, natural and manmade disasters, cybercrime and the EU's external borders are important challenges** to EU security.
- Most respondents believe that the **police and other LEAs are doing more about terrorism** compared to other threats. However, there is no strong consensus (63%) about LEAs are doing enough to fight terrorism.
- A vast majority (92%) of the respondents **believe that LEAs should exchange information with their counterparts in other EU countries**.

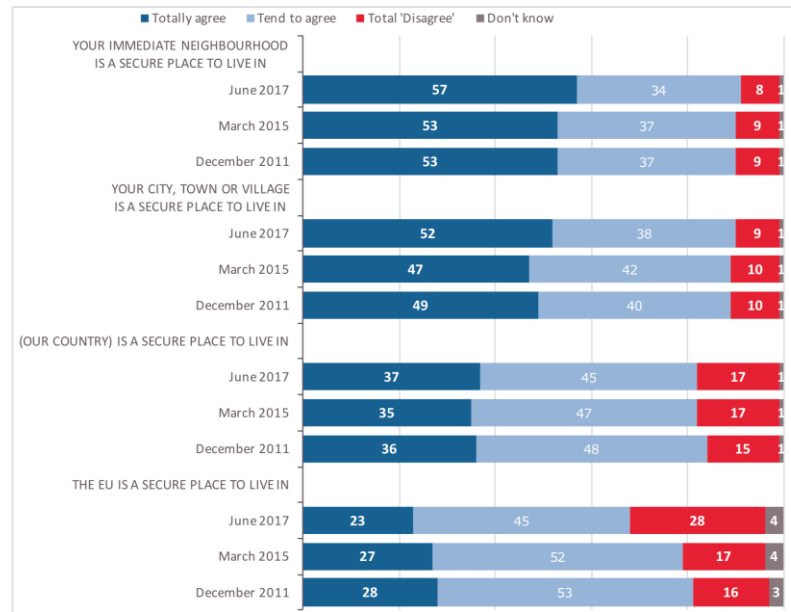
LETSCROWD is further [exploring the public perception of security in mass gatherings](#) and needs your help in responding to its [survey about European citizen's attitude towards security in mass gathering events](#).

Where do Europeans feel safer? Do they perceive the EU a safe place to live in?

The respondents were asked to what extent they agree or disagree with the following statements:

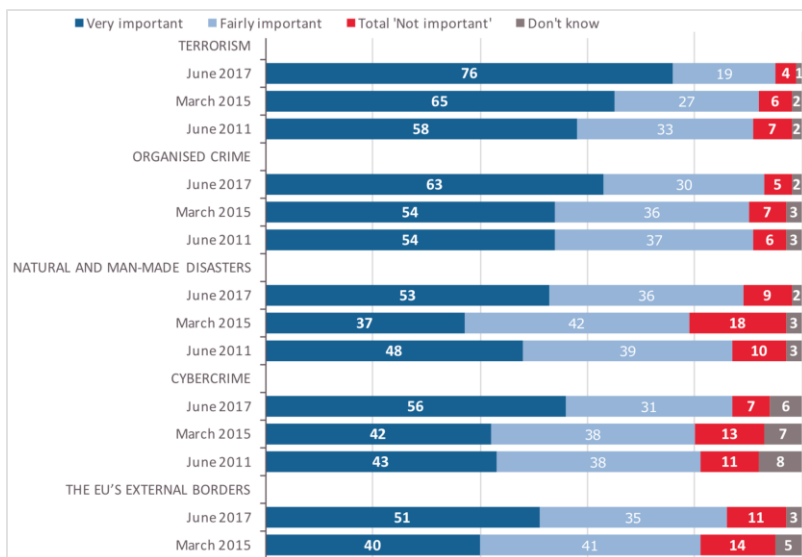
- Your immediate neighbourhood is a secure place to live in;
- Your city, town or village is a safe place to live in;
- Our country is a safe place to live in;
- The EU is a safe place to live in.

Figure 1 - Question: To what extent do you agree or disagree with each of the following statements about public security? [source: Special Eurobarometer 464b]



- **90% of the people agree that their immediate neighbourhood, city, town or village is a secure place to live in**, showing a large majority in the EU feels safe in the places they live.
- Less people, but still a significant majority (**82%**), feel secure when the question expands to the country level.
- The percentage drops to **68% when respondents are asked if they believe the EU is a safe place to live in** and has dropped by 11% when compared to the responses of the 2015 survey.

The responses indicate that despite the terrorist attacks in the EU since 2015, **respondents continue to feel safe in their surroundings, but concern has been raised for Europe.**



What do Europeans perceive as important challenges to security?

Special Eurobarometer 464b also surveyed how important different security challenges are to the internal security of the EU. In the context of the survey, the following security challenges were considered:

- terrorism;
- organised crime;
- natural and man-made disasters;
- cybercrime;
- the EU's external borders.

Figure 2 - Question: In your opinion, how important are the following challenges to the internal security of the EU? [source: Special Eurobarometer 464b]

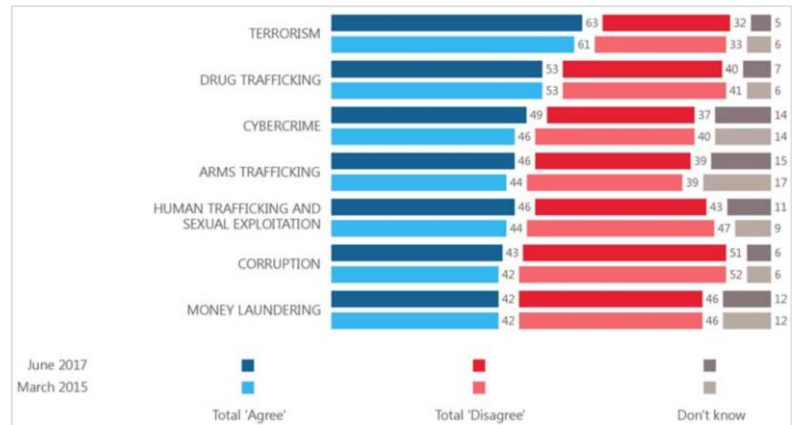
- **95%** of the respondents see **terrorism** as an important or fairly important challenge.
- **93%** see **organised crime** as an important or fairly important challenge.
- **89%** see **natural and manmade disasters** as an important or fairly important challenge.
- **87%** see **cybercrime** as an important or fairly important challenge.
- **86%** see **the EU's external borders** as an important or fairly important challenge.

In all member states, **at least 86% of the respondents perceive the above security challenges as important** with significant differences between countries over how much of a problem they are. **An increase is observed in the percentage of those assessing these issues as important** within the period of three Eurobarometer surveys.

Do Europeans perceive that national authorities are doing enough to tackle security challenges?

The Special Eurobarometer 464b asked respondents about the extent to which they agree that the police and other law enforcement authorities are doing enough to combat these threats.

Figure 3 - Question: To what extent do you agree or disagree that the police and other LEAs in our country are doing enough to fight ...? [source: Special Eurobarometer 464b]



Compared to the other security challenges, **terrorism is the threat that most respondents (63%) believe that the police and other LEAs are doing enough**, in contrast to drug trafficking, cybercrime, arms trafficking, human trafficking and sexual exploitation, corruption and money laundering.

What do Europeans believe about law enforcement agencies exchange information with other EU countries?

The survey also questioned to what extent people agree or disagree that the national police and other national LEAs should exchange information with their counterparts in other EU countries in order to fight crime and terrorism.

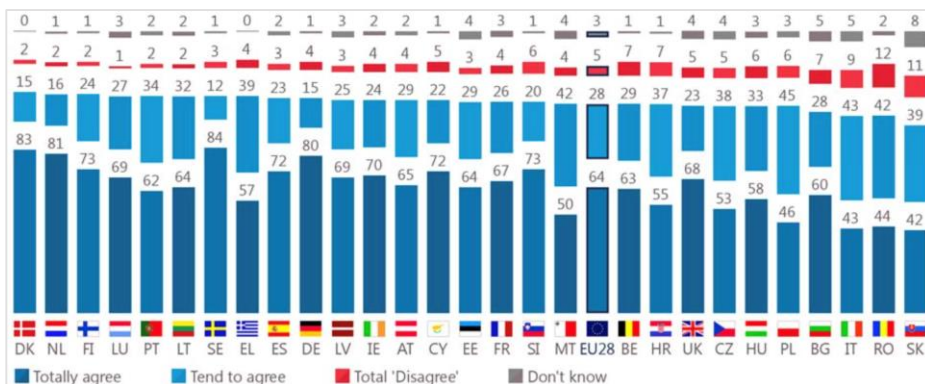


Figure 4 - Question: To what extent do you agree or disagree that in order to fight crime and terrorism the national police and other LEAs should exchange information with other EU countries? [source: Special Eurobarometer 464b]

A vast majority of **92% of the respondents agree on the need to share information within the EU to better fight crime and terrorism.**

EENA is a Brussels-based NGO, set up in 1999, dedicated to promoting high-quality emergency services throughout Europe. EENA serves as a discussion platform for emergency services, public authorities, decision makers, associations and solution providers. EENA's activities enable the collaboration of all stakeholders to improve emergency response in agreement with citizens' requirements.

<https://eena.org>

EENA - European Emergency Number Association



Training package for crowd protection based on human factor

Chanan Graf – RailSec LTD

In recent years the world has faced an increasing tendency of terror organizations to carry out attacks in urban environments, particularly targeting large scale events and mass gatherings, such as music concerts, festivals, or street fairs. Recent attacks were ended with mass casualties among civilians and LEA personnel.

Mass gatherings, in their nature are considered “soft” targets: they attract a lot of people and are intended to allow mass crowds to participate. **Terrorists consider these kinds of events as a prime opportunity to target many individuals** at an event that usually carries **media attention, and the possibility of detection is low**. Some of these events, such as street fairs or public park concerts, do not have designated entry points, where security screenings and controls can be conducted.

The main challenge of LEAs is to screen hundreds and sometimes thousands, of individuals and their belongings, in a short time during the entrance process, and during the event itself over several hours, and to identify those individuals, or their belongings, that might pose a security threat.

In order to tackle this issue, **one of the tools and goals of the LETSCROWD project is to develop a training package** that will provide trainees (LEAs) with the tools, skills and knowledge to identify indicative behaviour of individuals, or the presence of objects, that stand out in a suspicious way within the crowd.



The training package provides an overview on the methodology used for the development of the training modules and provides details of the proposed modules that will be delivered in a demonstrator; this will teach **how to identify abnormal behaviors**, and how to extract a suspicious behavior from a set of situations and characteristics of an event; these two factors together, can help to **distinguish an abnormal**

behavior from a normal one, according to the union of a multitude of variables such as: date, time of day, holiday or not, type of celebration, type of public attending, heterogeneity of the public, number of people and type of activity (concert, demonstration, celebration, performance, spontaneous meeting, religious celebration, patronal celebrations, etc.). That's because **an abnormal behavior, can be considered as normal under certain circumstances, and vice versa**.



The training package developed within the framework of the project includes 5 modules:

- The Terror Threat to Mass Gathering Events
- Suspicious signs in behavior and appearance & Body Language.
- Terror attacks using different types of explosives and their identification by human factor.
- Methods of searching and handling of suspicious objects.
- Communicating with Multicultural Crowd in mass gathering



RailSec Ltd. is a global security consulting firm, based in Israel, specializing in operational aspects of security. The company offers a unique blend of security consulting services based on more than three decades of international experience in the field of homeland security. The company's solutions place significant emphasis on deterrence and prevention and damage mitigation.

<http://www.railsec.com>

RailSec LTD



The LETSCROWD survey on European citizens' attitude towards security in mass gatherings events

Alessia Golfetti, Sabina Giorgi - Deep Blue

Join our surveys! Your opinion is important to us!

The events in Europe in recent years have made security and risk perception a topic with high interest. Citizens' risk perception across the 28 EU member states has been surveyed by different **Special Eurobarometer public opinion surveys** (more details in the first article of this Newsletter: "How citizens in Europe perceive risk related to security: review of Special Eurobarometer reports").

Enabling security as societal value is a guiding principle of the research carried out in LETSCROWD. A shift is needed from a vision of security as "**guarantee of public order**" to a perspective of "**construction of security**". According to the last one, security is built and shared, and each stakeholder and citizen contributes to its maintenance. Thus, **security can be seen under a bottom-up perspective**, where feelings and participation of citizens and of involved practitioners is of fundamental importance to guide and influence decision makers in establishing policies, investments and implement proper prevention and mitigation measures.

That is why the **LETSCROWD project launched two surveys to investigate the perception of security** with respect to a new domain not yet explored at EU level: the mass gathering events.

The LETSCROWD surveys address **two main target audiences**:

8. Which type of mass gathering events have you more attended in the last three years?
(Please use a scale from 1 to 5, where 1 means the type of mass gathering event you attended the most and 5 means the event you attended the less)

1	2	3	4	5	Sporting events (e.g. European football championship; tennis international tournaments; rugby world cup; etc.)
1	2	3	4	5	Political demonstrations
1	2	3	4	5	Religious or traditional celebrations
1	2	3	4	5	Concerts
1	2	3	4	5	Festivals

- **Citizens**, to analyse public opinion in relation to policies and actions for protecting people in mass gatherings against criminal and terrorist acts;
- **Security experts**, law enforcement agency officers and first responders who are directly involved in the security management of mass gatherings, to include an expert perspective.

Citizens' and LEAs' perspectives will be explored taking into account the following aspects:

- Perception of security in mass gatherings events;
- Perception of the actions taken by the law enforcement authorities and other relevant stakeholders to combat threats at national and EU level;
- Perception of the contributions given by new technologies to enhance security (especially in mass gatherings) and their impact on human rights and freedoms.

7. To what extent do you agree or disagree with each of the following statements about PUBLIC SECURITY in mass gathering events?
(one answer per row is allowed)

	Totally agree	Tend to agree	Tend to disagree	Totally disagree	Don't know
Mass gatherings organized in my CITY/TOWN are secure events to attend	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mass gatherings organized in my COUNTRY are secure events to attend	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mass gatherings organized in EU are secure events to attend	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The project needs your opinion!

To participate in our surveys use the following links:

- European **CITIZENS'** attitude towards security in mass gatherings events - <https://www.surveymonkey.com/r/C567CWC>
- **LAW ENFORCEMENT AGENCIES AND FIRST RESPONDERS'** attitude towards security in mass gatherings events - <https://www.surveymonkey.com/r/933Q86S>

Deep Blue (DB) is a research and consultancy Italian SME, specialized in human factor, safety, security, validation and scientific dissemination. The company operates in contexts with high safety, security and resilience requirements, such as Transport, Healthcare and Energy.

<https://dblue.it>

Deep Blue



Computer vision tools to support LEA operators in monitoring mass gathering events

Giorgio Fumera, PRA Lab, University of Cagliari

In the [previous issue of the LETSCROWD Newsletter](#), we provided an overview on the application of computer vision research outcomes to the development of intelligent video surveillance (aka video analytics) software tools to support Law Enforcement Agency (LEA) operators. In this issue we'll better detail the tools developed by the PRA Lab within the LETSCROWD project.

How does computer vision research contribute to LETSCROWD?

Two kinds of monitoring and investigation tasks carried out by LEAs in the context of mass gathering events have been considered in LETSCROWD:

- during **event execution**, estimating the number of people in a given region of the event venue, either by LEA operators in the field, or from real-time videos monitored in a control room or command post;
- during post-event **forensic investigations**, scanning a large amount of videos acquired during a mass gathering event by a video surveillance camera network, to search for individuals of interest, such as suspect ones.



Manually performing the above tasks is time-consuming and tedious. Specific software tools, which can be deployed as components of software suites used by LEAs to manage their video surveillance systems, **can support LEA operators and forensic investigators by reducing the time required** to perform such tasks.

Three specific prototype tools have been developed as part of the LETSCROWD project: appearance-based person re-identification, attribute-based people search, crowd density estimation.

Appearance-based person re-identification

Face recognition systems are nowadays widely used by LEAs to search for suspect individuals in videos acquired by CCTV systems. However, in unconstrained settings **face may be not visible** (e.g., due to person pose or to occlusions), or may cover a too small image region, due to camera distance, to be useful for automatic face recognition. In this case appearance-based person re-identification systems can support LEA operators and forensic investigators by automatically **retrieving images of an individual of interest based on clothing appearance** to a query image of the same individual manually selected by the user from a video frame. From each retrieved image the user can access the video from which it was extracted, which allows one to analyse the behaviour of the corresponding individual. Even when face is visible, appearance-based person re-identification can be used to complement face recognition systems.

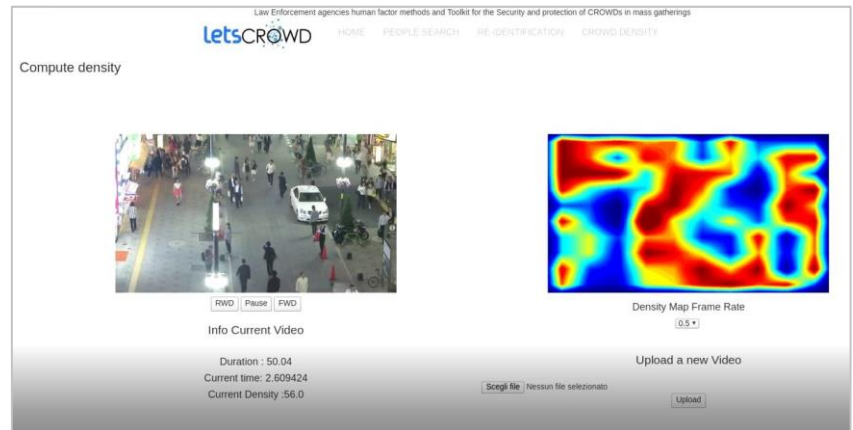
Attribute-based people search

Often, in forensic investigations, a description of a suspect individual is provided by eyewitnesses, and investigators have to search for similarly looking individuals in videos acquired by a CCTV system. The description may involve clothing appearance, as well as attributes, such as gender and carried items (e.g., bags or backpacks). **Attribute-based people search systems allow the user to input the attribute profile of an individual of interest in terms of a predefined set of attributes**, such as the colours of upper and lower body clothing, gender, and carried items, and then automatically retrieve images of individuals exhibiting a similar attribute profile.

Crowd density estimation

During mass gathering events, LEA operators almost **manually monitor the size of a crowd and estimate the number of people** in a given region of the event venue. These tasks are time-consuming as well, especially when many video cameras have to be monitored simultaneously. Currently, **computer vision tools already exist for automatically counting the number of people in a scene**, but their effectiveness is limited to non-crowded scene when almost no overlapping

between people nor occlusions by objects in the scene are present. Automatically estimating the number of people in crowded scenes with significant overlapping or occlusions, known as **crowd density estimation in the computer vision field, is still a very challenging task**. In the LETSCROWD project a crowd density estimation tool has been developed to provide a real-time estimate of the number of people in a scene, or in a user-defined region of interest inside a scene. This kind of tool can also raise alerts when the estimated number of people exceeds a user-defined threshold, and when anomalous and potentially dangerous behaviours are automatically detected, such as a sudden increase or decrease of the estimated number of people.



PRA Lab works on the development of next generation pattern recognition systems for real applications such as video surveillance, biometric authentication, text categorization, and intrusion detection in computer networks. PRA mission is to address fundamental issues for the development of future pattern recognition systems, in the context of real applications.

<http://pralab.diee.unica.it/en>

PRA Lab - University of Cagliari



LETSCROWD Publications

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- S. Cáceres, A. Marqués, J. Alonso, C. Pérez,
[“Ciudades inteligentes más seguras, nuevas herramientas para la gestión de eventos masificados para la Policía Municipal de Madrid y la Ertzaintza”](#),
 Libro de comunicaciones y proyectos, IV Congreso de Ciudades Inteligentes, Madrid, May 30-31, 2018 (pp 406-424)
- B. Lavi, G. Fumera, F. Roli,
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 Expert Systems With Applications, 2018.
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[“Metodología y herramientas centradas en el factor humano para una mayor seguridad y protección ciudadana en eventos masificados \(Law Enforcement agencies human factor methods and Toolkit for the Security and protection of CROWDs in mass gatherings\)”](#),
 Conference proceedings, V Congreso Nacional de I+D en Defensa y Seguridad, Toledo, Spain, November 2017
- Cuesta, K. Rodríguez, O. Abreu, D. Alvea,
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