

# Articolo in materia di analisi del rischio per gli eventi ad alto affollamento sulla rivista internazionale «Crowd Safety»

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# Estratto da The Crowd n. 2/2019

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# THE CROWD

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## A MASTERCLASS IN EVENT COMMUNICATIONS

Four giant marionettes, 1.3 million visitors and a three-day outdoor performance; we interview the team from Liverpool's Dream.

### FGH: A SCIENTIFIC APPROACH TO EMPLOYEE WELFARE

### THE NEW CHALLENGE FOR RISK ANALYSTS OF LARGE EVENTS

### THE PROLIFERATION OF DRONE USE ACROSS THE INDUSTRY

### HEADING INTO THE HOME STRETCH

The ESA discuss the brand new Crowd Management ANSI Standard

## A PERFORMANCE-BASED APPROACH TO SAFETY AT LARGE EVENTS IN PUBLIC SPACES: FROM RISK TO SCENARIO ASSESSMENT

**M**anaging the crowd at large events in public spaces is a difficult task. Prescriptive approaches are not suitable while partial performance and risk-based regulations (at national and local level) revealed to be ineffective. Tragic recent events have demonstrated this (e.g. the Piazza San Carlo crowd incident in 2017, Turin - Italy). The reason of their ineffectiveness relies on the peculiarities of both each large event (a football match, a concert, a festival) and the space in which they are organized (a specific stadium, an old town centre, a public park), that may nullify the benefits of a rigid approach using check-lists. Even if yet performance-based.

conference held in Matera.

To satisfy this necessity means to make the artistic and cultural heritage, exhibited to large crowds during public events, safely accessible and exploitable, protecting both the people and itself from the risks of being hurt (the former) or damaged (the latter) in case of a loss of control in crowd management.

Matera is a very peculiar case study, complexity is given by the layout of the town and the fact that the majority of buildings are excavated into the mountain itself.

### SAFETY AND SECURITY OF LARGE PUBLIC SPACE EVENTS

During the conference, Fabio Dattilo highlighted four key elements for safety and security of large events in public spaces:

1. sharing information and accountabilities with stakeholders;
2. risk assessment as the basis to define the management strategy;
3. standards and laws;
4. usage of modern tools to verify if performance targets are reached taking into account some key parameters when assessing complex situations (like the number of participants, their features, the layout and space configuration).

### BOWTIES: A PERFECT TOOL TO IDENTIFY AND ASSESS CROWDING-RELATED RISKS

After presenting a recap about the most recent regulations on fire safety in Italy, Salvatore Tafaro discussed the necessity to identify credible scenarios, representative and conservative, of what can go wrong when managing such complex and large events.

BowTies are a perfect tool to identify and assess crowding-related risks, as shown in Fig.2. Before advanced software simulations are used, this identification has to be formalized to define the scope and the "perimeter" of what needs to be analysed and which are the safety targets to reach. The BowTies for this project have been developed using BowTieXP by CGE Risk Management Solutions, NL.

### THE NEW CHALLENGE FOR RISK ANALYSTS OF LARGE EVENTS

Finally, Luca Fiorentini talked about a preliminary fundamental step before launching a software simulation like Pedestrian Dynamics by Incontrol Simulation Software (Fig.3) allows: it's the knowledge of human behaviour, intended both as individuals and the crowd.

The same word "crowd" hides an intrinsic underdetermination that is

apart the peculiarities of the individuals who make the crowd.

The advanced simulation allows enables us important insights for some aspects, however it is true that without a proper definition of the boundary conditions and the basic parameters, or without a correct evaluation of the results, also in terms of sensitivity, the outcomes cannot be used as a reliable base to make informed decisions.

Only a shared and rigorous approach allows us to go from data to information, and from here, to decisions by stakeholders. Beyond the available tools, this remains the true challenge for the insiders.

Special thanks to Fabio Dattilo (Head of Italian National Fire Corp), Salvatore Tafaro (Matera Provincial Fire Brigade Commander) and Luca Fiorentini (Executive Director of TECSA S.r.l. and SFPE Italy Vice President).

Fig.1: Pedestrian Dynamics by Incontrol Simulation Software

Fig.2: Developed BowTie to assess crowding-related risks in Matera

Fig.3: Matera is a very peculiar case study in terms of layout complexity