

WP1 – BE and SUOD: State of the Art (SoA), risks and human behavior

T1.3 – Terroristic acts (SUOD) in BE: SoA with identification of conditions/factors (in outdoor BE) influencing the risk. Current mitigation strategies analysis. Definition of human behavior including crowding conditions by combining SoA data and real-world events analysis

D1.3.3 – HUMAN BEHAVIORS IN BE DURING THE ATTACK

ABSTRACT. Terrorist attacks, in the last decades, have contributed to reduce considerably citizen safety in the Built Environment. In order to develop risk-mitigation strategies, human behaviours (intended as individual's and crowd's reactions to such sudden disasters) must be deeply inquired. Comprehending recurring behaviours and predicting possible individuals' choices can be useful to determine which factors (e.g.: the type of attack, overcrowding, users' typologies) and BE conditions can mainly affect the emergency.

To this end, this deliverable resumes the recent results of works on real-case observations (i.e. videotapes) from **terrorist attack all over Europe** to organize qualitative and quantitative aspects in such attacks. Comparisons with other emergencies are provided thus defining common and typical reactions to such an emergency. **Outcomes constitute the first complete database** on this topic. **Behavioural investigations** are structured in relation to the emergency stages, by providing related statistical analysis on more frequent observed human reaction. Such results highlight how people tend to run far from the event trigger, but how the need of information about the event plays a fundamental role in timing and decisions. The influence of boundary conditions (e.g. type of attack, BE scenario, damages, rescuers' presence) on behaviours frequency is also shown. **Individuals' motion speeds analysis (also in respect to density conditions)** are compared to previous database concerning other emergencies (e.g.: earthquakes, fires, general-purpose), thus remarking differences in analyzed quantities. As a result, using terrorist acts-related databases in the risk assessment process and in the development of evacuation simulators is suggested by results. This database constitutes a starting point to be reused in the future work packages to this aim.

