BE S²ECURE
Built Environment Safer in Slow and Emergency Conditions through behavioUral assessed/designed Resilient solutions
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WP 1 BE and SUOD: State of the Art (SoA), risks and human behaviour

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

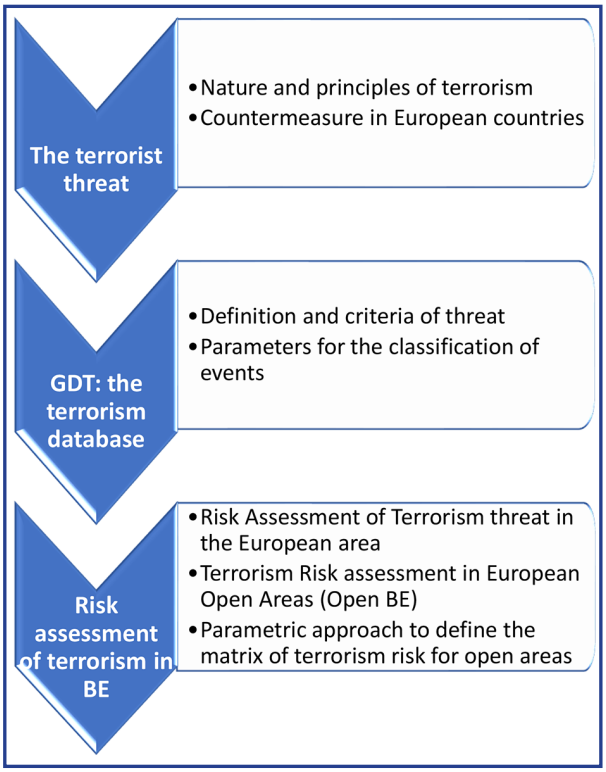
D1.3.1 - MATRIX OF TERRORISM RISK CONDITIONS IN BET

ABSTRACT

The terrorist threat is a complex phenomenon that affects modern cities. Differently from the natural event, terrorist events include the human will of perpetrators, changing their perspective of urban areas. Starting from the identification of a well-accepted definition, Terrorism has been analyzed organizing all its inherent characters and exploring previously European experiences according to the main scientific literature, as well as focusing on the enabled strategies and guidelines in the European States.

The recognition and the validation of relevance in the terrorism phenomenon have been achieved investigating a real sample of events based on the Global Terrorism Database (GTD) through the Probabilistic Risk Assessment (PRA) approach. Here, main features are highlighted simplifying the parameters involved in the GTD classification, focusing on the predominant attack types and a reduced number of Environmental urban Classes. Moreover, the terrorism phenomenon has been analyzed focusing on the second level of Environmental Classes related to the Open areas. Those are referred to the real open urban areas (identified for squares and streets) and to the external areas (identified as Spaces of Relevance - SoR) related to critical classes of buildings.

Finally, a parametric deconstruction of the phenomenon has been identified following the PRA. Here, all the indexes involved in the Likelihood and Consequence variation were identified and validated to determine a full parametric algorithm useful in quantifying the risk assessment of real open BE.



Workflow: from the state of art to the Matrix of Terrorism

Summary of terrorism countermeasures relating the "visibility" of measures and "activeness" of urban users

	HIGH VISIBILITY	INTEGRATED	INVISIBLE
ACTIVE MEASURES	**Video-surveillance**	**Mobile barriers**	
	Closed circuit television (CCTV)	mobile vehicle bollards (retractable, turntable)	
	Surveillance		
	Vigilance and control of accesses		
	Mobile Barrier		
	Rising Wedge Barriers, Drop Arm Crash Beams, Crash Gates, Surface-Mounted Rotating Plates		
PASSIVE MEASURES	**Traditional Passive barriers**	**Fixed urban furniture**	**Urban Mobility Planning**
	Fixed vehicle bollard Walls, berms Jersey barriers in fixed and anchored installations Fences (Chain-link, Monumental and metal fences, Anti-climb (CPTED) fence, Wire	Flowerpots heavy objects (e.g. monuments) Engineered planters Reinforced street furniture, fixtures and trees	Controlled Traffic Zone pedestrian zone Parking Design, etc.
		Integrated Fixed barrier	**Designing external features of buildings**
		The NOGO barrier The TigerTrap	Positioning of glazed surfaces Using laminated glass

Indexes for the Terrorism Risk Assessment