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SMART CIBER –
System of Maps Assessing Risk of Terrorism against Critical Infrastructures in Big Events Rallies
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CONCEPT PAPER
Analysis of EU and global system and methodologies for risk assessment

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This paper investigates both the theoretical and the empirical approach of the model of the integrated map for risk assessment. Drawing on concepts of risk and resilience, the model aims at developing an integrated risk map through a set of indexes, indicators and clusters. While indexes can be defined as "the focus of the observation", indicators are "what we collect" and clusters are "what we look at". In particular, we aim at collecting: a) structural data b) relevant data in relation to both critical infrastructures and the overall vulnerabilities of the "big city" (i.e. unauthorized settlements). In doing so, weak signals that should raise risk alert (if matched with other data) are not only emphasized but also geo-located on a map. The repetition and the matching of some of the indicators disclose what we call as "red flags" and might determine a pro-active intervention.

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INTRODUCTION

The creation of a Risk Map system for risk assessment against terrorism threat focusing the attention on Critical Infrastructures (CIs) and Big Events (BEs) within the Big City (BC) urban context, should take into consideration a broad approach, as the phenomenon of "Terrorism" is characterised for an extreme

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flexibility and a dynamic capability in adapting its image according to the changing conditions within a certain space/time[1], i.e. organizational, operational, logistic aspects, as well as the tactics and strategies to reach the ideological aim at the base of violent activity justification. Therefore, the development of a prevention/repression policy on this issue needs to consider this aspect and calibrate the internal measures to adopt on this basic feature.

This premise is crucial to understand the framework of the methodologies applied to reach a global system of risk assessment map, i.e. the output of the present research. The experience of the most relevant (from both mass media and civil society perspectives) terrorist events occurred within the EU borders, i.e. the bomb attacks in Madrid (2004) and London (2005), contributed in implementing the legal framework, as well as the operative best practices on this issue among the several EU Countries. The result is a shared analysis of the perception of the terrorist threat to achieve a common standard reaction capability, on the base of which increasing the (qualitative and quantitative) level of controlling/preventing possible threats.
In detail, the EU and Member States have a key role in developing polices of prevention and repression/control of terrorism menace, both at a national and European/international level, as potential targets of this threat, as proved by the mentioned two main violent events occurred after the 9/11 in he U.S.A. Therefore, some features of the EU Counties could be considered as attractor factors/conditions for national/international terrorism, whatever is its cause (e.g. political, religious, etc.). In particular, the EU considers that one of the many attractor factors would be the aspect of "major event" (i.e. BE, as defined in this study), since "*the aim of such terrorist attacks could be the event itself, VIPs, politicians of the European Union, national delegations of Member States or the public taking part in the event*", furthermore the presence of international media "(…) represents a *platform for the presentation of the group's or organisation's ideology*". As consequence "*the law enforcement agencies should decide which terrorist groups or organisations –and individual persons- could be relevant and check their own data base according*

[1] The concept of "*space*" and "*time*" is at the base of the sociological approach, on the theories answering the question "how to read the reality": space and time in fact, are the two main factors that help in understanding the reality perception from "**the natural world**" viewpoint (GIS-Geo-Spatial References). The natural world should be completed with "**the humankind world**" perception to reach an holistic understanding of the reality, characterized for the interaction of two factors, i.e. "cognitive activity" and "relational activity" (Human Factors). The two mentioned categories are intertwined and the synergic activity produces the interpretation (perception) of the reality.

to the event".[2] In few words, the EU policy focuses its attention on a prevention activity based on information and intelligence best practices sharing.
The nature of threat is flexible as well in fact the new frontier of the terrorism evolution, is "individual" terrorism, as a private violent strategy decision: the s.c. "*lone wolf*" or "*solo actor*" phenomena. In fact, the most recent Europol reports intend to take into consideration also these peculiar criminal phenomena as brand new effective forms of terrorism. Thereof, the Europol analysis revealed that "(…) *the threat [of Al-Qaeda-inspired terrorism] has evolved and lone actors or small EU-based groups are becoming increasingly prominent, as is the internet, as a key facilitator for terrorism-related activities*"[3]. The turnover of the terrorism strategy modification has been identified by Europol in the year 2011, as new terrorism violent forms took place in several EU Countries on the base of which it is possible to make a future development analysis of this phenomenon: "*2011 presented an highly diverse terrorism picture which will probably be mirrored in 2012, with a possible increase of lone and solo actors plots*"[4]. Europol deeply analysed the "Anders Behring Breivik case" happened in Norway, as an exemplification of the evolution of this kind of terrorism: "(…) *the incidents in Norway in 2011 prove that attacks performed by individually-operating actors are not a practice limited to Al-Qaeda inspired terrorism*"[5], in fact "*the different modi operandi used in the violent extremist incidents in Norway in July 2011* (…) *ha[ve] demonstrated the devastating effects of firearms. Since the Mumbai attacks in 2008, the potential impact of a successful firearms assault has been obvious and may be chosen for future attackers*"[6].

[2] Council of the European Union, 10589/1/7 REV 1, ENFOPOL 119, *Handbook for police and security authorities concerning cooperations at major events with an international dimension*, Bussels 04.07.2007, Annex II, III.2.3, p. 16
[3] Europol, TE-SAT 2012, *EU Terrorism Situation and Trend Report*, European Police Office, p. 5, www.europol.europa.eu
[4] Europol, TE-SAT 2012, *EU Terrorism Situation and Trend Report*, European Police Office, p. 6, www.europol.europa.eu
[5] Europol, TE-SAT 2012, *EU Terrorism Situation and Trend Report*, European Police Office, p. 9, www.europol.europa.eu
[6] Europol, TE-SAT 2012, *EU Terrorism Situation and Trend Report*, European Police Office, p. 32, www.europol.europa.eu

DEFINITIONS OF THE MAIN CONCEPTS

The risk map model developed in the course of the present research is the result of a work-in-progress approach, through an analysis of several aspects directly and indirectly connected with the terrorism issue. In fact, terrorism should be intended as a complex phenomenon, which involves several components in a society and a EU metropolis.

In particular, the present study aims to create a system of risk assessment, taking into consideration the whole complexity of the different nature aspects that unavoidably refers to terrorism, intended both as strong and weak signals, considered as outputs of a big city urban context.
The two main intertwined concepts, , namely "risk" and "resilience", deal with terrorism.

In detail, the "**risk**" definition varies according to the context of reference (e.g. health condition, economy, political aspects, social sciences, etc.), therefore the doctrine has not created a unique and homogeneous definition of this concept (see, *inter alia* Lupton 2013)[7] . In particular, the "risk" definition intended in this research refers to the perception coming from the natural hazards experience and background (civil protection perspective), since it is crucial to distinguish between the intrinsic nature of the risk and the causes that originate the risk itself.

The doctrine defines several components of the risk concept:

- the likelihood of an event occurring
- the Impact/consequence/magnitude, etc. of the event if it occurs
- vulnerability
- uncertainty
- subjectivity vs. objectivity

In light of the main components of "risk", we can argue that the doctrine perceives risk as being the chance of some disaster occurring. In fact, once risk has been identified, then there is the evidence of a (potential or real) threat of damage, injury, liability, loss or any other negative occurrence that is caused by external

[7] Lupton, Deborah, *Risk,* Routledge 2013.

or internal vulnerabilities, and that may be avoided through pre-emptive measures, such as surveillance practices.
Furthermore, risk can also be identified with a chosen action or activity (including the choice of inactivity) that will lead to a loss, intended as an undesirable outcome. From the perspective of the "vulnerability" concept, as deeply rooted in the "risk" definition, it is possible to identify the potential that a given threat will exploit vulnerabilities of an asset or groups of assets and thereby cause harm to the organisation.
A risk can also be intended as the consequent loss resulting from the inadequate or failed internal processes, people and systems, or from external events.
Therefore, the idea of risk is also related to the concept of uncertainty, as the risk can also be defined as the effect of uncertainty upon objectives where an effect is a deviation from the expected (positive or negative) results.

The concept of "risk" is unavoidably related to the "**resilience**" definition, with which it shares the same background, as also this concept originates from the natural calamities and hazards context.
The international organisations in fact, began to develop a common shared definition of resilience, especially in the light of the terrorism threats both in the U.S.A. and EU in the course of the year 2000. In particular, the UN[8] definition of resilience is based on the idea that it is "*the ability of a system, a community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions*"[9]. Thereof, the level of resilience (of a person or communities) depends upon the presence of necessary resources and the capability of reorganising itself both prior to and during time of needs. The same considerations applied to the concept of risk can be inferred for "resilience" as it is seems challenging to agree upon a common understanding across the disciplines which have attempted to address resilience from different perspectives. In this context, we are mainly concerned with "resilient cities" [10].

[8] United Nations, "UN System Task Team on the post-2015 UN development agenda. Disaster risk and resilience", Thematic Think Piece, UNISDR & WMO, May 2012
[9] United Nations Office of Disaster Risk Reduction, UNISDR Terminology and Disaster Risk Reduction, Geneva, 2009
[10] http://www.preventionweb.net/files/33059_33059finalprinterversionexecutivesu.pdf

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THE STUDY OUTCOME: A MODEL OF INTEGRATED MAPS FOR RISK ASSESSMENT (see Appendix)

Drawing on the above mentioned concepts, this research aims at developing a model of risk assessment based on an integrated maps system.
In light of this premise, it is crucial to clarify a further essential concept developed through this model: i.e. the concept of "risk map", as intended in this study.
In particular, the developed model is based on a set of indicators which serves as basis for an integrated and geo-located mapping system. The further aim of the present study in fact, is to create a decision-aiding tool for municipalities.
Therefore, the model is built on a wide *spectrum* of "**indicators**", defined as empirical facts or data that serve to measure the extent of a phenomenon (i.e. "what we collect"). They are the weak signals as the output of a certain urban context, that reveals the nature of the vulnerabilities present in a certain space at a certain time.
The interaction among indicators reveals the "**indexes**", defined as theoretical categories that sever to guide the observation (i.e. "the focus of the observation").
Both indicators and indexes are gathered from the urban context through a system based on the overlap of several "**clusters**", defined as the different perspectives of observation (i.e. "what we look at"). In detail, the clusters taken into consideration in the present study can be classified as follow:
The first three clusters (i.e. **clusters 0, 0.0 and 0.1**) concern the risk map structural data; **clusters 1 and 2** concern critical infrastructures and big cities while the last two clusters (i.e. **clusters 3 and 4**) deal with further developments on the basis of some limits concerning the interaction of the previous clusters.
In detail:

-Cluster 0: it is a set of data focused on specific structural data (geo-location)
-Cluster 0.0: it is a set of "sensitive targets" related to Critical Infrastructures (CI) and Big Cities (BC) contexts (geo-location)
-Cluster 0.1: indicators of social uneasiness drawing on the cluster 0 (geo-location)
-Cluster 1: CIs, namely relevant indicators focused on Critical Infrastructures related to early warnings ("soft targets") and red flags ("hard targets") (geo-location)
-Cluster 2: BCs, namely relevant indicators within the urban context related to early warnings ("soft targets") and red flags ("hard targets") (geo-location)
-Cluster 3: subjectivity, namely the perspective of the experts and of the citizens
-Cluster 4: resilience opportunities (further developments)

The explanation of the methodology to reach the abovementioned model needs further elaboration on the basis of the outcomes of the information technology tool. In fact, the collected data are intended to be represented through a geo-location system, namely a software able to upload almost in real-time the data gathered from the urban context and through the cartographic representation of the city (e.g. Milan), to geo-localise the several indicators at the level of civic number, through a multi-dimensional perspective (i.e. district level, census areas, streets perspective, etc.). Thereof, this software allows to obtain the data analysis, through algorithmic systems, from both aggregated and disaggregated data perspectives.

A due premise has to be done, the several indicators and indexes sets referred to each cluster should be intended as "open lists", because it is always possible to modify both the set of indicators or indexes and adequate them in accordance with the specific urban context of reference that has to be analysed (both at a national and European level). This model will be tested and adopted in other EU Countries, partners of this research (Rotterdam, Budapest and Varna).

The **Cluster 0** contains the demographic data gathered from the different Municipality departments (i.e. statistic department, the school and education department, etc.), whose aim is the data collection about the population, the immigration impact, the retired/weaker social classes in general.
The demographic data are integrated with specific features, i.e. ethnicity, education level, economic status, religious affiliation, on the base of which further indicators need to be gathered:

-Unemployment rate
-School dropout rate
-Immigration rates and residence requests
-NGOs: quantitative (number) and qualitative data (features: religious, etc.)
-Social housing: quantitative (number of residents and number of defaulting payments/evictions)
-Social workers associations rates
-"Radical meeting points": radical right/left wing organisations; radical mosques
-Reports by the citizens to the local police: quantitative (number) and qualitative (the reason of the report)
-Fines made by the local police: quantitative (number) and qualitative data (why)

The **Cluster 0.0** refers to the "sensitive targets" on the base of the Clarke's theory of EVIL DONE[11], i.e. the acronym of the main features of a potential target to be attractive for a terrorist attack or threat. According to the doctrine and the previous most recent experience about international terrorism events, it is possible to recognise certain privileged targets, because of their logistic, their symbolic/iconic intrinsic value, their structural features, etc.
This study intends to divide two categories of sensitive targets, i.e. the potential targets referred to the Critical Infrastructures and those referred to the Big City urban context.
Critical Infrastructures:
-Electrical cabinets
-Gas pipelines
-Waterworks
-Manhole cover
-Underground stations
-Bus stops
-Tram stops
-Train stations
-Airports

Big City urban context, specifically referred to the Milan city:
- Duomo church/square
-Scala theatre/square
-City Hall
-Tribunals & Courts
-San Siro football stadium
-General Consulates
-Police Headquarters
-Military barracks
-Expo pavilion
-Milan Stock-Exchange

[11] Clarke R. V., Newman G. R., *Outsmarting the Terrorists*, Praeger Publisher, Westport, 2006

These two groups in fact are objects of a specific analysis through an agreement of information sharing activity, where the CIs and the private/public major sectors (religious, cultural, political, economic, etc.) are involved in a PPP process (Private Public Protocol) to obtain the collaboration of the main stakeholders of the several sectors involved in the different functions of a city.

The **Cluster 0.1**, defined also as "social uneasiness map", is specifically related to the vulnerabilities, intended as the weak signals or early warnings, referred to the urban context. In fact, the data collected in the very first cluster (i.e. cluster 0) lead to a visual representation of the social uneasiness at an urban level. In particular, structural data can be matched with the "dynamic" data (early warnings/vulnerabilities) geo-located within the city. The dynamic data can be identified as follow:
-Unauthorised settlements (e.g. Roma camps)
-Unauthorised houses occupancies (buildings or apartments)
-Unauthorised dump sites
-Damages of different nature (e.g. vandalism, damages or removed direction signs, graffiti)
-Bagging
-Homeless

The Clusters 1 and 2 gather a wide *spectrum* of data, from the early warnings (i.e. weak signals or vulnerabilities) to the s.c. "red flags" (i.e. strong signals or threats).
In particular, the early warnings have to be intended as weak signals that should raise risk alerts, especially if matched with other data (on the base of the different clusters interaction), while the red flags represent the medium/high risk. The early warnings turn into red flags on the base of two main criterion:
1-Repetitions, i.e. percentage of a single indicator and/or interaction percentage among indicators, that is data matching
2-Sapcial proximity, i.e. two or more than two indicators in the same area

Besides it is important to underline that the following indicators lists are Milan-centred and the EU partners (i.e. Rotterdam, Budapest and Varna) are encouraged to:
a-tailor this model according to their legal, cultural, social framework in order to make it operational within their specific contexts
b-identify who can provide relevant information (e.g. structural data, safety/security data, etc.)

In particular, the **Cluster 1** refers to the Critical Infrastructures (CIs) indicators, where the early warnings on the base of the collected data from the Milan experience can be listed as follow:
-Proximity with unauthorised camps
-Stealing of copper, iron, etc.
-Arsons
-Graffiti
-Breakings and damages to the perimeter walls, enclosures and gates
-Breaking and damages of technical devices: e.g. surveillance cameras
-Stealing of ID badges and documents
-Employees assaults
-Peri-operational surveillance

The repetition (% criterion) of the abovementioned vulnerabilities, turns these phenomena into red flags (i.e. strong signals or threats), as it reveals also further events that should be intended as potential danger to the regular activity of the CIs:
-Unauthorised parking of vehicles in reserved areas
-Abandoned cars/vehicles
-Unidentified objects
-Sabotage against technical devices
-Damages (e.g. electrical cabinets, gas pipelines, manhole covers)
-Abandoned cars/vehicles + unidentified objects

The data matching activity among the several indicators and the related repetition (% criterion), lead to the identification of a set of indexes, as mentioned in the previous pages... This specific cluster identifies the following indexes:
-Unauthorised settlements
-High immigration rates
-Gang presence
-Criminal networks
-Unauthorised houses occupancies
-Radical “meeting points”

The same *ration* has been adopted for the **Cluster 2**. The main difference is that cluster 2 refers to the Big City (BC) context of analysis.
Thereof, the relevant indicators intended as early warnings collected from the urban context are as follow:
-Unauthorised settlements or occupancies
-Unauthorised dumps
-Damaged or removed direction signs and/or traffic lights
-Threats of public officials
-Robberies
-Damages against goods/properties
-Breaking and damages of public security devices (e.g. surveillance cameras)
-Insufficient/lack of lighting
-Unauthorised vendors

The repetition (% criterion) of the abovementioned indicators plus further indicators that reveals a higher level of danger, create the red flags indicators:
-Abandoned cars in specific locations
-Unauthorised occupancies of apartments and buildings
-Vandalism
-Robberies
-Food adulteration
-Narcotics/drugs dealing
-Street prostitution
-Assaults of public officials
-Brawls (groups of youth/adults + ethnic features)
-Forgery of brands, documents, cars, etc.
-Pollution and/or environmental crimes

Also the BC context is based on the further development approach adopted for the CIs analysis perspective, i.e. the data matching activity among the several indicators and the related repetition (% criterion), lead to the identifications of a BC specific set of indexes:
-Human trafficking
-High immigration rates
-Gang presence

-Criminal networks
-Unauthorised houses occupancies
-Radical "meeting points"

It is worth noting that the specific phenomenon of "lone wolf" (LW) is not characterised by specific indicators, because, notwithstanding the importance of tracking the (weak and/or strong) signals of "lone wolf", there are no direct indicators to this violent phenomenon for one main reason: the local police cannot collect relevant information (e.g. illicit trade of explosive material) referred or referable to a LW case.

The data collected from the several sectors involved in this study, namely the Municipality of Milan, the Local Police, the Critical Infrastructures are validated through the subjective perspective of this model, i.e. the creation of an "Expert Committee" (EC), aimed to provide with contributions, namely structured reports (expertise) of the data-analysis feedback, intended as the risk assessment on the base of the abovementioned indicators/indexes several lists.
Besides the information provided by the EC will be collected with *delphi method* or *focus groups*, as even the subjective perspective will enter the algorithm for risk evaluation.

We also need to take into, consideration the limits of this system. The following aspects should be considered:
1) The observers are mainly the local police, therefore there is a lack of other crucial data collected by, for instance, the state police or other public security forces
2) The map implicitly requires to adopt a selective attention criterion of the (limited) indicators lists, with the consequent risk of ignoring other important "early warnings"
3) The subjects involved in the data gathering process (i.e. the local police agents) require to be trained, therefore it is crucial to organise trainings activities that need to be homogeneous and focused on "what to look at"
4) The technical devices sharing among the EU partners, to overcome the IT gap on the different skills and technological tools available in each Country
5) The "technological determinism" aspect: namely the risk of relying exclusively on technology without taking into account a more socio-technical approach to security devices

6) This model is not sufficiently predictive and literature has highlighted impossibility of prediction through indicators only

The subjective perspective of an Expert Committee in fact, has been though specifically to overcome in an effective way, the limits mentioned in the points 2), 5) and 6), including also the citizens' perspective through online tools and/or informal debates.
In particular, the model has been developed to provide the EC with a specific set of questions[12]:
1. Are there (for ex. social, economical, cultural) developments that are perceived as problematic in specific societies (or in broader terms cultural areas)?
2. Are these developments of specific collective significance?
3. Which social groups are particularly affected by the respective conflicts?
4. How are these groups likely to respond, given their political and ideological patterns of thought: should we expect them to become radical or, even worse? could individual groups consider using violence as a solution to the conflict or to achieve their goals?
5. How great is the possibility that a radical/extremist attitude may lead to actual violent acts or behavior: do the groups have the required resources as well as the willingness to act or are they prepared to acquire the resources they need to carry out the acts of violence?

One additional issue is crucial to the final aim of a risk assessment through a map system developments, namely Big Events (BEs).
In particular, the doctrine defined BEs or mega-events as "*large-scale cultural (including commercial and sporting) events which have a dramatic character, mass popular appeal and international significance*"[13].
In fact, BEs concerns both space (a specific urban context) and time (a specific timeframe), thereof the model developed in this study requires to adapt the level of risk assessment to the two main variables, namely space/time. Therefore, in case of a BE occurring in a certain urban context, an increasing level of risk should be taken into account i.e. increasing the percentage criterion of interactions among the several weak signals and red flags.

[12] Kemmesies U. E., *The Prediction of Terrorist Attacks – Is it possible to identify Pre-Incident Indicators for these crimes*, Paper-presentation at the international expert meeting organised by Max-Planck-Institute, Freiburg, March19-22, 2009
[13] Roche, Maurice, *Mega-events and Modernity. Olympics and Expos in the Growth of Global Culture,* Routledge 2000.

Besides the literature recognizes three further main aspects that may influence the measurement of the resilience factor, as follow:
-People density
-Symbolic feature (subjective: person / objective: place-logistic)
-Mass-media attractiveness

In light of this, it is possible to affirm that BEs have to be intended as "sensitive targets" by default, as the international literature highlights at list two dimensions which could impact on BEs[14]:
-International threats (e.g. terrorism)
-Local threats (e.g. protests)

BEs, thus, need to be contextualized in order to plan an effective crisis management and/or to foster resilience. Therefore, a comprehensive list of indicators would be useless and misleading.

FIRTHER DEVELOPMENTS: RESILIENCE

Resilience" is based on two main aspects, i.e. first of all the ability of recovering after a crisis and then the ability of taking the crisis as an opportunity to grow and improve.
In the literature, the concept of resilience is increasingly linked with terrorism, urban contexts, critical infrastructures and mega-events, such as the Olympics. In particular, there has been a significant shift: from **predictive models** that have –more often than not- substantial limits, to **pro-active approaches** based on the concept of measurable indicators of resilience.
Therefore, either in light of the above mentioned limits or of further developments and big events (EXPO 2015 in Milan), it is crucial to think about risk, security and terrorism within the framework of resilience.
The concept of "resilience" in fact, can be schematized as follow:

[14] See, *inter alia*, P. Fussey, J. Coaffee, G. Armstrong, and D. Hobbs, *Securing and Sustaining the Olympic City,* Ashgate, 2011.

From a Pro-Active Approach To a Reactive Approach

Timeline

Prediction *Resilience*

(Integrated Risk Map)

In detail, "resilience" means the ability to "resile from" or "spring back from" a shock. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need.

A particular focus has to be devoted to the resilience capability in relation to the CIs possible threats, because of the key-role that the CIs play within an urban context for the basic functional aspects of the city. In fact, the doctrine tried to develop specific CIs resilience indicators.
The assessment of resilience covers all the disaster management cycle, from mitigation to recovery. Specific indicators of resilience are[15]:
-Robustness
-Rapidity Resourcefulness
-Redundancy

Each indicator bears a different meaning with regards to different phases. For instance robustness in the mitigation phase deals with the development of retrofitted structures, while in the preparedness deals with the degree of community preparedness.

Further resilience indicators, that are objectively valid not only for the interaction with the CIs specificity, may be listed as follows:

[15] Bruneau, M *et. al,A Framework to quantitatively assessing resilience of communities,* Earthquake Spectra 19 (4), 737-738, 2003.

-Technological upgrade
-Training of those in charge of security

The concept of resilience relates also to urban resilience and mega-events, security and terrorism (e.g. the designing of counter-terrorism features to sport and non-sport venues).
Future research could specifically address resilience with a quantitative approach (indicators) in order to overcome the limits of a predictive model (see the point 6) of the abovementioned list of limits to the proposed matrix).

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GLOSSARY

BIG CITY: it refers to a metropolis or a complex urban setting, characterized for a big flow of people living and/or working within a specific urban context.
BIG EVENT: Big Events of mega-events are "large-scale cultural (including commercial and sporting) events which have a dramatic character, mass popular appeal and international significance".
CLUSTER: perspectives of the observation ("what we look at")
CRITICAL INFRASTRUCTURES: the EU Communication COM(2004) 702 defines Critical Infrastructures as "Those physical and information technology facilities, networks, services and assets which, if disrupted or destroyed, would have a serious impact on the health, safety, security or economic well-being of citizens or the effective functioning of the government Member States".
"EVIL DONE MODEL": it has been created by *R.V. Clarcke* and it is the acronym of the main features of a potential target to be attractive for a terrorist attack or threat (i.e. E=exposed; V=vital; I=iconic; L=legitimate; D=destructible; O=occupied; N=near; E=Easy)
INDEX: a theoretical category that serves to guide the observation ("the focus of the observation").
INDICATOR: empirical facts and/or data that serve to measure the extent of a phenomenon ("what we collect").
"LONE WOLF" THEORY (LWT): it is the brand new frontier of terrorism expression, as it is a phenomenon characterized for an individualistic subversive activity: a lone wolf is "a person who acts on his or her own without orders from — or even connections to — an organization".
RESILIENCE: the doctrine has not a unique definition of "resilience", as this concept can be applicable in a wide verity of contexts (from natural hazards to criminal phenomena). The literature through the recent years links the concept of resilience with terrorism, urban context, critical infrastructures and mega-events.
This research adopts the UN definition of "resilience", i.e. "the ability of a system, a community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions".
RISK: the doctrine has not created a unique definition of "risk", since this phenomenon can occur in different contexts and it can be expressed from a wide *spectrum* of phenomena of different nature.
This research defines "risk" as is "the evidence of a (potential or real) threat of damage, injury, liability, loss or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through pre-emptive measures, such as surveillance practices".

RISK ASSESSMENT MODEL: a "model" is a schematic and simplified description of a phenomenon, system or process that accounts for its known or inferred proprieties and may be used for further study of its characteristics (i.e. predictions). Thereof, a "risk assessment model" is a scheme through which it is possible to analyse a set of phenomena that the experience indentifies as (quantitative and qualitative) highly probable to generate "risk" within a certain context.

RISK MAP: the "risk map" is a cartographic representation of the several vulnerabilities gathered from a certain urban setting. The added value is the fact that the several signals of social uneasiness and criminal phenomena are visually represented on the city map, so that it is possible to have a clear picture of the logistical location of the vulnerabilities. Besides, a cartographic system can facilitate the public institutions in implementing prevention/repression strategies against the most diffused criminal phenomena, as well as to reduce/control the vulnerabilities present in certain areas represented on the map system.

SAFETY AND SECURITY POLICY: the distinction between the two terms "safety" and "security" is always ambiguous, since in many languages there is not a concrete distinction between the two words, as there is only one word to express the both concepts (e.g. German '*Sicherheit*', French '*sécurité*', Italian '*sicurezza*', Spanish '*seguridad*', etc.). In reality the doctrine defines "safety" as 'the condition of being free form harm or risk', which is basically identical to the "security" definition, i.e. 'the quality or state of being free from danger'. But in the case of "security", a further meaning has been developing, more specifically in connection with criminological aspects, i.e. 'the measures taken to guard against espionage or sabotage, crime, attack or escape'.

In light of the pervious premise, the "security and safety policy" is the set of rules and strategies to prevent/repress any form of danger, harm or risk , whatever is the nature of these phenomena.

TERRORISM: the doctrine has not given an exhaustive and clear definition of "terrorism". In fact, both the U.S.A. and the EU created their own "terrorism" definitions, although the result is for both definitions, a list of behaviours that the experience referrers to terrorism phenomenon.

The main difficulty in defining this complex criminal activity is due to its "dynamic and flexible" capability in adequate its violent strategy to the social, political, religious, historical context of reference. Thereof, the doctrine distinguishes different forms of "terrorism": i.e. religious terrorism, political terrorism, narco-terrorism, environmental terrorism, etc.; furthermore the logistic violent operative capability influences the "terrorism" definition: i.e. national terrorism and international terrorism.

VULNERABILITY: it is a certain phenomena that has negative consequences (social uneasiness) within a certain space (urban setting) from different viewpoints: i.e. social, political, institutional, economical, cultural, religious, etc.

WEAK SIGNAL or EARLY WARNING: it is a phenomenon present in a certain setting, that apparently has not a negative consequences but in concrete it generates social uneasiness, also at the simple level of "social perception" (i.e. there is not a real and concrete risk, but there is a diffused sense of vulnerability within a certain community).

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SMART CIBER –
System of Maps Assessing Risk of Terrorism against Critical Infrastructures in Big Events Rallies
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APPENDIX

Scheme of the model: System of Maps Assessing Risk of Terrorism against Critical Infrastructures in Big Events Rallies

Structural data city level		Critical Infrastructurs	Big City	Experts and Citizens	Resilience
Cluster 0: geo	*Cluster 0.0: geo*	*Cluster 1: geo*	*Cluster 2: geo*	*Cluster 3: geo/not*	*Cluster 4: geo*
Demographic data of population	Unauthorised settlements	Proximity with unatuhorised camps	Unauthorised settlements	Exp.: info from round tables	Robustness
Unemploiment rates	Unauthorised occupances	Stealing of copper, iron, etc.	Unauthorised occupances	Exp.: info from focus groups	Rapidity
School drpout rates	Unatuhtorised dump sites	Arson	Unauthorised dumps	Citiz.: info from focus groups	Resoucefulness
Immigration rates and residence request	Damages of different nature	Graffiti	Damages or removed traffic signs	Surveyes on specific issues	Redundancy
NOGs quantitative/qualitative data	Bagging	Breakings and damages	Public officials' threat or assautls	Local police talkings	Technological update
Social housing quantitative/qualitative data	Homeless	Breakings and damages of IT devices	Robberies	Web info and complains	Security agents' training
Radical "meeting points"		Stealing of ID badgesand documents	Damages to private/public goods		
Citizens' reports to the local police		Emplyees assaults	Insufficient/lack of lighting		
Fines made by the local police		Unauthorised parking in reserved areas	Bkreaking/damages of secuitry devices		
		Abandoned cars/vehicles	Unauthorised vendors		
		Unidentified objects	Abandoned cars in specific locations		
		Sabotage technical devices	Vandalism		
		Damages (electrical cabinets, gas pipelines...)	Food adulteration		
			Narcotics/drug dealings		
			Street prostitution		
			Brawls (youths/adults + ethnic features)		
			Forgery of brands, documents, etc.		
			Pollution and environmental crimes		

Experts info feed data

Risk increases when % repetition of single indicator & indicators matching (Indexes):
-Unauthorized settlements
-High immigration rates
-Gang presence
-Criminal Networks

-Unauthorized houses occupancies
-Radical “meeting points”
-Human trafficking