EFNDT WORKING GROUP 5: PUBLIC SECURITY AND SAFETY NDT TECHNOLOGIES

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Introduction

These days the world has witnessed a nearly disaster again in the field of aviation despite of all security measures that already have achieved a considerable level. As a consequence, numerous people are demanding even better and more efficient screening technologies, namely the body scanners. The current news reports are flown over with this subject so it remains unnecessary to go deeper into details in this context leaving just one more technical oriented aspect – demanding scanning and detection technologies. As compared to the NDT-community's foremost mission to preventing technical accidents – the practical approaches in fact consist of scanning and detection technologies. So we are encountering one principle applied in rather different areas, **security** and **safety**, while following principally the same goal – preventing disasters. Since security and safety are organisationally allocated to different institutions, the common commitment raises the questions of the differences between these two areas. The next question would be addressing the potential benefit if they could approach each other or even cooperate. This, again, leads to asking who should take action.

As a result

Elucidating the way to catastrophic events should provide the key to answering the question of the difference between the security and safety. It starts with reasons profoundly different in their nature as shown in red in the first line of **Figure 1**. The common wish is to avoid any harm. Apparently, this difference parallels that one between accidents that happen without any intend and atrocities initiated purposely. Both end up likewise in a disastrous event causing harm. Casting these relationships into a chart yields a funnel like shape as shown in **Figure 1**.

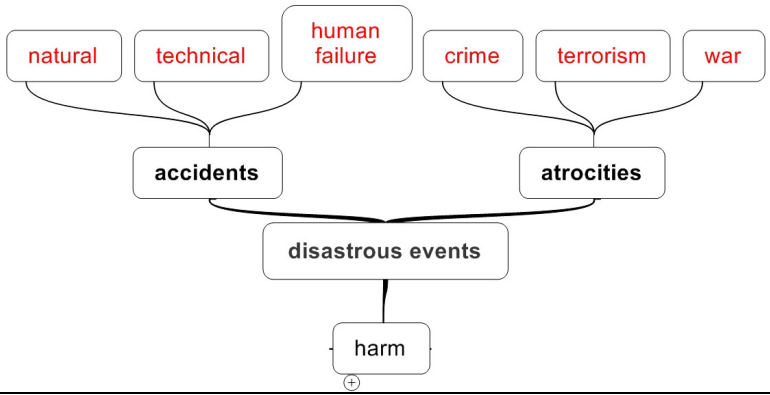

Figure 1: The catastrophic "funnel".

The most obvious difference can be found in the course of a disastrous event, if it was intended or not. Natural catastrophes cannot be made anyone responsible for, except neglected precautions. Technical accidents are definitely undesired, unnecessary to mention the contribution of NDT to avoid them. Due to the imperfect human nature failures can be reduced by various measures such as education etc., but never excluded completely. As a consequence, any accident caused by these reasons cannot be regarded as an intended event, in difference to the other group of causations consisting of crime, terrorism and war. Hence any following action is identified as atrocity to indicate causing harm purposely. Nevertheless, both, accidents and atrocities end up in disastrous events leading to harm in terms of losses, damages and casualties. Facing these consequences, the differentiation between "security" and "safety" is weakened, a reason to bring them together.

The way how to counteract any course of a disastrous event is summarised in **Figure 2**. It clearly shows the different lanes of "security" and "safety". In general, the causes with an up to down tendency are designated in red, and the counteractions in blue with a bottom to top direction.

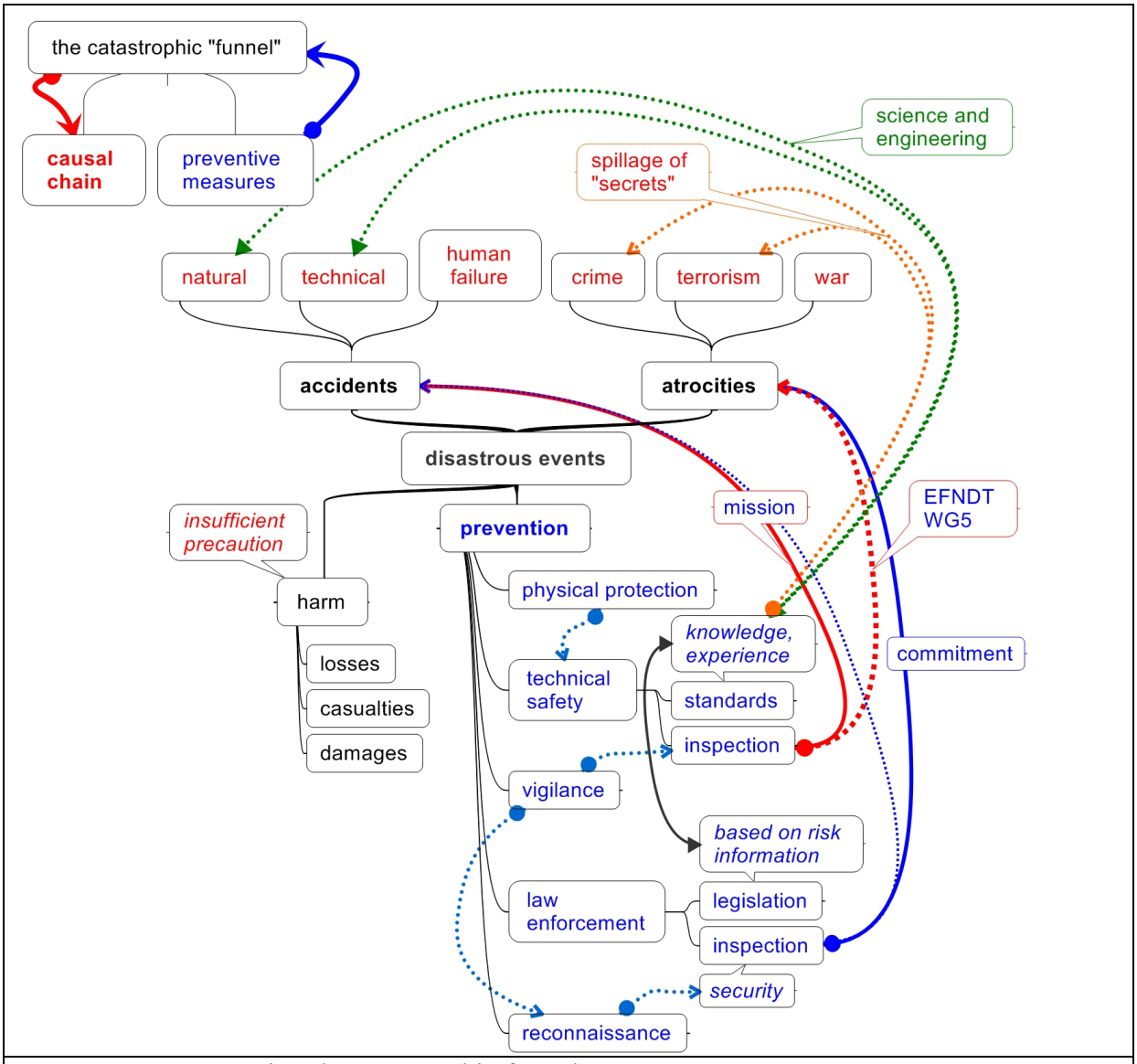

Figure 2: Counteracting the catastrophic funnel

The most effective countermeasure remains the prevention. Any neglect in this context may be another reason of harm; therefore it is added to the chart shown in **Figure 2**. It is very obvious that avoiding accidents is a matter of technical "safety", where NDT is responsible for, while counteracting atrocities falls into the liability of law enforcement, i.e. "security". Doubtlessly there are overlapping areas, particularly pertaining to the knowledge and the available information. In addition, the common knowledge and experience forms the base of understanding the nature and technology and may also contribute to avoid accidents. On the contrary, the identical body of knowledge may have the potential of misuse to cause atrocities. This certainly raises the question of how far to spread certain information, in other words, how to handle confidentiality. Of course, further factors have to be considered such as physical protection, vigilance and reconnaissance. The importance of the last two factors for security matters has been demonstrated these days in the context of the attempted attack on an aircraft.

Though to a minor extend, the law enforcement also takes care of technical safety in some areas when supervising compliance with existing laws pertaining to e.g. traffic safety. Vice verse, there should be also a cross bridging between technical inspection technologies and the prevention of atrocities, a gap that could be filled by the NDT community with all the existing knowledge and experience, though in different fields of applications. As a matter of fact, the EFNDT Working Group 5, formally called "Antipersonnel (Land)Mines Detection", was originally founded to identify ways to eliminate antipersonnel mines from infested areas to make them accessible again after armed hostilities. Beside numerous meetings, one technical concept was studied experimentally studied to improve the prodders for mine searching [1]. Whenever a prodder hits an obstacle in the soil, one could never decide whether this could be a mine or simply a stone. Equipping such instruments with a sensor tip would resolve this problem. However, the sad problem is that most minefields are found in countries with limited financial resources so difficulties have been encountered to introduce advanced technologies on a broad base. In the meantime, the terroristic threat increased dominating the public fear and call for safety shifting the mine problem more and more to the background in the public view. As a consequence, the subject of the Working Group 5 was extended to cover the whole area concerning the public security in the awareness of the fact that many screening and scanning technologies exist either parallel in both areas, "security" and "safety", or just in one of those although the other one could certainly benefit from [2]. Finally, the Working Group 5 was renamed to "Public Security and Safety NDT Technologies (PSSndtT)".

Bearing in mind the dual use in both areas, the developments of new technologies consider both, security and safety aspects as e.g. in the field of X-ray backscatter radiology [3, 4]. Another matter is the utilisation of existing knowledge in each of those areas. A sound body of experiences how to handle dangerous materials and how to detect flaws as possible reasons for disastrous events exists in numerous standards and guidelines. These documents are common e.g. in the commercial and industrial areas as well in non-destructive testing. This includes safety measures in case of accidents. Many stakeholders in the other area are not necessarily aware of the existence of such huge amount of information that certainly could be of benefit when providing counter measures [5].

Meetings and developing technical concepts alone certainly shall be insufficient to reach the goal of a collaborative strategy to prevent disastrous events, particularly since they occur unexpectedly by their nature making it difficult to take preparative measures. Detecting indications in time to take preventive actions should, better to say, must be a common effort of all parties involved. As a contribution for meaningful collaborations in a mutual understanding, a concept for future Working Group 5 activities is presented in **Figure 3**. Two lanes have

been identified that have to be followed both with comparable emphasis: exchanging knowledge and experiments by different means and initiating novel approaches that certainly will become necessary to cope even with the current challenges, not to mention putatively upcoming ones.

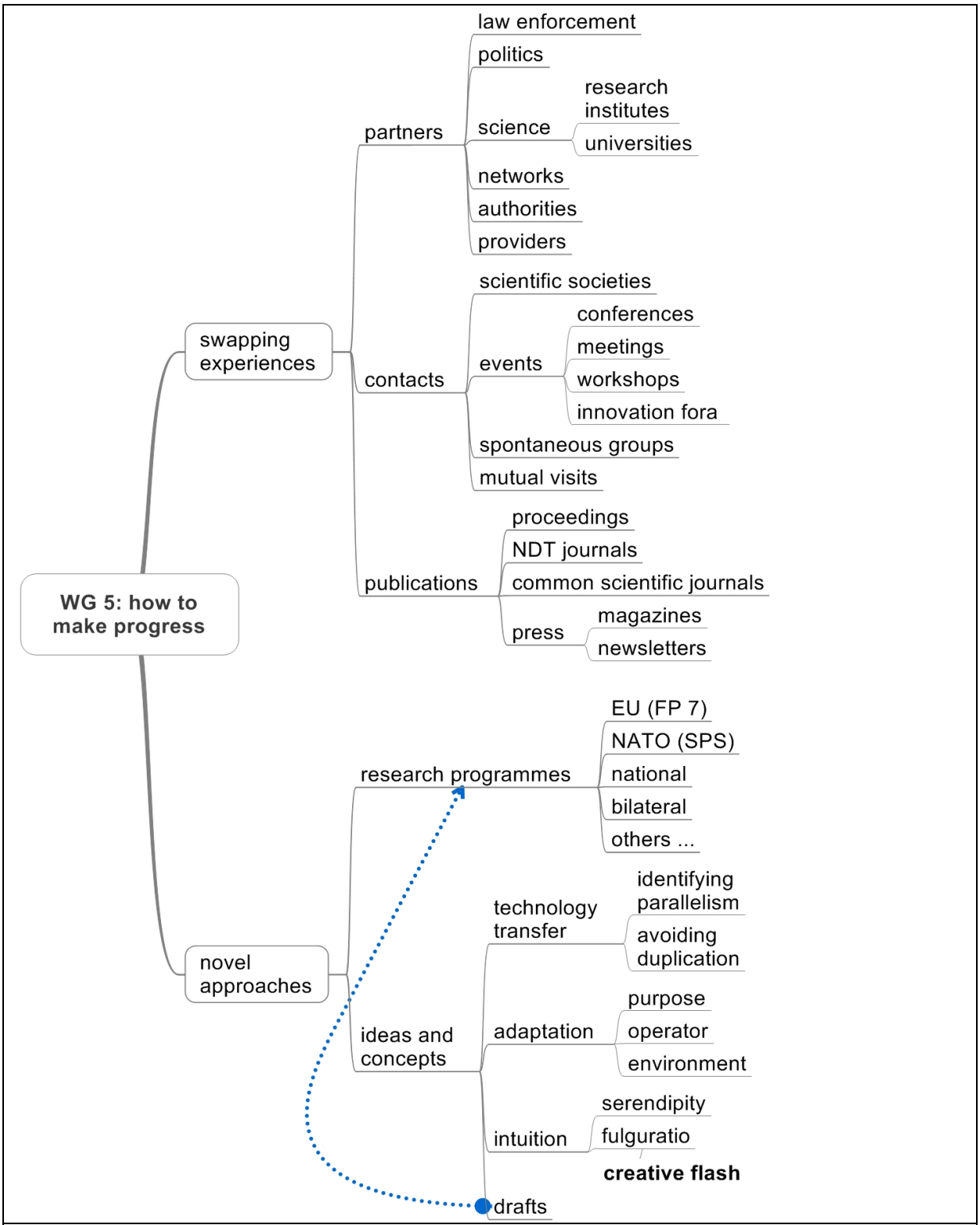

Figure 3: Future strategical concept of Working Group 5 "Public Security and Safety NDT Technologies (Sent)".

Considering exchanges of knowledge and experiences, first of all the partners have to be identified with whom to correspond. This should include definitely the security related ones as they are present in law enforcement areas, authorities and – not to forget – politics. Since nobody is capable to cover all fields of technologies, various scientists in universities and research institutes should also being included. Last not least, the providers of technologies, i.e. the industry and commerce, must be present in such a round. Quite recently, networking activities have been launched to organise such a complex community. Such a group only has a chance to congregate when having the chances of contacts, as they may be found in scientific societies or established at the occasion of events such as conferences, meetings, workshops or various fora. These activities could also include mutual visits and the forming of spontaneous groups. Finally, all sorts of publications always are appropriate vehicles to communicate relevant information in a larger community that may even include the public.

No progress could be achieved without novel approaches, leaving the question how to initiate them. Certainly, there are several ongoing research programmes that offer also a financial source for research activities in this field. Two aspects have to be followed in the future work of the Working Group 5, the constant screening for available programmes and drafting new ideas that might fit into one of those. Last not least, a working group could only prosper well when raising new ideas and concepts. Since this is a field without proven ready made concepts, some initiatives should be mentioned as absolutely essential: the transfer of technologies, quasi as an existing capital, from one area to the other to avoid unnecessary duplication in developmental efforts, consideration of adaptations whenever necessary and the intuition that is, admittedly, not predictable. An adaptation may become necessary if a certain technology should be used for another purpose, by other operators presumably with a different education and/or within a different environment with its own conditions. The least predictable task has the potential to become a most efficient one, entering new lanes to resolve the problems of preventing disasters. Two thoughts may help to enter this most challenging aspect: to consider serendipity and to remember Konrad Lorenz when he introduced the term “fulguratio” [6]. Serendipity requests the broadening of the view to “the other side” of the lane and fulguration a bringing together of two items allocated formerly in separated layers that are isolated from each other. Fulguratio just means a flash through that insulation, and a new identity will be created by bringing two items together that have been strictly separated before. Is there any better argument than this to bring “security” and “safety” together?

Conclusion

The wish to live in a safer world in the future demands a growing together of the classically separated areas of “security” and “safety” in a mutual understanding just to cope with the upcoming challenges. Executing member in each of those areas will benefit from the mutual exchange of knowledge and experiences supporting to improve the tools and measures. Answering the final question of the introduction, we do it – EFNDT Working Group 5 “Public Security and Safety NDT Technologies (PSSndtT)”.

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