

Innovation During the Nuclear Security Summit 2014

*Lessons Learned from the Deployment of Innovation
During the NSS in The Hague*





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Introduction and Reader's Guide

This report provides an impression of the deployment of innovations during the Nuclear Security Summit (NSS) in 2014 and the lessons to be learned from this with respect to innovation during future summits and events.

Starting points for the NSS

- Safe
- Undisturbed
- Dignified and moderate



In the run-up to the NSS, innovation was put top of the agenda, along with maintaining safety and ensuring that the process was undertaken in a composed, undisturbed dignified, and level-headed manner. This is by no means a straightforward matter, as the relationship between safety and innovation is a complex one. The reason why innovation came top of the agenda in the preparations for the NSS was twofold: firstly, it was necessary to deploy new technology and new processes in order to make the summit as safe as possible; secondly, the NSS was seen as a golden opportunity to show the world the innovative capacity of the Netherlands.

Reader's Guide

This report firstly provides a summary of the method used to carry out the study, before outlining the general context of innovation as an explicit theme in the security of the NSS. This is followed by a list of the various lessons learned, with explanation. At the end of this report, a number of recommendations are formulated about how these lessons learned can be used in the organisation of subsequent summits or events.

1 – Backgrounds and Study Design

1.1 Innovation in Security: The Nuclear Security Summit

Security and innovation are inextricably linked with each other, but their relationship is a complex one. Without innovation, it is not possible to anticipate future threats and a more efficient and effective response to existing threats. At the same time, innovation is associated with risks. Whilst existing methods and practices have stood the test of time, new methods and technologies have yet to prove their worth. And it is precisely in situations where safety is at stake, that risks must be minimised and controlled. However, it is essential that innovations continue to be tested and deployed in order to protect safety, not only now but also in the future. It is important therefore to create circumstances in which innovative security solutions are realised in the best possible way. But what exactly are those circumstances?

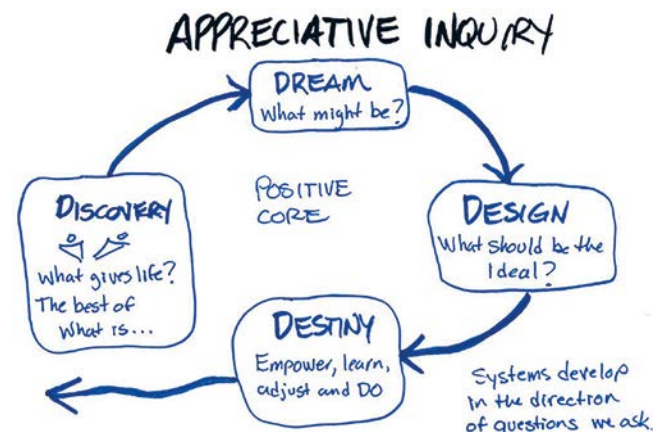
On 24 and 25 March 2014, the Nuclear Security Summit (NSS) was organised in The Hague. The NSS has been described by many as the country's *largest security operation ever*. Although safety was given top priority, innovation was explicitly and emphatically included on the security agenda of the NSS. In addition, a number of innovative security solutions were deployed during the NSS. What were the reasons for deploying these innovative methods and techniques? What were the circumstances that made this possible? And which lessons can be learned from this? With this last question in mind, the Municipality of The Hague commissioned HSD to examine, by means of a small-scale and positive study, the most important lessons learned with respect to the deployment of security innovations during the NSS.

The results presented in this report are derived from a small-scale study in which a method known as *Appreciative Inquiry* was applied to examine which circumstances led to the deployment of innovations in the security of the NSS. First and foremost, this report provides an insight into a number of important conditions for the successful deployment of innovations during the NSS, from which a number of general lessons regarding the policy-related and operational deployment of security innovations can be learned. The underlying thought is that these lessons are important to the security of future large-scale events and to the promotion of innovation in security.

1.2 Study Focus and Method

The study was carried out by a consortium of HSD partners; Twynstra Gudde, Leiden University-The Hague Campus, and HonderdProCent Inzet voor Veiligheid. The main focus of this study was on the lessons learned with respect to the deployment of innovation during the NSS. To identify these lessons, the researchers expressly focused on adopting an *Appreciative Inquiry*. In this method, the emphasis is on forces that foster positive change. So, it is not about identifying shortcomings or problems, but, rather, about discovering and identifying the positives together with the stakeholders concerned. It is about finding out 'What gives life', as founder David Cooperrider puts it.

In consultation with the focus group, four innovations that had been deployed during the NSS were selected for the study and examined in greater detail by means of document analysis and interviews with several persons concerned. In addition, a number of documents of the Working Group on Innovation were examined to obtain an understanding of the context, and interviews were conducted with those directly responsible for security during the NSS and the preparations therefor¹.



Source: Cooperrider et al

1 Appendix 1 contains a list of the persons interviewed.

2 – The Context of Innovation During the NSS

Innovation was deliberately chosen as focal point for security at the NSS. In order to get a better understanding of how innovations were used during the NSS, this chapter provides an analysis of the NSS' innovation context.

2.1 NSS and Innovation

The explicit focus on innovation during the NSS underlines the wishes of the Dutch Cabinet to seize the NSS to demonstrate the innovative capabilities of the Netherlands. This wish was also expressed in the project plan *NSS Innovation Room*, which stipulated that innovation should play a key role during the NSS. The NSS is seen as an opportunity to foster attention for innovation in safety and security, and to showcase The Hague as a city for peace and safety, and as a region where the authorities, business community, and knowledge institutions converge to debate and develop products devoted to safety and security.

‘The starting point in this context is that the NSS is seen as an opportunity. The NSS provides the perfect backdrop for the Netherlands to demonstrate to the world just how innovation can contribute to the security of this type of major events.’

Source: Project Plan Innovation Room, National Coordinator for Counterterrorism and Security (NCTV) January 2014

Once the Dutch Cabinet had indicated in the autumn of 2013 that it wished to use the NSS as a platform for innovation in security, the *Security* project group was set up, and initially tasked with fleshing it out in more detail. Subsequently, the *NSS Working Group on Innovation* was formed, with representatives from the National Coordinator for Counterterrorism and Security (NCTV), the Ministry of Foreign Affairs, the National Police, the Ministry of Defence, and the Municipality of The Hague.

This Working Group initially focused centrally on compiling an inventory of innovative ideas, techniques, and products that were to be deployed during the NSS. For this purpose, it examined the actual deployment as well as needs and possibilities. Because ‘innovation’ was not a specific item on the agenda at the outset of the organisation of the NSS, the inventory process did not result in an extensive portfolio.

Nevertheless, the unique circumstances surrounding the NSS required several creative security solutions. The gathering of a large number of heads of state, for example, implied that not only national security protocols had to be observed, but also the protocols of foreign powers.

In order to justify the innovations that were actually deployed and to explore the potential of innovation in the security domain, one suggestion was to create an innovation platform simultaneously with the NSS. The main purpose of this platform was to create sufficient scope for the innovations that were to be deployed during the NSS in a so-called *Innovation Room*². To that end, support was sought from the Ministry of Security and Justice and the Municipality of The Hague. The Innovation Room was subsequently organised at the HSD Campus in The Hague as a side event to the NSS. The Innovation Room was also widely advertised, which provided added momentum for the initiative. According to several of those directly concerned, the Innovation Room significantly helped to draw people’s attention to innovation during the NSS³. This in turn ensured that innovation-based ideas could be disseminated in the form of a recognizable and feasible product. During large-scale events such as the NSS, new facilities and out-of-the-box thinking are prerequisites. However, without the support of prominent policymakers and the formation of the Working Group on Innovation as a key driver, innovation would probably have received far less attention.

2.2 The NSS Innovation Room

The purpose of the NSS Innovation Room was to provide ample scope to showcase a number of innovations and creative and innovative solutions, to address security and safety issues surrounding major events, to welcome a large number of stakeholders, to contribute to the commercial potential and further development of specific innovations, and to demonstrate to the world that the Netherlands – and the City of The Hague in particular – provides an environment for knowledge development, technology, and innovative capabilities.

² The term and the concept were devised by the NSS Working Group on Innovation, and have since been used for other, comparable events.

³ A summary of the innovations showcased in the Innovation Room is provided in Appendix 2.

The contents of the Innovation Room consisted of three elements. First and foremost, *operational relevance*. The main focus was on seeking out innovative products, in so far as these products actually contributed to the security of the NSS. Secondly, *partnerships* were encouraged. Thirdly, *strategic communication* formed an integral part.

‘The Innovation Room was a real crowd puller and highlighted the different innovations deployed. One aspect that was discussed at length in this context was the extent to which the innovations could be shown while the conference was still ongoing. The security of the NSS should not be compromised in any way by these demonstrations. This crucial aspect was considered for each innovation shown.’

With regard to the selection of exhibitors, companies and public-sector organisations were sought that had applied innovative techniques during the NSS, as well as organisations for which the NSS served as a learning environment, supplemented by initiatives financed or co-financed by central government, which could be applied at major events such as the NSS in a broader sense. The list of invitees mainly included policymakers from home and abroad, producers, and users of security products. At the end of the event, a prize was awarded for the most innovative product.

All in all, twenty products were displayed in the NSS Innovation Room. Twelve of these innovations were used in the actual NSS operation, three were deployed in a test environment and five were exhibited because they will be deployed in future events. This ensured that lessons could now be learned from the NSS environment and NSS partners, and that there was a demonstrable link with the NSS.

2.3 International Context

The international dimension is patently present in security, and also at the NSS. Security knows no bounds. Furthermore, authorities occupy a special position in security, because they are often the principal consumers of security products. This places a special emphasis on the relationship between authorities, the business community and knowledge institutions. These three stakeholders need each other, also in terms of doing international business. Studies from 2007, which were carried out at the behest of the Ministry of Economic Affairs, reveal that a considerable amount of money in the security domain is spent on R&D, and that such investments involve substantial spin-off and spillover effects⁴.

The days that 100% Dutch-made products were exported to other countries seem to have come to an end. The economies of many countries have integrated to such an extent that knowledge, skill, technologies, systems, and subsystems all form part of cross-border transactions. The memorandum of Minister Ploumen, *Versterking van de positie van Nederland in mondiale waardeketens (Strengthening the position of the Netherlands in global value chains)* of 16 May 2014 is one of the formulations of this new reality. Minister Ploumen presents a new perspective on the global economy, which is increasingly organised in global value chains, and plays an ever more crucial role in emerging markets. Products are no longer produced in one country, but in a region of the world. Integration in global chains gives countries new possibilities to promote economic growth and development: it gives access to new markets, important sources of knowledge, and the best production factors available worldwide.

‘The Netherlands will have to be able to respond quickly to new circumstances, to keep on developing new activities with which to generate cash, and to cooperate internationally in order to safeguard its economic and political interests.’

Source: *Memorandum Versterking van de positie van Nederland in mondiale waardeketens* (Strengthening the position of the Netherlands in global value chains), Ministry of Economic Affairs, May 2014



Visit President Obama to the Rijksmuseum, an example of the international exposure of the Netherlands.

The challenge is to strengthen the position of the Netherlands in these global chains. This requires innovation, innovation in products, in cooperation, and in processes. In this context, public-private partnerships, in all of their guises, are also important to encourage Dutch companies to enter a foreign market together. Investments with large positive spillover effects – the security domain is a prime example of this – are especially valuable. Take for instance foreign companies that invest in R&D and regional head offices in the Netherlands, which have good connections with foreign markets. In close consultation with regional partners, efforts must be made to ensure that foreign companies that have already established in the Netherlands become rooted even more firmly.

4 See for example the report *Security First: Security First Een verkenning naar Nederlandse kansen voor veiligheid en innovatie* (*Security First: Security First, An exploration of Dutch opportunities for security and innovation*) of the Ministry of Economic Affairs (2007).

3 – Lessons Learned

What was the reason for deploying innovative methods and techniques during the NSS? Which were the circumstances that made the deployment of innovations during such a major and important event possible? And which lessons can be learned from this? In this chapter we describe the most important lessons observed by us.

The first, general lesson that emerged from the interviews relates to the nature of innovation. It is usually assumed that products can either be innovative or less innovative. In this context, innovation is usually explained as the result of a process. An important lesson learned is that innovation does not only relate to the result, or the outcome of the process; innovation itself is a process and should be explained and understood as such. During the preparations and the event, a process of innovation was set in motion. From an analytical perspective, it is then important to find out which factors enabled and boosted this process. The presence of an existing network, the specific mentioning of the term *innovation*, and the strategies for financing are the most important drivers for the process of innovation. Below we give a short explanation of each driver and the lessons learned.

Example

The cooperation for the implementation of the Traffic Management Master Plan during the NSS. For this purpose, Rijkswaterstaat (Directorate-General for Public Works and Water Management), the province, the municipality, Arcadis, the Ministry of Infrastructure and Environment, the Ministry of Security and Justice, the police, the supplier of transponders in order to be able to follow cars, and the supplier of quick movable barriers worked together on a traffic management plan that was implemented successfully during the NSS.



Security and traffic come together during NSS

3.1 Network

As stated above, innovation has a lot to do with taking risks and, by extension, dealing with risks. New methods, processes, techniques, and products are tested and deployed. This is always done in cooperation with different parties. Usually, various public-sector stakeholders are involved in such cooperation, and at least one private-sector party, the supplier of the required technique/intended solution. Cooperation becomes more efficient when the parties, and by extension the people representing the different organisations, know each other and know where they stand. The Ministry of Defence, for example, has invested in *innovation games* for that very reason. In this way, they keep in touch with the market and its players. The Ministry of Security and Justice is also increasingly investing in these games. The Hague Security Delta also provides a good platform to get to know the different security partners during networking events.

Good and reliable networks facilitate the process of innovation. To be known is to be loved. The following lessons emerged from the interviews:

- The cooperation and the development of innovations proceeded much more smoothly because the parties had previously worked with each other or knew each other through other networks. Taking joint risks is easier when you already know and trust each other.
- Because the Working Group on Innovation specifically sought new products, services, and processes that could be deployed during the NSS in the context of product development, more innovations were deployed.
- The input of innovations during the NSS came from various national companies, the police, the Royal Netherlands Marechaussee, the Ministry of Defence, knowledge institutions, and universities.

During this study, various interviewees mentioned the characteristics and conditions that had to be met by a consortium of different parties in order to be able to realise innovation. The partnerships in such a consortium must be safeguarded, and a climate of mutual trust, respect and granting the other his or her success must be fostered.

Several interviewees observed that the 'bottom line' is to strive for a win-win situation in which all parties concerned first and foremost jointly aim to develop something new to solve a problem. All parties should participate in the consortium on the basis of trust. This also enables uncertainties to be shared with each other. In order to achieve this, it is essential that clear agreements are made from the outset about which information must be shared and how, who will become the owner of the innovation, and how costs and income will be apportioned. An existing network provides better conditions for this than partnerships that have been established on pragmatic grounds.

'Granting the other his or her success is crucial, too much macho behaviour never works. The thing is to strive for a win-win situation, in which stakeholders do not necessarily see a lot of dollar signs in front of their eyes, and the persons concerned participate in a network on the basis of trust. Uncertainties should be shared.'

3.2 Naming of Innovation

In addition to the presence of a network, the explicit use of the term *innovation* is also an important stimulus for the process of innovation. The naming of innovation creates a framework which makes it possible to direct initiatives that promote innovative processes. This ensures that the hectic pace of everyday life does not prevent new developments and insights from seeing the light of day. By mentioning the word 'innovation' during the NSS, we mean putting innovation firmly and squarely on the agenda, using a summit as a platform of innovation, and fitting out an Innovation Room in which innovations are shown.

3.2.1 Innovation on the agenda

Innovation is now a regular item on the agenda of many future-oriented politicians, administrators, and entrepreneurs, and with that it is often explicitly mentioned. As stated above, innovation was also explicitly added to starting points, thus promoting top-down innovation. This created the opportunity for people from the operational organisation to find an audience for the deployment of new products and processes they needed, prompted by their knowledge of the operation.

Example

An example of innovation prompted by the need at operational level: Out of the 160 mounted policemen that were deployed during the NSS, 13 had been equipped with cameras. They rode together in smaller groups across and around the NSS site and in the centre of The Hague. Through them, the cameras sent real life images of the situation on site to the control room. This allowed the tactical arm of the police to monitor events and make better-informed decisions.

Lessons:

- The request from the Dutch Cabinet, coupled with the formation of a specific working group on innovation, enabled the administrators to draw ample attention to the issue of innovation during the NSS. This made it easier for the executive organisations, such as the police and the Royal Netherlands Marechaussee, to deploy the innovations desired by them or to be given the opportunity to devise new, innovative processes.
- For the deployment of innovations to be successful, support at a political-strategic level is of vital importance. Without the explicit support of the key figures that were responsible for the security of the NSS, it would not have been possible to deploy the innovations.



Many world leaders visited The Hague

3.2.2 Opportunities because of the NSS

The organisation of the NSS proved so unique and required so many tailored efforts that the event provided a good opportunity to deploy new (innovative) concepts and products. They were compelled to do so, among other things, because special security and safety requirements had been imposed.

For example, the fact that foreign heads of state were coming to the Netherlands implied that the national safety standards and the security of these heads of states had to be observed. In addition, the requirement that the NSS had to be safe, but that the Dutch population should not suffer under it, demanded additional flexibility. The organisation used, for example, quick movable barriers, negating the need for long-term, disruptive road barriers and ensuring that the NSS could proceed as smoothly as possible. And if they did not succeed in solving specific problems/issues around security, the 'pressure cooker' was used. As one interviewee stated: 'A few people from the organisations who had to do the job were put inside a room, handed the problem and instructed not to get out until they had thought of a solution.'

'Because cyber security was really a new element in this conference, we had to develop new ways to deal with this in cooperation with private parties.'

During the interviews, the expression 'pressure makes everything malleable' was often heard. By this they intended to indicate that the special circumstances of the NSS created a situation in which much more was possible, much more quickly and much easier than in less exceptional situations. Organisations and people had to cooperate, also because unnecessary internal bureaucratic procedures were skipped. The heightened sense of urgency created an atmosphere in which people communicated more, but above all made more practical arrangements. Making the best possible use of these circumstances was given an extra boost by the formation of the specific Working Group on Innovation. During the preparations for the NSS, this working group called attention to innovation, facilitated it, and made it possible.

The NSS is not unique as a driver for innovation. Other events can also be drivers. An event is a good driver for cooperation, a good platform to display innovations, and a smart moment to test innovations. This not only applies to events that involve security issues (e.g. this NSS and the Global Conference on CyberSpace 2015), but also to large-scale events in which safety plays a role (e.g. WC Hockey, the start of the Tour de France, Mysteryland, or King's Night). This aspect emerged during the interviews that dealt more in general with innovation, security and safety.



NSS Innovation Room at the HSD Campus

It is also easier to cooperate with different parties during an event because you are compelled to cooperate, as it were. It also helps if the different parties have worked together on previous occasions (e.g. Ministry of Defence and the police during the large-scale civil military crises exercises in the security regions). Experiments are not carried out ad lib during events. That is why it is important to work with innovations with which one is a bit more acquainted and which have undergone practical tests. An example of this is 'Builder', a product which had already been deployed by the Ministry of Defence (copying complete villages in Afghanistan in 3D for practice purposes) and which was deployed during the NSS to copy the World Forum building in 3D. An innovation may also be deployed parallel to familiar and tried and tested devices. A new type of scanning system can be introduced at Amsterdam Airport Schiphol by deploying it beside tried and tested security devices.

From the interviews, several relevant lessons emerged about the opportunities for innovation offered by the NSS:

- The success of the deployment of innovations during an event depends on the process of cooperation that is taking place in the run-up to the deployment. This could specifically be promoted from the Working Group on Innovation by, if necessary, acting as a facilitator or intermediary or by thinking along.
- Innovation should be included in the preparations for an

event from the outset.

- The explicit attention for innovation by the formation of a working group within the NSS project organisation that could focus on (and promote) innovations during the event apart from the organisation or security of the NSS itself was of great importance.
- It has been important to put ambassadors for innovation in the Working Group on Innovation. People who are willing and able to dedicate themselves to innovation. 'Otherwise, you won't manage; you need a coalition of the willing.' The members of the working group were the faces of innovation during the NSS.

3.2.3 An Innovation Room spotlights innovation

Innovation is a concept that can be explained in many ways. Innovation is often about developing solutions and techniques for dealing with practical problems while learning. Consequently, innovation does not necessarily have to be something great or unique. In one of the interviews, for example, the interviewee stated that plans for large-scale innovation were rejected, whereas very practical things, such as the above-mentioned quick movable barriers, can also be seen as innovative security devices. In the context of innovation, the equipping of a show room (i.e. an Innovation Room) may therefore fulfil a number of important functions. Firstly, it helps to create a certain image of innovation. In the Innovation Room, an image is created

of the innovation by displaying demonstration models and specific security products. Secondly, it helps to raise awareness about the importance of innovation for security purposes. Thirdly, the Innovation Room helps to provide insight into the use of specific innovations. Visibility increases deployability. In this context, it is of great importance that support and publicity is given to the existence of the Innovation Room, raising awareness among the right people. At the NSS, the Ministers concerned and the Communication Department of the NSS and the NSS Security Project Group strongly endorsed the Innovation Room.

The following lessons emerged about the Innovation Room:

- The importance of an Innovation Room. In this way, the innovations that are being deployed during the event can be displayed and explained; in turn, these products and processes receive more attention.
- In order to be able to organise an Innovation Room, it is important that an administrative support base exists at a high level. Furthermore, it is important that the Innovation Room is made into something attractive, something that cannot be missed, emphasising that this is a unique event.
- The Innovation Room gives suppliers/inventors the opportunity to show their product/service to a larger public. Good advertising moment and a way to initiate possible future use.

3.2.4 Appreciative evaluation as a driver

This study was devised, in particular, by interviewing those concerned. This was done by adopting a purposefully positive line of approach by means of Appreciative Inquiry. Looking back on the deployment of innovation during the interviews, attention was again directed at innovation and the results. During various interviews, the interviewees expressed their intention to re-establish contact with the parties with whom they had cooperated during the NSS to find out how the process or project had developed, to meet up again in order to discuss where this can be repeated, or to check whether the process devised for the NSS will be deployed during the next summit as well. In brief, the mere fact that good discussions had been conducted about the innovations that were deployed during the NSS produced new and positive attention.

Lesson:

- Looking back on the deployment of innovation after the NSS in a positive and appreciative way generated new ideas and attention for innovation. The discussions enhanced the embedding of the partnerships entered into and the lessons learned.

3.3 Financing and Co-creation

3.3.1 Investment during the NSS

The realisation of innovation requires investments. But by whom? A private-sector party from its business development budget, the authorities seeking new or more efficient solutions, or both parties? During a major event such as the NSS, this is less of an issue and the main focus is on practical solutions. The authorities are prepared to invest and they also have a budget available for this purpose. To private parties, the fact that their product will be deployed during a prestigious event as the NSS also represents a value, as a result of which they are willing to invest.

‘For financing purposes, the point of departure was not a finished product, but rather a product development strategy. The product was being developed and could therefore be deployed at cost price. All we were concerned about was the development of a new product.’

However, financing remains an issue if innovation is concerned. Private parties will often have to make substantial investments, and the authorities will only be able to co-invest partially due to purchasing rules, tendering policy, and declining budgets. However, during the NSS, a lot could be achieved because a financing capacity had been created. For example, Rijkswaterstaat was able to quickly make agreements regarding the costs with the other road authorities because commitments could be made immediately that additional costs would be paid. The NSS also provided opportunities. For example that the products could be displayed in the Innovation Room, with the result that the selling price of the product offered increased. Thanks to this opportunity to deploy and display a product, it will consequently be possible to recover the investments in the longer term. Such reasoning also applies to so-called ‘product development processes’ during an event: the product is being developed and can therefore be deployed at a low asking price. The primary object was the development of a new product. The deployment and exhibition in the Innovation Room may yield added value for a product later on.



At the HSD Campus public-private cooperation is facilitated

Lessons with respect to financing:

- During the NSS, a budget was available for the financing of innovative products and processes because of the special circumstances of the situation.
- The NSS gave suppliers of innovative technologies and processes an inviting platform. Therefore, suppliers were able to invest during the NSS and to only charge partially for the deployment of their product or service.

3.3.2 Financing of innovation: national and international opportunities

Innovation is seen as necessary and increasingly as something positive because it may contribute to the improvement of quality, efficiency or cost reduction. The authorities are often the most important launching customers for innovation processes in security. Now that innovation is increasingly on the agendas at a national, municipal and provincial level, it may help if proposals for innovation are being made from the business community. Such proposals should preferably provide a solution for an administrative issue. For example the wish for a better connection between observations by the police in the street and the control room so as to be able to make better-informed decisions. This is entirely in keeping with the objectives of the Municipality of The Hague, HSD, and InnovationQuarter of the metropolitan region of Rotterdam-The Hague.

As stated above, the international economy organises itself to an increasing extent in value chains. Within these chains, emerging markets play a bigger and bigger role. Products are no longer produced in one country, but in a region of the world. Integration in global chains gives countries new possibilities to promote economic growth

Example

During the NSS, multiple innovative techniques and the accompanying processes were deployed in order to share information more quickly. The majority of these techniques was developed specifically for deployment during the NSS or was at least adapted. The authorities did not pay the full cost price for the deployment of these techniques. In many cases, the authorities co-invested in the development of the solution, but the companies themselves paid the larger part of the costs of development and deployment. The NSS was seen as a good opportunity to test the innovation.

and development: it gives access to new markets, important sources of knowledge, and the best production factors available worldwide. The challenge is to strengthen the position of the Netherlands in these global chains.

In this context, public-private cooperation, in all its guises, is also important to encourage Dutch companies to enter a foreign market together. Especially investments with large positive spillover effects – the security domain is an outstanding example of this – are extremely valuable. This also deals with attracting foreign companies that invest in R&D and regional head offices in the Netherlands, and which have good connections with foreign markets.

During the NSS, many foreign delegations and companies visited the Netherlands. In addition to participating in the conference, many follow-up talks and visits took place, during which the ambitions and capacities of various companies in the Netherlands became clear. The opposite also applies. The NSS and the many activities organised around it fit seamlessly with the aim to have the business sector integrate in international value chains further and more fully.

4 – Short Review and Recommendations

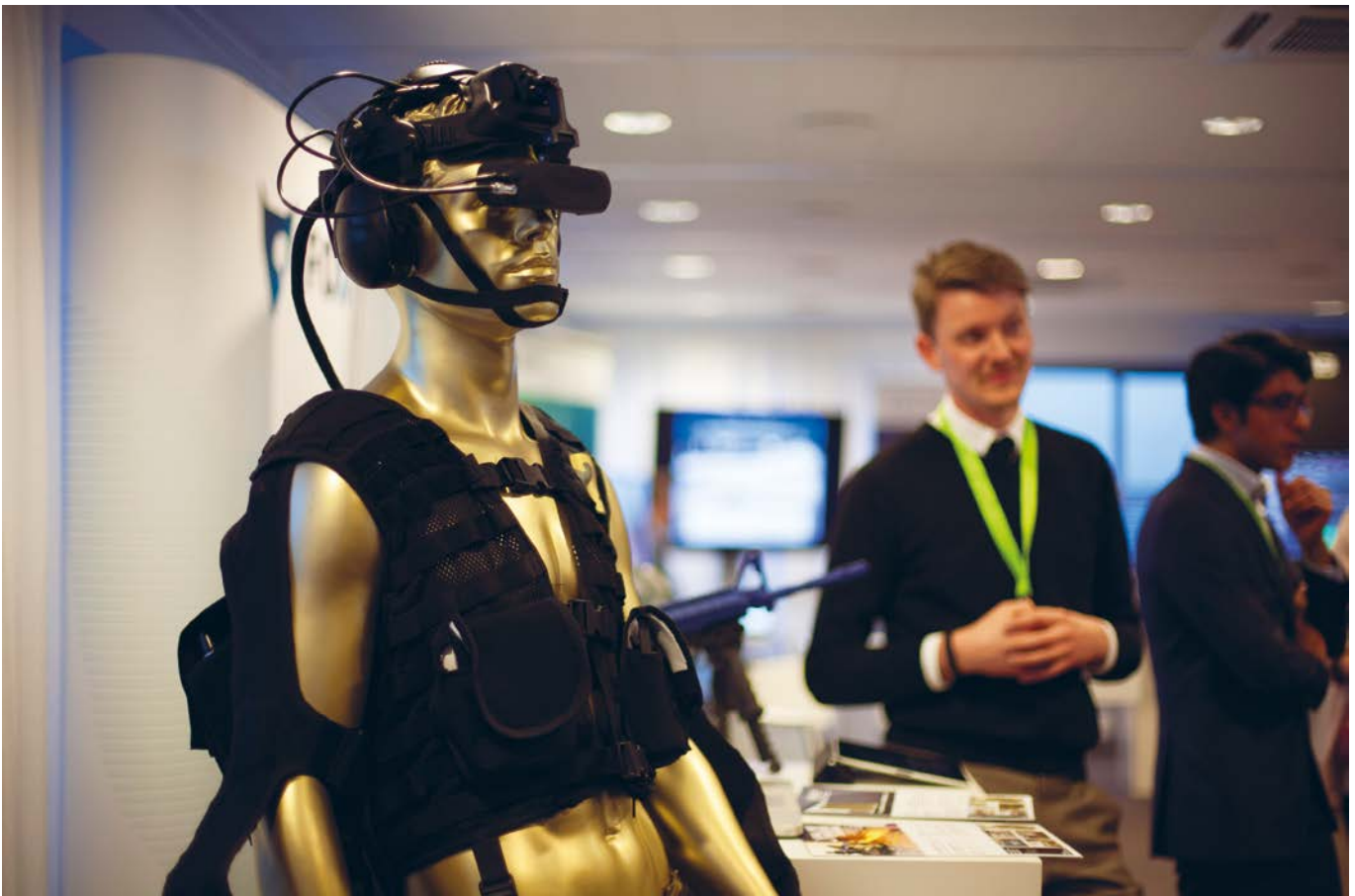
The deployment of innovations during large events contributes to even more security. In this chapter several recommendations are presented to make sure innovations can be deployed.

4.1 Short Review

This report describes the most important findings of a short study into the role of innovation during the NSS. On the basis of a number of interviews with those directly involved, it emerged that a large-scale event, such as the NSS, provides multiple opportunities to deploy and display innovation in security. This is the most important conclusion in light of the assumption that security and innovation are at odds with each other. Innovation implies risk, and risk is not desirable where security is concerned. However, the threat assessment continues to change, and innovation in security is necessary to be fully prepared for new or unique threats. Just like other large-scale events, the NSS has created temporary and controllable changes in the threat assessment. It requires creativity and inventiveness to develop products in order to be able to deal with these changes. Large-scale events are unique opportunities for the development and deployment of innovation. This dovetails perfectly with the increased attention for and broadly shared interest in the theme of innovation.

As this report repeatedly points out, a number of specific circumstances can stimulate the use of innovative security products further. Innovation should not only be seen as a product, but should be explained first and foremost as a process. Next, it is important to specify the circumstances in which the process of innovation is accelerated or strengthened to achieve innovative processes and products. It also emerged during the interviews that a good and reliable network of parties from the authorities, the business community, and knowledge institutions that cooperate over a longer period of time and in good faith with each other, is a prerequisite to ultimately translate creative ideas into innovative security products. Investing in liaising with and creating meeting places for different stakeholders therefore appear to be important stimuli for innovation processes.

The Innovation Room is also an important catalyst of innovation processes. The Innovation Room fulfils various functions. One very important function is that the innovative products and services deployed are named as such. This turns innovation into something tangible, and promotes awareness of the



NSS Innovation Room: Worldforum 3D - Re-Lion



Consultation with potential innovation partners

importance of innovation. What is more, the Innovation Room, and in the broader sense the deployment of innovative products during the NSS, are a means to finance innovation in a smart way. The innovative products examined were also deployed as part of a product development strategy in which the NSS provided the opportunity to develop a technique or a product. Consequently, the supplier does not supply a finished product to its buyer, but the supplier and user together are partners in the realization of an innovation. In such a partnership, profit and sale at the highest price are subordinate to the shared interest of developing a high-quality product. The possibility of displaying the product in the Innovation Room during a high-impact event such as the NSS contributes to national and international publicity, as a result of which it will be possible to deploy the innovative product elsewhere at a higher price later on.

The foregoing observations around the importance of reliable networks, the naming of innovation by means of the Innovation Room, and the undertaking of research and the adoption of development strategies in order to finance innovative products in a smart manner are important in the light of a broader development to make innovation a key policy objective.

Innovation is beginning to feature more and more on the agendas of programmes and organisation of events. In turn, the experience gained around the NSS, the lessons learned with regard to cooperation, the Innovation Room, and financing appear to lend themselves perfectly for broader application.

4.2 Recommendations

This section lists a number of recommendations to preserve security innovations in subsequent summits and events.

4.2.1 Naming innovation

Emphatically placing innovation top down on the agenda of the organisation of an event creates scope and possibilities for its deployment. This happened during the NSS, and this greatly contributed to the deployment of innovations during the NSS.

Recommendation: emphatically put innovation on the agenda for the preparations of a summit or event in time and clearly, provided with a clear political and administrative mandate, sufficient financial resources, and an adequate informative campaign.

4.2.2 Invest in innovation networks

Cooperation becomes more efficient when the parties, and by extension the people representing different organisations know each other and know where they stand. This certainly also applies to the cooperation required for the deployment of innovations during a summit or event. It is therefore advisable to invest in networks and platforms at the national, regional, and local level, where the authorities, the business community, and knowledge institutions can meet each other. The authorities, the business community as well as knowledge institutions invest in such networks and must continue to do so.

- Invest on a structural basis in contacts and activities among market/private parties, the authorities, and knowledge institutions in order to create innovation. This often begins with training programmes, exercises, and test environments. This will provide a good understanding of the market and its players which may generate innovations, and as a result of which an ongoing and improved match is obtained between supply and demand.
- Organisations such as Ministries (Security & Justice, Defence), municipalities, HSD, and InnovationQuarter should look specifically for start-ups, new products, services, and processes that can be deployed during events for the purpose of product development.

4.2.3 Innovation Room

By equipping an Innovation Room during the NSS, the even organisers actually managed to increase the use of innovation. Not only were innovative products and processes displayed and became more visible as a result, the Innovation Room also generated more attention for innovation. Everyone involved in the deployment of innovations wants to draw attention to their creations. Once participants realised that they could showcase their products and services in the Innovation Room, many suppliers, as well as civil servants, approached the organisers to ask whether they could say a few words about their products or processes. As a result, several innovations that initially could not be deployed were deployed during the NSS after all. The senior civil servants of the Ministry of Security and Justice received an individual tour of the Innovation Room and all senior civil servants of all Ministries were invited to the opening. Innovation was therefore emphatically brought to the attention of top officials. In brief, the NSS Innovation Room boosted innovation during the NSS in more than one way.

Recommendation: Equip an Innovation Room as a vital hub of a summit or event, and also organise lectures by companies and side events. Involve Innovation Attachés in the preparations.

4.2.4 Evaluate

By evaluating the deployment of innovation and its benefits at the end of the top event, you keep momentum and retain attention for the innovations and the cooperation it required. This enables you to future-proof and devise new ideas. Undertaking the Appreciative Inquiry interviews allowed us to think back to the NSS and the successes of deploying specific innovative processes and products. This resulted more than once in the interviewees contacting the persons with whom they had cooperated for the NSS with new ideas. This also resulted in the fact that it was consciously checked whether specific successful processes and products had also been deployed again during the Global Conference on Cyber Space in March 2015.

Recommendation: Always organise a debrief after each summit and event. Do this by constructively discussing what went well in the deployment of innovations. This ensures that positive experiences are continued and new innovative initiatives emerge more easily. The positive experiences with products, processes, and persons could also be placed in a cloud environment that is accessible to all relevant public and private parties.

Innovation shown at NSS Innovation Room



4.2.5 Practise innovation

In order to test innovations, they can be deployed during an exercise. This produces a good picture of the quality and suitability of the innovative product or process. It is also possible to ask specifically for innovations to be deployed during an exercise. The operation usually has a good impression of where improvement is possible or even necessary. This is done by the Ministry of Defence. They focus specifically on innovation during exercises.

Recommendation: Include innovation in training programmes, exercises and tests in which the authorities, the business community and knowledge institutions participate. Triangles created in this pre-competitive phase are invaluable in devising crucial security innovations.



The NSS was held at the World Forum

4.2.6 Push innovation in a specific direction, also outside the Netherlands

The NSS was of vital importance to the Netherlands and also to the deployment of innovative products and processes. Part of these were re-deployed or developed further and used during the subsequent top event, the Global Conference on Cyber Space. This indicates that there is a need for innovation and the opportunity to deploy innovation. The Municipality of The Hague, as a city hosting top events, and central government were able to take advantage of this opportunity in a more specific way. By finding out which large-scale events will be held in The Hague, the Netherlands, and also in other countries over the next five years, that enable the Dutch to draw on their expertise in the deployment of innovation during a top event, as well as their specific experience with the deployment of specific innovations during a top event.

Recommendation: The experience gained with the deployment of innovation during the NSS is widely applicable to comparable and other events at home and abroad. Draw up a five-year plan in which the Dutch input during events strengthens the international security chains.

Appendix 1 – List of persons interviewed

Name*	Job Title	Organisation
Steffie van den Berg	Innovation Consultant	Ministry of Security and Justice
Joris den Bruinen	Assistant Manager	The Hague Security Delta
Ernst Dobbenberg	Head of Knowledge and Innovation Department	Ministry of Defence
André Griffioen	Secretary of NSS Working Group on Security	Ministry of Security and Justice
Arno Julsing	General Commander NSS	National Police
Dennis Kilsdonk	Account Manager Front Office DLOS	National Police
But Klaasen	Programme Manager Innovation, Chairman of NSS Working Group on Innovation	Ministry of Security and Justice
Erwin Lanting	Director LEA Solutions	AGT International
Hans van Loon	Business Development Manager	Fox-IT
Douwe Pietersma	Project Manager	Ministry of the Interior and Kingdom Relations
Erik van de Rijt	Sr Programme Manager The Hague Security Delta	Municipality of The Hague
Willy van de Steenbakkers	NSS Programme Coordinator Mobility	Ministry of Security and Justice
Pieter van der Veen	NSS Project Leader	Rijkswaterstaat
Erik Verschoor	Sr Traffic Management & IT Consultant	Arcadis

* This is not an exhaustive list. It was not possible to mention all persons interviewed by name.

Klankbordgroep		
Name	Job Title	Organisation
Steffie van den Berg	Innovation Consultant	Ministry of Security and Justice
Joris den Bruinen	Assistant Manager	The Hague Security Delta
But Klaasen	Innovation Programme Manager, Chairman of NSS Working Group on Innovation	Ministry of Security and Justice
Daan Rijnders	HSD Project Leader	Municipality of The Hague
Erik van de Rijt	Sr Programme Manager The Hague Security Delta	Municipality of The Hague

Appendix 2 – List of the innovations displayed in the Innovation Room

Innovation 1 | CBRN Response Unit

Organization | RIVM/Kropman

The CBRN Response Unit is designed for the analysis of objects suspected to contain chemical and/or biological substances which can be dangerous to human health. The unit is fully self-sufficient and by the integration of different disciplines, employees can work safely and efficiently to analyze substances. Together with Deerns Consulting Engineers, Kropman Contamination Control designed the unit for The National Institute for Public Health and the Environment (RIVM). Kropman was also responsible for the construction, commissioning, qualification, validation and maintenance of the unit. It can be rapidly deployed and used in cases of potential biological and/or chemical incidents in rural and urban areas. This innovation has special features in being an all-in-one, self-sufficient system, with power connections and emergency generators, temperature and humidity control, (under) pressurisation, redundant exhaust, air-tight construction, internal pressure cascades and room decontamination.

Innovation 2 | Real-Time Intelligence Centre

Organization | AGT International

The Real-Time Intelligence Centre makes information relevant to decision makers by analyzing publically available data which may anticipate potential security issues in multiple languages. This innovation has been used successfully at several recent mega events. For example, AGT worked in close cooperation with the National Police to safeguard the inauguration of the King, which attracted hundreds of thousands of spectators to Amsterdam in April 2013. The Real-Time Intelligence Centre was also used to proactively monitor the safety of the 180,000 attendees who gathered for the TommorrowLand dance music festival in Belgium. AGT collected and analyzed data from various online sources in order to recognize potential disturbances before they materialized.

Innovation 3 | DISCUS

Organization | Ministry of Defence/Microflown

DISCUS combines long range radar detection and camera systems with short range acoustic detection of for instance gunshots. It can be deployed, in both urban and rural areas, as well as on specific places of interest like compounds and airports. The mobile acoustic sensors can also be placed on vehicles. The DISCUS system enhances situational awareness and thereby increases protection levels. It can be used for both military and civilian purposes. The system is able to locate threats, and it presents one overview of an area from all different detection systems (radar and acoustic) that it combines. An image improvement system developed by TNO, is used to filter and optimize camera images to improve observation and recognition.

Innovation 4 | Traffic Management Masterplan

Organization | Arcadis

To reduce the impact of road closures on the remaining traffic in the densely populated area of The Hague and its surroundings during the NSS, the Dutch National Highway Authority was requested to deliver traffic management plans. Together with Arcadis they developed and coordinated the execution of an integrated Traffic Management Master plan for all road authorities, for both dynamic traffic management and for the static diversion of routes. Arcadis also supported the Dutch National Highway Authority in the purchasing the necessary resources (such as mobile roadblocks) and participating in multidisciplinary exercises. This approach in the development of the traffic management masterplan is an innovative way to reduce the impact of the road closures during the NSS.



Innovation 5 | InterACT

Organization | IC3DMedia

This innovative virtual training system was developed with the Dutch Police Academy and now combines organization training, e-learning and continuous development in one intuitive application. InterACT is a tailor-made training suite with scenario's designed for specific organizational contexts and specific job skills. The focus is on interpersonal training, whether employees need training for safety, conflict management, dealing with aggression or other topics like sales, negotiation and hospitality training. In each training, participants learn to assess situations and make the best decisions. The system keeps track of training results and provides suggestions on how to improve performance. InterACT also allows training on mobile devices like smart-phones or tablets. This innovation aims to make training more effective, more flexible as well as more enjoyable.

Innovation 6 | Crowd Control Trainer

Organization | VSTEP/National Police

The Crowd Control Trainer was developed by VSTEP and provides police commanders and crowd control training managers with an effective training simulator for crowd-related incidents and demonstrations. It is a cost effective and safe enhancement of practical exercises, which are often difficult to organize. It allows creation and interaction of demonstrations and large crowds and provides commanders with a realistic tool to train their crowd management and response strategy capabilities. Training takes place in a realistic, virtual 3D representation of actual real life environments. The Crowd Control Trainer allows realistic simulation and training of all aspects of crowd control, including crowd management, crowd control and riot control.

Innovation 7 | Police Training/XVR

Organization | Police Academy

As society is continuously changing, new technologies and new methods have to be integrated in police work and police training. The Dutch Police Academy collaborates with (technical) universities and business partners, both nationally and internationally, to innovate training. One of the latest innovations is using virtual reality training software, like XVR, for operational and tactical police officers. Training with virtual software means that students learn by playing different kinds of incidents or scenarios on a computer, both individually and collectively. Teachers can switch to other scenarios by creating another environment or simply adjust an existing scenario. All kinds of scenarios can be played, for example forensic investigations, assisting in a traffic accident or controlling a riot. Other new technologies as drones en head mounted devices are being tested in experimental labs to establish in what way they can increase value to police work and police education.

Innovation 8 | Worldforum 3D

Organization | Re-Lion

This innovative application is based on a part of the existing Re-lion SUIT software. With Dutch police units a new virtual training software application prototype was developed. It provides police and military special units with a photo-realistic, very high detail 3D visualization of their target and surroundings, like the Worldforum complex. It can be used for training, briefings and command and control during various types of interventions, for instance evacuations. The application is simple and robust, and can be used without wearing glasses, equipped with a finger pad for user-friendly navigation.



Innovation 9 | Tec4se

Organization | Security Region Twente

TEC4SE (Twente Experimental Command, Control & Communication Centre for Secure Environments) core philosophy is to incorporate and integrate existing technology and available information sources into a single information architecture. With this innovative approach it is possible to have relevant information available from various sources which, if properly combined, provides an optimal information position for first responders. By using netcentric principles TEC4SE enables a more adequate way of coping with both regular incidents and crises. Designed with privacy in mind, TEC4SE enables the optimization of the information position of the first responder, but also respects privacy where necessary. The rule based conditional access of information enables specific authorizations to be embedded in the system. Government, industry and knowledge partners have teamed up to co-create TEC4SE.

Innovation 10 | e-Nose

Organization | DCMR

The e-Nose is a compact measuring instrument that consists of multiple sensors that register changes in the chemical composition of air. The e-Nose provides fast indication of the total affected area and source of the emission in the case of chemical emissions, making a quick government response possible. Fixed and mobile measuring networks of e-Noses can provide crucial information for public safety. This innovation is used to reduce odour inconvenience, and it can help to localize the source of the odour of chemical emission. The e-Nose is also used in several industries to quickly detect possible emissions and optimize processes without having to increase the odour inconvenience for neighbouring companies or citizens.

Innovation 11 | Situational Awareness

Organization | Mounted Police

This innovation aims at improving the transfer of information during large-scale police operations. Improved information transfer should result in better predictions. While wearing helmet cameras with live streaming video and audio connections through a 4G internet connection, the mounted police can provide staff in the operations room with additional information, which may help decision-making. The Mounted Police also carries a tracking device. On a screen in the operations room, a red dot indicates the position of the Mounted Police officers. The innovation is a real-time combination of enforcement and information gathering. Where necessary, the Mounted Police officers can collect information for preventive purposes, for example to avoid that the situation gets out of hand during a public event.

Innovation 12 | iTable

Organization | TNO

The aggressiveness of activists and terrorists, as well as easy availability of smaller, more portable and more effective means of attack, makes VIP protection increasingly difficult. A team leader preparing a security plan on a paper map, does not suffice anymore. In close cooperation with stakeholders from the National Police, TNO developed a collaborative multitouch software application. By using the application, the whole team assigned to protect a VIP, can jointly plan the best course of action using a digital map. It also allows dynamic evaluations of interventions, evaluations of locations in 3D, simulation of the line of sight or the effects of explosions, and it can track people in real-time. The application supports distributed teams to work together and share their plans and status. And, best of all, it's intuitive and fun to use.



Innovation 13 | Grab 'n Stitch

Organization | National Police/TNO

Grab 'n Stitch is an innovative tool that develops a media-driven intelligence capability. Every day millions of pictures are published on the Internet, every minute hundreds of hours of video are uploaded. Due to the penetration of smart phones, tablets and in the future possibly Google Glasses, content is instantly shared using social media. The probability that an event or incident is captured by a device and published on the Internet is high and increasing. Collecting multimedia content from open sources has great potential for new security applications. The Grab 'n Stitch application exploits this potential by collecting pictures from Twitter, Facebook and Flickr. In addition to simply collecting the pictures based on keywords, it is also possible to search for similar pictures. The tool can therefore contribute to tactical investigations, reconstructions of events and as real-time intelligence.

Innovation 14 | Internet Research Network

Organization | National Police

The Dutch National Police developed the Internet Research Network (iRN) to allow criminal investigators and government agencies with a legal task to monitor or research the Internet, to use the Internet in a controlled manner for research, investigation and monitoring. The iRN has an ISP-function; it offers users several additional services. Users can use the Internet in a safe and forensically secure way, both visible and invisible. All the information the users views on the Internet is electronically logged and could be used as evidence in court. The iRN also has a tool which assists the users in doing systematic research of open source information. The relevant information is presented to users in a "smart way", requiring no manual collection and combination of information. The network differentiates between users with different rights to access information. The iRN works according to the principle of 'Legal by design'. This means that regular privacy checks are being conducted and that open source technology makes the network transparent and verifiable.

Innovation 15 | Compronet

Organization | Groningen Police/CGI

Compronet (Community Protection Network) is an innovative concept that is focused on the realization of a modern way of alerting and communicating with citizens and professionals (participants), while creating real-time ad-hoc groups of participants working together on an incident. This innovation uses technical sensors, open and closed sources and social media to receive and send (share) information. It uses the principle of citizen participation. Next to a message service, existing social media accounts of the participants are used for communication. The Compronet system integrates a high degree of automated processing of data and information, in order to accelerate the reaction of participants in relation to an incident and to increase the situational awareness of the participants.

Innovation 16 | Safe Armoured Glazing

Organization | Krov

This innovation providing anti-ballistic glazing has the advantage that it is lighter and thinner than other safety glass products, reducing costs and time in construction, as well as making the use of anti-ballistic glazing possible on more objects. For Safe Armoured Glazing, the Krov company is using its patented CAST-FORM casting process. It is relatively easy to produce different types of innovative armoured glazing, to meet specific client requirements. For Safe Armoured Glazing, the Krov company acquired a license from TNO. A special production process was developed together with the Stolker Glas company. In this partnership Krov contributed the polyurethane technology, Stolker Glas the specialized knowledge for glassproduction.



Innovation 17 | Twitcident

Organization | CrowdSense

In the Netherlands about 1,3 million active Twitter users post more than 5 million messages on average every day. This enormous flow of information contains vital information, which is processed by Twitcident. This innovation offers an excellent visualization of tweets, enhancing situational awareness. Twitcident sifts through and analyzes the information real time for local authorities, police, emergency services and other operators. It can help to better navigate areas in the midst of chaos, or funnel helpful logistical information directly to first responders. This innovative system cuts through Twitter's noise, and focuses on the most relevant aspects of an incident. The system works by first monitoring local emergency broadcasts for an incident. Once an incident is reported, Twitcident begins to aggregate relevant social media updates. The service then analyzes and filters what is uncovered. The system's developers have tested the system with the Dutch police and fire departments.

Innovation 18 | Real-time Traffic Management

Organization | Saab

This innovative real-time traffic management system matches planning with actual trips of one or more vehicles (cars, busses), while traditional planning systems work separately from actual traffic. With this Saab innovation, traffic is efficiently planned, taking into account several conditions like the priority of the trip and the number of vehicles. During the actual execution of the trip, based on monitoring, the real-time locations are visible and the (arrival) times are adjusted. The system indicates if the planning conditions are being violated. Options to solve problems in planning are provided to the transport leader, for instance delaying or acceleration, changing the schedule, using an alternative route or ignoring the condition(s) that triggered the violation. The system also provides its operators with the ability to instantly re-plan the schedule if assignments are added or deleted.

Innovation 19 | ProtACT

Organization | Fox-IT

Enterprises can spend millions on equipment to combat cyber attacks, but there is still no guarantee of security. Preventive measures alone does not suffice. Fox-IT's innovative ProtACT technology reduces the risk of hacking attempts, data leaks, virus outbreaks, denial-of-service or other cyber threats in just a few minutes. ProtACT Managed Security Monitoring keeps an eye on systems and networks 24/7. If the Fox-IT cybercrime monitors detect abuse, they notify the client and immediately conduct a full analysis. Often within just a few minutes, the client knows how to block the threat or limit any further outbreak. Monitoring is also a crucial component of forensic readiness; ensuring to be ready for an incident and an immediate start of investigations.

Innovation 20 | M-sec Wall System

Organization | Aalbers Wico

The innovative M-sec Wall System is a modular bullet-proof wall system that is easy to install and dismantle. Ideal for creating a temporary security solution in response to changing situations where individuals require immediate protection. M-sec walls are used in places such as hotels, homes, embassies, offices and airports. It can be used where the existing protection is insufficient and/or where the permanent security solution is not available yet. The system is stand-alone and is clamped between floor and ceiling without causing damage. The system is bullet-proof in various bullet resistance classes. M-sec walls are attractively designed and can be fitted on the inside (safe side) with finishing panels so the walls blend in with the environment.



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