

Deliverable D1.2

Empirical Study of innovation management practices of users in the security sector

WP 1

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1 Executive Summary

1.1 Introduction

The present document represents the Deliverable D1.2 (“Empirical Study of innovation management practices of users in the security sector”) of the project INNOSEC (“INNOvation Management Models for SECurity Organisations”). The purpose of this report is to study and analyse the innovation management practices of eleven selected security organisations.

We define security organisations as organisations that are responsible for fulfilling security missions for society like fire fighters, police and commercial security organisations. Organisations whose prime mission is not security specific, but in which a part (e.g. a department or group) conducts security tasks such as security departments of airports and other high risk facilities and infrastructures are also considered security organisations.

The task has been executed by face-to-face interviews with a variety of experts from the selected security organisations and additionally by scanning and analysing literature like government reports and scientific journal articles.

1.2 Background

For the INNOSEC project, innovations were defined as being the introduction of a new technology, a new concept of organisation or a new method of training into the security organisation.

For the purpose of the project we needed an innovation management model that considers a security organisation’s operating environment and often non-linear process of introducing new innovations. This process consists of:

- Search, monitoring and identification of new ideas & technologies
- Evaluation and selection of new ideas & technologies
- Adoption, adaptation & implementation of new ideas & technologies
- Learning, feedback and interaction

In each of the case studies the different processes of innovation management were analysed in detail.

1.3 Innovation Management

We have identified the organisational strategy to have an influence on the innovation management process, but the strategies and their impact on innovation management differ greatly between the selected organisations. Financial considerations, as well as the

organisations structure, hierarchy and decision making processes play an important role here.

The innovation strategy as formal basis for innovation management processes can be very important for an organisation. Interestingly six of the eleven studied organisations have no explicit innovation strategy, but some of them recognize the importance of innovations and do have strategies for specific fields (e.g. ICT).

Also, some organisations have no explicit process of searching or monitoring new ideas and technologies, but others deal actively with this process by having formal systems of proposals that collect ideas from the staff, by the use of special competence centres for searching and monitoring or by having a specialized subunit for this approach.

The identified ideas need to be evaluated, so that the organisation can choose which of the new ideas should be implemented. Like before, some organisations have no clear standardized system for evaluating and selecting their innovation projects. By contrast, others have a high standard for the selection of their innovations. In this process financial considerations are very important for most of the studied organisations.

There exist many different ways of implementing an innovation into an organisation. Organisations can for example just implement them top-down or collect their staff's feedback at this stage and take that into consideration. Some organisations use no formal process, whereas others have very high standards for the implementation of new ideas and technologies or employ an active project management during the adaptation and implementation phase.

Running parallel to the processes of innovation management mentioned before is the process of "Learning, feedback and interaction". Different stakeholders of the innovation management like the staff of the organisation, the actual users or their clients are involved in this process. This involvement varies by method, intensity and reaction to the feedback. But the most of the studied organisations have no formalised "Learning and feedback" process.

1.4 Conclusion

The description of the innovation management practices of the eleven studied organisations' leads to a very heterogeneous picture with some similarities between the organisations. Several possible factors of success or advantages were identified.

The integration of all phases of innovation inside one organisation as well as having one subunit that deals with innovation management could be a factor of success. Additionally more budgetary freedom and the involvement of a diversity of experts in the innovation management process are seen as key factors of success. An active idea management system with the ability to by-pass the hierarchy and directly contact the relevant actors in innovation management could be a factor for a successful creation of ideas.

An early involvement of all stakeholders in the innovation management process seems to be a good recommendation to simplify the later phases of the innovation process. The right balance between involvement of the staff and top-down strategies needs to be found in each stage of the innovation process and in each organisation.

It can be seen that some organisations are more successful dealing with innovations than others. This is the point where the INNOSEC project wishes to provide a modular solution for all organisations from the security sector.

2 Introduction

Almost all organisations that wish to cope with current problems, competition or threats need to introduce new technologies, organisational changes or fresh training methods. This kind of introduction can also be called “innovation”. But how is the management of such innovations treated in organisations of the security sector? What different kinds of innovation management practices are being used and which are perceived as being successful? The present document delivers case studies, which are the building blocks to answer these and similar questions.

This document represents Deliverable D1.2, an “Empirical Study of innovation management practices of users in the security sector”, for the project INNOSEC (“INNOVation Management Models for SECurity Organizations”). This report is the second of three deliverables of the WP1, called “End-user¹ organisations’ environment and innovation management”.

This work package aims to analyse the operating environment (see D1.1: “Detailed study of end-user environment in the security sector”) and its impact on the innovation management of security organisations. The task was led by Fraunhofer and supported by UNIMAN, Tecnia, FOI, AIT and TNO. In it, we have studied the innovation management practices our featured security organisations² employ in their day-to-day work.

Apart from conducting face-to-face interviews with a variety of experts from these security organisations, we have also taken into account material from secondary sources like government reports and scientific journal articles.

We define security organisations as organisations that are responsible for fulfilling security missions for society like fire fighters, police and commercial security organisations. Organisations whose prime mission is not security specific, but in which a part (e.g. a department or group) conducts security tasks such as security departments of airports and other high risk facilities and infrastructures are also considered security organisations.³

In order to be able to create a modular model of innovation management (which is the goal of the INNOSEC project) we first need to study and analyse cases of innovation management of organisations inside the security sector. By taking a look at the different variations and taking into account the operating environment of each organisation, we will be able to discern what works well and what doesn’t. Also, we can identify which of the innovation management practices can form a module by itself that can be transferred and implemented in other organisations.

This report has three elements:

¹ In the course of the project, the term “end-user” has been substituted with the term “user”.

² In addition to the ten case studies presented in D1.1, the present deliverable takes into account one more case study (organisation K).

³ See glossary

- A background to our view of innovation management (section 3.1) and its different stages (sections 3.2 to 3.7) with comments and examples from the eleven case studies of eleven organisations that we refer to as organisation A to K;
- A discussion and conclusion of the different kinds of innovation management we have encountered in our case studies (section 4);
- A number of case studies describing the operating environments and innovation management practices of the eleven selected security organisation (section 3.8 and Annex 1, which is confidential and can only be accessed by the INNOSEC consortium).

3 Innovation Management

3.1 Background

In order to be able to analyse the innovation management of different organisations in the security sector, it was necessary to first take a look at possible models of innovation management in general and the term “innovation” itself. “Innovation” can be defined in many different ways, ranging from a simple definition like “Innovation [...] means the commercialization of invention”⁴ to an eight level categorization (e.g. new parts, new products, new customers)⁵. For the INNOSEC project, we defined innovations as being the introduction of one (or more) of the following into the security organisation:

1. a new technology (e.g. new scanning devices, new computers etc.)
2. a new concept of organisation (e.g. a new cue management, process optimisations etc.)
3. a new method of training.

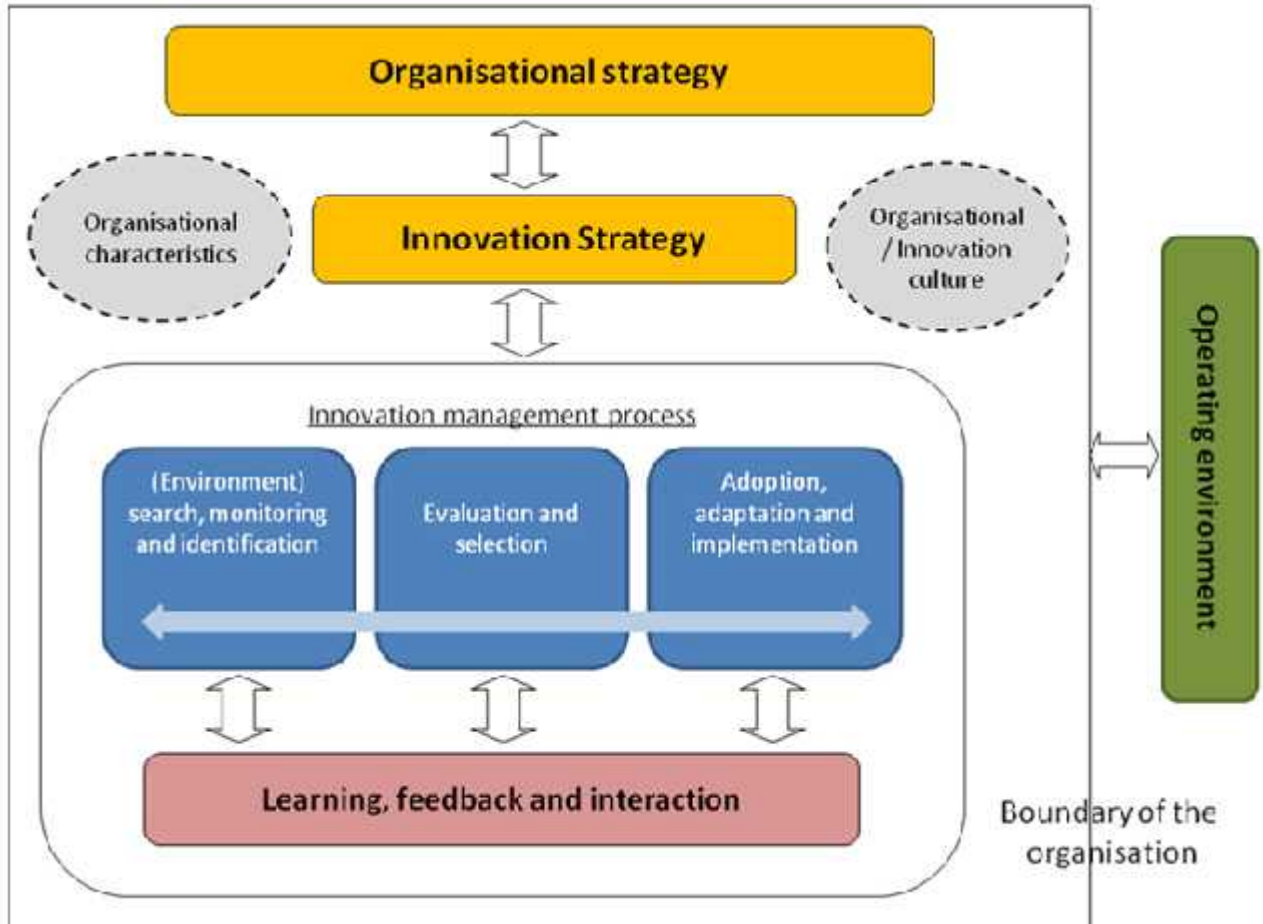
Next, we considered different models of innovation, i.e. how do innovations happen. One of the standard models for innovation is the so-called “linear model of innovation”.⁶ That model however is rather generic, taking into account basic science and applied science (the name of these can vary, depending on the author), and represents a rather simple possibility of how an innovation can take place. For INNOSEC, we needed a model that took into account a security organisation’s operating environment and often non-linear process of introducing new innovations (see Figure 1). We have thus identified the organisational and innovation strategy to be of importance for the innovation management. These can have a rather direct impact on the innovation management process itself. This process consists of three steps that are non-linear but consist of different activities inside the organisation. Running parallel to this process is another process called “Learning, feedback and interaction”, since the possibility of improving or changing the innovation during the implementation process can take place at any time. Finally, the organisational characteristics and the organisation’s innovation culture have influence on the whole process. In each of our case studies (see Annex 1 – Case study organisations), we analysed the different processes and influences of innovation management in detail.

⁴ See: Schumpeter, J.A., 1942. *Capitalism, Socialism, and Democracy*. Harper & Row, NQ as cited in Massa, S., Testa, S., 2008. *Innovation and SMEs: Misaligned perspectives and goals among entrepreneurs, academics and policy makers*.

⁵ For this and other categorizations, see: Garcia, R., Calantone, R., 2002. *A critical look at technological innovation typology and innovativeness terminology: a literature review*.

⁶ See for example: Godin, B., 2006. *The Linear Model of Innovation: The Historical Construction of an Analytical Framework*.

Figure 1: Model of innovation management in security organisations



3.2 Organisational strategy

Innovation management is of course not the core field a security organisation is active in. It is thus important to analyse, what an organisations overall strategy looks like and how this affects its innovation management. Financial considerations can play an important role here, just as much as an organisations structure, hierarchy and decision making processes.

Organisation I, for example, has no clear organisational strategy, but rather “organisational priorities” (e.g. protect vulnerable people or deliver value for money).

The main task of organisation A is to maintain public security in Austria. However, in order to cope with this task, innovation (more explicitly, technical innovation) plays a major role and is essential (quality management is also of importance here). Similarly, organisation C states that innovation plays an important role in the overall organisational strategy. To be able to innovate, these two organisations also have research units of their own.

Organisations B, G and H on the other hand don't have research units of their own or in-house research in general. But in this organisation new services are developed, using its own resources, and offered to the public. If the services are successful the help of the general public and the media is enlisted to raise new funds for the organisation. This can be described as a special form of innovation cycle.

Risk and vulnerability assessments are regularly applied at organisation E. With them, the organisation tries to find evidence on necessary innovations. Organisations F and G have similar approaches, with the emerging use of threat scenarios to determine which innovations are important (organisation F) and sometimes employing "push" innovation methods to actively search for new technologies to improve and achieve higher standards (organisation G). Organisation B (and organisations F and H) also stress the importance of day-by-day, incremental innovations that take place.

Organisation H uses a negotiation process between its directors and organisational units during the implementation of innovations to discuss constraints of resources.

Clear organisational strategies with strategic goals were reported by organisations D and J (e.g. improved performance or protection of people). Organisation K additionally has a clear vision on the organisations future achievements.

3.3 Innovation strategy

Having taken a look at the organisations' different approaches to organisational strategy, we now take a closer look at their innovation strategies. These strategies are very important for innovation management, since they can be the formal basis for any process of initiating and conducting the introduction of a new technology, organisational process or training method.

It is very interesting to note that six of the eleven studied organisations have no explicit innovation strategy at all (organisations A, B, C, D, I, J). In addition to that, organisation B reported that "any attempts to fully standardize innovation processes were regarded to be futile". Approaching innovations via risk management is one way of organisation J to cope with its missing innovation strategy.

On the other hand, organisation K reported that they employ a clear innovation strategy, which is related to the organisational strategy.

Six of eleven security organisations cooperate in some way with universities and/or research institutes and/or the private industry (organisations A, B, C, I, J, K). Four of eleven actively participate in national and international research projects (E, F, G, K). Organisation A has a special organisational subunit that is responsible for this cooperation.

Now even though many of our studied organisations have no clear innovation management, some of them recognize the importance of innovations and do have strategies for specific fields (e.g. ICT) (organisations A, C, D, I). Organisations A and C have a broad view of innovation, similar to the one used for INNOSEC. They regard new technology,

organisational improvements and new trainings as innovations which are mainly aimed at improving the organisations' efficiency.

For organisations B, D, E, F, G and H their innovations emerge from the needs of clients and/or from newly arising threats. They thus do not actively seek new innovations but have a more passive approach by waiting for needs or threats to arise. However, once a need has been identified, innovations are actively sought, e.g. by using an "exploration process" (organisation G). Organisation H reports that they see their innovations as giving their clients a competitive advantage through new products and services.

As mentioned above in 3.2, organisation H has no in-house research. However, the testing and adaptation of new technologies does take place in in-house labs.

A final interesting note on innovation management comes from organisation D. Here, people working within the organisation compete over the funding of new ideas. This leads to the "best people" winning new funds and not the best ideas. This problem has been identified, but not changed (yet).

3.4 Search, monitoring and identification of new ideas & technologies

Many innovations start with the phase called "search, monitoring and identification". In this phase, an organisation actively looks at different sources (e.g. the internet, literature databases, conference proceedings, personal meetings) in order to find new ideas or inspirations. But finding those ideas is not enough. It is also necessary to monitor ideas that might not be of interest for the organisation at the moment but might become so in the future. Also, an idea can be known at an organisation but has not been identified as relevant for it. This phase of innovation management is being handled very differently across the studied organisations.

Organisations A and F, for example, have introduced a formal system of proposals that collects ideas from the staff and/or the organisations' subcontractors. In the case of organisation A, this system was implemented 15 years ago and produces from 3500 to 4000 staff proposals every year (20% of which are of a technological nature and 80% organisational).

Ideas from the staff and from inside the organisation in general are also being used by organisations B, C, D and H (which uses special "competence centres" for this) but they have no explicit process of searching or monitoring new ideas. Organisation D has an "innovation broker" who receives ideas from the bottom and top-down innovations which are motivated by big incidents or problems.

In organisation B, these ideas can lead to the formation of a working-group which then continues the process of innovation. This organisation also uses intra-organisational competitions to inspire the creation of new ideas. Its experts monitor their respective environment (e.g. by reading their scientific journals). Similarly, employees from organisations H and K visit conferences, congresses, fairs and scientific events.

Interestingly, even though organisation C reported to have no formal innovation strategy, they do see their involvement in the whole process of innovation management, starting from the conception of an idea to its application and specification of equipment, as a key factor of success.

For a public organisation like organisation A, sending its employees to external trainings and private organisations to work there for a certain amount of time is also a source of new ideas. This organisation (along with organisations G and J) is also actively approached by the private industry with new products.

An incentive to propose new innovations which is used by four of the studied organisations is a financial bonus. Another incentive, employed by organisation A, is the involvement of the proposer in the development and implementation process.

At organisations C and K own laboratories provide opportunities for active experimentation, testing ideas and innovations. Organisation K has a subunit which is responsible for this experimentation.

In general, four of the studied organisations have a subunit or senior leaders which deal actively with the search, selection and evaluation of new ideas (organisations E, I, J, K). At organisation E, 100 of a total of 750 employees are engaged in this work. At organisation J, the senior leaders visit other organisations which are active in a similar sector to learn from their innovations.

Organisation E has recruited an EU strategist who scans each technology area for types of funding with the goal to apply for new projects.

By recruiting staff with experience outside of the organisation's sector organisation I tries to search and identify new ideas.

No evidence was found of innovating or experimenting of the staff of organisations G and H during their "free time".

3.5 Evaluation and selection of new ideas & technologies

Once ideas and innovations have been identified as being relevant for an organisation the next phase of innovation management starts: evaluation and selection. Since it is possible that not all identified ideas can be implemented in the organisation, they need to be evaluated. Based on this evaluation, the organisation can then choose which of the most important new ideas should be implemented.

Similar as before, some organisations have no clear standardized system for evaluating and selecting their innovation projects. In this phase, three organisations reported this (organisations C, F, I). Rather, decisions here are taken on a case-to-case basis due to the individual character of innovations. Organisation J involves its staff in the selection and evaluation and then makes a decision based on the feedback.

Organisations A and C have a high standard for the selection of their innovations. Special working groups are set up which should involve experts that are tailored to the nature of the innovation. These experts then evaluate the innovations, making this a qualitative selection process.

Quantitative factors in the process of selection and evaluation often involve financial considerations. Seven of our eleven studied organisations reported these considerations to be very important in the selection process, since many of them face budget cuts (organisations A, B, C, D, G, I, J). Among the goals of taking this into consideration are “help more people with the same resources” and improving the cost-benefit ratio.

In general, organisation B reports its reasons for innovating at all are to become more efficient and meet the needs of clients. Thus, the selection process also has to take these criteria into account. The decision on new innovations is taken by a majority vote, which is seen as an innovation barrier. But this is due to the basic democratic and federal system of this organisation. An in-depth evaluation of the innovations is then also performed by a working group, made up of experts.

Another important criterion is that all new technological systems must be compatible with systems of other collaborating organisations (organisations E, J).

Important for organisation H is that new technologies should “increase performance and efficiency in processes”.

At organisations D, I, J and K organisational subunits are responsible for the evaluation and selection. Some do this in cooperation with specialty subunits, but this is dependent on the nature of the innovation.

3.6 Adoption, adaptation & implementation of new ideas & technologies

After the evaluation and selection of a new idea or innovation, the process of adapting and implementing this innovation begins. There exist many different ways of implementing an innovation into an organisation. Organisations can for example just implement them top-down or collect their staff’s feedback at this stage and take that into consideration. It is also important whether an innovation is already suitable for use or whether the innovation first has to be adapted to the special needs of an organisation.

For this phase, only two organisations (organisation B, F) use no formal process, due to the “very heterogeneous innovation processes” (organisation B). At organisation F, the introduction of a formal process is planned for the future.

Three organisations employ an active project management during the adaptation and implementation phase (organisations C, I, K). This can involve well-planned schedules for new technology roll-outs and the accompanying of the whole process of introduction of new technologies (e.g. using hand-outs and hotlines for feedback at organisation C).

Similarly, organisations G and H involve the users and technology suppliers during the implementation of a new technology and use their feedback to improve future implementations and to make sure that the specific needs of the organisation are fulfilled.

In the special case of IT innovations, organisation H uses one of its subunits to adapt these to the needs of the organisation.

Organisations A and J have very high standards for the implementation of new ideas and technologies since these organisations operate in a public environment.

For organisation B, the implementation of a new idea or technology is straightforward, since all barriers have been passed in the earlier phases. This organisation develops and implements many of its innovations in a bottom-up process. These are tested and improved through incremental steps and diffuse inside the organisation. Top-down innovations also exist. An interesting side note is that this organisation keeps its old systems working for redundancy reasons.

At organisation C, both commercial off-the-shelf products and products which have to be adapted for use are introduced.

Interesting trend is "Bring Your Own Device (BYOD)" where members of the organisation use their own equipment to do their work more efficiently (organisation D). This organisation has also had good experiences with implementing innovations in those expertise groups where they are used, while a wide implementation with multiple groups can be problematic. This organisation also suggests a slow introduction of innovations to that the original idea doesn't get lost in the process of standardisation.

3.7 Learning, feedback and interaction

The process "learning, feedback and interaction" runs parallel to the three processes of innovation management the above chapters dealt with (see chapters 3.4 to 3.6). In this process, the organisations involve different stakeholders of the innovation management like the staff of the organisation, the actual users or their clients. This involvement can vary by method, intensity and reaction to the feedback.

At organisations A, B, C, D, E and G there is no single formalised process, but the level of learning and feedback was described by organisation A as being "adequate". Mostly, the feedback arrives at the organisation from bottom-up. For example, at organisation C, the users are encouraged to ask questions in training courses and to use hotlines and thus give regular feedback. Also, this organisation (along with organisations H and K) conducts regular meetings with its users or regular workshops with its suppliers (organisation H). Organisation C is also involved in the final phase of a technology, i.e. the decommissioning and shutdown. However this organisation has no feedback loop between them and their clients. Various systems for the handling of new ideas exist in different areas of organisation E. The aim is to improve and unify this. At organisation G "learning occurs naturally" through communication between organisational subunits. This has led to an emergence of informal networks supporting innovation.

A regular survey of the staff after the implementation of an innovation is conducted at organisation J. If in this survey a risk or a risk failure is identified, this information is shared nationally. For their trainings, this organisation compiles an annual training needs analysis in order to learn which trainings and training innovations need to be conducted in the next year.

The formalized proposal system by organisation F (described above) is also used in this process to get feedback.

At the organisations H, I and K their respective organisational subunits are responsible for getting the feedback and reacting to it. At organisation I, this leads to a “lessons learnt” report for each completed project.

3.8 The case study organisations

This report is based on a description of the operating environment and the innovation management practices of eleven case study organisations in the security sector. A summary of the organisations is set out in Table 1 (below) and the full description of the case study organisations can be found in the confidential Annex 1. A summary of the innovation management influences and processes for these security organisations can be found in **¡Error! No se encuentra el origen de la referencia..**

Table 1: Summary of case studies

Name of organisation	Country	Type of organisation	Degree of autonomy	Primary security mission	Secondary security mission	Tertiary security mission
ORGANISATION A	Austria	Public	Low/medium	Security of citizens	Intelligent surveillance & border security	Restoring security & safety in case of crisis
ORGANISATION B	Austria	Private non-profit	High	Security of citizens	Restoring security & safety in case of crisis	
ORGANISATION C	Germany	Public	High	Restoring security & safety in case of crisis	Security of citizens	Security of infrastructures and utilities
ORGANISATION D	The Netherlands	Public	Medium	Security of citizens	Restoring security & safety in case of crisis	Security of infrastructures and utilities
ORGANISATION E	Sweden	Public	Low/medium	Restoring security & safety in case of crisis	Intelligent surveillance & border security	Security of citizens
ORGANISATION F	Sweden	Private	Low	Security of infrastructures and utilities	Intelligent surveillance & border security	
ORGANISATION G	Spain	Public	Low	Security of citizens	Security of infrastructures and utilities	Intelligent surveillance & border security

Name of organisation	Country	Type of organisation	Degree of autonomy	Primary security mission	Secondary security mission	Tertiary security mission
ORGANISATION H	Spain	Private	High	Intelligent surveillance	Security of infrastructures and utilities	
ORGANISATION I	UK	Public	Medium/High	Security of citizens	Restoring security & safety in case of crisis	
ORGANISATION J	UK	Public	High	Security of citizens	Restoring security & safety in case of crisis	Security of infrastructures and utilities
ORGANISATION K	Germany	Private	Medium/High	Security of infrastructures and utilities	Intelligent surveillance & border security	Security of citizens

4 Discussion and conclusion

The description of the eleven studied organisations' innovation management leads to a very heterogeneous picture with some similarities between the organisations.

Organisation C described the integration of all phases of innovation inside one organisation as being a key factor of success. The former seems to be seconded by other organisations (e.g. organisation B) who reported that a too strong diversification of subunits might lead to innovation barriers. The same is true if the different subunits don't know what their actual tasks in the innovation management process are. The example of organisation J disagrees with this. Local subunits, combined with freedom of choice, can also be an advantage in innovation. Having one subunit that deals with innovation management seems to work well though (organisation K).

Another key factor of success in organisation C is their budgetary freedom. However, this could also lead to a misuse of budget. On the other hand, organisation D allocates 100% of its innovation budget and it is suggested that it would be better to have around 30% of the budget free for new and spontaneous ideas, thus also asking for more budgetary freedom.

Organisation A provided another such factor of success. It is suggested that if the staff has the ability to by-pass the hierarchy and directly contact the relevant actors in innovation management, the creation of ideas is more successful. At this organisation, this is done by using an active idea management system. The introduction of such a system might constitute one of the modules of the future INNOSEC model. This organisation also holds a holistic view of new ideas and innovations, thus staying open for new possibilities. The few possibilities for their staff to work for a limited time in the private industry are seen as a weakness. This would mean that a high mobility of an organisations staff and the possibility to work in different sectors for a while could improve an organisations innovation management. But organisation G points out that a high mobility of members of the organisation can also lead to discontinuity in some innovation processes and could thus constitute an innovation barrier.

Complex legal requirements or being able to innovate only inside the framework of legislation is seen as an innovation barrier by some organisations (organisations G, K). The same seems to be true for standards, which are perceived as having advantages and are reasonable but can, in some situations, hem innovation (organisation C).

Organisation B can be seen as a special case, since a great part of the organisation's staff consists of volunteers (this leads to diversity, which is also considered a huge resource for innovations). Organisation C also sees the diversity of its experts (scientists and engineers) and their involvement in innovation management as an advantage. Volunteers, organisation B argues, need a modular system for their innovation management, since the executive level doesn't have many options to influence the lower levels of the hierarchy. Also, due to very diverse tasks and activities, the standardisation of innovation processes is limited. An innovation barrier, which is unique to organisation B are external stakeholders who are unwilling to introduce innovations. With a modular innovation management, all different subunits (and perhaps external stakeholders) of such an organisation can select and adapt parts of new innovations. This idea lies behind the INNOSEC project. It remains a question, whether the modular approach not only makes sense for organisations such as organisation B.

Organisational, process and social innovations are seen as being more troublesome by organisations A and B than technical ones. Technical innovations are also seen as a possible key enabler for the simplification of processes and efficiency gains (organisation A). Such technical innovations are the most important ones for organisation G. But this always depends in part on the operational environment. Organisation K mostly innovates in the areas of organisational, process and social innovations because most of their technical equipment is regulated by legislation.

In general, an early involvement of all stakeholders in the innovation management process seems to be a good recommendation to simplify the later phases of the innovation process (as described by organisation B).

We think that no direct and active impact from the industry and scientific institutes, as in the case of organisation C, can be seen as a disadvantage for innovation. Also, the fact that some organisations like C and D reported no formal process for searching and monitoring of new ideas and technologies might lead to random acquiring of new ideas.

Some organisations reported that they had no formal process of gathering feedback. This might lead to frustration in the staff, if they start to feel that criticism doesn't lead to change. It seems that the right balance between involvement of the staff and top-down strategies needs to be found in each stage of the innovation process and in each organisation.

Finally, a monopoly position of an organisation can, from our point of view, also lead to stagnation in the innovation process.

In some of the studied organisation, one can also observe first steps or ideas towards improving their innovation management. Organisation E has a scope to intensify collaboration on the European level to improve innovation. At organisation D, shorter and more regular cycles of evaluation are wished for.

The present report D1.2 represents an analysis of the innovation management practices of eleven organisations from the security sector to understand the different ways these organisations conduct their innovation management. It can be seen that some organisations are more successful dealing with innovations than others. This is the point where the INNOSEC project wishes to provide a modular solution for all organisations from the security sector.

The third, and final, deliverable of this work package will be a "Situation Report" which will concretely examine the strengths and weaknesses of each security organisation and identify gaps in their innovation management. This analysis will then be used as a basis for WP3.

Table 2: Summary of innovation management influences and processes of case study organisations

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION A	<p>Maintain public security</p> <p>Innovation plays a major role</p> <p>Own research unit</p> <p>Active quality management</p>	<p>No explicit innovation strategy</p> <p>Partnerships and/or collaboration with universities and research institutes</p> <p>broad view of innovation, mainly aimed to improve the organisation's efficiency</p>	<p>Ideas from the staff and/or subcontractors collected through a formalized proposal system</p> <p>Incentives for proposal of innovations: financial bonus</p> <p>Actively approached by the private industry with new products</p>	<p>Qualitative selection process through experts</p> <p>Financial considerations very important</p>	<p>Very high standards, since organisation operates in a public environment</p>	<p>No single formalised process</p>
ORGANISATION B	<p>Develops new services, then tries to raise funds for them</p> <p>Day-to-day incremental innovations are also of importance</p>	<p>No explicit innovation strategy ("futile")</p> <p>Innovations emerge from the needs of clients and/or from newly arising threats</p> <p>Industry cooperation</p>	<p>Ideas from the staff and from inside the organisation in general, but no explicit process of searching or monitoring new ideas</p>	<p>Financial considerations very important</p> <p>Innovation criteria: become more efficient and meet the needs of clients</p> <p>Decision on new innovations by majority vote; in-depth evaluation by expert working groups</p>	<p>No formal process</p> <p>Implementation normally straightforward since all barriers have been passed earlier</p> <p>Old systems are kept working for redundancy reasons</p>	<p>No single formalised process</p>

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION C	<p>Innovation plays a major role</p> <p>Own research unit</p>	<p>No explicit innovation strategy</p> <p>Partnerships and/or collaboration with universities and research institutes</p> <p>broad view of innovation, mainly aimed to improve the organisation's efficiency</p>	<p>Ideas from the staff and from inside the organisation in general, but no explicit process of searching or monitoring new ideas</p> <p>Involved in the whole process from the conception of an idea to its application and specification of equipment</p> <p>Own laboratories provide opportunities for active experimentation, testing ideas and innovations</p> <p>Incentives for proposal of innovations: financial bonus</p>	<p>Qualitative selection process through experts</p> <p>Financial considerations very important</p> <p>No clear system for evaluating and selecting innovation projects</p>	<p>Both commercial off-the-shelf products and products which have to be adapted for use are introduced</p> <p>Active project management</p>	<p>No single formalised process</p> <p>Users are encouraged to ask questions in training courses and using hotlines and thus give regular feedback</p> <p>Regular meeting between organisation and its users</p> <p>No feedback loop between organisation and clients</p> <p>Involved in the final phase of a technology, i.e. the decommissioning and shutdown</p>

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION D	Clear organisational strategy with strategic goals (e.g. improved performance or protection of people)	No explicit innovation strategy Innovations emerge from the needs of clients and/or from newly arising threats	Innovation broker receives ideas from the bottom, top-down innovations motivated by big incidents or problems	Financial considerations very important Organisational subdivision responsible for evaluation and selection of new ideas	"Bring Your Own Device (BYOD)" Implementation of innovations inside the expertise groups where they are used are successful; wide implementation with multiple groups problematic Suggest slow introduction of innovation so that original idea doesn't get lost in process of standardisation	No single formalised process

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION E	Regular risk and vulnerability assessments	Innovations emerge from the needs of clients and/or from newly arising threats Participation in national and international research projects	Recruitment of an EU strategist who scans each technology area for types of funding with the goal to apply for projects Subunit which deals actively with the search, selection and evaluation of new ideas	All new technological systems must be compatible with systems of other collaborating organisations	Organisational subunit deals with specific needs of organisation and is in contact with both users and suppliers	No single formalised process, rather various systems in different areas of the organisation. Aiming to improve this
ORGANISATION F	Emerging use of threat scenarios to determine which innovations are important Day-to-day incremental innovations are also of importance	Innovations emerge from the needs of clients and/or from newly arising threats Participation in national and international research projects	Ideas from the staff and/or subcontractors collected through a formalized proposal system Incentives for proposal of innovations: financial bonus	No clear system for evaluating and selecting innovation projects	No formal process (planned for the future)	Formalized proposal system also used for feedback

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION G	<p>Sometimes employing “push” innovation methods to actively search for new technologies</p> <p>No in-house research</p>	<p>Innovations emerge from the needs of clients and/or from newly arising threats</p> <p>Once a need has been identified, innovations are actively sought by using an “exploration process”</p> <p>Participation in national and international research projects</p>	<p>Actively approached by the private industry with new products</p> <p>No evidence of innovating or experimenting in “free time”</p>	<p>Financial considerations very important</p>	<p>Technologies are implemented involving the users and suppliers of technology and using their feedback to improve future implementations</p>	<p>No single formalised process but “learning occurs naturally” through communication between the organisational subunits</p> <p>Emergence of informal networks supporting innovation</p>

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION H	<p>Day-to-day incremental innovations are also of importance</p> <p>Negotiation process between directors and organisational units during implementation of innovations to discuss constraints of resources</p> <p>No in-house research</p>	<p>Innovations emerge from the needs of clients and/or from newly arising threats</p> <p>Giving their clients competitive advantages through new products and services</p> <p>Testing and adaptation of new technologies takes place in in-house labs</p>	<p>Ideas from the staff and from inside the organisation in general, but no explicit process of searching or monitoring new ideas</p> <p>No evidence of innovating or experimenting in "free time"</p> <p>Visiting of conferences, congresses, fairs and scientific events</p>	<p>New technologies should "increase performance and efficiency in processes"</p>	<p>Adaptation of IT innovations through organisational subdivision</p>	<p>Regular meeting between organisation and its users</p> <p>Organisational subdivision is responsible for getting feedback and reacting to it</p>

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION I	No clear organisational strategy, organisational priorities	No explicit innovation strategy Partnerships and/or collaboration with universities and research institutes Information services strategy exists	Recruitment of staff with experience outside of the organisation's sector Senior leaders which deals actively with the search, selection and evaluation of new ideas Senior leaders visit other organisations which are active in a similar sector to learn from their innovations	Financial considerations very important No clear system for evaluating and selecting innovation projects Organisational subdivision responsible for evaluation and selection of new ideas	Active project management	Organisational subdivision is responsible for getting feedback and reacting to it "lessons learnt" report

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION J	Clear organisational strategy with strategic goals (e.g. improved performance or protection of people)	No explicit innovation strategy Approaching innovations via risk management Partnerships and/or collaboration with universities and research institutes	Subunit which deals actively with the search, selection and evaluation of new ideas Actively approached by the private industry with new products	Financial considerations very important Involves its staff in the selection and evaluation and then makes a decision based on the feedback All new technological systems must be compatible with systems of other collaborating organisations Organisational subdivision responsible for evaluation and selection of new ideas	Very high standards, since organisation operates in a public environment	Survey of the staff after implementation of innovation, if risk or risk failure is identified, this is shared nationally Annual training needs analysis in order to learn which trainings and training innovations need to be conducted in the next year

Organisation	Innovation Management influences and processes					
	Organisational strategy	Innovation strategy	Search, monitoring and identification of new ideas & technologies	Evaluation and selection of new ideas & technologies	Adoption, adaptation & implementation of new ideas & technologies	Learning, feedback and interaction
ORGANISATION K	Clear organisational strategy including a vision for the organisations future	<p>Clear innovation strategy, related to the organisational strategy</p> <p>Partnerships and/or collaboration with universities and research institutes</p> <p>Participation in national and international research projects</p>	<p>Incentives for proposal of innovations: financial bonus</p> <p>Own laboratories provide opportunities for active experimentation, testing ideas and innovations (subunit responsible)</p> <p>Subunit which deals actively with the search, selection and evaluation of new ideas</p> <p>Visiting of conferences, congresses, fairs and scientific events</p>	Organisational subdivision responsible for evaluation and selection of new ideas (in cooperation with specialty subunits)	Active project management	<p>Organisational subdivision is responsible for getting feedback and reacting to it</p> <p>Regular workshops with suppliers</p>

Annex 1 – Case study organisations

Annex 2 – European context of the integrated border management system development

Glossary

Term	Definition
Security organisation	Security organisations are organisations that are responsible for fulfilling security missions for society like fire fighters, police and commercial security organisations. Organisations whose prime mission is not security specific, but in which a part (e.g. a department or group) conducts security tasks such as security departments of airports and other high risk facilities and infrastructures are also considered security organisations.
Non-security organization	Organisations that do not have any security missions for society are non-security organisations.
Innovation	The process of identifying, evaluating, acquiring and integrating new technologies and new services based in technology in order to improve the service of security to the citizens <ul style="list-style-type: none"> - However, we acknowledge that we cannot ignore the subsequent impact of the technological innovation on (organisational) innovation management practices and service delivery, and so will be mindful of it
Operating environment	The factors external to the organisation that may act as drivers or constraints on the innovation management practices of security organisations
Innovation management practices	All those practices & institutions (formal & informal) within an organisation that contribute to its innovation process & outcomes
Security service providers	The part of the security organisation that actually conducts security measures. For example, inside an airport, the security service provider would be the ones that conduct security checks at the gate. Very often security service providers are also the users.
Users	Those members of the security organization that actually use new technological innovations (e.g. equipment or software) in their day-to-day work, are being trained by new training methods or are directly influenced by new organizational changes. <i>Users</i> can also be responsible for implementing innovations into the security organization. End-users are also users, but constitute a subset of users as a whole. The terms can be used inter-changeably to some extent.
Procurers	Those who are responsible for selecting and buying new technological innovations. They are usually located within the security organisation, but may also be adjunct to it; procurers may also be users, or they carry out their role by communicating with users and/or researchers
Developers	Members inside a security organization complex that are charged with developing new technological equipment or software, new training concepts or new organisational means for their <i>users</i> . <i>Developers</i> can at the same time

	be <i>users</i> or <i>researchers</i> . Normally, <i>developers</i> include engineers and craftsmen. They differ from the <i>researchers</i> in that they represent a later stage in the innovation process where they develop an actual product. Findings from the development process can feed back to the <i>researchers</i> and vice versa.
Researchers	Those responsible for conducting scientific studies in order to create new equipment, new software, new training methods or new organisational means. They can be situated both within and outside the security organisation, and can range from all disciplines inside the physical sciences, social sciences and humanities, depending on the security organisation. The researcher's work feeds into the work of the developers and procurers.
Champions and Promoters	This refers to individual(s) who turn the innovation dream into reality, who are passionate about the innovation and are able to help overcome the (internal and external) barriers to adoption and implementation.