# Title
MASCA Deliverable 7.2 Exploitation Plan

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<tr>
<td>Authors:</td>
<td>Mc Donald, N (TCD); Corrigan, S (TCD); Leva, C (TCD); Mattei, F (TCD); Zon, R (NLR); Maji, A (NLR); Ulfvengren, P (KTH); Mårtensson, L (KTH); Cacciabue, C (KITE); De Sordo, D (SAGA); Peyrat, S (Thales); Ledin, A (Swedavia); Skillborg, H (Swedavia)</td>
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1 EXECUTIVE SUMMARY

MASCA supports an integrated development of the capability to manage change in a complex system like aviation. In order to ensure resilient capability to change, an organisation (or group of organisations) has to be able to mobilise its resources (especially the knowledge and the information that supports this) to anticipate future challenges, and to respond and adapt to such challenges (whether they are fully foreseen or not); it has to understand how its systems function and how the system is performing; and have sufficient consensus to participate in and support the effective leadership of change. In order to support the development of this capability MASCA has developed (or incorporated) an integrated set of services, methods and tools, comprising Managing information, Analysing, Serious gaming, Capability building and Achieving value (MASCA). The primary areas for the short term exploitation of the MASCA CMS are in the areas developed in the case studies: the introduction of advanced proactive performance driven Safety Management Systems, the introduction of Airport Collaborative Decision Making, and the management of change in regional airports. MASCA, however, is applicable across the range of socio-technical change in aviation and in other domains where operational risk needs to be controlled, for example in the resources industry and in health care. SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis suggests that the strengths of MASCA are in its integrated approach which is proportional to the complexity of the requirements of change. Its potential weakness is in its complexity – it requires further focus and refinement to mitigate this. The short term opportunities for exploitation concern both further focused RTD in the PROSPERO project, together with interventions in the areas of safety management, collaborative decision making and airport change. As an integrated system MASCA will rely on collaborative agreements between the partners who have a stake or own the intellectual property of the components of the system. However these components can as well be developed and exploited separately and on their own merits.

2 INTRODUCTION

The management of change is not a simple concept. It requires knowledge of the socio-technical system which is subject to change together with an understanding of the processes through which change in that system can be accomplished. Such processes are not adequately represented by a top-down representation of change as simply following a plan. Nor are they adequately represented as a bottom-up emergent process of spontaneous adjustment and/or resistance. Leading change requires an understanding of those emergent processes so that the capabilities, forces and energies of organisations can be mobilised in a way that supports and enables a direction of change. Furthermore, aviation is a complex system of systems, with interdependent processes spanning many organisations. This simply reinforces the point that change in such systems requires the collaborative development of shared understanding of how interests and goals can be realised in a future system.

In deliverable 6.1 - Final evaluation of the change initiatives – the goals and challenges of MASCA were described as follows:

“The main object of MASCA is to deliver a structure to manage the acquisition and retention of skills and knowledge, through training on organisational processes for managing change.”

The MASCA Change Management System (CMS) was developed to deliver an integrated change management capability through its deployment in selected change management case studies.

‘MASCA was conceived and developed in order to address the high failure rate of change initiatives and to provide guidance and support for how to do it better. To do this the theory has not only to provide an adequate descriptive account of the factors that are associated with change, but also to demonstrate how those factors actually work together to produce a change in the organisational
system; and finally it should do this in a way that can support practical measures that give real leverage over the change process.’

MASCA thus promised to provide an integrated approach to supporting the development of a capability to manage change in a complex system like aviation. It has evaluated the efficacy of this approach in Deliverable 6.1. Bearing in mind the findings of this evaluation, this deliverable seeks to plot out an exploitation trajectory for the outputs of the MASCA project. For the reasons outlined above, the initial focus of this analysis is on MASCA as an integrated system which can deliver a rounded capability to an end-user organisation or group of organisations. However the MASCA approach is an integration of a number of distinct individual components each of which can have an exploitation trajectory in its own right. This will be the subject of the final part of the deliverable.

3 Overview of the MASCA Change Management System

At the conclusion of the MASCA project it is possible to offer the following succinct, high-level definition of what is required to change an organisation:

At its most general, the capability of a resilient organisation has to encompass the following three characteristics:

- To be able to mobilise its resources (especially its knowledge and the information that supports this) to anticipate future challenges, and to respond and adapt to such challenges (whether they are fully foreseen or not).
- In order to do this is has to understand itself, in two ways:
  - how the system functions (how the interaction of human, social and technical aspects makes it possible to deliver value in the short medium and long term); and
  - what it is doing (how data from this activity is converted to knowledge about how the system is performing)
- To have sufficient consensus to participate in and support the effective leadership of change

This definition applies (all other things being equal) to a set of organisations functioning as an operational system-of-systems – as in aviation.

In order to support the development of this capability MASCA has developed (or incorporated) an integrated set of services, methods and tools, which are summarised in Figure 1, below. These are Managing information, Analysing, Serious gaming, Capability building and Achieving value (MASCA).

The core of the MASCA Change Management System comprises the operational and management processes, which deliver value in real-time, which is sustainable, and which are capable of change (Achieving Value). Knowledge of these processes (the ‘know-how’ of how things really work) is captured in process maps, analyses and evaluations (Analysing). Data generated by process activity is gathered, integrated, assessed (Managing information). Capability building is supported by mentoring by external expertise; training is offered tailored to the needs of this particular initiative and the phase it is in; high level competence in managing change is given by a Master’s programme. Serious gaming provides participants with the opportunity to explore collaborative ways of working and to experiment with different roles and scenarios.

These components enable the three change criteria outlined above. The requirement to understand how operational processes can be improved and how management processes can be developed is a precondition for building consensus; but it also provides an opportunity, through broad participation, to get an in-depth real and valid picture of how the system works. All components of the MASCA CMS facilitate active participation to understand one’s own and others’ roles and interests and seek to build a shared vision and minimise mutual misunderstanding. This is, or can be, a generic
capability – once applied to one change initiative it can be generalised to others. The point is to embed the knowledge cycles (learning from process data, understanding how to improve the functioning of the system) into routine management processes that deliver incremental change in a verifiable way. This in turn provides capability to support more major change initiatives. While, by their nature, major change initiatives are disruptive, the MASCA approach seeks to minimise non-productive (or counter-productive) disruption due to poorly targeted and less adequately designed initiatives, in particular those that do not properly take into account all stakeholders. This requires a long-term investment both in terms of the professional development of the individual change agent / change manager as well as the core competence or capability of the organisation(s) concerned. Hence the Masters programme – Managing the Risk in Change – is designed to translate the learning from RTD projects like MASCA into high-level and enduring professional and organisational competence.

Figure 1: Components of MASCA Change Management System

Table 1 below illustrates the deployment of the MASCA CMS across three broad areas of intervention. These broadly match the cases studies of the MASCA project, though the prospective risk assessment case has been incorporated under the umbrella of SMS for this illustration. The material from all of these cases forms part of the curriculum for the Masters programme, which in turn will support the development of leadership for future change. This shows the broad application of the MASCA concept: supporting SMS implementation in a major airline, collaborative decision-making across a major airport and change in the business performance of a regional airport.
Table 1: Deployment of MASCA CMS

<table>
<thead>
<tr>
<th>Achieving value</th>
<th>SMS</th>
<th>ACDM</th>
<th>Airport change</th>
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<tbody>
<tr>
<td></td>
<td>SMS development and implementation</td>
<td>Collaborative decision making in airport turnaround</td>
<td>Airport operations</td>
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<td></td>
<td>Prospective risk assessment</td>
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<td>Airport management</td>
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<td></td>
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<td></td>
<td>SMS</td>
</tr>
<tr>
<td>Capability building</td>
<td>Mentoring, training &amp; workshops, Master’s program</td>
<td>Mentoring, training &amp; workshops, Master’s program</td>
<td>Mentoring, training &amp; workshops, Master’s program</td>
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<tr>
<td>Analysis</td>
<td>Understanding SMS as process. Change evaluation</td>
<td>TAT Process analysis. Change evaluation</td>
<td>Airport processes mapped, management processes developed. Change evaluation</td>
</tr>
<tr>
<td>Serious gaming</td>
<td></td>
<td>Skyboard</td>
<td></td>
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<tr>
<td>Managing information</td>
<td>Vision monitor RAMCOP AR/DJ/ Hazard ID</td>
<td>Daily journal (DJ) Anomalies report (AR) Hazard ID</td>
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4 Market Analysis

4.1 SMS

By October 2014 all aviation service providers will need to comply with a new regulation for Safety Management Systems. For example all airlines will apply for a new airline operations certificate, AOC, based on their new Safety Management Systems. The main purpose of the new safety regulation requirements is to improve safety performance. The new regulation is changing from an outcome based measure to a performance based measure. The envisioned regulatory SMS is clearly advocating an integrated approach (ICAO, 2008).

The new integrated management system creates a paradox for regulation: it has to prescribe what has to be done to assure that safety is properly addressed; but actually assuring this requires a broader focus than just on safety-related functions, because safety performance depends on the integrated performance of the whole system; however regulators cannot prescribe what is beyond their remit which relates to those aspects which are (specifically) related to the safety of the system. Therefore, in order to understand how to implement an effective safety management system we need a model that goes a long way beyond the borders of what has traditionally been included under the rubric of safety management.

The performance being measured is safety performance. Safety performance is assessed as how well the SMS functions: “Effectiveness of the SMS, how well it performs and manages to improve the system”. This requires high-level safety knowledge and understanding about issues where state of art safety research is still struggling. The logic of the new regulation for an SMS (ICAO, 2012) has derived from systems engineering and quality management (Stolzer, Halford & Goglia, 2008). The logic of the quality management approach to safety may be easy to understand in theory, but in practice the integration between quality and safety is a real challenge. An indication of this may be that ICAO has
published three versions of the safety management manual (2006; 2008 and 2012). It has taken years only to develop a manual, which describes the theory. This is difficult, not only for every airline in the world, but also for researchers in this field.

In practice this means that measures indicating safe performance in operations, called indicators, will be agreed upon by authorities and each individual airline. Targets will be set for desired performance improvement on these indicators by next assessment exercise. Requirements will need to be described as well and is a process for how to accomplish this improvement. Safety performance is going to be measured in terms of how well set indicator targets are met. In other words it is essential to understand the system, identify influencing mechanisms to the functionality, implement and monitor indicators, and improve the functionality and outcome. Hence, safety performance is change capability!

MASCA has developed a SMS framework. This framework would be used to train people in the overall function and identify their role as well as missing gaps between the existing status with a future functional system. This would require structured inquiry and SCOPE modelling to be applied.

The target is in general any Airline as well as CAAs and other aviation stakeholders that are developing and implementing SMS. Documentation needs to be approved October 2014 so the immediate need is spring 2014 and also coming year before first regulatory audit of not only compliance but to demonstrate safety performance. It is feasible to get involved in the planning of SMS training for implementation already this spring of 2014 in SAS.

4.2 Airport Collaborative Decision Making (ACDM)

SESAR is beginning to enter its implementation phase. One of the key bottlenecks is the airport turnaround process. If SESAR delivers a step change in capacity in the sky, the benefits of this cannot be realised without and commensurate increase of capacity on the ground during the aircraft turnaround. EUROCONTROL, the organisation responsible for the preparation of the aviation system for the implementation of SESAR and the Single European Sky, recognises that the difficulties of collaboration between competing organisations within an airport environment is a major barrier to the effective implementation of ACDM. There are 35 major European airports that are mandated to implement ACDM by 2014. Currently eight of these have done so successfully and a further 28 are in the process of implementation. It is recognised that those airports that have a more integrated ownership pattern for airport and ground handling services have had less difficulty in implementing ACDM than airports with a greater diversity of independent companies. This issue was directly addressed in MASCA. Arlanda airport is one of the airports and one of those with a wider range of independent companies whose active collaboration in necessary to make ACDM work successfully.

The approach taken in MASCA goes much further than any other SESAR initiative in addressing the human and social aspects of collaboration that need to be addressed to make an integrated turnaround process work effectively following the milestones set by EUROCONTROL. It comprises analysis of potential issues and offering solutions based upon training of staff, including serious gaming to sharpen skills and insight in relevant competence for all staff members involved. This has been recognised by EUROCONTROL, and the potential contribution of the MASCA approach to ameliorating this problem is under discussion with them. The Airports Council International also recognises this problem. Following an initial presentation and workshop held in the ACI Leadership Forum in Bologna in October 2014, a further workshop specifically devoted to ACDM will be held at the ACI Leaderships forum in 2014.

In the short term it is feasible to target 20 major European hub airports as potential customers for implementation of the MASCA approach to ACDM.
In PROSPERO Swedavia is being included in the partnership explicitly to bring their experience in change management from the MASCA project in order to develop a stronger concept of managing the risk in change. The will enhance the airport group in PROSPERO (Aeroporti di Roma, Athens airport, SAGA) in developing a shared model of change which can increasingly become an industry standard.

4.3 Regional Airports

Regional airports are facing major commercial pressure across Europe for a variety of reasons: reduction of state or local government subsidy; competition from road and rail; the changing business model of low-cost carriers is evolving in a way which means transferring more flights to major airports, reducing their reliance on small regional airports. A key part of the survival strategy for such airports has to be to tighten up their own business model: consolidate, reduce costs, maintaining the same level of service, while enhancing quality and safety, with fewer resources. In Pescara, MASCA has demonstrated how it can support essential elements of this strategy through building a culture of compliance with procedures, improved reporting, both internally and externally; effective implementation of safety and quality management, including a very grounded approach to assessing and managing risks; together with a human resources policy tailored to the needs of the business. Undoubtedly, the case of small regional airports demonstrates the challenges of resilience in the face of severe external threats. The business model is progressively less sustainable and it is likely that many small regional airports will not survive as commercial entities in their current form. For those that do survive and prosper the key factors will most likely be a combination of internal flexibilities and agility together with external factors of geography, access to markets etc. MASCA does not offer a simple answer to this problem, but can offer some important elements to aid the internal capability to adapt and adjust.

MASCA has applications across any industrial or service domain which is susceptible to risk. The following two examples illustrate this:

4.4 Resources

The in-depth investigations of the disasters at the BP Texas oil refinery and the Deepwater Horizon drilling and extraction operation reveal the extent of the challenges for large organisations in safety critical industries of implementing recommendations effectively and transparently; and achieving culture change to ensure that improved ways of working are embedded in the normal practices of the organisation; and in managing hierarchies of subcontractors, who deliver the front line services. These reports demonstrate that the response of these organisations to these challenges is often ineffectual. They do not appear to know how to manage the kind of socio-technical change that will ensure effective safety performance. MASCA provides a model for how this could and should be done.

Opportunities to adapt the MASCA approach to the resources sector are:

4.5 Healthcare

In the health services, cost escalation and new service demands with constrained budgets has led to intense pressure for change, in turn leading to a chronic crisis over quality and performance. The following schematic account of the evolution of this crisis in the UK illustrates the need for an approach like MASCA.

- Stage 1: A growing crisis over escalating costs and declining service leads to major top-down policy initiatives to meet service targets (waiting lists, patients seen, etc.). These high-level service targets become the key drivers of internal re-organisation and change. Front-line staff is frequently bewildered and disillusioned by the continuous and repetitive demand for change which seems to take little account of their ability to deliver a quality service.
• Stage 2: In response to crisis events of unacceptably poor performance, new metrics are devised of key system outcomes. Thus, the high death rate in Bristol Royal Infirmary child cardiac surgery unit led to the development of the Standard Hospital Mortality Ratio (SHMR) metric, a standard measure of performance outcome which takes into account patient input variables, enabling a fair comparison between units. This metric gradually becomes a standard for comparison between hospitals.

• Stage 3: SHMR data in turn identify other service units with consistently poor performance outcomes. Investigation of these reveals chronic contradictions between meeting high level service targets (productivity) and standard of care (quality) leading to poor outcomes (Francis report).

• Stage 4: SHMR data are shown to be not an accurate index of quality of care. More sensitive measures are needed if there is to be an effective performance driver to improve standards of care, despite continuing cost escalation and funding reduction, and thence consistently improve outcomes.

This evolution has occurred over approximately 25 years, showing a system lurching in different directions in response to one set of performance metrics after another, with no effective way of understanding what it takes to deliver the service effectively in the first place. It is a costly, inefficient and damaging set of methods for managing change. The MASCA approach would cut across these contradictory tendencies by focussing from the beginning on the functional requirements to deliver outcomes effectively; participative methods build consensus on how a future system could function; and the management of information and knowledge about system functioning ensures an integrated, accurate and valid understanding of socio-technical function and system performance.

TCD are currently pursuing opportunities to adapt the MASCA approach to healthcare through research funding in the Irish healthcare system.

5 SWOT Analysis of MASCA as an Integrated System

5.1 Strengths
MASCA has formalised an approach to supporting change processes in complex socio-technical systems, including a systematic evaluation to empirically verify the effectiveness of the change itself and the support. The main strengths of the MASCA approach are that it is systemic and proportionate to the complexity of the problem that needs to be solved. All the evidence suggests that change is complex and uncertain and requires a multidimensional approach. The MASCA project has enabled a serious theoretical and empirical analysis of the nature of change; this has resulted in a new theoretical framework which is specifically designed to support the development of a program of measures to support change initiatives in a practical way, with the aim of improving their chances of success.

5.2 Weaknesses
The key weaknesses of MASCA are the inverse of its strengths: it is a complex model which may be difficult for someone unfamiliar with these concepts to grasp; it may be difficult to bring all the elements of MASCA together in an optimally co-ordinated way. It has been criticised as being too academic. While these comments may be justified, it is also important to take account of the stage of development of the MASCA concept. MASCA represents the first level of empirical testing of a new theoretical concept. It is hard to specify this as a TRL level because of the combination of a novel concept and methodology with a real world trial (this reflect the difference between technology development – performed offline – with operational change – performed online in real time). The questions is, whether it is possible to develop the MASCA concepts and methods in a way which preserves their systemic and multidimensional strengths but makes them more focused, easier to
explain and understand and with an infrastructure which makes for an efficient and co-ordinated delivery of service.

5.3 Opportunities

The immediate opportunity for the further development of MASCA is in the follow-on RTD project PROSPERO. This will enable the following developments to be achieved:

- Formalise change evaluation as a usable tool incorporated in the SCOPE analysis software environment.
- Integrate a more effective risk assessment framework in the change evaluation. This was one of the weaker parts of the MASCA change evaluation methodology.
- Continue the case studies to the end, so that the achievement of goals can be assessed in terms of the interim evaluation of the change program that was carried out in the MASCA project.
- Develop common capabilities across airlines and airports in assessing risk and managing change.
- Link into an overall system management framework that is being developed in PROSPERO, which comprises actively managing risk in the operation, and managing risk in design and change processes. It also incorporates a change management capability into an advanced concept for a proactive performance driven Safety Management System concept.

Furthermore the market analysis outlined above will be turned into an exploitation roadmap.

- In relation to ACDM, an integrated approach has been established between TCD, Swedavia, NLR and KTH, and some discussions have been initiated with EUROCONTROL. The timescale for the introduction of ACDM in European airports dictates that a plan be agreed during the first half of 2014.
- The timescale for the introduction of SMS revolves around a deadline for approval in October 2014. This marks a transition from establishing a policy, with all the elements documented and in place, towards fully implementing the policy in practice in a verifiable way, demonstrating the performance outcomes. Again the exploitation trajectory commences in early 2014, building on the work done in SAS during the project. Applying these concepts in SMS development in another major European low-cost airline is currently under discussion.
- Within the small regional airport (SAGA) the development and exploitation trajectory has shifted towards supporting the management capability to use the MASCA tools in order to assure the achievement of the strategic goals of the organization. This creates a series of best practices that can be emulated by other airports, large or small. This, in turn will create an opportunity to deploy the MASCA tools – the Daily Journal, Anomalies Report, Hazard ID.

5.4 Threats

One of the threats to the success of the MASCA exploitation plan derives from the fact that it is based on collaboration, with multiple stakeholders, developers and end-users, and intellectual property that is owned and sometimes shared between different parties. To take this further requires continued collaboration, either directly in the exploitation plan or through licencing or granting permission to use IP or knowledge which has been derived from that collaboration. The MASCA exploitation plan has not yet got to the stage of formal agreements between partners. Currently the opportunities and interests of different partners are the subject of diverse discussions. It is anticipated that this will lead to appropriate agreements that will underpin an effective plan of action.
6 Exploitation Potential of Individual Components of the MASCA System

The components of the MASCA Change Management System are capable of being developed as stand-alone individual elements, as outlined in table 2. This table provides a high level overview of the key MASCA products, intended markets and estimate of an overall time frame for exploitation.
<table>
<thead>
<tr>
<th>Product</th>
<th>Product Description</th>
<th>Intended Market &amp; Market Need</th>
<th>Time Frame*</th>
<th>Key Partners</th>
<th>Actions/Follow-On activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters - Managing Risk &amp; System Change</td>
<td>An online Masters Programme entitled ‘Managing Risk &amp; System Change’ will commence within the next year. This degree will be awarded by Trinity College Dublin and will. The key modules within this programme were developed within the project and will be translated into high-level and enduring professional and organisational competence.</td>
<td>The main target is the further education and training of personnel who have a role across key organisational functions - managing operations, quality, safety, regulation, human resources, planning and system design. The overall target is at the global level including EU students and non-EU students.</td>
<td>Short</td>
<td>TCD, KTH</td>
<td>Overall Curriculum and teaching staff has been identified for the Masters. The proposal is being prepared to ensure final internal approval from Trinity College Dublin. Plans are underway to initiate the overall marketing strategy of the Masters.</td>
</tr>
<tr>
<td>The Bridge concept</td>
<td>Training and educational concept for new approach to human factors. The concept encompass several issues where Basic human factors training for operators and managers in any complex socio-technical and high concept already used in seminars given by KTH researcher. Medium term revise concept and produce material, and explanatory text. Book and cases for training for various industrial settings.</td>
<td>Concept already used in seminars given by KTH researcher. Medium term revise concept and produce material, and explanatory text. Book and cases for training for various industrial settings.</td>
<td>TCD and KTH</td>
<td>TCD and KTH</td>
<td>Concept already used in seminars given by KTH researcher. Medium term revise concept and produce material, and explanatory text. Book and cases for training for various industrial settings.</td>
</tr>
<tr>
<td>SMS implementation methodology</td>
<td>SAS Safety Management System presented as a framework. The framework described in a structural and a procedural part. Structural part being meeting and team structures, enabling IT – tools, methods etc. The procedural part is the management process of SMS, the functionality. This framework would be used to train people</td>
<td>Airlines, CAAs and other aviation stakeholders that are developing and implementing SMS</td>
<td>Documentati on needs to be approved October 2014 so the immediate need is spring 2014 and also coming year before first regulatory audit of not only compliance</td>
<td>KTH, TCD, SAS</td>
<td>Set up meeting with SAS training department and follow up on the HF group need for a common HF concept in SAS to which existing initiatives could be mapped. Match to safety policy and overall training needs in future SAS SMS. Could also play a part in SMS implementation training.</td>
</tr>
</tbody>
</table>
in the overall function and identify their role as well as missing gaps between the existing status with a future functional system. This would require structured inquiry and SCOPE modelling to be applied.

<table>
<thead>
<tr>
<th>Risk model for SMS</th>
<th>Continue to build an integrative service linking statistical power to vision monitor and an integrated operational concept that allows for systemic risk assessment.</th>
<th>Aviation industry and regulators</th>
<th>Long term development in new projects and on-going PROSPERO</th>
<th>All PROSPERO partners</th>
<th>Long-term and on-going. Matthew Stogsdill will most likely have a PhD in this field and applications for Air TN and Swedish VINNOVA are in preparation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic education at master and PhD levels.</td>
<td>Safety and risk management courses, master thesis projects are planned in relation to the 1-3 above.</td>
<td>KTH, possibly polytechnic in Milan and Madrid?</td>
<td></td>
<td>KTH</td>
<td>Knowledge developed will be integrated in existing courses. Outstanding research issues may be formulated as explorative master thesis projects. A European Doctorate in Industrial Management (EDIM) already enable collaboration across Stockholm, Milan and Madrid and exchange PhD courses.</td>
</tr>
<tr>
<td>RAMCOP</td>
<td>Methodology to apply in the case of hazard analysis and risk assessment for changes in operational situations.</td>
<td>Mandatory implementation of Safety Management System (SMS) by all Civil Aviation</td>
<td><strong>Short:</strong> Industrial application in SMS</td>
<td><strong>Medium:</strong> AirDolomiti</td>
<td>- Implementation in the development of the SMS of AirDolomiti and in other Operators and Airport organisations. Coupling with background knowledge information (SDS tool for mandatory Occurrence reporting and data collection) to implement an automated system</td>
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<tr>
<td>Skyboard</td>
<td>Serious game for training change management competences and for improving attitudes towards airport CDM.</td>
<td>Change managers at airports dealing with the introduction of aCDM.</td>
<td>Short</td>
<td>All</td>
<td>The intention of disseminating the game is to cooperate with (independent) consultants facilitating the introduction of ACDM at European airports. The consultants provide help and we provide part of the CDM training by guiding gameplay.</td>
</tr>
<tr>
<td>Skyboard</td>
<td>Skyboard</td>
<td>Combining game with other MASCA training aspects as total package</td>
<td>Short</td>
<td>TCD, KTH, NLR</td>
<td>EUROCONTROL, airports and stakeholders where CDM will be implemented</td>
</tr>
<tr>
<td>Skyboard</td>
<td>Serious game</td>
<td>Colleges and universities</td>
<td>Short</td>
<td>All</td>
<td>Cooperating with consultants facilitating the introduction of ACDM at European airports. The game is used for demonstrating the importance of ACDM at their airport.</td>
</tr>
<tr>
<td>Skyboard</td>
<td>Marketing instrument</td>
<td>Other domains than aviation / ATM</td>
<td>Medium</td>
<td>All</td>
<td>To explain that collaboration / exploitation is important to focus on in their domains as well and that such a game can also be designed for their specific purposes</td>
</tr>
<tr>
<td>Skyboard</td>
<td>Support EUROCONTROL in introduction of ACDM at airport</td>
<td>EUROCONTROL</td>
<td>Short</td>
<td>All, NLR</td>
<td>Enable / support EUROCONTROL staff to use Skyboard for their own training for introduction of ACDM to stakeholders at different airports.</td>
</tr>
<tr>
<td>Skyboard</td>
<td>Training instrument for communication and coordination</td>
<td>Other domains than aviation / ATM</td>
<td>Medium</td>
<td>NLR</td>
<td>Use the ACDM based game in other domains where comparable kinds of communication and collaboration exist. Examples are rail, nautical, medical, etc.</td>
</tr>
<tr>
<td>Daily journal</td>
<td>An activity log of daily</td>
<td>Airport ramp</td>
<td>Short</td>
<td>TCD</td>
<td>Revise, update in the light of experience. Integrate</td>
</tr>
</tbody>
</table>
tasks hosted on the SCOPE software system | workers. Can be customised to any domain | into an information management framework
---|---|---
**Anomalies report** | A system for collecting and collating reports on anomalies or blockers to effective performance | Airport ramp workers. Can be customised to any domain | Short | TCD | Revise, update in the light of experience. Integrate into an information management framework
---|---|---
**Hazard ID** | Generic hazard identification method, hosted on SCOPE software system | This is a generic framework for recording local hazard identification. It can be applied in many domains. The hazards identified in the SAGA case study could become part of a generic airport hazard database | Short | TCD | Consolidate and extend Hazard list and mitigation reports in SAGA and other airports. Develop Airport hazard case study in PROSPERO.
---|---|---
**SCOPE change evaluation** | A structured enquiry for conducting a change evaluation. | This is a generic framework for analysing socio-technical change in any domain involving operational risk | Medium | TCD | Formalise change evaluation methodology within SCOPE modelling tool. Continue analysing case studies
---|---|---
*Short (within 6-12 months following the end of project); Medium (within 1-2 years following the end of project) Long (2+ years following the end of the project)*
7 REFERENCES
