MASCA – Managing System Change in Aviation

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Background
Within the aviation industry the need for sustainable change is becoming more and more imperative. This is due to a number of factors ranging from structural to technological to commercial. Also, change management, mentoring, leadership skills and other “soft” skills are not adequately distributed throughout the aviation industry. Human factors’ training is mainly focused on the operational layer within organisations with the aim of reducing error and enhancing safety at the point where it is most likely to occur. However, safety risk, for example, is known to be a systemic phenomenon and not contained within the cockpit or hangar. Change is being imposed on the industry from a number of sources and the need for change management skills and capability within organisations is increasing.

Project Objectives
The main objective of MASCA is to develop and deliver a structure to manage the acquisition and retention of skills and knowledge concerning organisational processes for managing change in the ‘whole air transport system’. Different stakeholders in a common operational system (airlines, airports, maintenance companies, etc.) will come together to change the shared operational system to deliver a better service. The workprogramme takes an action research approach with a primary focus on the transfer of change management capability into the organisations that are responsible for and involved in change. Thus the workprogramme is organised around two complementary objectives:

- The development of a system to support the development and deployment of an integrated change management capability (Change Management System – CMS)
- The deployment and evaluation of the CMS in selected change management initiatives, both simulated and actual.

Figure 1 provides an overview of the key elements of the MASCA CMS tool-box
The MASCA consortium covers the range and balance of partners to address the ‘whole air transport system’ – airlines (SAS, AirDolimiti) includes flight, maintenance and ground operations companies; airport authority (Swedavia, Pescara Airport); an original equipment manufacturer (Thales Avionics) - world leader in aircraft technologies; two universities (Trinity College Dublin, KTH - Stockholm); an aeronautics research organisation (NLR), and an SME (KITE) with a strong profile in technology and human factors services to aviation. The eight partners represent five European countries (Ireland, Sweden, Italy, the Netherlands, France).

**Key Outputs to date**

During the first six months of MASCA a comprehensive assessment of end-user needs was carried out with the industrial partners. This assessment culminated in an agreed set of change intervention projects around the following themes:

- Change Case-Study 1: Supporting the introduction of Collaborative Decision Making (CDM) in a competitive airport environment
- Change Case-Study 2: Linking risk & performance across flight ops, maintenance & a/c turnaround
- Change Case-Study 3: Assessing preparedness & facilitating change

The research also advanced an overall concept of change management by proposing change management as a set of interlocking processes which operate in different ways to bring about a successful result. As a set of nine elements comprising a change management capability (see figure 2), it is possible to derive an evaluation metric to assess the capability maturity of an organisation in relation to managing change. Organizing these elements in a set of processes highlights the sequencing and dependencies between the different stages
and parallel activities of the process and provides the basis for much more targeted and effective guidance for action. The link between process and outcome also provides the ultimate evaluation of process effectiveness.

Figure 2: The main elements considered for a change process in MASCA

Following the consolidation of end-user needs and the identification of the key change interventions, the research focused on the overall specification and design of the Change Management System (CMS) and how this system could be developed, validated and implemented to ensure effective support to the change interventions. Again the focus on this phase was ensuring on-going engagement with the end-user organisations and intensive co-ordination between the research partners to enable a clear and industry relevant change management support system.

The key outputs can be summarized as follows

**Change Case-Study 1 (Swedavia):** Supporting the Introduction of Collaborative Decision Making (CDM) at Arlanda Airport
- Development, pilot implementation and evaluation of a Serious Game to support the implementation of Collaborative Decision Making (CDM).
- Process Map of the turn-around process

**Change Case-Study 2 (SAS & SAGA):** Linking risk & performance across flight ops, maintenance & a/c turnaround
- Identification of key processes for improvement and process mapping of key processes (e.g., improved integration among different departments at the turn-around process has been identified as a key process in SAGA)
- Development of MASCA Performance Management Support Tool
• Development of a Daily Journal – a web application that captures all the daily work in electronic format (as only paper-based systems in place) Development of a Safety Performance Framework for SAS (allowing Safety Performance Indicators to drive change)
• Development of a Safety Culture System Change Framework

**Change Case-Study 3 (AirDolimiti): Assessing preparedness & facilitating change**
• Design of the Change Management Assessment Tool (CMAT) – prototype interfaces developed

The Learning Training and Mentoring (LTM) framework provides a support across all change initiatives and has developed: an overall framework for collaborative learning; an online learning community; an outline proposed Masters Curriculum due to commence in September 2013; development and delivery of Safety Awareness and Human Factors Training at SAS Ground Handling Operations and SAGA. Development of a supportive training infrastructure of Leadership & Change is currently underway

**Expected Results**
Failure of change management and new technology initiatives to achieve their objectives are a major cost to the aviation industry and significantly hamper the reduction of operating costs. MASCA will improve the effectiveness of the management of change, maximising operating cost reductions, enabling these to be passed on in reduced travel charges.

In summary what MASCA is trying to do that is different is as follows:

• Analyse the nature of change in complex socio-technical systems
• Develop a new theory incorporating all the critical elements in a dynamic model
• Operationalize that model in processes and guidelines
• Build a support structure for change
• Develop and implement capability of measuring different dimensions of change
• Deploy all this to support a number of case studies
• Monitor and evaluate the case studies
• Test the theory of change against the empirical evidence
• Develop and improve the theory
• Develop and improve the change support programme.