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EUROCONTROL Guidelines

The Change & Transition Tools Compendium

EUROCONTROL

EUROPEAN ORGANISATION
FOR THE SAFETY OF AIR NAVIGATION

The Change & Transition Tools Compendium

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Abstract

This Compendium is the first of three Deliverables of the Change and Transition Work Package of the EUROCONTROL SENSE Programme. The Compendium is part of the Proactive Method (ProACT Method) for the Management of Change in Civil Aviation. The ProACT Method consists of Information Material for Managers, a Users Manual and this Compendium.

The selected material in this Compendium can be used by anybody in civil aviation who is tasked with planning and implementing changes in their organisation and/or in the ATM operational environment. The document gives the information that is necessary to make an informed choice of methods or tools that best fit the specific needs or purposes in a given change process. The information is compiled in standard templates and gives the relevant content and details on the quality and the practical attributes of the selected material.

Keywords

Aviation	Change	Management	Transition
Tools Compendium	ProACT Method	ProACT Process Model	
Methods & Tools	Case Study	Best Practice	Guidelines
Reference and Guidance Material			

Authors

Hermann Rathje (EUROCONTROL), Bernd Hill (EUROCONTROL)

Contact(s) Person	Tel	Unit
Hermann RATHJE	+32 2 729 3955	EUROCONTROL
Bernd HILL	+32 2 729 5058	EUROCONTROL

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The following table identifies all management authorities who have successively approved the present issue of this document.

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Publications

EUROCONTROL Headquarters

96 Rue de la Fusée

B-1130 BRUSSELS

Tel: +32 (0)2 729 4715

Fax: +32 (0)2 729 5149

E-mail: publications@eurocontrol.int

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EXECUTIVE SUMMARY

The implementation of the Single European Sky (SES) and newly developed technologies by SESAR requires substantial organisational and/or operational changes. As all significant changes they have a significant demand for human transition: They demand a positive response of people to unlearn 'old' and learn 'new' skills, to adapt to new structures and working methods. They also require a change in behaviour of individuals and organisations. In short, substantial changes of any sort will only be successful if they are accepted and actively supported by people affected by the change.

To successfully implement changes and transfer from a current state of working to a new one, a proactive and structured approach is needed. Methods and tools that can assist and support a change process during its different stages can be a great help.

This document presents the EUROCONTROL Change and Transition Tools Compendium and comprises Methods and Tools, Case Studies, Best Practices and Reference and Guidance Material. The Compendium lists and describes Methods and Tools, Case Studies, Best Practice, Reference and Guidance Material and gives users access to material identified as being relevant and selected to support the management of change and transition processes in civil aviation.

The material was selected by a team of Human Factor Experts, Change Experts and Researchers with knowledge and experience about change in the ATM environment within their organisations. The aim was to select highly relevant material, with a record of meeting essential criteria, which has demonstrated its value in development or change studies, and has the potential to support the change process during the different steps and activities.

The first step was to gather available material that had relevance for change and transition in high risk industries. At total of 140 methods and tools etc. was compiled from the ATM, Oil, Chemical, Nuclear, Maritime, Hospital and Police industrial areas.

The second step was to select from this initial list of relevant material the best available material by assessing their characteristics against qualitative and quantitative criteria developed and adopted by the Task Force for this purpose. The Task Force applied a 'Delphi Technique' approach in the final stage of selecting the material for this Compendium.

The material in the Compendium is thus

- carefully selected using best available information;
- identified as relevant for change and transition in civil aviation;
- considered to be practical and applicable during the change process and
- organised and described in a user friendly manner.

This Compendium includes 44 carefully selected tools and provides all necessary information that users need for making a choice for a method or tool etc. that best fits their specific needs or purpose when planning and implementing changes in their organisation or in their operational environment.

The Tools Compendium is part of the Proactive Method for the Management of Change & Transition in Civil Aviation (ProACT Method). The ProACT Method consists of Information Material for Managers, a Users Application Manual and this Tools Compendium.

The three documents complement each other and should preferably be used together.

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1. Introduction

This Compendium provides information on assessed and selected material that has proven for being applicable for Change & Transition processes in Civil Aviation from start to finish. Users can apply this material in the Change & Transition process as a support to project management.

The material was selected by a team of Human Factor Experts, Change Experts and Researchers with knowledge and experience in the ATM environment and in change & transition work within their organisations.

The main objective was to collect, compile, and describe relevant existing material for change and transition in civil aviation, in the safety related industry and also in some relevant other high risk industrial areas outside civil aviation.

The aim was to select material relevant, meets essential development criteria, has demonstrated its value in development or change studies, and has the potential to support the activities during the different steps of a change process.

A Workshop developed probable and relevant ATM change and transition scenarios. A categorisation system, using scientific quality criteria; criteria related to the practical use of the material and criteria related to the specific requirements of civil aviation was developed to describe the material in a common format.

The outcome was a standard template that is used in the Annexes of this Compendium.

The entire material was reviewed in this version to ensure completeness of information, correct and complement details on the tools or methods itself and gain permission from authors for publication etc.

The template presents the technical, the quantitative and - most importantly: qualitative information about the selected material to aid practical use. This format allows to quickly find the relevant information and to compare with alternative methods.

The template supports the informed choice of users by referring to core criteria including:

- Effort required / Cost;
- Target population;
- Relevance to change and transition scenarios;
- Technical descriptions – contents – equipment – qualifications;
- Process description;
- Strengths / Weaknesses;
- Psychometric properties.

The selected material was sorted into four categories:

- Methods and Tools – Annex A
  - Questionnaires
  - Interviews
  - Observations
- Case Studies – Annex B
- Best Practice – Annex C
- Reference and Guidance Material – Annex D

User should use the information given in the Compendium to choose from the material what they think best fits their specific purpose and what they consider is relevant for supporting them in their change project.

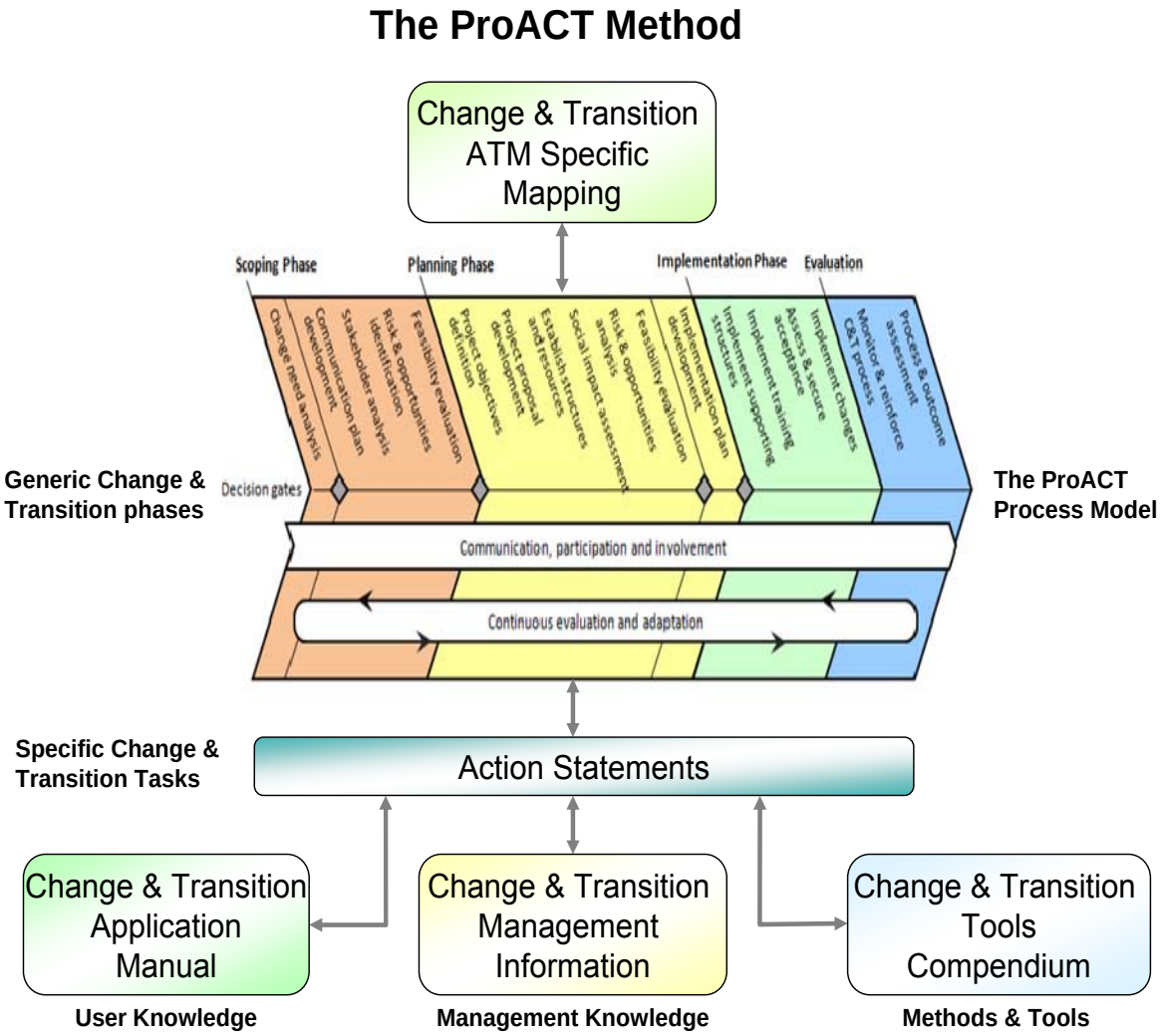
This document is a 'living document' and considered as a good start. It is not and cannot be complete in a full sense. It is clear that some change aspects are better represented than others and that some are not covered in any detail.

However, it is expected that more relevant and useful material for change and transition will be added in future.

1.1 The Proactive Method for the Management of Change and Transition in Civil Aviation

The Proactive Method for the Management of Change and Transition in Civil Aviation (ProACT Method) consists of Information Material for Managers, an Application Manual and this Compendium of specifically selected material supporting a Change process.

The Material is build around the Proactive Aviation Change and Transition Process Model (ProACT Process Model) as the central process. It is a structured, generic process for Change and Transition and describes the phases and activities to be considered during a Change process in close resemblance to the typical phases of a Project Management Process and Plan.



The Action Statements are included in the Information Material for Managers and the Users Application Manual. The Tools Compendium offers selected material for analysis, support and facilitation of a Change & Transition process in conjunction with the Action Statements.

The Tools Compendium and the Application Manual supplement each other and are to be used in combination.

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2. Quality Criteria for the selected Material

Three basic quality criteria for the material and the way of using the material are always and under all circumstances of importance and should be observed and maintained to the highest extent possible:

- ensure objectivity;
- be reliable;
- be valid.

Objectivity, reliability, and validity are three quality criteria that apply especially to measurement or assessment techniques:

Objectivity: Is the quality of a measurement method that can be tested or proven independent from the individual developer of the measurement method or the individual user of. High objectivity means that the use of an instrument or the interpretations of the results etc. are not dependent on who is the user of the method.

Reliability: Is the consistency or stability of a set of measurements and is expressed in a calculated score for the measurement instrument. High reliability in essence means that - when using the same instrument on the same person again, it will give or is likely to give the same results. This form of checking the quality of an instrument is called test-retest reliability and is a form of stability of the measurement.

Another form of reliability is given when two independent assessors of a situation both using the same assessment instrument give similar scores. This form of reliability is called inter-rather reliability. It is obvious that instruments that have a low or insufficient high reliability do not allow drawing any firm conclusions from the result. This may render those instruments as not applicable for such purposes.

Validity: Is referred to as the degree to which a measurement instrument measures what it was designed for to measure and for the purpose for which it was used. It is therefore true to say that a valid use is made of an instrument only if it is used for the same or similar purpose for which it has been designed.

This clearly points to one important issue: if you use an otherwise valid instrument for a different purpose for which it has not yet been validated it will not necessarily deliver valid results. As obvious as it seems, this principle is often not respected.

Different types of validity are used of which the most common are:

- **Internal validity:** this is an estimate of the degree to which conclusions about causes of relations are likely to be true. This estimate is made in view of the measures used (which may be know and proven to have validity), the research setting that was applied, and the entire research design.
- **External validity:** this concerns the question to what extent one may safely generalise from the sample that was studied to the defined target population for which the measure was designed and / or to other populations (i.e. across time and space) when using the instrument.
- **Criterion-related validity:** this reflects the success of measures used for prediction or estimation of something that occurs at a later stage in time. A good example of criterion-related validity is in the validation of employee selection tests. In this case scores from the test or the battery of tests obtained by test candidates during the selection stage is correlated with employee performance scores obtained in future training or on the job.

- **Construct validity**: this refers to the totality of evidence about whether a particular measure or test item adequately represents what is intended by theoretical account of the construct being measured. A simple example: do the items that are claimed to measure the (theoretical construct) 'Intelligence' correctly represent the phenomenon 'Intelligence' (or does it measure something else?).
- **Content validity:** this is a non-statistical type of validity that involves systematic examination of the instrument content to determine whether it covers a representative sample of the behaviour domain that it intends to measure. A measurement instrument has content validity built into it by careful selection of the items to include. Items are chosen so that they comply with the test specification which is drawn up through an examination of the subject domain. A simple example: I you want to measure 'Intelligence' it is obvious that the items used in a test that aims to measure it does actually cover all different facets in the behaviour that show intelligent behaviour (and not only one small part of it).
- **Face validity:** this is closely related to content validity. While content validity depends on a theoretical basis for assuming if a test is assessing all domains of a certain criterion, face validity relates to whether a test appears to be a good measure or not. Thus, this is a subjective measure of validity but an important one: The use of a questionnaire that is believed by respondents of not being valid (even if it has measured validity) it might be refused or not answered correctly and results may be corrupted.

Depending on the purpose for which the material is used the necessary precision of the requirements varies. Three levels of quantitative requirements are distinguished:

Level 1 – for accurate measurement purposes, i.e. to obtain reliable and valid information and making firm decisions like rejection or acceptance of a candidate for a job.

Level 2 – for screening purposes, i.e. to anticipate problems or identify their causes, to indicate whether intervention is necessary or not, or to make a choice between alternative directions or solutions.

Level 3 – for orienting purposes, to provide general information and obtaining information on the direction.

The ISO 10075-3 standard for guidelines on requirements for scales or instruments relies strongly on test theoretical measures (psychometric testing as, for example, in ability testing and personnel selection). It defines strong minimum measures for five requirements (objectivity, reliability, validity, sensitivity and diagnostic confidence) of which only validity and reliability are reported here, demonstrating the high benchmark that real measurement instruments need to fulfil:

Precision Level	Reliability	Validity
1 - Accurate measurement purpose	≥ 0.9	≥ 0.5
2 – Screening purpose	≥ 0.8	≥ 0.4
3 – Orienting purpose	≥ 0.7	≥ 0.3

Reliability and validity criteria are mentioned in the descriptions of the Annexes as far as they were available. Where reliability and validity are low, due care must be exercised in the interpretation of the results or applying the method or tool.

3. Categories of selected Material

The material selected for this Compendium has been sorted into categories (according to their content) for easier identification and use.

Category	No.
Methods and Tools	29
Case Studies	4
Best Practice	3
Reference and Guidance material	8
Total	**44**

Some basic knowledge about the categories when using the selected material as a source in a change process is required and outlined below.

3.1 Methods and Tools

Methods and tools are specific ways in which information is gathered and can be clustered in measurement instruments, like questionnaires, interviews and observation instruments. It is important to point out that a person using the methods and tools by performing a questionnaire survey, an interview or making observations needs to have training and experience about the specific methodology as well as knowledge and skills on research design.

The data collected normally needs further to be compiled and analysed which requires knowledge in analysis techniques and statistics. Since most analysis are made by means of computers, software skills and knowledge about appropriate use of the software (such as SPSS, Stata, Statistica specifically developed for this purpose) is needed.

3.1.1 Questionnaires

A questionnaire is a research instrument consisting of a series of questions and other prompts (items) for the purpose of gathering information from respondents.

It is a valuable and most widely used method of collecting a wide range of information from a large number of respondents. Questionnaires have advantages over some other types of surveys in that they are cheap, require less effort from the questioner than verbal or telephone surveys, and often have standardised answers (multiple choice) that make it simple to compile the data.

Information is collected by means of standardised procedures so that every individual is asked the same questions in more or less the same way. The intent with a questionnaire survey is not to describe the particular individuals who are part of the sample but to obtain a composite profile of the population (Scheuren, 2004).

Even though there are different approaches to the construction of a questionnaire, the most common design include a series of questions where specific number of questions measure similar aspects. Such a group of questions are often referred to as representing a dimension, a scale, or subscale.

Although they are often designed for statistical analysis of the responses, this is not always the case. When dealing with statistical analysis however, mean values of included scales are often calculated to get a summary score reflecting the scales. Statistical analysis is further often used to calculate such things as standard deviations, correlations, frequency tables etc. Statistical analysis requires basic statistical knowledge and computer skills. Analysis is often made by use of computer software such as Microsoft EXCEL, SPSS, or Statistica.

Good questionnaire construction is critical to the success of a survey. Inappropriate questions, incorrect ordering of questions, incorrect scaling, or bad questionnaire format and structure can make the survey valueless.

The sample size required for a survey partly depends on the statistical quality needed for survey findings. This, in turn, relates to how the results will be used. When conducting a questionnaire survey in an organisation with a limited number of employees, it is good practice to include all staff if this is feasible and obtain a sufficient high percentage of returned questionnaires (preferably more than two-third) to allow reliable and valid conclusions to be drawn.

Anonymity of the individual replies is a key principle. Individual respondents should be informed how anonymity is ensured in the survey and how their responses will be treated. Individual responses should never be identified in reporting survey findings. All of the survey's results should be presented in completely anonymous summaries, such as statistical tables and charts (Scheuren, 2004).

3.1.1.1 Types of questions

The most common types of questions found in questionnaires are:

- Closed ended questions - Respondents' answers are limited to a fixed set of responses. Most scales are closed ended. Other types of closed ended questions include:
  - Yes/no questions - The respondent answers with a "yes" or a "no".
  - Multiple choice - The respondent has several options from which to choose.
  - Rating scales - Responses are graded on a continuum (e.g.: rate the appearance of the product on a scale from 1 to 10, with 10 being the most preferred appearance).
- Open ended questions - No options or predefined categories are suggested. The respondent supplies their own answer without being constrained by a fixed set of possible responses (Scheuren, 2004).

3.1.1.2 How to plan and perform a questionnaire survey

To prepare and conduct a questionnaire survey, you need to:

- Address the aim supporting the organisation's strategy concerning a change and its transition.
- Obtain the agreement of the staff (i.e. via elected staff representatives, trade union or works council) and the business management before starting the investigation. Make sure that this tool is appropriate to investigate the topic you are interested in.

- Make sure you have enough units of the questionnaire and envelopes if you plan to conduct a survey by mail. Afterwards the employees shall be informed of the investigation; its aim, the date of the investigation, and further actions. Anonymity by using a coded system and if appropriate the voluntary nature of the employees involvement shall be guaranteed. This can be done by using an information sheet, giving a presentation, or post the information on several places within the organisation' or the department. It should be made sure that all employees are informed and have the same chance to participate as otherwise the survey might not be representative.
- Keep in mind to get in touch with the employees especially if you plan to process a survey by mail before you start the investigation. This is necessary to affirm their commitment for participation in the investigation. Afterwards you have to ensure that every employee gets a copy of the questionnaire. If you are processing a mail survey you have to name the due date when the questionnaire has to be returned.
- It has to be ensured that surveys are conducted with reasonably standardised conditions and that people are undisturbed when filling in the questionnaire (have sufficient time available etc.).
- Secure (locked) collection boxes have to be placed within the organisation's department if the employees obtain their questionnaires personally. Sometimes it will be better advisable that employees are placed in a secluded area to ensure anonymity.
- After finishing the data analysis employees should be informed about the results of the questionnaire and the further actions which are based upon the results.

In a change process, questionnaires can be used to gather especially information on job satisfaction, social aspects, leadership, change preparedness or resistance to change, specific aspects related to the change or upcoming implementation.

This information can be used as input to plan the change, the need for change or where, when, and how to best intervene in the process and also to find out what upcoming problems need to be resolved during the change process.

3.1.2 Interviews

Interviews can be used as an alternative method or as a complement to questionnaires when collecting data. An interview is normally conducted with one individual but sometimes with a group of people. The interviewer asks questions and records responses, either by making notes or using a tape or video recorder. An interview can be structured, semi-structured or unstructured (Arnold, Cooper & Robertson, 1998).

3.1.2.1 Structured interview

Structured interviews are a means of collecting data for statistical surveys. In this case the data are collected by an interviewer rather than through a self-administered questionnaire. Interviewers read the questions exactly as they appear on the survey questionnaire.

The choice of answers to the questions is often fixed (close-ended) in advance, though open-ended questions can also be included within a structured interview.

In a structured interview each interviewee is presented with exactly the same questions in the same order. This ensures that answers can be reliably aggregated and that comparisons can be made with confidence between sample subgroups or between different survey periods.

A structured interview also standardises the order in which questions are asked of survey respondents, so the questions are always answered within the same context.

This is important for minimising the impact of context effects, where the answers given to a survey question can depend on the nature of preceding questions. Though context effects can never be avoided, it is often desirable to hold them constant across all respondents.

3.1.2.2 Semi-structured interview

An alternative approach to the structured interview is the semi-structured interview. This technique is conducted with a fairly open framework which allow for focused and conversational two-way communication. They can be used both to give and receive information.

Unlike the structured interview not all questions are designed and phrased ahead of time. The majority of questions are created during the interview, allowing both the interviewer and the person being interviewed the flexibility to probe for details or discuss issues.

Semi-structured interviewing is guided only in the sense that some form of interview guide, is prepared beforehand, which provides a framework for the interview.

3.1.2.3 Unstructured interview

An unstructured interview is where the interviewer asks as few questions as possible, permitting the interviewee to talk freely, intervening only to refocus the discussion or probe for additional insights into a key area.

This technique enables the interviewee to re-establish the parameters of the discussion, a process which itself reveals what is important to the interviewee (Arnold, Cooper & Robertson, 1998).

3.1.3 Observations

The observation technique is often used to collect data concerning human behaviour. The observer acts as unobtrusively as possible and records the frequency, source, and timing of behaviour. This can be termed structured observation. Alternatively, the observer may participate in the events he or she is studying which is called participant observation.

Where people are being observed in their workplace they are normally informed or asked about it in advance. Their awareness may itself affect their behaviour but that are usually preferable to the alternatives of secrecy or even deception.

Observation may also include observing the consequences of behaviour; for example a person's work productivity (Arnold, Cooper & Robertson, 1998).

3.1.4 Summaries of selected Methods and Tools

The list below summarises the selected Methods and Tools and provides a quick impression. Detailed descriptions are available in Annex A of this Compendium.

Situational Outlook Questionnaire (SOQ)

Type: Questionnaire **Location:** ANNEX A No: A-1

The Situational Outlook Questionnaire (SOQ) is an instrument originally conceptualised and developed by Ekvall (1983) and Ekvall et al. (1983) in Swedish as the 'Creative Climate Questionnaire' (CCQ) (with 50 items, 10 dimensions). The instrument has been translated, revised, refined and modified in the late 1980th based on results of conceptual work and detailed validation studies which lead to the current version, now named Situational Outlook Questionnaire (SOQ).

The SOQ measures the perceptions of employees of the climate for creativity, innovation and their readiness for change within their immediate work environment in any type of organisation. The questionnaire consists of 53 items (including 3 open-ended questions) that assess 9 dimensions (with 5 items each) of organisational climate that foster or hinder creative behaviour and organisational change: Challenge & Involvement; Freedom; Trust / Openness; Idea Time; Playfulness / Humour; Conflict; Idea Support; Debate; Risk-Taking. The CCQ has one additional dimension: Liveliness/Dynamism.

The SOQ (as the CCQ) is intended to be used as a diagnostic tool to improve awareness and understanding of the organisations ability to support creativity and change. Organisational climate is conceptualised as a combination of various variables in the individual, the (working) group and the organisation that influence patterns of behaviour in any work environment. These behaviour patterns, together with associated feelings and attitudes characterise the atmosphere or quality of life in an organisation: the Organisational Climate. Organisational Climate is found to be an important factor that can stimulate or hinder change and innovation within an organisation and is therefore a main force of the organisation's ability to change.

Copenhagen Psychosocial Questionnaire (COPSOQ)

Type: Questionnaire **Location:** ANNEX A No: A-2

The Copenhagen Psychosocial Questionnaire (COPSOQ) is a questionnaire developed for assessing a broad variety of psychosocial factors at work that are or can be influenced by a change, like factors in the social work environment, in the quantitative, cognitive, emotional and other areas that the work environment and the work itself puts onto people, the personal importance of work (i.e. perceived quantitative or cognitive demand; meaning of work; predictability etc), the influence and room for decision taking that people have in their work environment, their coping style and sense of coherence on stress and individual health and the well being among employees and other job factors like job security and job satisfaction. The COPSOQ is a very complete and combined method that covers the main relevant workplace related factors.

The questionnaire is in the first instance a screening instrument developed and validated for practical use in organisational and enterprise settings and for making practical interventions in the workplace. The questionnaire can be used to screen the health status of the organisation aiming to detect areas that need to be improved and that could hold back the change process due to poor psychosocial health within the organization.

Leader Effectiveness and Adaptability Description (LEAD)

Type: Questionnaire **Location:** ANNEX A No: A-3

The Leader Effectiveness and Adaptability Description (LEAD) questionnaire is based on the Hersey-Blanchard Situational Leadership Theory (SLT). The original theory and the proposed model attempts to provide leaders with some understanding of the relationship between an effective leadership style and the level of maturity of their co-workers. Because abilities and motives among co-workers vary, the leader should have sensitivity and diagnostic ability to perceive and appreciate these differences and adapt his/her leadership style to be most effective.

The LEAD questionnaire aims to grasp the prominent leadership profile ('Telling', 'Selling', 'Participating', 'Delegating'). Effectiveness is measured by how close the preferred style is to the 'best' style in a described situation. It represents the leader's capability to adapt their leadership style in accordance with their followers' maturity (and thus followers needs), as indicated by their readiness to perform in a given situation which depends largely on 2 factors: follower knowledge, skills and or ability and motivation and or confidence.

Performance Readiness Style Match – Manager & Staff Member (PRSM)

Type: Questionnaire **Location:** ANNEX A No: A-4

The 'Performance Readiness Style Match – Manager & Staff Member' (PRSM) is based on the Hersey-Blanchard Situational Leadership Theory (SLT) (more fully described in A-3 LEAD). The basic assumption is that a leader must use different leadership styles – depending on the situation to be most effective. Leadership is the interaction between the readiness of followers and the amount of task guidance (task behaviour) and social support (relationship behaviour).

Performance Readiness is the extent to which a follower demonstrates the ability and willingness to accomplish a specific task; this readiness level is not a personality trait but changes from task to task. The leader has to observe and assess the readiness level of followers and to diagnose the performance readiness in two aspects: willingness and ability. The PRSM aims to measure performance readiness and so to identify the effective leadership style that best 'matches' readiness. The PRSM allows staff members and leaders to share this information about performance readiness (follower) and leadership style to build more effective working relationships. The PRSM can be used as a screening tool to diagnose the general situation among the staff, as well as an intervening tool between a staff member and its leader providing input to individual learning from own work situation and developing the staff-leader relationship.

Self ratings about the job maturity (**ability** to perform the objectives) and psychological maturity (**willingness** to perform the objectives) create one part of the results. The other part is the comparison between staff member maturity and the leader behaviour supporting the staff member. The interpretation gives a matching about the optimal leadership style (behaviour) to enhance staff member's work performance and staff-leader relationship. This is important especially during change processes during which tasks, procedures, and other structural conditions might change to proactively manage affected staff members' performance and staff-leader relationships.

Safety Culture Measurement Toolkit (SCMT)

Type: Questionnaire **Location:** ANNEX A No: A-5

The SCMT for European ANSPs includes a questionnaire as part of a safety culture concept. The questionnaire provides a snapshot of the safety culture within the ANSP. The results of the questionnaire are used in a second phase in Workshops with ANSP personnel as an input for reflection why the state of safety culture was perceived as it was and to determine how safety could be improved in the organisation. The approach and toolkit was developed in close coordination with the FAA (US) with a view to raise the level of safety culture in European ANSPs prior to the changes due to the next generation of ATM (SESAR).

During situations of change and transition in ATM it is vital to identify and monitor / mitigate / avoid possible negative impact on the safety culture that ensures that safety issues receive the attention and support that is required to maintain a sufficient high level of safety and performance of the Safety Management System (SMS). The pressure to make these changes can lead to a degradation of safety unless a strong safety culture exists.

Safety culture is defined and conceptualised in the SCMT as the enduring priority and real commitment to safety by all levels in an organisation: the management, controllers, supervisors and technical support people and concerns their unwillingness to let production and capacity, cost –efficiency and other concerns outweigh the concerns for safety.

Your Employeeship

Type: Questionnaire **Location:** ANNEX A No: A-6

Your Employeeship is a questionnaire both for screening purposes and for individual and collective learning and development. It can be used as a **screening** method to diagnose the general situation in an organisation or for **intervention** purposes with members in an existing team. The questionnaire assesses the work-oriented relationship behaviour based on *task ability* (technical skills to meet the requirements of assigned tasks) and *social ability* (the social capabilities to meet the requirements for social interactions that then task demands).

The results give staff members and leaders knowledge and understanding about their own and other fellow workers' behaviour that helps to develop more effective working relationships. The assumption behind the tool is, that highly developed work-oriented relationships have a positive influence on organizational climate, organizational outcomes, and supports in the adaptation to new working conditions and requirements. During the early phases the results can give input about the psychosocial aspects' "readiness" to handle the change. By following up on these results during the change process the tool provides input how the psychosocial aspects influence and are influenced by the change.

Team Climate Inventory (TCI)

Type: Questionnaire **Location:** ANNEX A No: A-7

The Team Climate Inventory (TCI) is a multidimensional measure of work group climate for innovation and performance. The 38 question TCI measures four factors which are shown to be predictive of effective team performance and which could most usefully benefit from positive interventions: (1) Team Vision - clarity, perceived value, sharedness and attainability; (2) Participative Safety - decision-making, information sharing, interaction frequency and safety; (3) Support for Innovation - articulated and enhanced support; (4) Task Orientation - commitment to excellence, appraisal and task orientation.

The potential uses of the TCI include: Team climate surveys for organisations as part of organisational development interventions; Team climate diagnosis and development of interventions; Team innovation and creativity interventions to enhance innovative potential; Measuring team development and changes in group climate over time; Selection of new team members and their induction into the team.

The TCI is provided with normative data from both public and private sectors and a scoring disc computer program.

Hourglass® Model

Type: Web based questionnaire; Change process model **Location:** ANNEX A No: A-8

The Hourglass Model is designed to set right some communication and interaction problems in order to increase participation and empowerment among employees, supervisors and managers. It consists of four stages; i.e. preparatory, investigatory, implemental and evaluative stage. These four stages are divided in five phases: individual, fellow-worker group, occupational/professional group, department and company phase.

At each stage a question technique called polarization is applied implying that answers to the questions aim to uncover dissonance or mental conflicts hence forcing the individual to act in order to reduce the tension. Polarizing and “action releasing potentials” are generated in order to facilitate communication and interaction among participants in later phases of the Hourglass Model and to initiate changes and development based primarily on inner motivational forces.

The user designs and adapts the web based questionnaire with respect to five features: question theme, question aspect, question alternative, actor, and time perspective.

Controller Acceptance Rating Scale (CARS)

Type: Decision tree type rating scale **Location:** ANNEX A No: A-9

The Controller Acceptance Rating Scale (CARS) is a simple, scalar measure and indicator of satisfactory human-system performance. It measures operational acceptability of the system or some of its components as being seen as effective and suitable by controllers who participate in the development of new tools or important changes.

CARS was developed at NASA Ames as a measure of acceptability of Decision Support Tools (DST) in ATM. CARS uses an adapted version of the Cooper-Harper Scale for pilot assessment of handling of aircraft. The key categories for controller evaluation of the system are: Controllability – Tolerability – Satisfaction – Desirability (Acceptability).

The air traffic controller rates how well the overall system (software, hardware and user) is working. Each controller is asked to rate the system according to his own experience, from his particular sector position.

CARS results provide a numerical record of development progress and software acceptance during development and implementation of software changes during operational evaluation or in operational settings considered ready for daily use in operations.

Fleishman Job Analysis Survey (FJAS)

Type: Questionnaire **Location:** ANNEX A No: A-10

The Fleishman Job Analysis Survey (FJAS) is a long established Job Analysis Tool for the description of jobs and tasks in respect to required abilities and skills. It provides a common taxonomy of definitions of those abilities and skills which can be used by experts to assess tasks in regard to the requirements on those skills and abilities using Behaviour Anchored Rating Scales (BARS).

The FJAS consists of a total of 73 knowledge and skill scales for a variety of abilities from the cognitive, the psychomotor and the sensory domain as well as interactive and social domains. The method assumes that jobs / tasks can be differentiated by their skills / abilities that are required to perform them and that people, who know the job well (i.e. job incumbents, supervisors) can make reliable and valid assessments of the required skills / abilities.

The FJAS can be applied for all kinds of jobs but has a strong history in the aviation context. It reflects 4 decades of research on mental abilities. Factor analytic studies helped support the identification and description of a total of 52 various abilities. The FJAS provides a handbook proposing tests that might be used for selection. Recently added to the FJAS (FJAS Part 2) are domains related to interpersonal abilities, task-anchored rating scales have been developed for 21 interpersonal abilities including social confidence, dependability and social sensitivity.

Safety Scanning Methodology (SAF SCAN)

Type: MS Excel questionnaire and guidance material **Location:** ANNEX A No: A-11

The Safety Scanning Methodology was developed to proactively address and manage safety related issues in a structured process. The Methodology consists of questions set in the Safety Scanning Tool SST and the Safety Method Review Tool SMRT which are available as MS EXCEL spreadsheets with automatic reporting function. In addition, guidance material on the use of the Methodology is available.

The Safety Scanning Methodology and its Ms Excel tool is built upon 21 ‘Safety Fundamentals’ and basic regulatory principles in the four safety perspectives of Safety Regulation, Safety Management; Operational Safety; and Safety Architecture and Technology.

Safety Fundamentals are generically usable for any type of system. They are essential criteria for a safe design / development as they take a ‘cybernetic’ view on regulatory requirements. They enable that safety deficiencies can be detected that could lead to insufficient safety performance at an early stage of design and development. They help to avoid late identification of insufficient safety performance, non-approval of certification of a system, extra work to meet safety requirements or total failure of a change project.

The Methodology is primarily intended to be used by Competent Authorities to evaluate safety and safety regulatory risks related to a Change Process. However, all aviation stakeholders intending to conduct a Change Process should use the set of safety fundamentals defined in the methodology and reproduced in the MS Excel questionnaire as a benchmark to fulfil the safety regulatory requirements related to the introduction of a Change.

Solutions for Human – Automation Partnerships in European ATM (SHAPE)

Type: Questionnaires **Location:** ANNEX A No: A-12

Solutions for Human-Automation Partnerships in European ATM (SHAPE) deals with the impact of new automation on the air traffic controller. A set of questionnaires has been developed which serves to assess the effect of automation on controller workload, situation awareness, teamwork, and trust in the system.

These questionnaires are:

- Assessing the Impact of Automation on Mental Workload (AIM),
- Situation Awareness for SHAPE (SASHA),
- SHAPE Automation Trust Index (SATI), and
- SHAPE Teamwork Questionnaire (STQ).

CRIOP®: A scenario based method for Crisis Intervention and Operability analysis

Type: Methodology **Location:** ANNEX A No: A-13

CRIOP is a methodology that contributes to verification and validation of the ability of a control centre to safely and efficiently handle all modes of operations including: start up, normal operations, maintenance and revision maintenance, process disturbances, safety critical situations and shut down.

The key elements of CRIOP are Checklists covering relevant areas in design of a Control Centre (CC) and Scenario Analysis of key scenarios for risk analysis allowing investigating possible (potential) accidents in detail. The method is applied in a Learning Arena where the workforce with operating experience, designers and management can meet and evaluate the optimal Control Centre.

A CRIOP analysis is initiated by a preparation and organisation phase, to identify stakeholders, gather necessary documentation, establish analysis group and decide when the CRIOP analysis should be performed.

The CRIOP methodology must be used at the right times during design and operation of a control centre. The recommendations are to perform the CRIOP analysis at:

I. The first time during analysis or conceptual development

II. The second time during detailed design

III. The third time after one year of operating experience.

Human Factors Engineering Program Review Model

Type: Review methodology for Human Factors Engineering Programs **Location:** ANNEX A No: A-14

This methodology is used by the staff of the Nuclear Regulatory Commission to review the human factors engineering (HFE) programs of applicants for construction permits, operating licenses, standard design certifications, combined operating licenses, and for license amendments. The purpose of these reviews is to verify that accepted HFE practices and guidelines are incorporated into the applicant's HFE program.

The review methodology provides a basis for performing reviews that address the twelve elements of an HFE program: HFE Program Management, Operating Experience Review; Functional Requirements Analysis and Function Allocation, Task Analysis, Staffing, Human Reliability Analysis, Human-System Interface Design, Procedure Development, Training Program Development, Human Factors Verification and Validation, Design Implementation, and Human Performance Monitoring. Each review element is divided into four sections: Background, Objective, Applicant Submittals, and Review Criteria.

LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)

Type: Guidance Material (CHAMP); Software Package (LAMPS) **Location:** ANNEX A No: A-15

LAMPS is a simulation tool which models the variables that contribute and influence the controller staff inflow (recruitment, selection and training), throughput (use of controllers in the operational environment and in other areas in which controller expertise is required) and outflow (i.e. due to retirement, change of career) in a long-term (up to 15 years) planning timeframe. The LAMPS tool takes the factors that influence the relationship between traffic demand and operational controller staff into account. The complex interplay between the variables is modelled in the software.

CHAMP promotes a participative and interactive process for the planning cycle where all parties are involved and can contribute. ANSPs are facing uncertainties and changes in the controller working environment (technical and procedural changes), the working conditions (i.e. working hours, breaks, shift cycles) and in training (i.e. legal requirements) or legislation (i.e. licensing requirements) are the norm and are directly or indirectly impacting on the availability of staff. Planning of ATCOs is a complex and dynamic process and requires the inputs from various sources and the participation of people inside and outside the OPS environment.

CHAMP gives guidance for a participative process involving all parties as required and helps to take a long-term perspective where the staffing impacts from changes are reflected in realistic scenarios, whereby LAMPS reflects the changes in the respective variables and simulates the changed situation.

FactBack® Survey Method and Analysis Tool

Type: Questionnaire (free text) / ”Auto-interview” **Location:** ANNEX A No: A-16

The FactBack® Survey method and analysis tool is a survey method and analysis tool for collecting, structuring and analysing subjective perceptions, experiences and opinions recorded by respondents in free text. The data/ information collection is not based on predefined questions, but relies on respondent reflection on an openly formulated survey questionnaire. The data collection method rests on pedagogic principles of proactively involving respondents in a reflective rather than reactive (questionnaires) process in response to a given situation or issue.

It aims to gain insight into how one or different groups perceive a defined situation or stages in a development process.

The purpose is to monitor stakeholders’ perception of ”current reality” at the different phases of change process.

Due to its unique design, the tool offers a very high degree of flexibility with respect to scope of surveys and languages. The survey is unique in offering a method for comparing qualitative information and quantitative values of/ amongst groups.

A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)

Type: Questionnaire (free text) / ”Auto-interview” **Location:** ANNEX A No: A-17

The IO MTO document provides guidance for performing and reviewing the MTO (Man – Technology Organisation) activities in early design phases for construction or refurbishment projects where allocation between human, machine and/or different physical locations of personnel are of concern.

The purpose of these activities is to ensure that the human factors principles are followed and that requirements for allocation of functions, design considerations and organisational structure are systematically analysed and evaluated.

Attitude Toward Change Scale

Type: Questionnaire **Location:** ANNEX A No: A-18

Attitude toward organisational change is defined as an employee’s positive or negative evaluative judgement of a change implemented by his / her organisation. The **Attitude Toward Change Scale** is a brief questionnaire that assesses individual general cognitions about change, affective reactions to change, and behavioural tendency toward change.

Attitudes toward change in general and toward multiple specific changes are distinct and play an important role in determining whether a person or a group of persons chooses to support or resist a change. Those attitudes are often a better predictor of future behaviour than past behaviour as has been demonstrated by research (Ajzen & Fishbein, 1980, see box ‘Developer and source’). Organisations and managers must not only overcome employee resistance but must be able to generate active employee support for the change (behavioural support).

The concept and rational behind this approach is, that changing the attitudes and beliefs held by employees by creating a positive attitude towards change will in consequence shape the behaviour in a direction towards supporting change. The research also confirms that the more specific a change is, the more specific are the attitudes and orientations of employees towards a change and the more specific should be the questionnaire to be predictive.

Behavioural Support of the Change Scale

Type: Questionnaire **Location:** ANNEX A No: A-19

The Behavioural Support of the Change Scale is a short screening technique which aims to measure behaviour which reflect different 'steps' or levels of support from low support to high support: active resistance – passive resistance – compliance – cooperation – championing. The first measure aims to measure the behaviour on this behaviour continuum. One form of behaviour that people show is called focal behaviour; it expresses their commitment to change to which they feel bound (e.g. to stay with the organisation) and represent a form of compliance.

The degree of commitment to change is expressed in different degrees of compliance and behaviour in support to the change: low levels of commitment will result in forms of resistance (active or passive resistance). High commitment with the change will result in positive supporting behaviour (actively supporting and promoting change with others in the organisation).

The second form of behaviour is called discretionary behaviour and represents behaviour that people might show at their discretion and depending on the type of their commitment which expresses the specific efforts that people will make to make the change a success. Discretionary behaviour represents a form of cooperation with the change. The questionnaire measures both, focal behaviour (compliance respectively resistance) and discretionary behaviour (cooperation and championing).

Cynicism About Organisational Change (CAOC)

Type: Questionnaire **Location:** ANNEX A No: A-20

The Cynicism About Organisational Change (CAOC) measures three components: pessimism (a pessimistic outlook for successful change), dispositional attribution (a blame placed on those persons considered responsible for lacking the motivation or ability to effect successful change) and the contrary, situational attribution (an attribution of likely failure for a successful change on situational factors, not in the responsibility of persons due to lack of resources, of cooperation etc). The scale was developed based on sound and proven concepts.

The results of various developmental and validation studies show that employee cynicism is more likely to be a learned response to organisational factors than a personality – based predisposition (being a 'negative attitude person that always will complain'). Cynicism can therefore be influenced by management: the more people think that actually change has occurred in reality, the more they have been participating in past change and the more effective their supervisor were the less is their cynicism about (future) organisational change.

Cynicism about organisational change is the conviction of employees that a change process will not succeed. The reason for this is the belief, that those who are responsible for the process, lack motivation and competence. Cynicism as a result of a learning process that is determined by a small number of previous changes, ineffective leadership and little involvement of affected people in the change process. To reduce cynicism, appropriate steps have to be taken and confirmed in all phases of the process. Therefore, employees should be involved in the whole process. What kind of steps should be taken depends on the organisation and its administrational structure. Besides the well known impacts, high scores of cynicism correlate with low organisational commitment and a high amount of work grievances.

Integrated Task Analysis (ITA)

Type: Observation, Evaluation tool and Interview guide **Location:** ANNEX A No: A-21

The Integrated Task Analysis (ITA) is a task analysis method that covers different approaches addressing the **behavioural** and the **cognitive** aspects of the ATCO's tasks in order to compare different positions and service provisions. ITA can be used in early phases and as a system evaluation process (before / after or previous / new system comparison) or for process outcome evaluation.

The ITA is adjustable and adaptable for specific purposes and is applied within the real-time working environment of ATC, concurrently ensuring minimal interference with normal working procedures. Within the framework of developing the ITA a new concept, "the cognitive profile" (cognitive aspects include memory, decision-making, evaluation, attention and action control), was established and investigated. This allows making comparisons from the cognitive point of view between the different types of Air Traffic Services provision.

Furthermore, the ITA accounts for different ATC services and for controllers from different geographical areas. The ITA can be used in early (scoping and planning phase) and late stages (evaluation) within a change process. Therefore it is a useful method to explore a successful transition towards new procedures from a human (behavioural and cognitive) perspective. Options to check the impact of critical situations are included in the set of task analysis tools that form part of the ITA toolset.

Organisational Commitment Questionnaire (OCQ)

Type: Questionnaire **Location:** ANNEX A No: A-22

Organisational commitment is the employee's psychological attachment to an organisation and shows the tendency of a person of maintaining membership in an organisation. The OCQ measures three types of organisational commitment: Affective, Normative and Continuance Commitment. The affective commitment is developed through the emotional attachment to the organisation. It is even higher the more employees identify with the aims of the organisation and therefore desire to remain within the organisation. The continuance commitment is determined by the employee's investments within the organisation that would be lost, if they quit. The individual commits to the organisation because he or she "has to". Normative commitment means that the employees commit to and remain with an organisation because of feelings of obligation. The employee shows sense of duty, and "ought to" stay in the organisation. In sum: the OCQ describes the relationship of a person to the organisation and their reasons for staying.

There is much evidence in research for the fact that people who want to stay with an organisation perform more / invest more efforts than those who feel less committed to the organisation. This connectedness to an organisation will especially play a role during times when more efforts and commitment is required, as in situations of change.

Important Note: The **Commitment to Change** questionnaire (Herscovitch& Meyer, 2002) also measures three types of individual **commitment to change**: Affective, Normative and Continuance Commitment which all are positively related to support to change and is described in A-24. The scales are all based on the same general 'Three Component Model (TCM) developed by Meyer & Allen (1991) and subsequently extended in its application to organisations and recently to organisational change. This explains the similarity between the approach and the forms.

Openness toward Change Scale

Type: Questionnaire **Location:** ANNEX A No: A-23

The Openness toward Change Scale questionnaire can be used to gather information about the employees' change readiness. It inquires into the individual appraisal of a change and examines employee openness to change in two areas: change acceptance and positive view of changes. Then questionnaire has been used in a study together with other work context variables (i.e. level of information, participation) and variables representing individual differences (i.e. resilience, perceived control) as competing other explanatory factors that can explain employee reactions to change: turnover intention or actual turnover (leaving the company), job satisfaction and work related feelings of irritation.

The results showed that lower levels of **change acceptance** are associated with lower job satisfaction, more work irritation, and stronger intentions to quit. Personal resilience (a composite of self-esteem, optimism, and perceived control) is related to higher levels of change acceptance.

One important finding is that the three context-specific variables (information received about the changes, self-efficacy for coping with the changes, and participation in the change decision process) predict higher levels of employee openness to the changes. If the participants believe in the outcome of the change and provide information on a focal shift from "resistance" to "resolution".

The more employees accept the change - improved by high amount of information and involvement in the process - the more they are satisfied with their job and think less about quitting.

Commitment to & Coping with Change

Type: Questionnaire **Location:** ANNEX A No: A-24

Commitment to Change (CtC) and **Coping with Change (CwC)** were identified as two important antecedent factors that are related to intentions of people regarding leaving or staying with their organisation going through change (organisational turnover intention). CtC and CwC are individual, psychological factors that influence their change efforts in terms of motivation, efforts and abilities employed. Commitment is therefore one of the important factors for the support that people give to change initiatives.

Commitment to change is a kind of (inner) force that connects employees to the goals in change and binds them to a course of action that is deemed necessary for the successful implementation of changes. **Coping with Change** is a conscious psychological and physical effort (behaviour) that people show to improve their capabilities to deal with the uncertainty, the anger, stress and conflict at work or home that is often associated with organisational changes. Employees that are confident that they will cope with change are likely better equipped to contribute to the change process.

The **Commitment to Change** questionnaire (Herscovitch& Meyer, 2002) measures three types of individual commitment to change: Affective, Normative and Continuance Commitment which all are positively related to support to change. The **Coping with Change** questionnaire (Judge et al., 1999) measures the reactance of employees (in this case managers) to change in terms of expressing confidence in their own capabilities to handle changes and to resolve upcoming problems.

Organisational turnover intentions are correlated with both, a reduced commitment to change and a reduced ability to cope with a change. A potential outcome is employee turnover, e.g. the employee to leave the company or department. Organisational turnover intentions should therefore be measured and monitored throughout the organisational change process to detect such intention.

Results of a study demonstrate the importance of both commitment and coping with change: Coping mediates the relationships between affective commitment (valuing change positively) to turnover intentions whilst normative (feeling a sense of duty to go with the change) commitment and continuance commitment (believing that there is not much choice) are directly related to turnover: high normative c. is positively and high continuance c. is negatively correlated.

Profile Analysis of Job Satisfaction (PAJS)

Type: Questionnaire **Location:** ANNEX A No: A-25

The Profile Analysis of Job Satisfaction (PAJS) is a multidimensional questionnaire which measures 11 different aspects related to job satisfaction (communication and information; leadership; job content, salary etc.). It can be used for diagnosis of sources for job satisfaction and dissatisfaction as well as for potential analysis of the risk potentials for situations of critical levels of job satisfaction in an organisation.

The assessment of job satisfaction should be considered during organisational changes that have an impact on the measured factors. It is further recommended to monitor changes in the individuals' job satisfaction during the implementation of a change process.

Swedish Organisational Change Manager (OCM) Model

Type: Change process model (Integrative Group Process) **Location:** ANNEX A No: A-26

The Swedish Organisational Change Manager (OCM) model intends to promote improvements and change initiatives and increasing their probability of success. During the development an 'Integrative Group Process' (IGP) was employed that used expert knowledge from an expert network covering the complexity of change areas to identify, test and validate a usable model of change.

The IGP process identified 11 generic (= applicable to changes in general) factors that are critical for success / failure of a change. They were tested and showed of being important for successful improvements (change) in an organisation also in practice. The model predicted 80% of all successful changes and 75% of unsuccessful initiatives. It can therefore be used to diagnose weaknesses in an existing improvement or change process and change contexts; it can help to measure the organisation's overall potential for successful improvement and to prioritise potential initiatives (changes) that are still under consideration by management in regard to their probability of success or risks for failure. The OCM model groups the 11 critical success factors into four main change context phases that are the basics in a change process: 1) Environment for New Ideas; 2) Planning Phase; 3) Do, Execute Project; 4) Study and Act.

The model is based on Bayesian statistics (= on (subjective) probabilities for success / failure under the given circumstances of a change at hand). The model aims to address a problem and bias in change projects, namely that managers tend to overestimate the prospects of organisational change and need support in creating successful change contexts. The OCM model helps to get inputs on these context factors to increase change success.

Team Quality Questionnaire (TQQ)

Type: Questionnaire **Location:** ANNEX A No: A-27

The **Team Quality Questionnaire (TQQ)** is used to assess team quality independent from the occupational field in which the team operates. The TQQ consists of five factors of team quality: social- emotional (e.g. support within team), team atmosphere (e.g. work satisfaction), leadership quality (e.g. management quality), performance (e.g. continuous improvements) and flow of communication (e.g. exchange of experience). The five factors are measured with 20 items. An overall score for team quality is estimated. The TQQ reflects changes in team quality over a period of time; the questionnaire was developed as an evaluation instrument. It proved especially useful for team leaders in action research setting, survey-feedback approaches, benchmarking studies and action research.

Alternatively a **Team Effectiveness Audit Tool (TEAT)** is proposed. The questionnaire measures six team effectiveness factors: Team synergy, Performance objectives, skills, Use of resources, Innovation and Quality. The questionnaire has proved useful in providing a context for improvements in effectiveness of working teams in organisations. The questionnaire was developed based on EFQM (European Federation for Quality Management) principles. The results can be used by the teams themselves to address areas for improvement.

Belbin® Team Role Self-Perception Inventory (SPI)

Type: Questionnaire **Location:** ANNEX A No: A-28

The Belbin® Team Role Self-Perception Inventory was developed based on nine years world wide research on managers' behaviour. The research for studying teams and managers behaviour in teams was based on a business game, a computerised simulation, done during a one-week management course. Managers were placed in teams of varying composition to take part in the exercise. Participants' core personality traits, intellectual styles and their behaviour were assessed during the simulation using objective methods (standardised questionnaires and behaviour observation rating scales). As the research progressed, first eight and later nine different clusters of behaviour were identified, called "Team Roles".

Team Roles are defined by Belbin (1981) as “a pattern of behaviour characteristic of the way in which one team member interacts with another so as to facilitate the progress of the team as a whole”. The composition of a team in terms of the team roles was predictive of how the teams performed in the subsequent management courses. Five principles for building effective teams were derived from the research:

(1) Each member contributes to achieving the objectives by performing both a functional (technical, expert) role and a team role.

(2) An optimal balance of both functional and team roles is required, depending on the teams' task.

(3)Team effectiveness depends on the extent to which team members correctly recognise and adjust to the relative strength of other within the team.

(4) Personality and mental abilities fit members for some team roles and limit their ability to play other roles.

(5) A team can deploy its technical resources to best advantage only when it has the range and balance of team roles to ensure efficient team work.

The current online version of the SPI identifies the nine different team roles which ideally should be represented in each team. The roles are: (1) Plant, (2) Resource Investigator, (3) Co-ordinator, (4) Shaper, (5) Monitor – Evaluator, (6) Teamworker, (7) Implementer, (8) Completer – Finisher (9) Specialist.

The distribution of roles in the team makes it possible to predict how decisions within the team are made and if the team keeps good company. The team role self perceptions allow also to derive options for team development. During a change process the results show options for rearrangement of already formed teams or for forming new teams.

Fatigue- Monotony- Saturation- Stress Questionnaire (BMS)

Type: Questionnaire **Location:** ANNEX A No: A-29

The Fatigue- Monotony- Saturation- Stress Questionnaire (BMS) measures subjective experienced short-term effects of work related strain in terms of three different psychic effects: stress, fatigue, psychic saturation at work. These effects are deficiencies that are detrimental to health, performance, motivation and development. These short-term effects are known to lead in the longer-term to severe health problems i.e. psychosomatic disorders, decreasing performance (quality and quantity) and to absences from work due to sickness.

Two versions of the BMS exist; version BMS II of the questionnaire is for application in industrial and service business settings in which control, monitoring and operational steering and management activities (cognitive tasks) are the focus of work. BMS II is appropriate for the work environment in ATM. Several studies show a negative correlation between occupational stressors and attitudes to change, indicating that with increasing stress commitment to work and tasks decreases and acceptance to organisational change increases. The questionnaire can be used to identify different forms of critical psychological strain states and the perception of changes in working conditions that are experienced as stress, saturation, fatigue, and monotony during change. The BMS II consists of four scales with ten items each for the four factors: psychic fatigue, monotony, psychic saturation and stress. High fatigue, monotony and stress or a combination of these effects can have detrimental impacts on health and safety in the day-to-day work of personnel with increased risk for human error or safety risks.

Since 2009 the predictive model based on BMS is part of REBA a software for the ergonomic analysis, evaluation and design of task contents in consideration of health and safety.

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3.2 Case Studies

Rather than using large samples and following a rigid protocol to examine a limited number of variables, a case study often involves an in-depth, longitudinal examination of a small number or a single instance or event: a case.

A case study can provide valuable information about how to look at events, collect data, analyse information, and report results in a systematic way.

As a result, the reader may gain a sharpened understanding of why the instance happened as it did and what might become important to look at more extensively in future research.

When selecting a case for a case study, researchers often use information-oriented sampling, as opposed to random sampling. This is because the typical or average case is often not the richest in information.

Extreme or atypical cases reveal more information because they activate more basic mechanisms and more actors in the situation studied – but they are less representative for the 'normal' case.

In addition, both from an understanding-oriented and an action-oriented perspective, e.g. from a practical point of view, it is more important to clarify the deeper causes behind a given problem and its consequences by finding a solution for it than to simply describe the symptoms of the problem and how frequently it occurs (Flyybjerg, 2006).

In the Management of Change & Transition the practical side of knowing what is happening and why - is the prime focus and is necessary for finding a solution for the situation.

The case studies selected in this Compendium can be used as a learning source since they have been mainly conducted in civil aviation and other high-risk environments.

They can also be used as a method for collecting data if the suggested methodology is applied.

3.2.1 Summaries of selected Case Studies

The list below summarises the selected Case Studies and provides a quick impression. Detailed descriptions are available in Annex B of this Compendium.

A study on merging of ATM Centres and implementation of a new ATM System

Type: Case Study **Location:** ANNEX B No: B-1

The Case Study report provides a summary on how the DFS Air Traffic Control Centre in Bremen managed two important structural and organisational changes, e.g. the merging of two 2 ACC's within the DFS (Bremen and Berlin) into one and the introduction of a paperless strip system (PSS) resulting in a significant change in working methods at ATCC Bremen.

The Case Study summarises experiences made with these changes and addresses the results to those managing changes on an executive or advanced level, to change experts and to project managers. The report shows which measures were initiated to reduce the fears of leaders and those who were directly affected by the changes, using the DFS Change Model as a reference.

Study results show, that there are quite a lot of concrete measures available which are able to facilitate the implementation and the change process. By applying those measures a lot of potential resistance was reduced. The study results also show the limits of the preparation process and its individual measures. These measures could provide a "good practice" to similar change processes.

Business re-engineering and health and safety management - Case Study

Type: Case Study **Location:** ANNEX B No: B-2

This Case Study report provides a summary of how 10 organisations approached the management of health and safety aspects in major organisational change. One aim of this survey was to gain information on health and safety performance during and after reorganisation. Other aims were to develop an understanding of how organisations have responded to the major changes and to identify and profile health and safety strategies adopted during periods of major organisational change.

The survey found that health and safety management was not recognised as an issue in the initial phase or reorganisation in at least three of the organisations (mostly low-risk organisations). Where health and safety was recognised as an issue it was incorporated into the wider reorganisation or addressed in parallel.

The benefits by using the material of this Case Study are that it could be used as a learning source and /or as a methodology to understand how organisations have responded to health and safety management during organisational change. Furthermore the Case Study provides an overview of health and safety management aspects to be taken into account during organisational change.

Management of Safety Requirements in Subcontracting during the Olkiluoto 3 Nuclear Power Plant Construction Phase

Type: Investigation report and case studies **Location:** ANNEX B No: B-3

The report presents the findings of an investigation from the Radiation and Nuclear Safety Authority Finland (STUK) on the deficiencies and delays occurred during the construction of the Olkiluoto 3 nuclear power plant.

The project involved the Safety Regulator, the holder of the construction license and a contracted vendor consortium, which selected and contracted the work to several companies in Europe. However, the selection was strongly influenced by the request of the holder of the construction license to employ Finnish companies, which were not familiar with the specific requirements for concrete construction applied in the nuclear field.

Some of the companies contracted vendor consortium sub-contracted the manufacturing and supply of different elements based on price grounds. Only one contracted company had prior experience in the manufacturing of nuclear power plant construction materials and of the related specific safety requirements.

The report consists of three case studies for each of the three sub-projects, describing deficiencies in the areas of change and project management, quality control, safety culture and safety management, as well as leadership and authority, training, supervision and control.

Conclusions about the deficiencies are drawn in each case study. Specific recommendations on how to improve the project management for such large scale projects in the future are made at the end of the investigation report.

Attitudes to Change in ATM Operations

Type: Case Study, Questionnaire and Interviews **Location:** ANNEX B No: B-4

The study investigates the importance of attitudes to change in ATM and their impact in the behaviour of operators towards the change. The study defines the barriers to, and drivers of, change within the societal (or communal) context and measures the degree to which the change is adopted in their behaviour (compliance with the change) by the operators, e.g. controllers, pilots, engineers and others. A questionnaire based on the **Seven Stages of Change Model** was developed and adopted to use in ATM to assess operators understanding of the change, their perception of the change benefits and their willingness to adopt the change in their behaviour.

The study focuses on one change scenario, the **Continuous Decent Approach** (CDA) implementation. However, the methodology is generic and can be adapted to other changes in ATM. 82 structured interviews were conducted with controllers and pilots plus interviews with airline managerial / training captains, controller supervisors, CDA designers and airport authority representatives. Based on this the attitude to change at both the organisational and individual levels for macro-level and micro-level objectives is assessed. The report details the methodology and presents the results from the introduction of Continuous Descent Approach (CDA) trials at Manchester, Bucharest and Stockholm-Arlanda airports.

3.3 Best Practice

Best Practice asserts that there is a technique, method, process or activity that is more effective at delivering a particular outcome than any other technique, method, process, etc. The idea is that with proper processes, checks, and testing and trialling, it is more likely that a desired outcome can be delivered with fewer problems and/or unforeseen complications.

Best practices can also be defined as the most efficient (least amount of effort) and effective (best results) way of accomplishing a task. They are often based on repeatable procedures they have proven their value over time and or for large numbers of people. That is, if one does it again in the way it was done it will produce a similar or same result.

In real-world application, best practice is a very useful concept. Despite the need to improve processes as times change and things evolve, best practices can be used to describe the process of developing and following a standard way of doing things that multiple organisations can use for change management, policy etc.

In the Management of Change & Transition best practices usually describe and outline how to conduct a change process from planning to evaluation.

3.3.1 Summaries of selected Best Practice

The list below summarises the selected Best Practice and provides a quick impression. Detailed descriptions are available in Annex C of this Compendium.

Business Re-engineering and Health and Safety management - Best Practice Model

Type: Best Practice Model **Location:** ANNEX C No: C-1

This best practice model has been prepared as a practical guide to directors, managers and health and safety professionals involved in the conception, planning, assessment and implementation of changes in business organisation and management which have the potential to impact health and safety.

The model focuses on (1) how to ensure that change is an opportunity for improving health and safety and on (2) how to minimise the risk of health and safety suffering due to unforeseen effects of changes. This is achieved by compiling together the best practices and lessons learnt from a survey of 10 organisations who have undergone major organisational change.

The organisations are from the rail, chemicals, healthcare, water supply, power generation, nuclear, drink manufacturing, quarry, aviation and communications sectors. Examples of improvements in performance during periods of major change in organisations that did focus on safety are included.

McKinsey 7-S Framework Model

Type: Framework Model **Location:** ANNEX C No: C-2

The 7-S Framework Model describes organisations in seven core-variables. It was developed as an analytical framework to research on organisational effectiveness or performance for consultancy purposes. Organisations that are similar and strategy, structure and systems can still vary in performance or effectiveness. The 7-S model thus expands on the factors that are relevant for success and failure of organisations and links an organisations strategy with these other factors for effectiveness in the broadest sense.

To be effective, an organisation must have a high degree of internal alignment and balance among all seven **S** factors. The factors are divided into two groups, e.g. the so called 'hard factors' consisting of: Strategy, Structure and Systems and the 'soft factors' consisting of: Shared Values, Skills, Style and Staff which are human related and concern for example the 'lived' values of an organisation, involvement / participation of staff and customer orientation. Each factor cannot be effective on its own – it must be consistent/in alignment or balance with the other factors and reinforce each another.

The factors are interrelated and a change in one factor has knock-on effects in all others. Certain factors such as staff, strategy, structure and systems can be changed in the short term. The three remaining soft factors style, skills and shared values are 'delayed' factors that can only be changed in the long term. It is said that true competitive advantage originates from these three remaining soft factors which are hardest to change or influence in the short term.

The model can be used as a static checklist for analysis purposes, for example, identifying strength and weaknesses in an organisation and as a tool to assess potential conflicts when a strategic program is implemented. It helps to determine how to best implement a proposed strategy, but also it can be used to identify areas for alignment in an organisation, for example, in improving the performance.

The model is very effective for internal change management, but does not discuss the complexities of linking up with the external world and faster speed of communications.

Sensitivity Model Prof. Vester®

Type: Model / Approach **Location:** ANNEX C No: C-3

The Sensitivity Model Prof. Vester® was developed by Prof. Dr. Dr. h.c. Frederic Vester and is a computerised planning- and management tool for the ascertainment, diagnosis, planning and mediation of complex systems in organisations.

It simulates impacts of planned changes on systems, staff and organisations. It allows a user to visualise complex interrelated and interlinked processes, to realise their dynamics and to take proactive actions to solve upcoming problems.

The consequences of different Strategies and terms are shown providing an input to seek for the best possible solution and action.

3.4 Reference and Guidance Material

Reference and guidance material is any document that aims to streamline particular processes according to a set routine and mainly consists of guidelines and checklists.

Guidelines may be issued by and used by any organisation that aims to make the actions of its employees or divisions more predictable and presumably of higher quality. In a change project it could be used to give guidance concerning different steps or activities that should be accomplished in order to reach a specific goal.

A checklist is used to help ensure consistency and completeness in carrying out a task. It is often used as a human factors tool or in aviation safety to ensure that a long list of items are not forgotten. It could also be used as an organisational tool associated with managing change to make sure that specific items are in place or have been carried out before proceeding to the next step.

Both guidelines and checklists are often part of a best practice methodology.

3.4.1 Summaries of selected Reference and Guidance Material

The list below summarises the selected Reference and Guidance Material and provides a quick impression. Detailed descriptions are available in Annex D of this Compendium.

Change Management Standard Process Design

Type: Generic change model, reference material **Location:** ANNEX D No: D-1

The Change Management standard process design establishes a management, a communication and information, participation and an evaluation process as key processes for the management of changes in a structured way. The commitment and leadership of Management in management process plays a key role in this model.

The communication and information process ensures acceptance by and dialogue with staff. The participation process of the model strives to involve staff representatives being equally responsible, together with management, for the conduction of the change. The evaluation process of the model ensures continuous evaluation and includes a feedback mechanism for affected staff and project managers.

Business Re-engineering and Health and Safety Management – Literature Survey

Type: Literature survey **Location:** ANNEX D No: D-2

The Business re-engineering and health and safety management literature survey summarises the findings of publicly available literature on the scale and form of business reengineering, e.g. company reorganisations in the UK and the effect it has on health and safety standards. Furthermore, the health and safety issues, pitfalls and opportunities associated with business reengineering are analysed.

The literature survey provides an overview of current management structures to allow the Health and Safety Executive to review the extent to which health and safety management guidance is consistent with current industrial practice.

It is complemented by publicly available research on the effects of reorganisation on health and safety so that the HSE can consider the need to review regulations covering the current and foreseeable needs of the nuclear industry. It further identifies where industry requires additional support in the form of guidance to meet the needs of a changing industrial environment.

Organisational Change and Major Accident Hazards

Type: Information sheet **Location:** ANNEX D No: D-3

The organisational change and major accident hazards information sheet provides guidance for employers responsible for major hazards on how to manage the impact of organisational change on their control of the hazards. Organisational change is a normal and inevitable part of business life in all sectors.

But organisations associated with major accident hazards have a greater potential for disastrous consequences and higher costs in terms of lives and money. These consequences mean that organisations managing major hazards must aim for much higher reliability than is normally necessary in commercial decision making. The information sheet therefore describes common pitfalls to look for, suggests a three-part framework for managing organisational change, and explains the legal duties of an employer.

This information sheet is intended for employers and senior managers dealing with organisational change, and anyone involved in planning or implementing such change. It will also be helpful to employees and trade union or staff representatives and safety representatives.

Managing and Regulating Organisational Change in the Nuclear Industry

Type: Guidance material **Location:** ANNEX D No: D-4

The guidance material on managing and regulating organisational change in the nuclear industry sets out a structured high-level process for Regulators in the Nuclear Industry helping them to assess whether Nuclear Companies licensed by the Nuclear Safety Regulators have an effective process for managing organisational change (e.g. staffing issues, organisational restructuring etc.) in place.

The regulator may wish to gain an early and accurate awareness of any proposed organisational change which has the potential to impact upon nuclear safety. This entails the gathering of information which enables a judgement to be made about the adequacy with which that change has been analysed and planned, and the provisions for implementing and monitoring the change.

The requirements of a structured management of change process are outlined and a number of other factors influencing the regulator's confidence in the Nuclear Companies management of change are described. This guidance material is of interest to Regulators in civil aviation helping them to develop and document a verification procedure for aviation organisations that manage organisational change processes, especially when safety related changes are subject of such an organisational change.

The UK Regulator's View of External Influences on Safety and License Conditions for organisational Change

Type: Information Sheet & UK Nuclear site license conditions **Location:** ANNEX D No: D-5

The UK regulator's view of external influences on safety information sheet provides a high-level overview of a range of change factors (industry, markets, technology, and government) that have affected nuclear regulation in the UK over the last 40 years, and gives examples of how the regulator has adapted to these changes.

A particular emphasis of the report is on the need for anticipating change and for developing new approaches to regulating change for licensed organisations and their ways of working. An important aspect was to gain confidence that the licensed companies were approaching the change in a systematic and controlled manner. It became also clear that the company's management of change was of such importance that it required regulatory oversight and that a consistent and proportionate approach was needed.

Therefore a new License condition (LC 36) was introduced setting requirements on the control of changes to the organisational structure and resources which may affect safety and which have to be submitted for regulatory approval.

The information sheet provides an insight into the tasks and responsibilities for oversight of the Nuclear Installations Inspectorate and the requirements for licensed companies. The change factors discussed range from operational, industrial and market factors to issues of governmental guidance, funding and policy. However, few concrete examples are provided on how is to be achieved.

Management of change in the nuclear industry – Evidence from maintenance reorganizations

Type: Technical Document **Location:** ANNEX D No: D-6

The Managing change in nuclear utilities technical document is developed and published by the International Atomic Energy Agency (IAEA) and provides a series of basic principles for managing change in nuclear utilities. It is based on practices being used by senior management and regulators for the implementation of effective change whilst remaining focused on safe and reliable nuclear operation. Although developed for nuclear utilities the principles for managing change whilst maintaining a safe and reliable operation are of good use also for managers developing and implementing changes in ATM.

The technical document explains in detail a complete change process from the identification of a need for change, the evaluation of a proposed change, the development of change plans and the implementation of a change up to the review and monitoring of the change process and is fully in line with the change process model below.

The document further expands on and explains the role a regulator has in a change process. The annexes in the document provide practical examples for the management of change in some nuclear companies. The guidance contained in this document is relevant to all changes from both external (e.g., the take-over of the company or deregulation) and internal drivers, such as company reorganisation.

The intended users of this publication are all levels of management, from senior executives to section managers, who are developing and implementing changes within their areas of responsibility. It also addresses regulators involved in assessing changes at the utility by ensuring that the changes are properly planned and executed so that safety and reliability are enhanced or at least maintained.

Management of change in the nuclear industry – Evidence from Maintenance Reorganizations

Type: Research Report **Location:** ANNEX D No: D-7

The Management of change in the Nuclear Industry – Evidence from Maintenance Reorganisations research report provides an analysis on the management of change in the Nordic Nuclear Power Plants maintenance organisations. It focuses on the changes that are taking place or have recently taken place in maintenance and on the impact and effects these changes have on the culture of an organisation, the safety and the effectiveness of maintenance activities.

Its aim is to study how to anticipate the consequences of organisational change to the safety and effectiveness of the organisation and to identify what change strategies and associated structures would best facilitate the psychological characteristics of work that enable effective working.

Starting with a review of organisational changes and safety in the nuclear industry, the research report proceeds to discuss different approaches to manage change and presents the key elements of a rigorous change management process. It further proceeds with a study of the effects of organisational changes on safety and effectiveness of four Nordic Nuclear maintenance organisations and presents the findings on similarities and differences of their change management processes.

The potential safety impacts after an organisational change on the organisational structure, organisational culture and the individual persons are further analysed and discussed. One of the main findings is that organisational changes are a potential safety risk especially since they have an effect on the organisational structure, the organisational culture and the individual persons which are strongly interrelated and hard to anticipate before a change is implemented.

The intended users of this research report are all levels of management, from senior executives to section managers, regulators involved in assessing changes and safety experts at an organisation.

Regulatory Aspects of Management of Change

Type: Workshop Report **Location:** ANNEX D No: D-8

The is Regulatory Aspects of Management of Change report presents the outputs from a Workshop convened by the Committee for the Safety of Nuclear Installations (CSNI) of the OECD Nuclear Energy Agency (NEA) for Nuclear Safety Regulators to share experiences and approaches dealing with organisational change at licensed organisations.

It is clearly a nuclear licensee's responsibility to manage its own affairs and to ensure that the means by which this is achieved do not compromise nuclear safety, it can be argued that if changes to staffing levels or organisational structure are inadequately conceived or executed they have the potential to affect the way in which safety is achieved and managed.

Therefore, it is appropriate for nuclear regulators to consider and to adopt a formal stance on the way in which nuclear licensees manage change. Regulators want to have confidence that change is being managed and controlled in such a way that it does not compromise nuclear safety.

Within the nuclear industry, all regulators share the challenge of determining effective methods for regulating a changing industry. Although the philosophy of minimising the potential for organisational change to adversely affect nuclear safety is shared, the detailed approaches and methods which are used are likely to depend upon the overall regulatory regime which is in place.

In order to facilitate this exchange, the Special Experts' Group in Human and Organisational Factors (SEGHOF) of the CSNI convened a workshop in September 2001. This report presents the discussions which took place at that workshop and its findings. It also presents a high-level model and recommendations for regulatory oversight of the management of change.

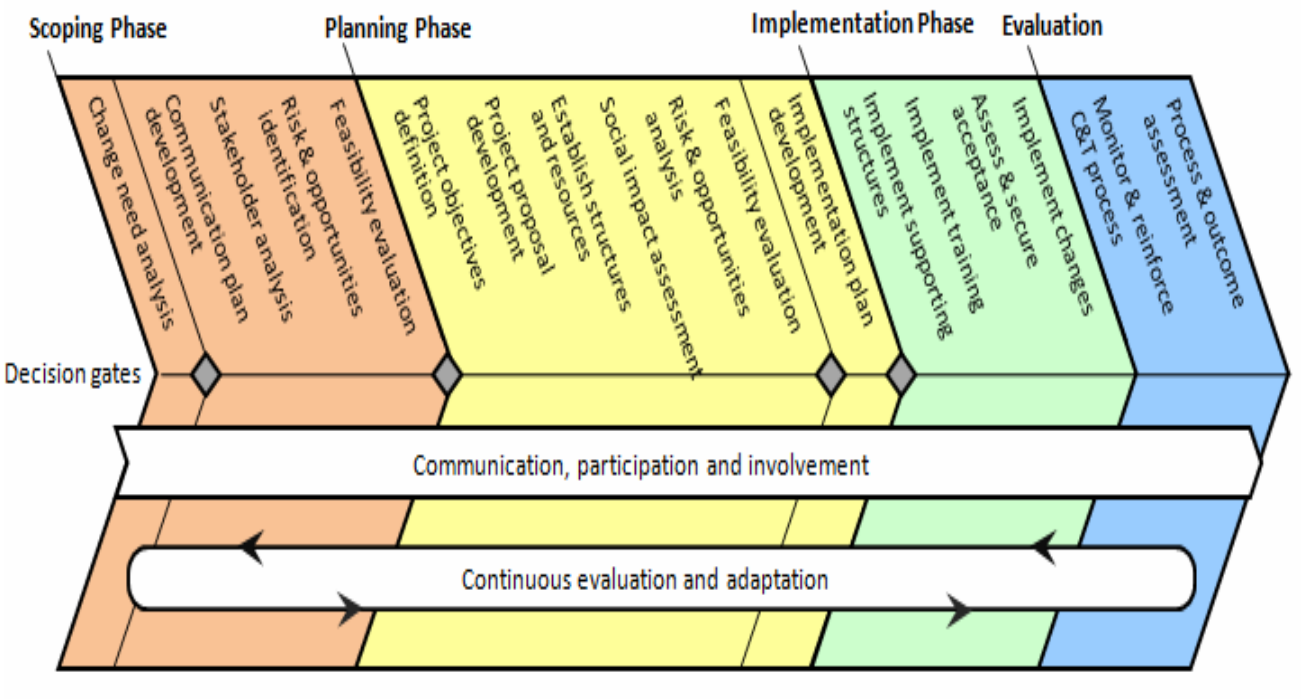
4. The Proactive Aviation Change and Transition (ProACT) Process Model

The Proactive Aviation Change and Transition Process Model (ProACT Process Model) is a generic change model and describes two processes and four phases including related activities to be considered during a change process.

The Model provides structured descriptions of potential stages in a change process. Users have the possibility to decide which stage and activities are relevant for the change at hand.

The model focuses on human issues, human performance, people management, motivation and on Communication, Participation and Involvement as key for the successful Management of Change and Transition.

The aim of the ProACT Process Model is to complement and support the project management of a Change rather than to replace it.



The Information Material for Managers, the Users Application Manual and this Tools Compendium is build around the ProACT Process Model which forms the central element of Proactive Change and Transition Management.

The following chapters describe the processes and phases in more detail. The processes, phases and the activities are linked to Methods, Tools, Best Practices and Guidance Material selected in this Compendium.

The rational for allocating the selected material to the process, phases and activities of the ProACT Process Model is explained.

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4.1 Overview of selected material for the ProACT Process Model

The selected material has been linked to the phases and activities of the ProACT Process Model, to gain a better understanding of which material could be useful to support each potential stage in a Change & Transition process.

ProACT© Process Model Phases and Activities	Methods and Tools	Case Studies	Best Practice	Reference and Guidance material	Total
Communication, participation and involvement Process	16	2	1	4	**23**
Continuous evaluation and adaptation Process	12	2	2	4	**20**
Scoping Phase					
Change need analysis	9	0	1	2	**12**
Communication plan development	3	2	0	2	**7**
Stakeholder analysis	2	1	1	2	**6**
Risks and opportunities identification	18	2	3	6	**29**
Feasibility evaluation	11	1	0	4	**16**
Planning Phase					
Project objectives definition	8	1	1	4	**14**
Project proposal development	2	2	1	4	**9**
Establish structures and resources	9	2	1	2	**14**
Social impact assessment	16	1	0	0	**17**
Risk and opportunities analysis	18	1	3	5	**27**
Feasibility evaluation	13	1	1	4	**19**
Implementation plan development	8	3	2	7	**20**
Implementation phase					
Implement supporting structures	11	2	1	7	**21**
Implement training	4	1	0	0	**5**
Assess and secure acceptance	20	2	1	4	**27**
Implement changes	8	3	2	5	**18**
Evaluation					
Monitor and reinforce change and transition processes	18	3	2	5	**28**
Process and outcome assessment	16	1	2	6	**25**

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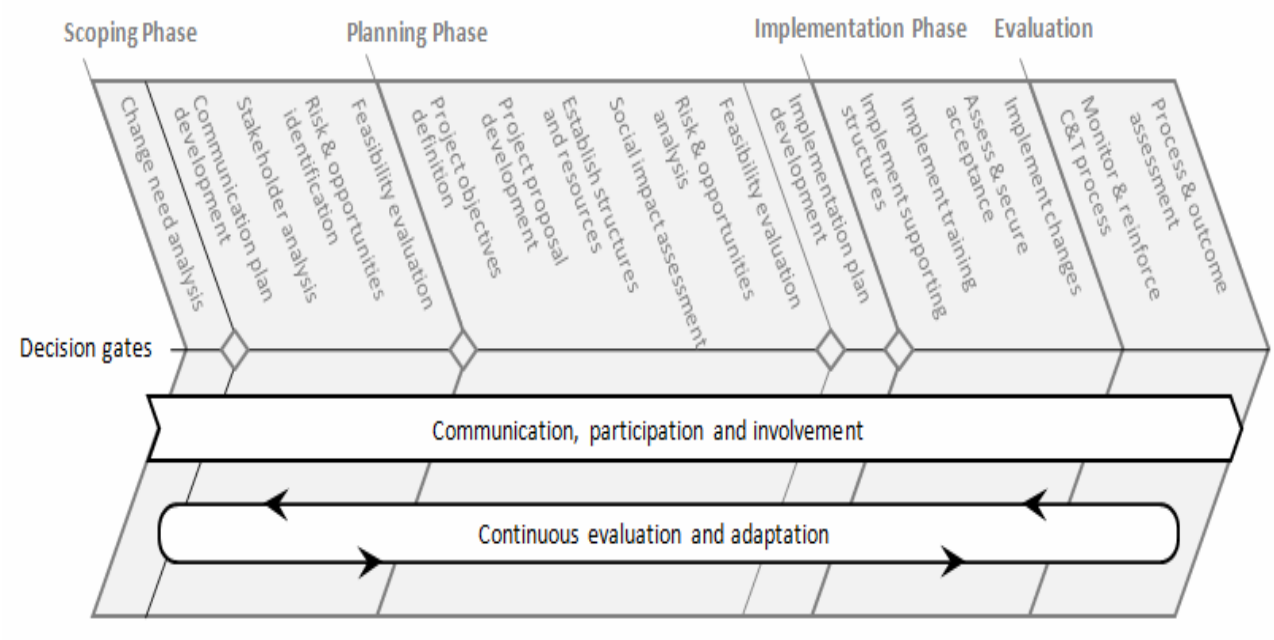
4.2 Selected Material for the Communication, Participation and Involvement Process



Effective communication, participation and involvement help to build acceptance of the change and getting peoples' support in the change process.

The Communication, Participation and Involvement Process is a continuous (horizontal) process. It is continuous as it has to happen throughout all phases of the change process from start to end. It includes activities that aim to ensure that people affected by change feel informed, learn and understand the change.

Commitment to change, the 'buy-in' to change of people - a positive attitude to the change – and their supporting behaviour are tangible outcomes that managers need to gain. This outcome will however only emerge if people accept the change, trust management and their own capabilities and are willing to contribute to the change. These pre-conditions are main subjects in communication, participation and involvement and are **the** key enablers for change success.

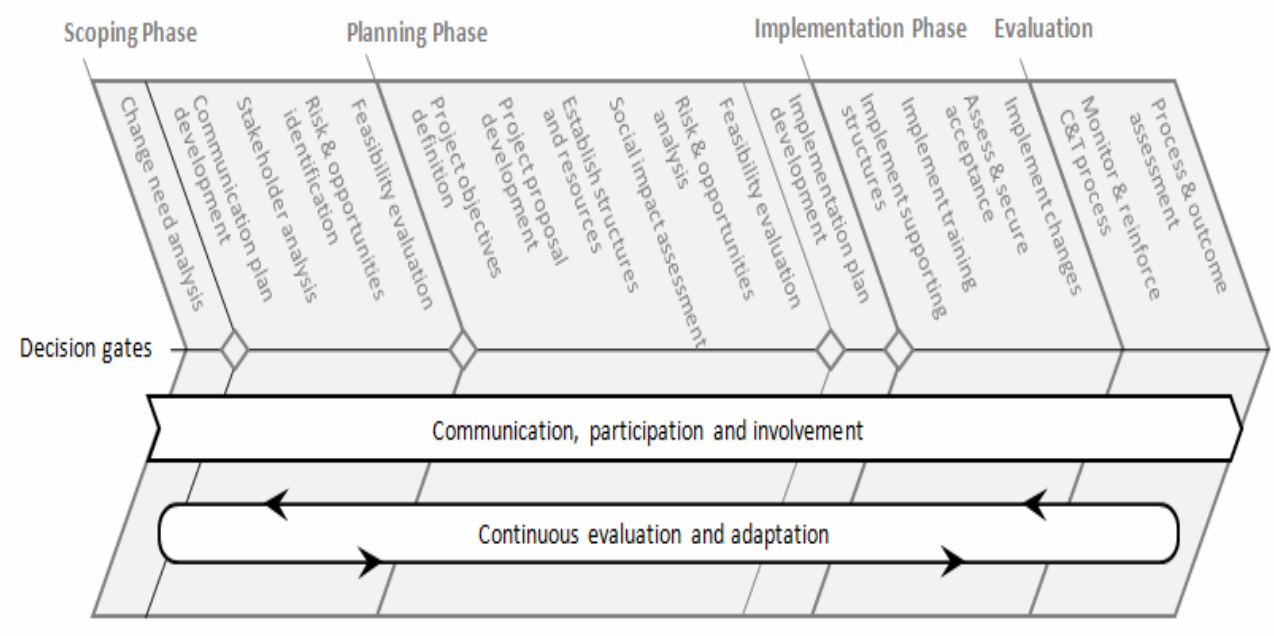
The material selected addresses relevant aspects of the process and concerns also leadership aspects, management style/ attitude and management behaviour in line with interactive, open exchange and information to affected people.

The material also addresses human factors, motivation, staff commitment and the capabilities to cope with change. This is what Communication, Participation and Involvement activities aim to foster.

The selected material listed in the table below is linked to the Communication, Involvement and Participation Process. The Location column provides information in which Annex the detailed description can be found.

Name	Category	Type	Location
Situational Outlook Questionnaire (SOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-1
Leader Effectiveness and Adaptability Description (LEAD)	Methods and Tools	Questionnaire	ANNEX A No:A-3
Hourglass Model	Methods and Tools	Web based questionnaire/Change process model	ANNEX A No:A-8
Controller Acceptance Rating Scale (CARS)	Methods and Tools	Decision tree type rating scale	ANNEX A No:A-9
CRIOP®: A scenario method for Crisis Intervention and Operability analysis	Methods and Tools	Method / checklist	ANNEX A No:A-13
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Openness Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-23
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
McKinsey 7-S Framework Model	Best Practice	Framework Model	ANNEX C No:C-2
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Organisational change and major accident hazards	Reference and Guidance material	Information Sheet on how to manage hazards during organisational change	ANNEX D No:D-3
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

4.3 Selected Material for the Continuous Evaluation and Adaptation Process



Continuous Evaluation and Adaptation ensures that throughout the change process relevant information is evaluated, compiled and used for decision making and adaptation of the change process.

Change is driven by decisions on the course of action based on information. Complete, valid and reliable information gained from various sources during the change process is important for successful decision making.

This process is continues (horizontal) and recursive. It is continuous as this has to happen throughout the change process from start to end. It has to be recursive also to allow evaluating previous decisions and their outcome and how this affected later decisions. This information can help to adapt decisions better to a changing reality.

It is acknowledged that management of change and decision making is heavily depending on valid and reliable technical information. However, one main reason for delays, problems and lack of success of change are human related.

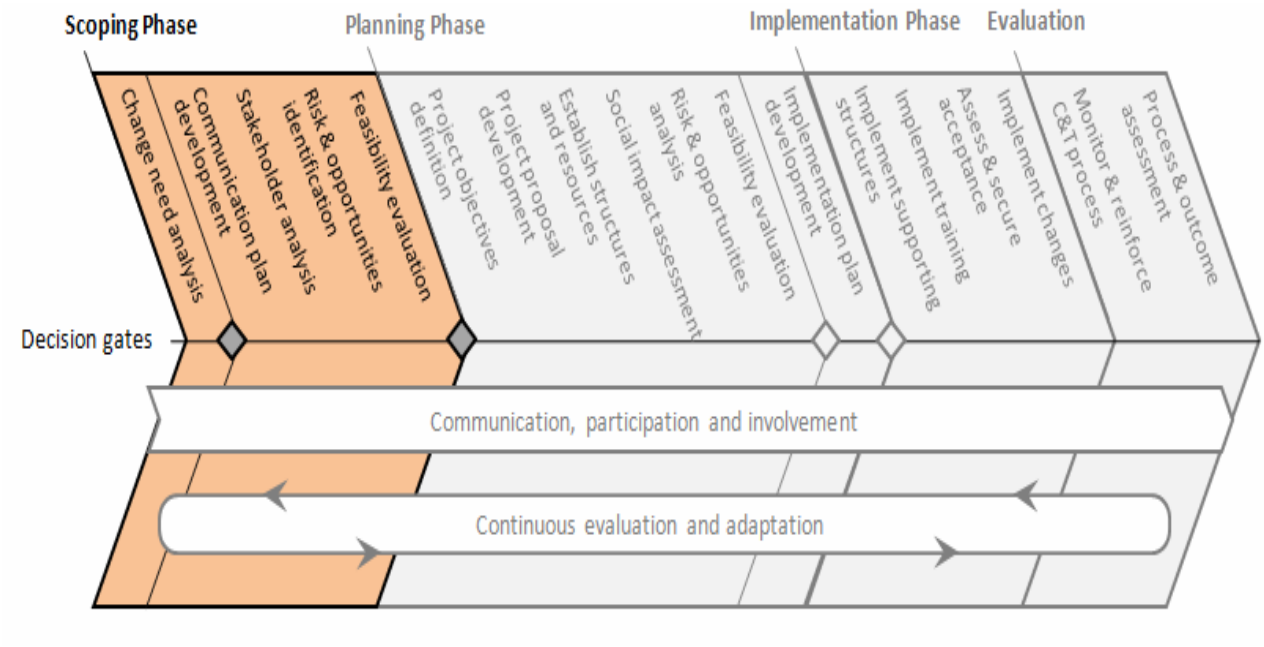
The material selected addresses relevant aspects in evaluating and adapting the change process with a focus on those impacts on decision making, time and effort planning etc. from a human performance, human resources planning, acceptance and commitment perspective.

The management of safety requirements and regulatory aspects, the allocation of functions and team effectiveness and quality need to be taken into account in this process.

The selected material below has been linked to the Continuous Evaluation and Adaptation Process of the ProACT Process Model. The Location column provides information in which Annex the detailed description can be found.

Name	Category	Type	Location
Safety Culture Measurement Toolkit (SCMT)	Methods and Tools	Questionnaire	ANNEX A No:A-5
Your Employeeship	Methods and Tools	Questionnaire	ANNEX A No:A-6
Controller Acceptance Rating Scale (CARS)	Methods and Tools	Decision tree type rating scale	ANNEX A No:A-9
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
McKinsey 7-S Framework Model	Best Practice	Framework Model	ANNEX C No:C-2
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
The UK regulator’s view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

4.4 Selected Material for the Scoping Phase



The Scoping Phase aims first at identifying and specifying a need for change. In a second step different options for responding to this need are explored and their feasibility is evaluated. The Scoping Phase, as a starting point, determines the dimension of a change, e.g. if it is a minor or a major change. It also allows deciding, after thorough analysis, on the appropriate and relevant activities for a change process.

The main focus from a human perspective in scoping a change is on leadership, safety and team work effectiveness.

4.4.1 The Scoping Phase Activities

The Scoping Phase activities cover all areas to be considered to determine the need for a structured change process.

It is important to ensure already during the Scoping Phase that people and stakeholders understand and are actively involved in the change process and their concerns and questions are taken on board and answered. Readiness to change, acceptance of the need to change and effectively managing the risks and opportunities are outcomes that not only depend on sound technical information, enforcing statements and ‘must convince’ arguments.

The selected material below has been linked to the Scoping Phase and its activities of the ProACT Process Model. The Location column provides information in which Annex the detailed description can be found.

4.4.1.1 Change need analysis

Name	Category	Type	Location
Copenhagen Psychosocial Questionnaire (COPSOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-2
Leader Effectiveness and Adaptability Description (LEAD)	Methods and Tools	Questionnaire	ANNEX A No:A-3
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Your Employeeship	Methods and Tools	Questionnaire	ANNEX A No:A-6
Hourglass Model	Methods and Tools	Web based questionnaire/Change process model	ANNEX A No:A-8
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

4.4.1.2 Communication plan development

Name	Category	Type	Location
Hourglass Model	Methods and Tools	Web based questionnaire/Change process model	ANNEX A No:A-8
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

4.4.1.3 Stakeholder analysis

Name	Category	Type	Location
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
FactBack® Survey method and analysis tool	Methods and Tools	Questionnaire (free text) / ”Auto-interview”	ANNEX A No:A-16
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

4.4.1.4 Risks and opportunities identification

Name	Category	Type	Location
Situational Outlook Questionnaire (SOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-1
Copenhagen Psychosocial Questionnaire (COPSOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-2
Leader Effectiveness and Adaptability Description (LEAD)	Methods and Tools	Questionnaire	ANNEX A No:A-3
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Safety Culture Measurement Toolkit (SCMT)	Methods and Tools	Questionnaire	ANNEX A No:A-5
Your Employeeship	Methods and Tools	Questionnaire	ANNEX A No:A-6
Team Climate Inventory (TCI)	Methods and Tools	Questionnaire	ANNEX A No:A-7
Hourglass Model	Methods and Tools	Web based questionnaire/Change process model	ANNEX A No:A-8
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
CRIOP®: A scenario method for Crisis Intervention and Operability analysis	Methods and Tools	Method / checklist	ANNEX A No:A-13
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
Integrated Task Analysis (ITA)	Methods and Tools	Observation, Evaluation and Interview Guide	ANNEX A No: A-21
Openness Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-23

Name	Category	Type	Location
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Belbin® Team Role Self-Perception Inventory (SPI)	Methods and Tools	Questionnaire	ANNEX A No: A-28
Fatigue – Monotonie – Saturation – Stress Questionnaire (BMS)	Methods and Tools	Questionnaire	ANNEX A No: A-29
Business re-engineering and health and safety management	Case Studies	Case study	ANNEX B No:B-2
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Business re-engineering and health and safety management - Best practice model	Best Practice	Best Practice model	ANNEX C No:C-1
McKinsey 7-S Framework Model	Best Practice	Framework Model	ANNEX C No:C-2
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Business re-engineering and health and safety management – Literature survey	Reference and Guidance material	Literature survey on the effect business re-engineering has on health and safety standards	ANNEX D No:D-2
Organisational change and major accident hazards	Reference and Guidance material	Information Sheet on how to manage hazards during organisational change	ANNEX D No:D-3
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

4.4.1.5 Feasibility evaluation

Name	Category	Type	Location
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Your Employeeship	Methods and Tools	Questionnaire	ANNEX A No:A-6
Fleishman Job Analysis Survey (FJAS)	Methods and Tools	Questionnaire	ANNEX A No:A-10
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
Integrated Task Analysis (ITA)	Methods and Tools	Observation, Evaluation and Interview Guide	ANNEX A No: A-21
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Openness Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-23
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
The UK regulator's view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

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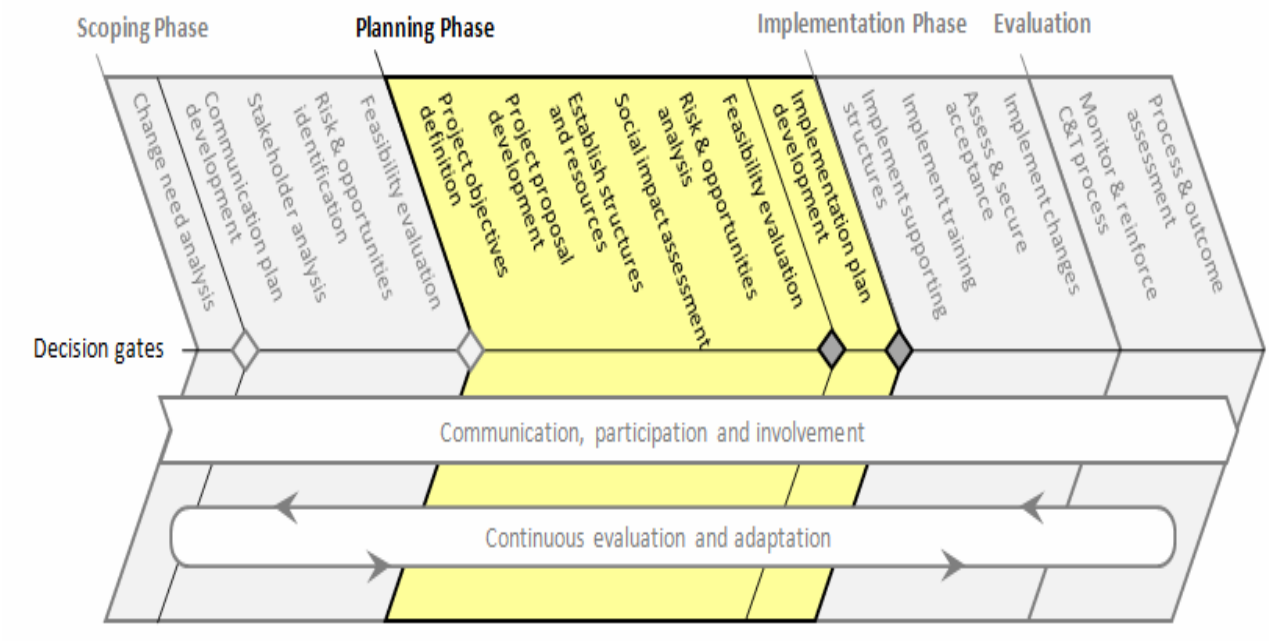
4.5 Selected Material for the Planning Phase



The Planning Phase aims to develop project objectives and a project proposal, by analysing and assessing the feasibility of the change. At the end of the planning phase, a project implementation plan, agreed by all stakeholders, should be the result.

Competent Authorities need to have an early involvement in the planning phase to give advice and instructions. It is obvious that human and social aspects play an important role each with a different perspective during the planning phase. Therefore, consultation and involvement of social partners is also required.

4.5.1 The Planning Phase Activities

The Planning Phase activities expand on issues such as early safety management, human aspects and teamwork as well as on acceptance, people commitment and support.

The latter become more prominent with increasing ‘visibility’ of the projects objectives and when coming closer to the final implementation. All activities of the Planning Phase are similar to activities of any project management plan.

The selected material indicates that in every change project the human context and its related aspects matter. Critical human aspects need to be taken into account to avoid delays or hold-ups during the implementation phase.

The selected material below has been linked to the Planning Phase and its activities of the ProACT Process Model.. The Location column provides information in which Annex the detailed description can be found.

4.5.1.1 Project objectives definition

Name	Category	Type	Location
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Controller Acceptance Rating Scale (CARS)	Methods and Tools	Decision tree type rating scale	ANNEX A No:A-9
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Integrated Task Analysis (ITA)	Methods and Tools	Observation, Evaluation and Interview Guide	ANNEX A No: A-21
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

4.5.1.2 Project proposal development

Name	Category	Type	Location
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

4.5.1.3 Establish structures and resources

Name	Category	Type	Location
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Belbin® Team Role Self-Perception Inventory (SPI)	Methods and Tools	Questionnaire	ANNEX A No: A-28
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
McKinsey 7-S Framework Model	Best Practice	Framework Model	ANNEX C No:C-2
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6

4.5.1.4 Social impact assessment

Name	Category	Type	Location
Your Employeeship	Methods and Tools	Questionnaire	ANNEX A No:A-6
Hourglass Model	Methods and Tools	Web based questionnaire/Change process model	ANNEX A No:A-8
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
FactBack® Survey method and analysis tool	Methods and Tools	Questionnaire (free text) / ”Auto-interview”	ANNEX A No:A-16
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Openness Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-23
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Belbin® Team Role Self-Perception Inventory (SPI)	Methods and Tools	Questionnaire	ANNEX A No: A-28
Business re-engineering and health and safety management	Case Studies	Case study	ANNEX B No:B-2

4.5.1.5 Risk & opportunities analysis

Name	Category	Type	Location
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Your Employeeship	Methods and Tools	Questionnaire	ANNEX A No:A-6
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
Solutions for Human – Automation Partnerships in European ATM (SHAPE)	Methods and Tools	Questionnaires	ANNEX A No:A-12
CRIOP®: A scenario method for Crisis Intervention and Operability analysis	Methods and Tools	Method / checklist	ANNEX A No:A-13
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Integrated Task Analysis (ITA)	Methods and Tools	Observation, Evaluation and Interview Guide	ANNEX A No: A-21
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Openness Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-23
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Belbin® Team Role Self-Perception Inventory (SPI)	Methods and Tools	Questionnaire	ANNEX A No: A-28
Fatigue – Monotonie – Saturation – Stress Questionnaire (BMS)	Methods and Tools	Questionnaire	ANNEX A No: A-29
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Business re-engineering and health and safety management - Best practice model	Best practice	Best Practice model	ANNEX C No:C-1
McKinsey 7-S Framework Model	Best Practice	Framework Model	ANNEX C No:C-2
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Business re-engineering and health and safety management – Literature survey	Reference and Guidance material	Literature survey on the effect business re-engineering has on health and safety standards	ANNEX D No:D-2
Organisational change and major accident hazards	Reference and Guidance material	Information Sheet on how to manage hazards during organisational change	ANNEX D No:D-3

Name	Category	Type	Location
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

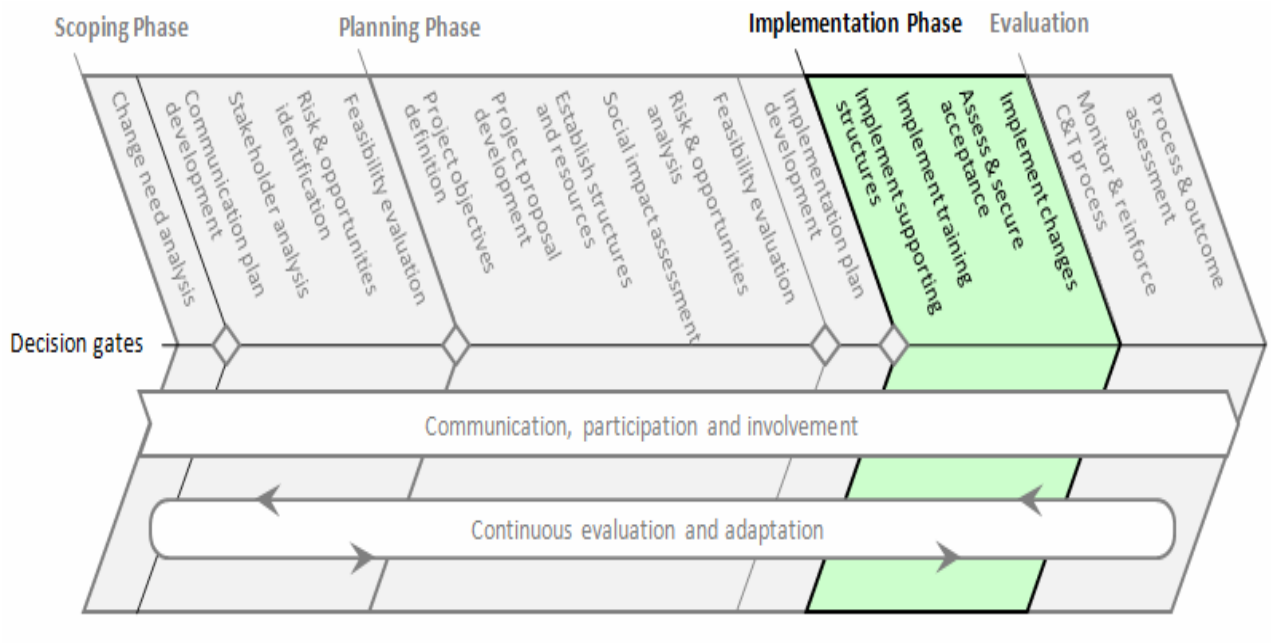
4.5.1.6 Feasibility evaluation

Name	Category	Type	Location
Fleishman Job Analysis Survey (FJAS)	Methods and Tools	Questionnaire	ANNEX A No:A-10
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
Solutions for Human – Automation Partnerships in European ATM (SHAPE)	Methods and Tools	Questionnaires	ANNEX A No:A-12
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Integrated Task Analysis (ITA)	Methods and Tools	Observation, Evaluation and Interview Guide	ANNEX A No: A-21
Openness Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-23
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
The UK regulator's view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

4.5.1.7 Implementation plan development

Name	Category	Type	Location
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Hourglass Model	Methods and Tools	Web based questionnaire/Change process model	ANNEX A No:A-8
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Business re-engineering and health and safety management	Case Studies	Case study	ANNEX B No:B-2
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Business re-engineering and health and safety management - Best practice model	Best Practice	Best Practice model	ANNEX C No:C-1
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Business re-engineering and health and safety management – Literature survey	Reference and Guidance material	Literature survey on the effect business re-engineering has on health and safety standards	ANNEX D No:D-2
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
The UK regulator’s view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
The UK regulator’s view of external influences on safety (IAEA-CN-82/55)	Reference and Guidance material	Guidance document, high-level case study	ANNEX D No:D-7
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

4.6 Selected Material for the Implementation Phase



The Implementation Phase aims to ensure that the change as described in the implementation plan is properly implemented. The most important human aspects to be considered during the implementation phase are the acceptance of the change by employees and the reduction of potential resistance.

Competent Authorities, once they have accepted the implementation plan, have the right to assess the implementation of the change by on-site audits at any time.

4.6.1 The Implementation Phase Activities

The Implementation Phase activities cover issues such as the establishment of a change management team including a network of experts to ensure that expert knowledge is properly taken into account and that change is implemented in a systematic and controlled manner.

Competent Authorities need to have access to all implementation documentation and to the change management team to fulfil their safety oversight function.

Effective training provision contributes to active behavioural employee support for implementing the change and ensures motivation to learn and adapt. Social Partners and management should work in partnership to ensure social acceptance to mitigate remaining resistance and reinforcing support and commitment of employees. Regular progress reporting and monitoring should take place in a coordinated and comprehensive manner.

The selected material indicates that organisational change is a potential safety risk as changing organisational structures; organisational cultures and the behaviour of individual persons are interrelated.

The selected material below has been linked to the Implementation Phase and its activities of the ProACT Process Model.. The Location column provides information in which Annex the detailed description can be found.

4.6.1.1 Implement supporting structures

Name	Category	Type	Location
Leader Effectiveness and Adaptability Description (LEAD)	Methods and Tools	Questionnaire	ANNEX A No:A-3
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Belbin® Team Role Self-Perception Inventory (SPI)	Methods and Tools	Questionnaire	ANNEX A No: A-28
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Organisational change and major accident hazards	Reference and Guidance material	Information Sheet on how to manage hazards during organisational change	ANNEX D No:D-3
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
The UK regulator's view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

4.6.1.2 Implement training

Name	Category	Type	Location
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Integrated Task Analysis (ITA)	Methods and Tools	Observation, Evaluation and Interview Guide	ANNEX A No: A-21
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3

4.6.1.3 Assess & secure acceptance

Name	Category	Type	Location
Copenhagen Psychosocial Questionnaire (COPSOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-2
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Hourglass Model	Methods and Tools	Web based questionnaire/Change process model	ANNEX A No:A-8
Controller Acceptance Rating Scale (CARS)	Methods and Tools	Decision tree type rating scale	ANNEX A No:A-9
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
Solutions for Human – Automation Partnerships in European ATM (SHAPE)	Methods and Tools	Questionnaires	ANNEX A No:A-12
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
FactBack® Survey method and analysis tool	Methods and Tools	Questionnaire (free text) / ”Auto-interview”	ANNEX A No:A-16
A Guideline to best practice for Function Analysis and Allocation in Integrated Operations (IO-MTO)	Methods and Tools	Guideline / best practice / method	ANNEX A No:A-17
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Openness Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-23
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Belbin® Team Role Self-Perception Inventory (SPI)	Methods and Tools	Questionnaire	ANNEX A No: A-28
Fatigue – Monotonie – Saturation – Stress Questionnaire (BMS)	Methods and Tools	Questionnaire	ANNEX A No: A-29
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Attitudes towards Change in ATM Operations	Case Studies	Case Study, Questionnaire and Interview	ANNEX B No: B-4
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
The UK regulator’s view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5

Name	Category	Type	Location
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

4.6.1.4 Implement changes

Name	Category	Type	Location
Copenhagen Psychosocial Questionnaire (COPSOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-2
Controller Acceptance Rating Scale (CARS)	Methods and Tools	Decision tree type rating scale	ANNEX A No:A-9
Fleishman Job Analysis Survey (FJAS)	Methods and Tools	Questionnaire	ANNEX A No:A-10
Solutions for Human – Automation Partnerships in European ATM (SHAPE)	Methods and Tools	Questionnaires	ANNEX A No:A-12
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
A study on merging of ATM-Centers and implementation of a new ATM-system	Case Studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Attitudes towards Change in ATM Operations	Case Studies	Case Study, Questionnaire and Interview	ANNEX B No: B-4
Business re-engineering and health and safety management - Best practice model	Best Practice	Best Practice model	ANNEX C No:C-1
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
The UK regulator's view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

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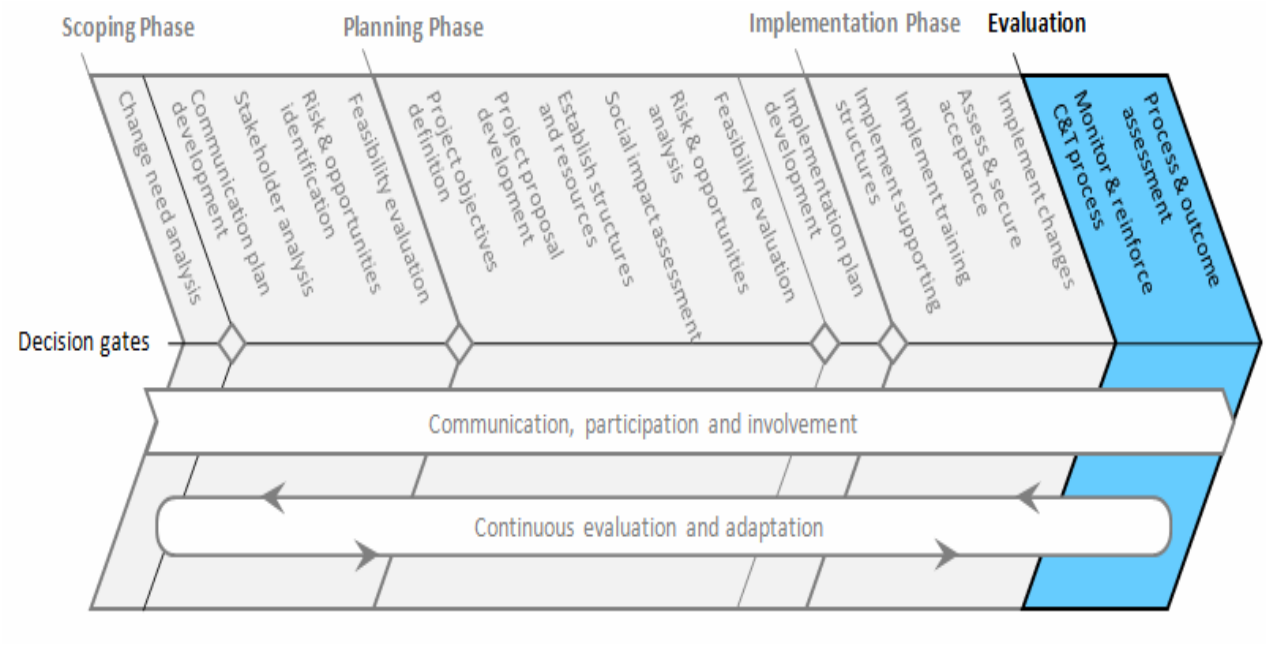
4.7 Selected Material for the Evaluation Phase



The Evaluation Phase assesses what has been achieved from the individual as well as from the organisation's point of view on the implementation of the change. It is a valuable resource and provides input to future changes as it should take the lessons learned into account. These should be communicated to employees for providing feedback, foster compliance and reinforce behaviour. The Competent Authority may suggest corrective actions for remaining issues.

4.7.1 The Evaluation Phase Activities

The Evaluation Phase activities allow evaluating changes to jobs and tasks, needs for new working arrangements and procedures and they reinforce supportive attitudes towards changes. Structures and or procedures that support "old ways" of behaving or doing things should be discouraged.

The final review of the change expands on health and safety aspects, stress and final desirability (acceptance) by employees.

The change management team, management and social partners should evaluate the outcome as well as the development process and officially sign off the change and produce a final report, which should also be provided to the Competent Authority.

Competent Authorities have the possibility to verify effectiveness and efficiency of the implemented change.

The selected material below has been linked to the Evaluation Phase and its activities of the ProACT Process Model.. The Location column provides information in which Annex the detailed description can be found.

4.7.1.1 Monitor & reinforce C & T process

Name	Category	Type	Location
Situational Outlook Questionnaire (SOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-1
Copenhagen Psychosocial Questionnaire (COPSOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-2
Leader Effectiveness and Adaptability Description (LEAD)	Methods and Tools	Questionnaire	ANNEX A No:A-3
Performance Readiness Style Match – Manager & Staff Member (PRSM)	Methods and Tools	Questionnaire / checklist	ANNEX A No:A-4
Controller Acceptance Rating Scale (CARS)	Methods and tools	Decision tree type rating scale	ANNEX A No:A-9
Fleishman Job Analysis Survey (FJAS)	Methods and Tools	Questionnaire	ANNEX A No:A-10
Safety Scanning Methodology (SAF SCAN)	Methods and Tools	Excel tool and guidance material	ANNEX A No:A-11
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Organisational Commitment Questionnaire (OCQ)	Methods and Tools	Questionnaire	ANNEX A No: A-22
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Belbin® Team Role Self-Perception Inventory (SPI)	Methods and Tools	Questionnaire	ANNEX A No: A-28
Fatigue – Monotonie – Saturation – Stress Questionnaire (BMS)	Methods and Tools	Questionnaire	ANNEX A No: A-29
A study on merging of ATM-Centers and implementation of a new ATM-system	Case studies	Case Study	ANNEX B No:B-1
Management of safety requirements in subcontracting during the at Olkiluoto 3 nuclear power plant construction phase	Case Studies	Investigation report and case studies	ANNEX B No:B-3
Attitudes towards Change in ATM Operations	Case Studies	Case Study, Questionnaire and Interview	ANNEX B No: B-4
Business re-engineering and health and safety management - Best practice model	Best Practice	Best Practice model	ANNEX C No:C-1
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Change management standard process design	Reference and Guidance material	Generic change model, reference material	ANNEX D No:D-1

Name	Category	Type	Location
Organisational change and major accident hazards	Reference and Guidance material	Information Sheet on how to manage hazards during organisational change	ANNEX D No:D-3
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7

4.7.1.2 Process & outcome assessment

Name	Category	Type	Location
Copenhagen Psychosocial Questionnaire (COPSOQ)	Methods and Tools	Questionnaire	ANNEX A No:A-2
Leader Effectiveness and Adaptability Description (LEAD)	Methods and Tools	Questionnaire	ANNEX A No:A-3
Your Employeeship	Methods and Tools	Questionnaire	ANNEX A No:A-6
Controller Acceptance Rating Scale (CARS)	Methods and Tools	Decision tree type rating scale	ANNEX A No:A-9
Fleishman Job Analysis Survey (FJAS)	Methods and Tools	Questionnaire	ANNEX A No:A-10
Solutions for Human – Automation Partnerships in European ATM (SHAPE)	Methods and Tools	Questionnaire	ANNEX A No:A-12
CRIOP®: A scenario method for Crisis Intervention and Operability analysis	Methods and Tools	Method / checklist	ANNEX A No:A-13
Human Factors Engineering Program Review Model	Methods and Tools	Review methodology for Human Factors Engineering Programs	ANNEX A No:A-14
LAMPS (Long-term ATCO Manpower Planning Simulation) and CHAMP (Collaborative Harmonised ATCO Manpower Planning)	Methods and Tools	Guidance Material (CHAMP) and Software Package (LAMPS)	ANNEX A No:A-15
FactBack® Survey method and analysis tool	Methods and Tools	Questionnaire (free text) / ”Auto-interview”	ANNEX A No:A-16
Attitude Toward Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-18
Behavioural Support of the Change Scale	Methods and Tools	Questionnaire	ANNEX A No: A-19
Cynicism About Organisational Change (CAOC)	Methods and Tools	Questionnaire	ANNEX A No: A-20
Integrated Task Analysis (ITA)	Methods and Tools	Observation, Evaluation and Interview Guide	ANNEX A No: A-21
Commitment to & Coping with Change	Methods and Tools	Questionnaire	ANNEX A No: A-24
Profile Analysis of Job Satisfaction (PAJS)	Methods and Tools	Questionnaire	ANNEX A No: A-25
Swedish Organisational Change Manager (OCM) Model	Methods and Tools	Change Process Model (Interactive Group Process)	ANNEX A No: A-26
Team Quality Questionnaire (TQQ)	Methods and Tools	Questionnaire	ANNEX A No: A-27
Fatigue – Monotonie – Saturation – Stress Questionnaire (BMS)	Methods and Tools	Questionnaire	ANNEX A No: A-29
Attitudes towards Change in ATM Operations	Case Studies	Case Study, Questionnaire and Interview	ANNEX B No: B-4
Business re-engineering and health and safety management - Best practice model	Best Practice	Best Practice model	ANNEX C No:C-1

Name	Category	Type	Location
Sensitivity Model Prof. Vester®	Best Practice	Model/Approach	ANNEX C No: C-3
Organisational change and major accident hazards	Reference and Guidance material	Information Sheet on how to manage hazards during organisational change	ANNEX D No:D-3
Managing and regulating organisational change in the nuclear industry	Reference and Guidance material	Guidance material	ANNEX D No:D-4
The UK regulator's view of external influences on safety and license conditions for organisational change	Reference and Guidance material	Information Sheet & UK Nuclear site license conditions	ANNEX D No:D-5
Managing change in nuclear utilities	Reference and Guidance material	Technical Document	ANNEX D No:D-6
Management of change in the nuclear industry – Evidence from maintenance reorganizations	Reference and Guidance material	Guidance material	ANNEX D No:D-7
Regulatory aspects of management of change	Reference and Guidance material	Workshop Report	ANNEX D No:D-8

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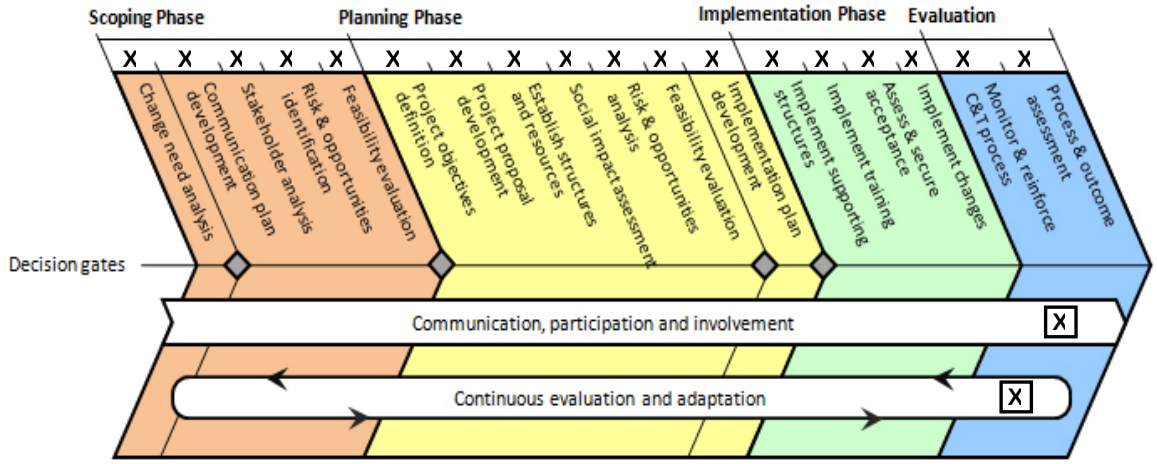
5. Description Template for the selected Material

5.1 Information provided in the Description Template

The Description Template provides as much information as possible on the selected material. The information provided helps to select the right material for the relevant activity of the ProACT Process Model.

EXECUTIVE SUMMARY	Last update: (DD/MM/YYYY)
Name of method or tool etc:	**Type**
The user is provided with the name of the selected material.	Information on the type of material, e.g. observation, questionnaire, interviews, case study, checklist, best practice etc is provided here.
Abstract:	
The Abstract provides a short executive summary of the context of use, aim and purpose, results and interpretations as well as expected benefits.	
ProACT Process Model	
Applicable to Phase and Main Activity:	
The ProACT Process Model is provided with suggestions for which phases and activities the material applies.	



References

Developer and source

Information on the name of the developer and source such as contact information and where to obtain the method or tool etc. as well as information on the availability of the tool is provided.

Year of development / publication, updates etc.

Information concerning the year of development, publication, and/or application of the method or tool etc. as well as the date of last update is provided.

General description

Purpose of measurement / study

This Section describes the purpose of the method or tool etc., for what it can or should be used for and why it has been included in the Compendium as a measure or case study etc. A description on what can be expected from applying the method in the frame of change and transition management is also provided. If it is a case study, information is also given concerning the purpose of the case study itself.

Type (e.g. observation, questionnaire, interview, checklist, measurement instrument, etc.)

This Section informs the user about the type of material categorised as, e.g. observation, questionnaire, interviews, case study, checklist, best practice.

Effort required (time, people, equipment, resources); usability and practicability

An estimate is given for the effort required to perform the measurement and analyse the data in terms of time, people, equipment and resources requirements.

Population – Demographic and or Professional Group for which the method is intended for

This Section describes for which group, e.g. profession or demographic group the tool is intended to be used. It is further stated if the tool is applicable only to a certain demographic group, i.e. a specific age group or gender etc. If it is a case study, information on the population that was in focus for the case study is provided.

Object of measurement / study (individual, team, profession, department, company)

Information is given on whether the tool is applicable to all staff or only to certain levels, only for individuals or to teams or professional groups, departments or the entire company/organisation. If the material is a case study, information on the organisational level in focus of the case study is provided.

Language (other than English)

States in which other languages the material is available.

Cost information / Copyrights / Agreements needed

This Section provides information on the availability conditions and costs (if any) for obtaining the material, for licenses or other fees, the costs for necessary equipment (e.g. scoring devices), costs for training needed to apply the material or the required specific expertise in case that the material can only be applied by a certified expert or specialist.

Further information is provided on other conditions, i.e. registration requirements and copyrights that need to be respected. A web link to the material and the copyright statement is given if available.

ATM specific mapping

Guidance for use in the ATM Context

This Section provides guidance on how the material can be used in the ATM change and transition context and suggests for what type(s) of specific ATM Change and Transition scenario(s) the material can be applied.

The relevant ATM Change and Transition scenarios identified are:

Consolidation, integration and outsourcing of services and units, e. g.:
- consolidation of control centres;
- centralisation of services (e.g. maintenance, AIS);
- remote operations and maintenance settings;
- outsourcing of services (e.g. development, maintenance).

Implementation of international working structures, e.g.:
- Functional Airspace Blocks (FAB);
- Trans-national companies or working arrangements (e.g. EAD Group, Entry Point North).

Implementation of future operational concepts and systems, e.g. encompassing:
- significant changes of roles and responsibilities in operational jobs;
- more integrated ATM processes characterised by wide information sharing, enhanced CDM (Collaborative Decision Making);
- significantly increasing automation of tasks or functions;
- new technologies (e.g. Data link, 4D trajectory based planning and control, support tools for separation delegated to flight crew, conflict resolution and collision avoidance automation support).

Harmonisation and mobility of staff, e.g.:
- transfer of operational staff to other states or in multinational working arrangements;
- Application of regulations concerning operational competence (e.g. ESARR 5, common ATCO license).

Changes in working conditions, e. g.:
- new shift/rostering cycles and working hours (e.g. to flexibly adapt to variations in traffic amount);
- new remuneration schemes;
- new organisational or social structures and/or processes.

Changes in organisational structure of whole companies, authorities or units, e.g.:
- Corporate privatisation;
- Civil/military integration of operations.

Certification and regulatory implementation activities, e.g.:
- certification as ATM service provider or training provider;
- implementation of harmonised safety management standards;
- implementation of harmonised competence regulations;
- implementation of harmonised/interoperable technology and procedural standards.

Changes in organisational culture, e.g.:
- Safety reporting culture;
- Innovation and change readiness.

Experiences of use in the ATM / safety industry / other industry context, including references / users

This Section provides information on previous experience in the ATM, the Safety or other industries. References in terms of name, year, title, source, edition, pages etc. are given, if available. If the material was used in the ATM context, a description on the why, how and where it has been used as well as the aims and results from the use of the tool is provided. If used in another industry, similar information is provided.

ProACT Process Model

Applicable to phase and activity of the ProACT Process Model

This Section describes for which process, phase and activity of the ProACT Process Model the material applies.

Technical description
Description of the content / study
This description covers the content of measurement and the concepts that are measured (i.e. fatigue, stress, psychosocial aspects, change readiness etc).
Context and Prerequisites for application
This Section provides information on the context in which the material can be applied and what prerequisites are needed to apply it. For example, if the material can only be applied in simulations or outside the normal operational context or if it can be applied directly in the life work environment. In case of a case study the prerequisites needed to replicate the study and the use of the same methodology in this context is provided.
Equipment required for application
This Section provides information on the equipment (including technical equipment) that is needed to apply the material. For example, if paper and pencil or PC is required or whether it requires simulation tools, a mock-up, a design study or a video to be shown. For a case study the equipment that is needed to replicate the study and the use of use the same methodology in this context is provided.
Required user qualifications
The necessary and sufficient qualifications of any person using the material are described. If a case study is concerned, the necessary and sufficient qualification of any person who wants to replicate the study and wants to make use of the same methodology is outlined.
Requirements / constraint concerning conditions for use
A description and evaluation concerning the practical limitations in the use of the selected material is given. Describes what aspects of privacy or confidentiality apply when using the material. It is outlined whether specific pre-information/instruction/briefing/training etc. is needed for those to which the material is applied to beforehand. It further describes what information is required to respond to the material or apply it (i.e. info on change itself, ways in which people might be affected by the change etc.).
Measure / Response Types
This Section describes the item type e.g. multiple choice, rating scales or other ways in which a person is asked to respond to a questionnaire or tool..
Collected parameters and data format
This Section provides a description of the parameters collected and the data format (scoring procedure, scales).
Results obtained and interpretation
This Sections outlines the data format of the outcome of applying the material (e.g. a (numerical) value or a qualitative category), the use that can be made of the results (e.g. deriving a quantitative value, a value on a scale,, a qualitative interpretation etc) and the possible assistance that is available for the interpretation of the results (e.g. against norms, standards or for classification of cases etc.).

Description of use
Figure / model
This Section provides a visual process model like a figure or picture of the material and/or illustrates factors/variables etc.
Process description
This Section describes the detailed process, especially on how to apply the material (i.e. the steps to go through) from the view of a person applying the material).
Evaluation
Strengths and Weaknesses of the tool
This Section describes the known strengths and weaknesses of the material.
Alternative methods / tools
This Section describes if other material is known which could be used instead of the selected one. Possible reasons for considering an alternative are also provided.
Possible combination with other methods / tools
This Section outlines if there is other material recommended to be used conjointly or if the material is normally or often used in combination with other material or it the material is part of a package.
Psychometric / methodological integrity description
Objectivity / (or at least) demonstration
This Section describes how objectivity is assured in application. For example: the outcome or data cannot be altered or manipulated by other persons. Information on the concept of measurement or the way of applying the material that limits the bias to a satisfying degree is provided.
Reliability / (or at least) demonstration
The reliability of the material is outlined, or at least, some proof or indication of reliability as well as the efforts that were made to ensure consistency of the measure.
Validity / (or at least) demonstration
The validity of the material is outlined, or at least, some proof or indication of validity, e.g. the demonstrated effects, available psychometric evidence, or the methodological strength is provided. Describes and informs about the way, in which the validity of the measure is ensured and for what purpose the validity has been ensured.
Description of methodological integrity and additional Evidence or Value that the tool or study provides
When direct psychometric values (objectivity, reliability, validity) are neither available nor applicable, a description and evaluation concerning the methodology used in developing the material or part of the material itself is provided. For Example: A learning example or a qualitative description of a process that helps to demonstrate something of relevance or getting a picture and understanding of it.

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ABBREVIATIONS

ANSP	Air Navigation Service Provider
ATCO	Air Traffic Controller
ATM	Air Traffic Management
C&T	Change and Transition
DFS	Deutsche Flugsicherung GmbH
DLR	Deutsches Zentrum für Luft- und Raumfahrt
EATMP	European Air Traffic Management Program
ESARR	EUROCONTROL Safety Regulatory Requirement
FAB	Functional airspace blocks
HF	Human Factors
IFE	Institute for Energy Technology
ISO	International Standards Organisation
SES	Single European Sky
SESAR	Single European Sky ATM Research

LIST OF TASK FORCE MEMBERS

The following members of the Change & Transition Task Force have contributed to the development of the material enclosed in this Compendium:

Work Package Leader and Task Force Chairman

Hermann RATHJE	EUROCONTROL Brussels, BE

Work Package Assistant and Task Force Secretary

Bernd HILL	EUROCONTROL, Brussels, BE

Task Force Members

Marcus ARVIDSSON	Lund University, SE
Hinnerk EISSFELDT	DLR Hamburg, DE
Jan HEIMDAL	IFE, Halden, NO
Peter HOFFMANN	Austro Control, Vienna, AT
Alexander HEINTZ	DFS Langen, DE
Johan JÖNSSON	LFV/Lund University, SE
Wolfgang KALLUS	University of Graz, AT
Michael PLATZEK	DFS, Langen, DE
Nic TURLEY	NATS, Farnham, UK

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