



# **GUIDANCE MATERIAL:**

## **PLANNING FHA ACTIVITIES**

### **1 INTRODUCTION**

This guidance material outlines the tasks involved in defining the approach to safety within the FHA itself.

### **2 FHA OBJECTIVES AND SCOPE**

- Define the objectives of the Functional Hazard Assessment; and how these will contribute to overall safety assessment for the system.

- As part of the total system approach, co-ordination between stakeholders:
  - ANSPs: engineers, ATCOs, ..;
  - Regulators: ATM, airworthiness, flight operations;
  - Users: airlines, pilots, ..;
  - Industry: equipment manufacturers (aircraft, “ground”), Communication Service Providers, ...
  - Others as necessary.

should be performed to develop and validate operational concept which will be used as input of the safety assessment. This includes co-ordination for Safety Objectives specification.

- Define the scope and level of the FHA. For example:
  - The scope of the FHA depends on the scope of the system under assessment. Total system approach can be limited to ground ATM, as long as it can be demonstrated that the system being assessed (the scope of FHA) is not directly interacting with the airborne segment.
  - FHA can be applied at different levels, from overall ATM Service Provision level to sub-system level.
  - Different levels of FHA could be conducted, dependent on whether certain functions have already been allocated to particular system elements;
  - A specific FHA could be conducted to cover the transition between the current and future operations or the decommissioning of the system;
  - For new concepts where refinement of the mode of operation, operational environment, .. will be achieved through iterations, it is useful to consider a phased approach to the FHA going along with a progressive development of the Concept of Operations since FHA has to be commensurate with lifecycle and the level of design detail. Phased approach enables the safety assessment process to influence the definition of procedures and human-related issues.

### 3 FHA PROCESS

- Identify the inputs to the FHA process (drawing on the material gathered under the FHA Initiation step, as described in Chapter 1);
- Define the methodology to be used for setting Safety Objectives. This should describe any necessary adaptations of the generic FHA process for the specific application. For example:
  - Outline methods used to identify potential hazards, drawing on information gathered in the Initiation step regarding methods; which were successful in past FHA sessions;

The recommended steps are:

1. **“Dry-run” or “scoping session” to:**

- “dry-run”: to allow a small team (programme management (manager and/or safety manager) and some selected stakeholders (including operational staff) to prepare FHA sessions by an early identification of failure modes, hazards and their effects. This could allow easing the “big” sessions by an early identification of issues dealing with scope, operational environment and level of hazards.
- “scoping session”: to screen out irrelevant issues and ensure an effective preparation for the FHA:- this enables to build a comprehensive check list of items and derive experts profile. This is especially useful for new system for which the scope is being specified;

2. **“Brainstorming session”:** see FHA Chapter 3 Guidance Material B2 and A; to identify hazards which could be “functionally unimaginable”;

3. Completion of hazard identification through **systematic functional hazard identification** (see FHA Chapter 3 Guidance material B1) using “brainstorming” sessions outcome.

- Define the approach to be used in setting Safety Objectives.
- Specify the type and attributes of the information to be recorded in the FHA process;
- Specify the structure of the required output of the FHA process.
- Define the FHA validation, verification and process assurance activities to be performed (see Chapter 4 for further guidance);
- Identify specific methods to be applied;
- Specify information to be collected;
- Define the procedures to be applied if flaws are detected during any of the evaluation activities.

#### **4 ROLES AND RESPONSIBILITIES**

- Define the roles and responsibilities of the persons, departments and organisations involved in the FHA process in particular in order to ensure that adequate coordination is performed for Safety Objectives specification such as:
  - regulatory bodies for ATM, airworthiness and flight operations;
  - ANSPs (including ATCOs);
  - Airlines (including aircrew);
  - Aircraft and aircraft equipment manufacturers;
  - ANSP equipment manufacturers;
  - Any other required bodies (such as Communication Service Providers, ...).
- Specify the required competencies for the persons involved in the FHA process, and any necessary training requirements.

#### **5 SCHEDULE AND RESOURCE ALLOCATION**

- Define the time schedule and resources required.

#### **6 PLANNING FOR FUTURE ACTIVITIES**

- Define the procedures to be applied when changes are made to Safety Objectives, system functions, operational environment or system interfaces. Defining adequate lines of communication is particularly important – safety assessors need to be informed of such changes.