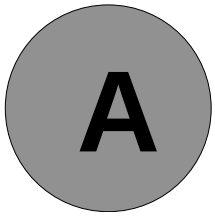

GUIDANCE MATERIAL:

OPERATIONAL ENVIRONMENT DEFINITION

Functional Hazard Assessment can only be properly conducted when considering the Air Navigation system being assessed within the context of the operational environment in which it will be integrated.

The description of the operational environment should include all characteristics which may be relevant when assessing the safety impact of the loss or degradation of the new/modified system's functions. In cases where elements of the environment of operation may be used as compensating factors in the assessment of the severity of the identified hazard effects, the best practise is that they should be identified and agreed with the regulatory authorities before initiating the safety assessment process.

The definition of the operational environment requires a description of the current operations and ATM/CNS capabilities that support these operations. It also requires a description of the environmental characteristics, i.e. those outside the ATM/CNS domain.

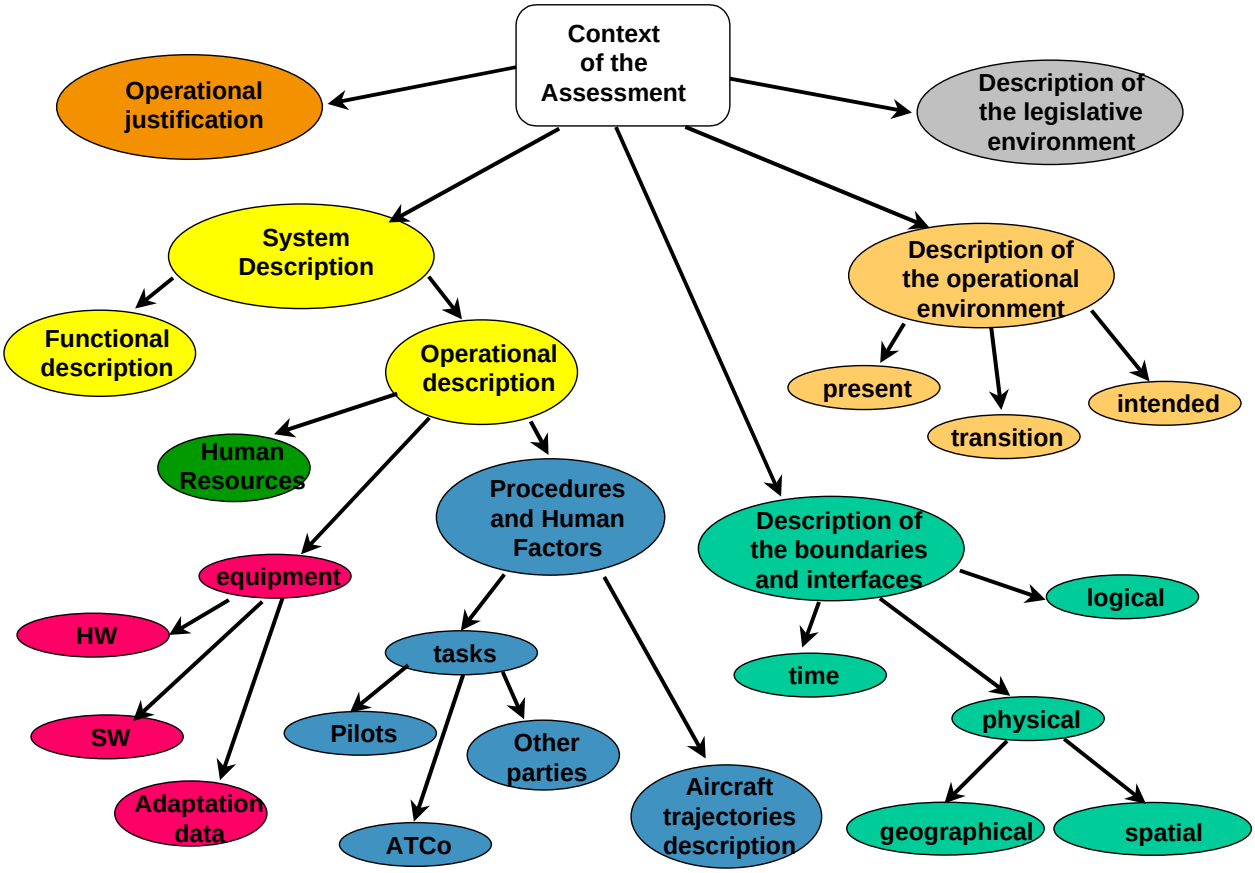

Figure A-1: Context of the assessment

The following are some examples of characteristics that need to be described:

- **Current ATM/CNS capabilities:** functionality, performance and limitations, level of automation e.g., description of current equipment, navigation capability and performance (RNP, RNAV), surveillance capability and performance (PSR, SSR, ADS), communication capability and performance (voice and data-link), proficiency of ATCOs, current procedures (operational, maintenance, etc.), availability of safety nets;

- **Airspace Characteristics:** airspace classification, separation minima, route configuration and complexity, sectorisation, special use airspace restrictions;

- **Traffic Characteristics**: traffic complexity, (current or foreseen) sector traffic density, (current or foreseen) track occupancy; Military operations, General Aviation operations;

- **Aircraft Performance and Equipment:** aircraft performance requirements, traffic is generally a mix of aircraft with different performances and levels of equipment fit.

- **Adjacent Centre Capabilities**: characteristics of ATC Unit with which traffic is exchanged (performances and limitations);

- **Airport Infrastructure**: e.g. the characteristics of airport movement area (runways, taxiways), availability of visual aids;

- **Weather**: local weather phenomena (e.g., turbulence over mountainous terrain, fog patterns, intensity of thunderstorms, volcanic ash);

- **Topography**: e.g., significant obstacles at and around airport, terrain characteristics;

- **Environmental Constraints**: e.g., noise sensitivity of populated areas in the environment of an airport.

This list is not exhaustive. Moreover some characteristics, such as Weather, Topography and Environment Constraints, may not be relevant for all types of system. However, in some cases, this information could be required in further steps of the safety assessment process.

Figure A-2 summarises these characteristics and how they relate to each other and to the system being assessed.

Additional Guidance Material

- ICAO
  Manual on Airspace Planning Methodology for the Determination of Separation Minima
  Doc 9689-AN/953 (First Edition - 1998)

- EUROCAE ED78A, Annex C, OSED Guidance
  Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications,
  (December 2000)

- B. Ruitenberg,
  Situational Awareness in ATC – A Model
  The Controller (March 1997)

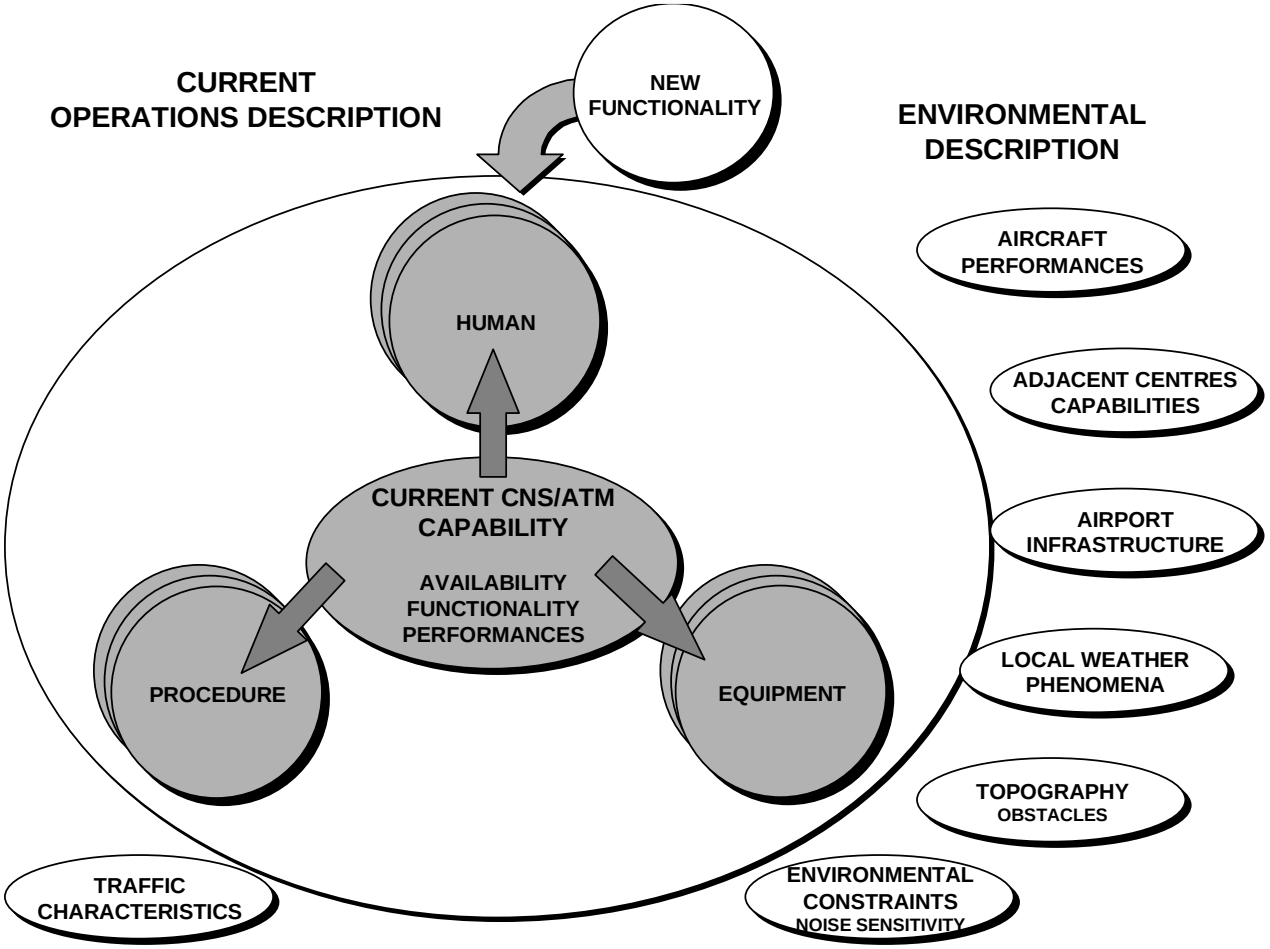

Figure A-2 – Operational Environment Description

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