Reference Scenario

Module 9 – Activity 4

European Airspace Concept Workshops
for PBN Implementation

Objective

- This module provides an overview of:
  - The development of a (critical) reference scenario and importance of this in the context of PBN Airspace Concept.
  - The performance and safety criteria to judge whether the implementation is eventually successful or not.

Why?

- Reference Scenario enables you to identify your current operations;
  - Positive
  - Negative
  - Benchmark

Why Not?

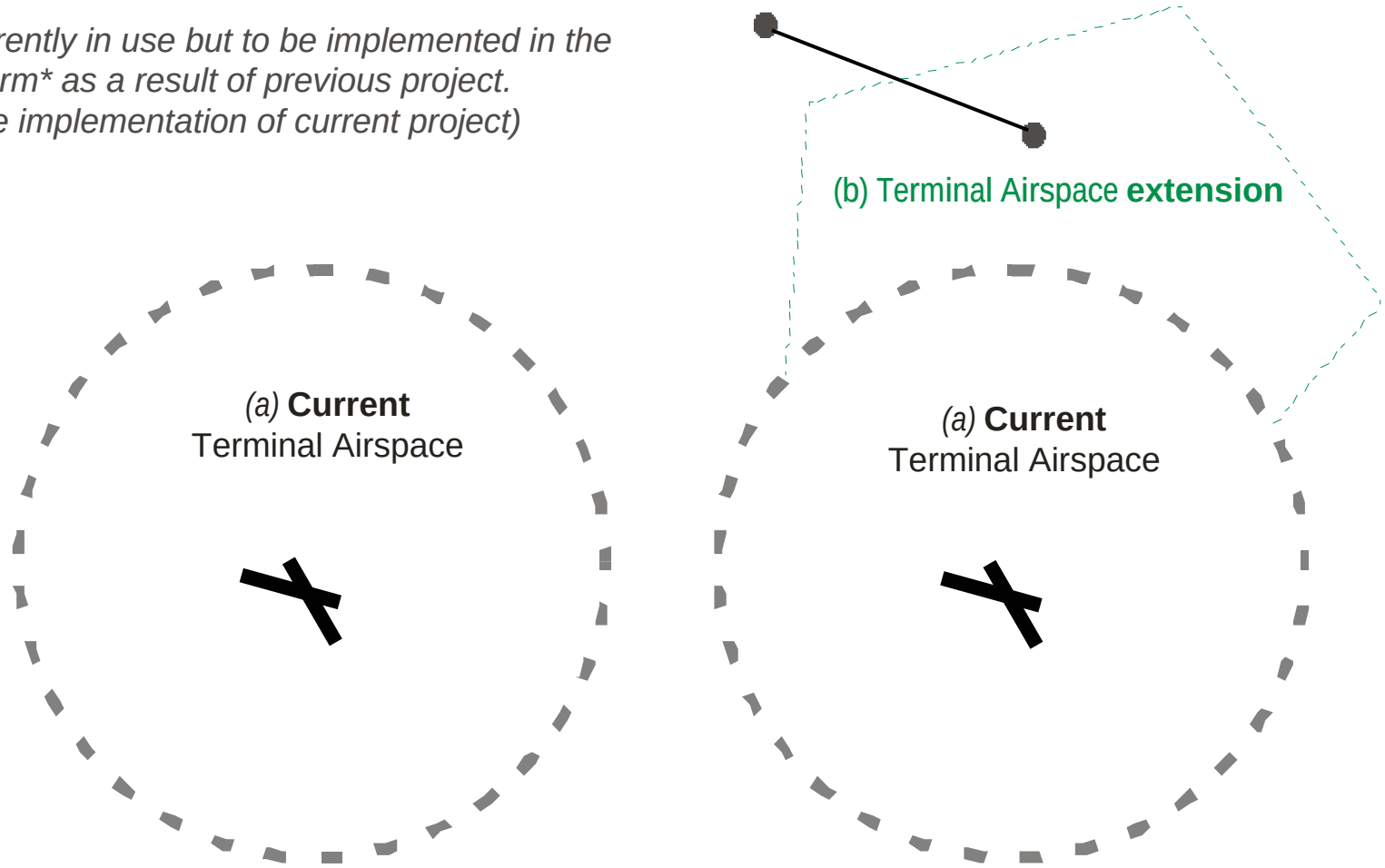
- In order to improve you need to measure
- No means of comparison
- New concept could be worse
- Using only procedures and LOAs will not provide realistic overview

Types

- Reference Scenario
- Pseudo Reference Scenario
  - Takes into account near term changes that will effect the PBN Airspace Concept

Pseudo Ref

Not currently in use but to be implemented in the short-term as a result of previous project.*
*(*Before implementation of current project)*



Current Terminal Airspace = (a)

'Pseudo' Current = (a) + (b)

Obtaining Information

Predominant Runway-in-use at airport(s) within existing Terminal airspace.	Statistical analysis of existing data over the last few years
Current Traffic Demand and its geographic and time distribution.	Traffic samples can be obtained from the Network Operations Centre and/or local ATC centre.
Analysis of the Traffic sample e.g. IFR/VFR mix; Fleet Mix; Aircraft performance mix, etc	Traffic sample. Obtained as above.
Routes (IFR & VFR), instrument approach procedures and Holding patterns/areas.	AIP and traffic sample;
Radar vectoring patterns	Operational controllers
Airspace dimensions	AIP and Operational controllers

How?

- Develop through workshop
- Normally 3-5 days
- All core members should attend
- A lot of work!

Information (1)

- Predominant RWY in use
- Traffic demand
- Analysis of traffic sample
- Routes (IFR and VFR)
- Radar vectoring patterns
- Airspace dimension

Information (2)

- Sectorisation
- Coordination between sectors
- Existing constraints (terrain)
- Existing ATM/CNS enablers

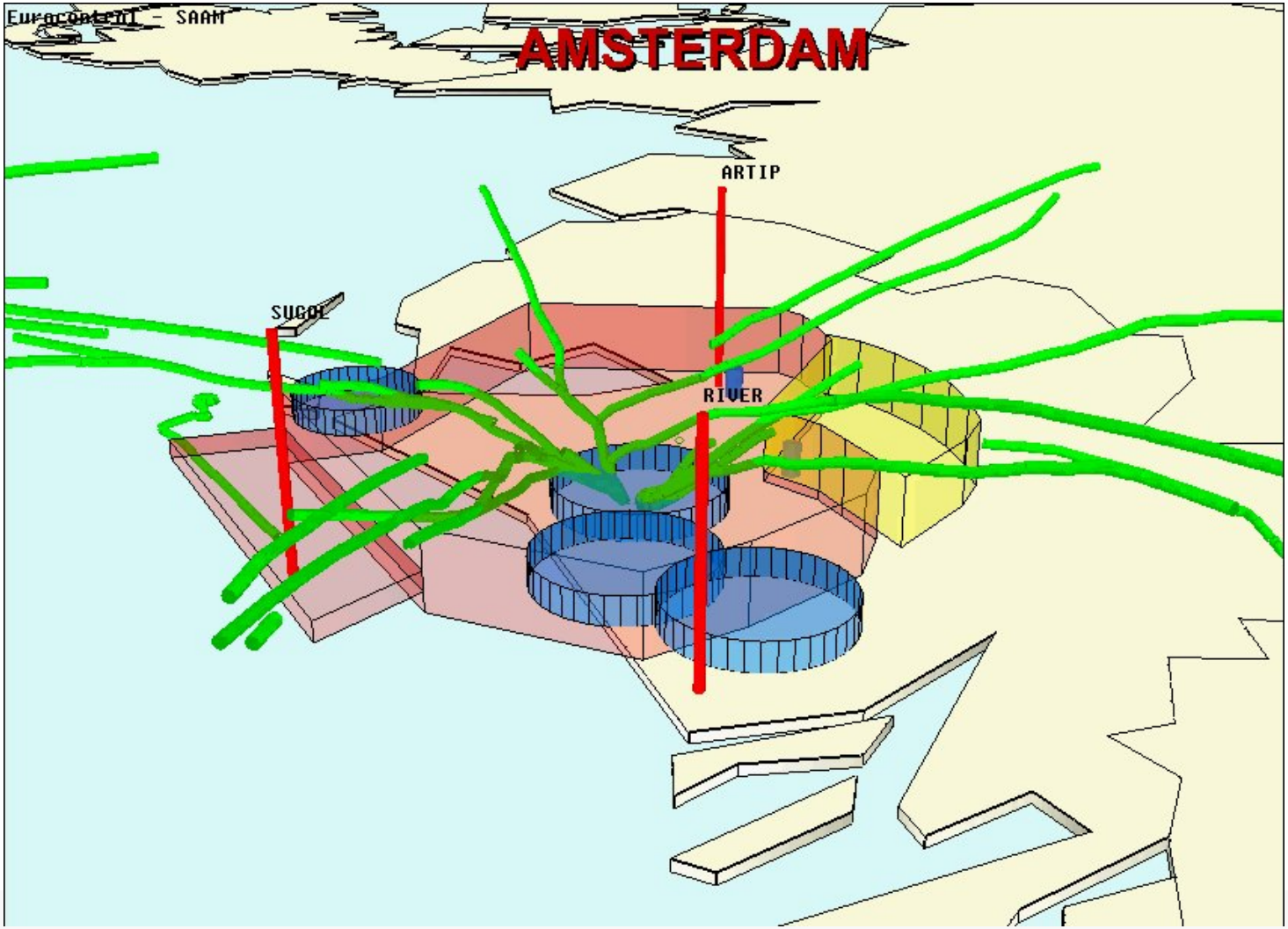
Support Tool

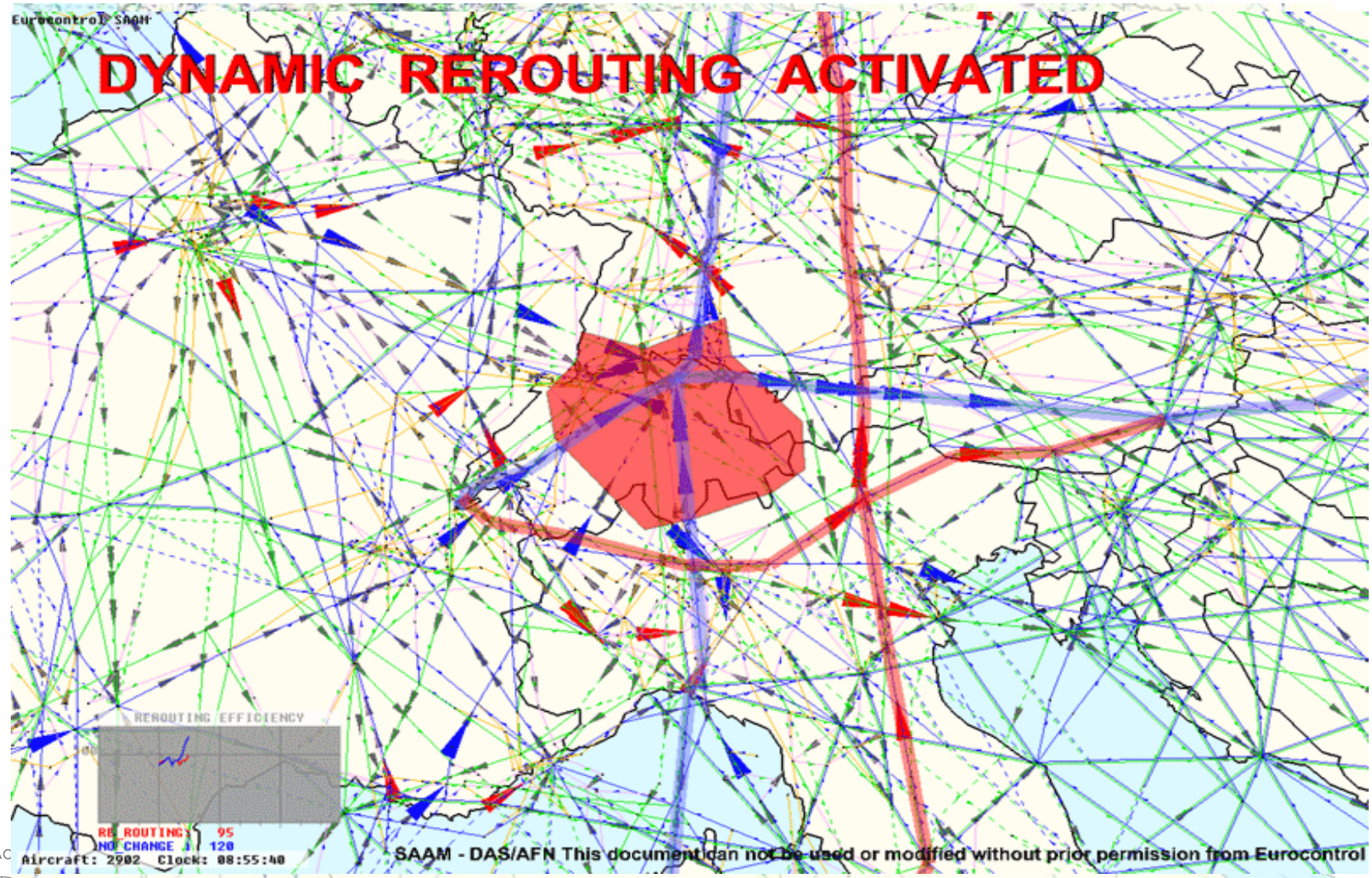
SAAM (EUROCONTROL)

- Free Route Concept
- Flexible Use of Airspace (FUA)
- RVSM
- 8.33Khz
- Version 2/3/4/5 and AAS of ARN (European Route Network)
- Terminal Airspace Development
- Functional Airspace Block (FAB)
- Dynamic Management of European Airspace Network (DMEAN)

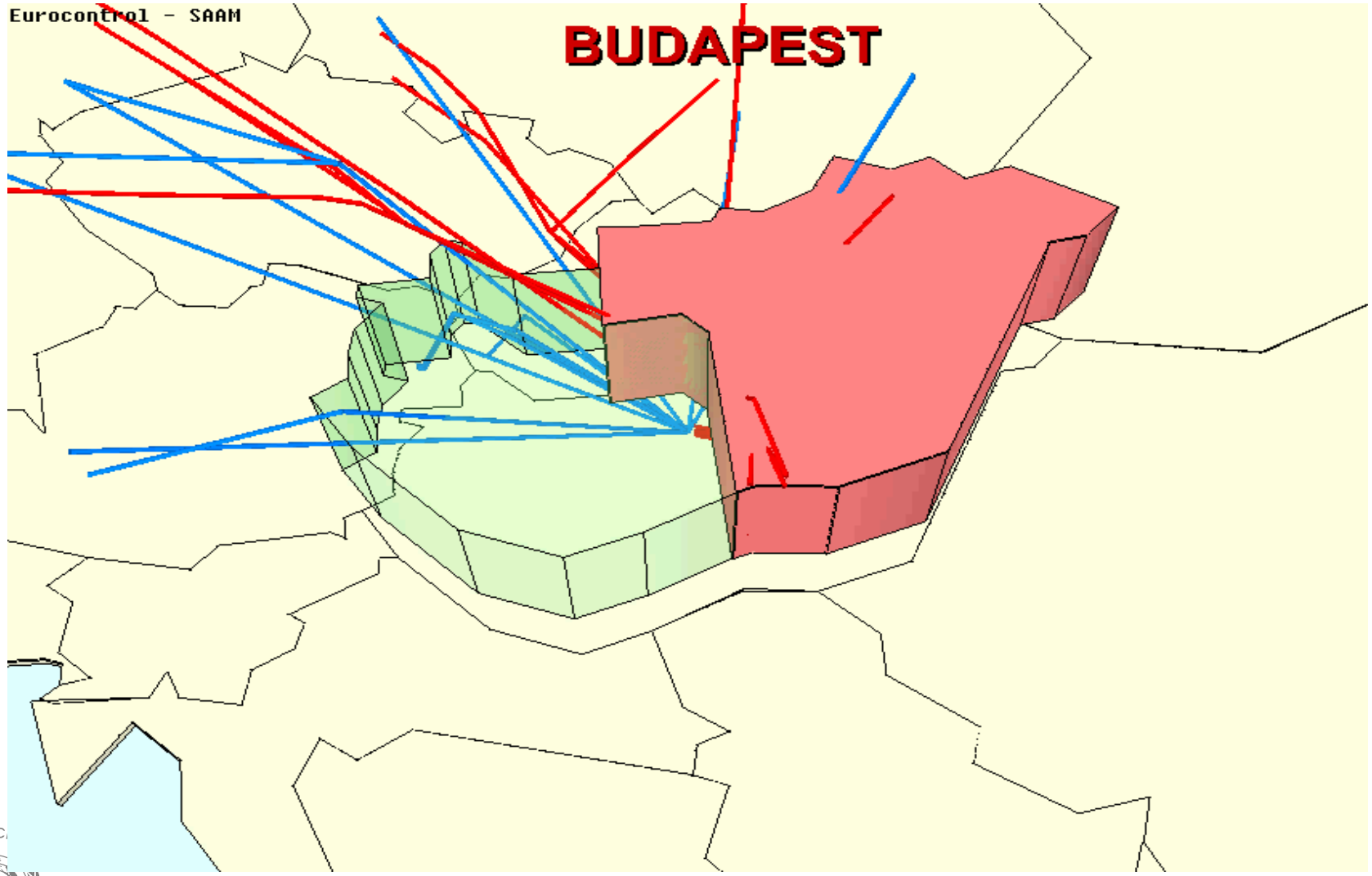
Tools

SAAM




Eurocontrol SAAM
DYNAMIC REROUTING ACTIVATED
REROUTING EFFICIENCY
RE ROUTING: 95
NO CHANGE : 120
Aircraft: 2902 Clock: 08:55:40
SAAM - DAS/AFN This document can not be used or modified without prior permission from Eurocontrol

Demo



Sample Reference Scenario Checklist

WRITING THE REFERENCE SCENARIO (ref. Part C 2.2, 2.3)	
1. Runways	
	Which runways are in use?
2. Traffic Types and Distribution	
	• What is the quantity of the traffic in terms of Arrival, Departure and Transit Traffic in combination with different traffic types? • What are the Traffic Mix in categories (HMVL) and Navigation Capabilities (Conventional / NAV)?
3. Terminal Airspace	
	• What are the lateral dimensions of the Terminal Airspace? • What are the Airspace Classifications in, and if deemed of interest, outside the Terminal Airspace? • What is the Transition Altitude in the Terminal Airspace? • Are there Airspace Reservations (military/VFR corridors/ recreational flying)? • Are there Airspace Restrictions that have an impact on the Terminal Airspace? • Are there Holding Areas and is there a Minimum Safe Altitude? • Are there Approach procedures published and to what extent are they used? • Are there Departure and Arrival procedures published? • Are there Radar Vectoring Patterns & MRVA defined and/or published?
4. Traffic Management	
	• How is the airspace surrounding the TMA organised? Are there adjacent ACC Sectors, ACC Sectors above and/or adjacent Terminal Airspace(s) and what is their relation with the TMA? • How is the Arrival Traffic managed? • How is the Departure Traffic managed? • How is the Transit Traffic managed? • If applicable, how are Military, VRF and Recreational Traffic managed?
5. Technical Support Infrastructure	

Critical Review

- Critical review
  - Identify operational problem areas
  - Identify constraints
  - Identify mitigation and enablers

Sample Checklist: Critical Review of Reference Scenario

CRITICAL REVIEW OF THE REFERENCE SCENARIO (ref. Part C 2.4)	
1. Runways	
	Which runways are in use?
	• *What are the Primary and Secondary Runways in Use in main & adjacent TA?* • *Is the mode of operation of the existing runways likely to change prior to the implementation of the existing project?* • *Are additional runways likely to be in use prior to the implementation of the existing project? If so, in what mode?* • *When was the mode of use for the runways implemented?* • *Have other modes of use been considered – and discounted? If so, why?*
2. Traffic Types and Distribution	
	What is the quantity of the traffic in terms of Arrival, Departure and Transit Traffic in combination with different traffic types?
	• *What is the geographic distribution of the traffic (in %)?* • *What is the time distribution of the traffic (seasonal/daily)?* • *What is the ratio between Arriving and Departing Traffic during peak hours?* • *What is the ratio between IFR/VFR, Military/Civil?* • *Do recreational-type-flying activities take place in the Terminal Airspace?* • *For items (1) to (5) on left, does the future traffic sample deliver the same results as the existing traffic sample used?*
	What are the Traffic Mix in categories (H/M/L) and Navigation Capabilities (Conventional / NAV)?
	• *Does the future traffic sample deliver the same results as the existing traffic sample used?*
3. Terminal Airspace	
	What are the lateral dimensions of the Terminal Airspace?
	• *Are all IFR Flight paths contained inside controlled airspace?*

Refining Design Objectives

- Current flaws or weaknesses used to improve design objectives
- Example;
  - Creation of SID only for summer months for Heavy a/c

Quality Management

- To measure is to know
- Constant process
- When correctly applied
  - Keep reduced project team
  - Little effort
  - Easy/early adaptation to changes
  - Customer orientated

Kapitali

- Additional data to finalise reference scenario?
- Is this enough data to work with?????

Any further questions?