FRA implementation in Switzerland - skyguide

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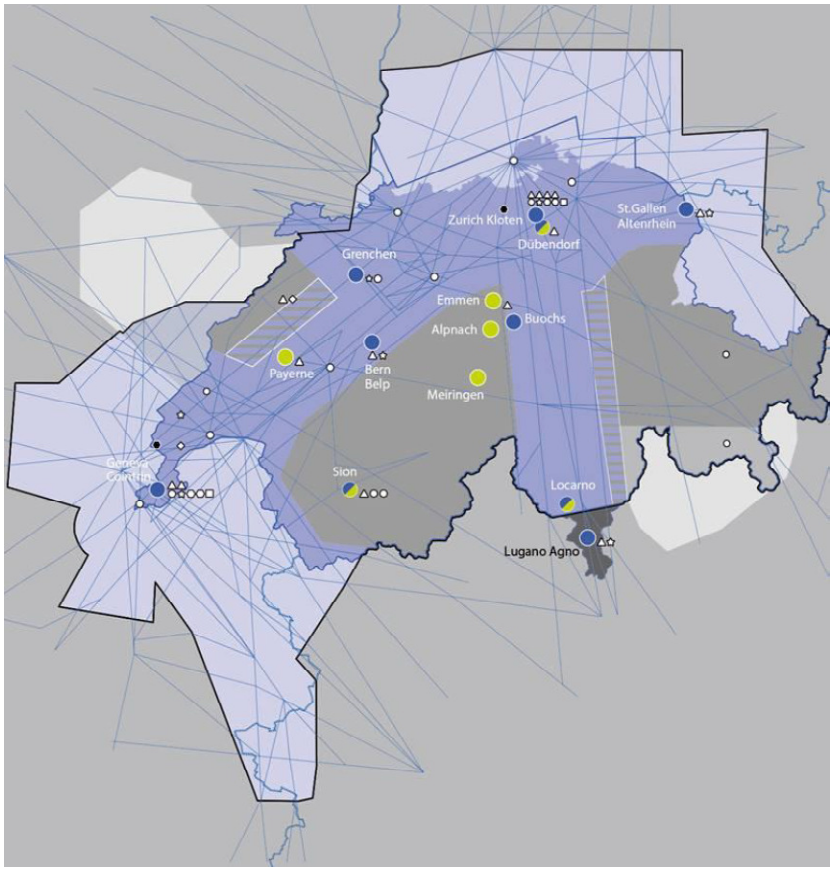
Project Overview

- Description:
  - Implementation of a FRA available H24 above FL195 in skyguide's AoR in one implementation step on the AIRAC date of 02.12.2021.

  - At the same time, the ATS route network will be removed above FL195 except where route segments are needed to provide connections with STARs, SIDs and the ATS route network below.



Project Overview

- Objective:
  - Compliance, by the end of 2021, with the Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014
  - No negative impacts on skyguide's performance in relation to safety and capacity.

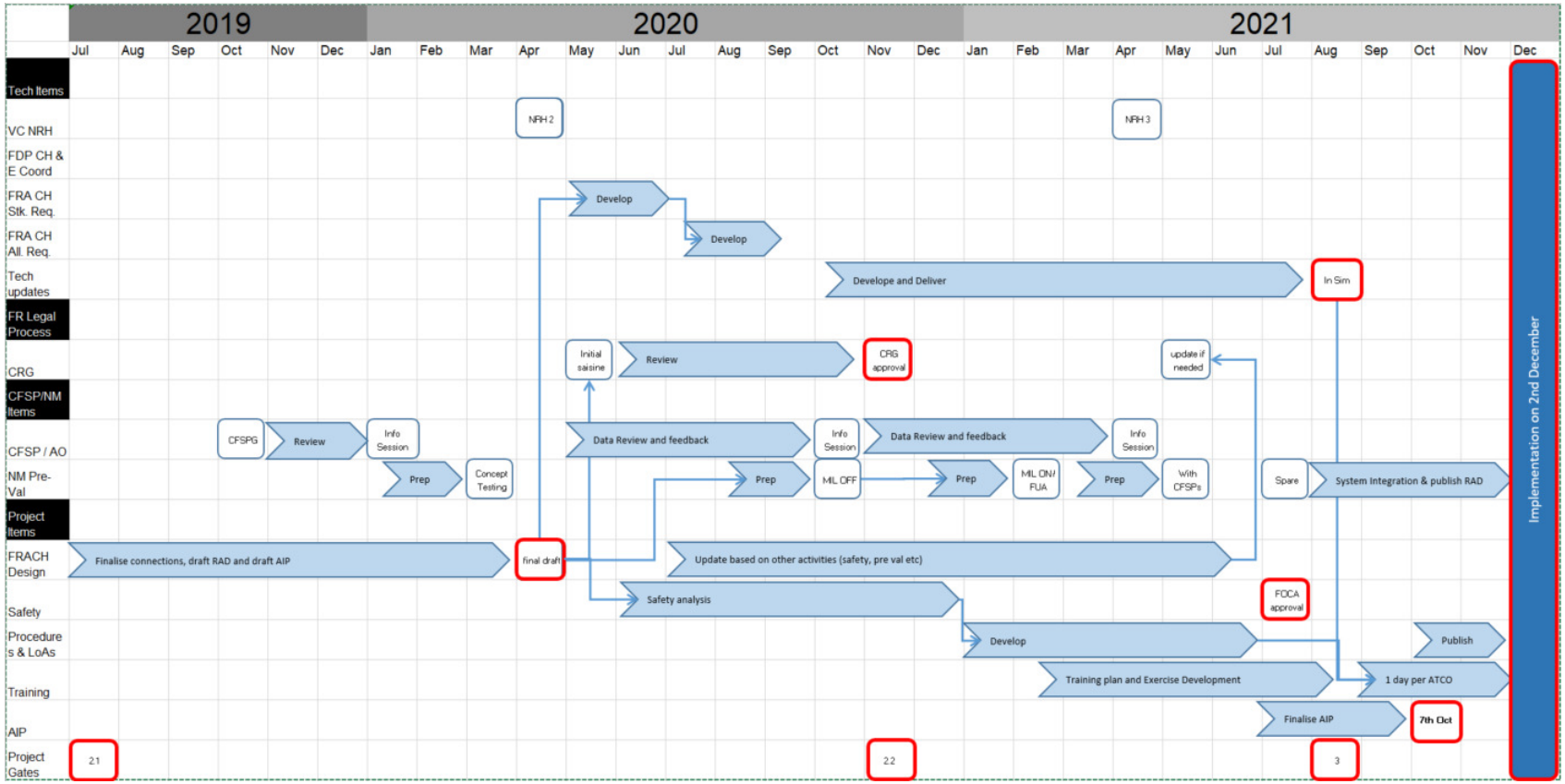
- Dependencies
  - Implementation of FRA is dependent on deployment of new ATM functionalities in skyguide as part of the virtual center project.
    - New route handling
    - Exit conflict detection tool

Project Overview

- Structural limitations as per ERNIP Part 1:
  - In complex airspace, the full implementation of FRA could potentially have a detrimental effect on capacity. In such airspace, States / FABs / ANSPs may decide to implement FRA on a structurally limited basis, for example by restricting the available FRA Horizontal entry/exit points for certain traffic flows, which could increase predictability and reduce the number of potential conflicts.

- SESAR PJ 06 results confirm the need for structural limitations within the skyguide FRA in order to achieve the project objectives:
  - There is no difference in safety in solutions scenarios when compared with reference scenarios. However, it is confirmed that a high safety level is clearly linked to the appropriate design and implementation of FRA in a structurally limited mode in order to maintain complexity in manageable limits.
  - The capacity is not reduced in the Structurally Limited Free Route environment using the appropriate ATC support tools and adapted procedures. The FRA structure Design has a crucial importance in order to maintain the complexity within manageable limits.

Project Planning

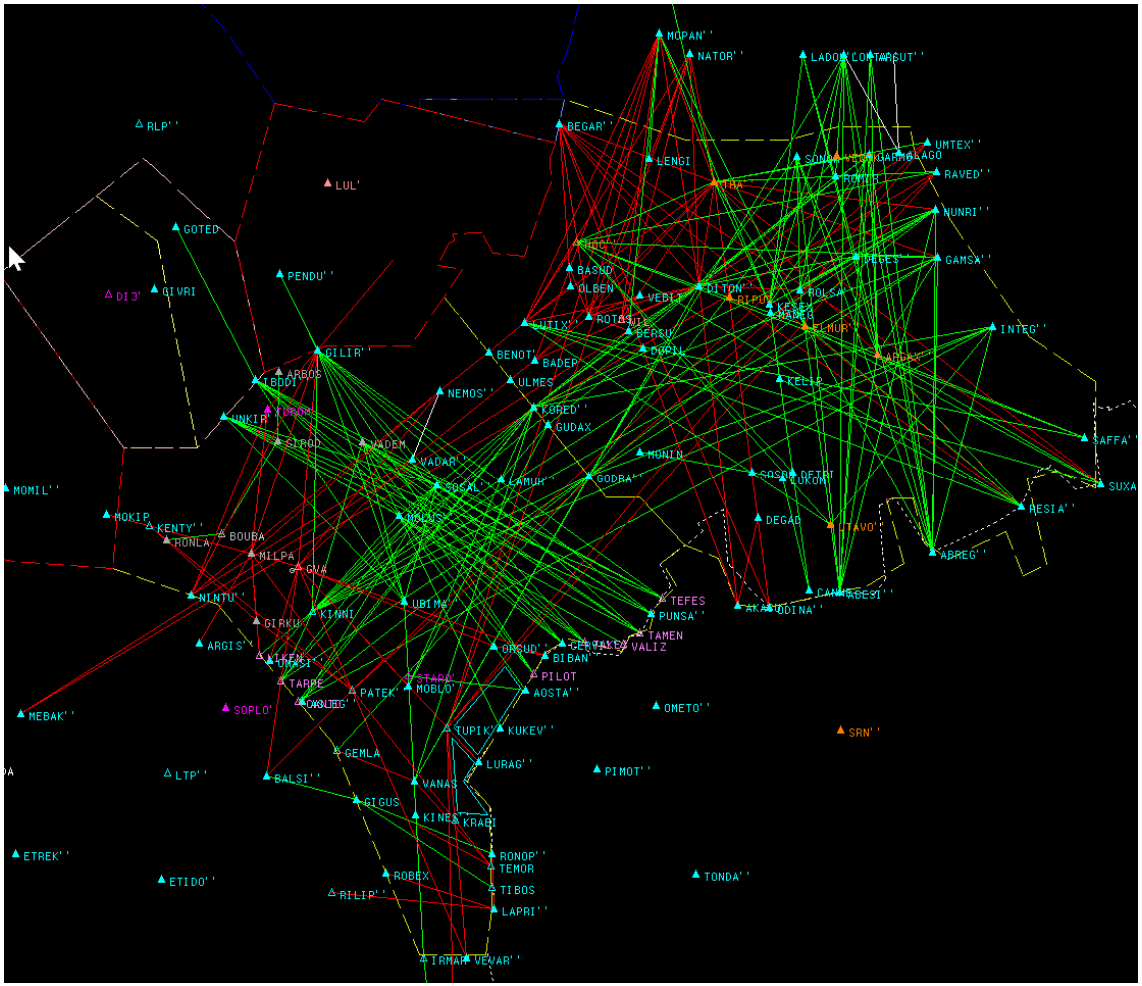


Operational Concept - Design

- The design for the FRA Switzerland was developed within the SESAR PJ06 work conducted by skyguide.
- FRA trajectories for this trial were designed according the following principles:
  - ATS Route Network above FL195 within the lateral limits of the FRA CH shall be removed at the same time as the FRA implementation
  - The FRA trajectories shall ensure horizontal and vertical connectivity with other FRAs (DSNA, ENAV, DFS).
  - The FRA trajectories shall ensure connectivity with the ATS Route Network below FL195 and in neighboring ANSPs where the FRA vertical limits are different.
  - FRA trajectories shall avoid unnecessary ATC coordination.
  - Existing boundary connections, coordination points and/or transfer points shall be maintained with adjacent ANSPs
  - A set of waypoints will be maintained within the FRA CH to allow for flight planning around military areas.

Operational Concept - Design

- The trajectories tested during the SESAR PJ06 project simulations.



Operational Concept - Design

- Final trajectories approved for implementation.
  - Even though structurally limited, the FRA offers more connection options than the current route structure.

FRA Switzerland Trajectories Zurich

	Discussion needed
	Night DCT
avbl	available

FRA Switzerland Trajectories Geneva

	Discussion / answers needed
	Night DCT
avbl	available

- Note: Night network DCTs currently published in RAD APP 4 will be kept as they are today

Operational Concept - FLOS

- To limit the number of traffic flows operating at non-standard levels, Switzerland will change from an east/west to a north/south default Flight Level Orientation System.
- This may be implemented prior to the FRA implementation.
  - This aligns skyguide with France and Italy but creates a difference with Germany.

Operational Concept - ASM Elements

- Switzerland has currently published Flight plan Buffer Zones (FBZ) for all AMC manageable areas within the FIR.
- Flexible Use of Airspace (FUA) restrictions for each of these areas have also been developed and tested by skyguide and are ready to support the implementation of FRA CH, however all currently published FBZs finish at the Swiss national border.
- Flexible Use of Airspace (FUA) restrictions will be used in parallel to CDRs from spring 2020.
- To ensure complete and correct FBZs for each area, they will be extended outside of the Swiss national boundaries to support the FRA CH implementation.
    - Publication will be in the Swiss AIP (coordinated with surrounding countries)
    - Management will be by the Swiss AMC
    - Implementation will prior to the FRA implementation.

Operational Concept - Flight Planning

- Within FRA CH pilots/airlines shall plan a direct route (DCT) between a defined Entry (E) point and a defined Exit (X) point, with the possibility to route via defined Intermediate (I) points, without reference to the ATS route network and subject to airspace availability.
- All FRA CH (EXI) points will be published in the Swiss AIP sections ENR 4.1 and 4.4.
- Planning via latitude and longitude points will not be allowed.
- Entry / Exit form FRA CH area shall be planned:
  - Laterally using published (EX) points only,
  - Vertically using SID/STAR and route connections published in RAD PAN EUROPE.
    - Except for these connections, there will be no vertical connectivity between FRA and non FRA areas