Family 1.2.1 AMAN/DMAN Integration

Integrated Arrival and Departure management aims at increasing airport and TMA throughput, resilience, and predictability by improved co-ordination between En-Route/Approach, local ATC and airports. DMAN provides optimum departure sequence based on information provided by airport operator, airlines, and ATC.

Similarly, AMAN calculates the optimum arrival flow to the airport. Integration of runway sequence, respecting AMAN and DMAN constraints, allows for optimum utilisation of runway. Where this integration interferes with the 180 nautical miles (or shorter distance as indicated in Family 1.1.1) requirement for extended AMAN, the system has to be tuned to allow as large horizon as possible.

Family 2.2.2 Extended Airport Operations Plan (AOP)

The AOP supports operations at airports with an increased scope and sharing of data between the airport and the Network Manager, building upon the airport collaborative decision making (A-CDM) supporting systems. The AOP is a rolling plan comprising different phases including Planning, Execution and Monitoring and Post-operations, that interacts with a number of services, systems and stakeholders gathering information from several systems.

The extended AOP supports landside and airside operations at airports with an increased scope and sharing of data between the airport and the Network Manager. The extended AOP is the fundamental tool supporting four operational services by improving the overall operational efficiency and increasing resilience of the airport and the network to resist disruptions such as but not limited to, adverse weather conditions, closure of a runway, security alerts.

Family 3.2.2 Enhanced Free Route Airspace operations

This Family addresses the following three elements: Final FRA implementation, Cross-border FRA implementation, and FRA connectivity with TMAs.

The Final FRA implementation will eliminate the structural limitations that are permissible for Initial FRA in terms of timing limitations (night FRA, weekend FRA, seasonal FRA) and lateral and vertical limitations.

Cross-border FRA operations provide further benefits of the FRA concept to Airspace Users. Cross-border FRA must be implemented with at least one neighbouring State. However, it should be considered by the implementing ANSPs, that maximum benefits for airspace users in terms of time, fuel and CO2 emissions savings will be achieved when cross-border FRA is implemented among all neighbouring states from the lowest mutual flight level upwards.

Family 4.2.2 Initial AOP/NOP Information Sharing

The AOP is a single, common, and collaboratively agreed rolling plan available to all airport stakeholders whose purpose is to provide common situational awareness and to form the basis upon which stakeholder decisions relating to process optimisation can be made. The AOP can be implemented in two steps: Initial AOP (iAOP) and Extended AOP, as described in Families 2.2.1 and 2.2.2.

The collaborative NOP is the continuous data exchanges between the Network Manager and operational stakeholder systems in order to cover the entire flight trajectory lifecycle and to reflect priorities as required. In order to improve the European ATM network performance, notably capacity and flight efficiency through exchange, modification and management of trajectory information, there is a clear need for information sharing between the AOP and the NOP. The initial AOP/NOP integration is the technical data layer for the collaborative NOP information sharing.

Family 4.4.1 AOP/NOP integration

As part of the evolution of processes and procedures, new data elements will be shared and also negotiated between AOP and NOP. These will have to be integrated in addition to the information that is shared in the iAOP-NOP exchange (Family 4.2.2). The processes, procedures and underlying concepts for the creation and integration will have to be agreed upon and/or adapted. This will apply to arrival planning information (e.g., TTO/TTA via API) as well as departure information (e.g., P-DPI based on airport capacity information) and enhanced management of capacities (e.g., diversion capabilities).

Family 5.3.1 Aeronautical Information Exchange

The aim of this Family is upgrading or implementing systems to support the Aeronautical Information Exchange as a service provider and/or service consumer. The services shall be deployed in accordance with the SWIM (System Wide Information Management) requirements. The following Aeronautical Information exchange services are to be implemented by operational stakeholders:

Services in support of Airspace Management and Advanced Flexible Use of Airspace
ASM Level 1 establishes airspace structures and defines their conditions of use, it includes the exchange of long-term airspace planning e.g., major exercises and events. ASM Level 2 deals with the pre-tactical reservation of the airspace structures. ASM Level 3 deals with the tactical activation and deactivation of the airspace structures.

Aeronautical Information Feature Service
The Aeronautical Information Feature Service provides on-request aeronautical information features as a data service. It allows the query and retrieval of aeronautical data based on optional filters that may include feature type, feature name and spatial, temporal and logical operators. Airspace users are not mandated by CP1 in AF5 but are recommended to implement an interface that consumes the information provided by the service and to use the information in daily operations.

Aerodrome Mapping Service
The Aerodrome Mapping Service provides on-request airport layout features and maps as a data service. The aim of the service is to deliver Aerodrome digital maps to operational stakeholders.

Digital NOTAM Service
The Digital NOTAM service provides event (Digital NOTAM) information as a data service. The service enables dynamic data sharing of aeronautical information updates, and to propose them for Digital NOTAM processing.

Family 5.6.1 Flight Information Exchange

Actual achievement of the objectives set forth in AF1 to AF4 requires the capability to effectively share information on individual flights and perform collaborative decision-making processes among all actors concerned with the operation of a flight. Such a CDM environment requires novel and improved technology that enables flawless exchange of large volumes of flight-related information all along the flight lifecycle while safeguarding data consistency and stakeholders' access (i.e., information is available at the right time, in the right way to the appropriate CDM participant).

This Family addresses the implementation of the FF-ICE (Flight and Flow Information for a Collaborative Environment) Release 1 (FF-ICE/R1) services over SWIM that are required to exchange pre-departure flight information. Service implementations must be compliant with the applicable version of the FIXM (Flight Information Exchange Model) standard. Stakeholders' compliance with FF-ICE/R1 provisions provides additional support for the achievement of the objectives stated in AF1 to AF4.

This Family also addresses the deployment of SWIM services to support A-CDM, with specific regard to the exchange of departure information between the Network Manager (NM) and the airports (Departure Planning Information) and the publication of flight update information.