Free Routes Airspace (FRA) Design Guidelines

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Abstract

The Document further clarifies and details provisions and requirements for Free Route Airspace (FRA) design described in the ERNIP Part 1, Chapter 6, Section 6.5 and includes guidelines on Free Route Airspace (FRA) design.

This Document guides States in FRA design; in the way different components shall be defined and published and how FRA shall be implemented ensuring a harmonized Network approach.

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1 General Provisions

1.1. The Document further clarifies and details provisions and requirements for Free Route Airspace (FRA) design described in ERNIP Part 1, Chapter 6, Section 6.5.

1.2. This Document includes guidelines on Free Route Airspace (FRA) design.

1.3. This Document guides States in FRA design; in the way different components shall be defined and published and how FRA shall be implemented ensuring a harmonized Network approach.

1.4. The Network Manager may use new abbreviations, terms or definitions appearing in this Document, which are different from ICAO for the purposes described. All examples given in this Document shall be considered as fictitious.

1.5. The Document is property of the Network Manager.
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2 Establishment of a significant point in FRA

2.1 FRA Horizontal Entry Point (E)

2.1.1. A FRA (E) point is a published significant point (5LNC or NAVAID) on the horizontal boundary of the Free Route Airspace from which FRA operations are allowed.

2.1.2. A FRA (E) point should be located exactly on the horizontal boundary of the relevant FRA area. In exceptional circumstances, only when an airspace design solution cannot be found, the FRA (E) point can be located inside or outside that FRA area within certain limits and after appropriate coordination with EUROCONTROL NM.

2.1.3. If the proposed location of a particular FRA (E) point cannot be on a relevant FRA area boundary:
   a) A new significant point over that boundary should be established and referenced as a FRA (E); or
   b) Adaptation of the FRA area boundary via a FRA (E) point should be considered in order to reduce to a minimum the existence of inside/outside FRA (E) points.

2.1.4. In cross-border FRA operations, a FRA (E) point should be changed to a FRA (I), where and when it is required depending on the nature of traffic flows. There is no requirement that this FRA (I) point should be used as mandatory for flight planning unless explicitly stated in the RAD.

2.1.5. The FRA relevance of such a point is published in AIP ENR 4.1 / ENR 4.4 either in the Column “Remarks” as a FRA (E) or in a new Column “FRA relevance” as (E).

2.1.6. When required, specific information with respect to a FRA (E) point is published in the AIP referring to the:
   a) Vertical FL band of a FRA (E) point, if different inside the FRA area from general FRA vertical limits (e.g. a “balcony” in the FRA area definition);

---

**Figure 1**: Example of a different FL band of a FRA (E) point
b) FLOS over a relevant FRA (E) point (see also Chapter 4):

- The “External” AIP FLOS, regardless of whether being published in ENR 1.7 or ENR 4.1 / ENR 4.4, shall be fully compatible with the:
  - “Internal” ATC FLOS in LoAs; and
  - “External” AIP FLOS of adjacent FRA area/s;

Notes:
1. The term “Internal” FLOS refers to the Flight Allocation (direction of cruising levels) as defined in the Common format Letter of Agreement between Air Traffic Services Units, Annex D. Procedures for Coordination, Chapter D.2 ATS Routes, Coordination Points and Level Allocation and/or Chapter D.3 Special Procedures. It is named “Internal” as in majority of cases this FLOS is known only by the relevant ATS Units.

2. The term “External” FLOS refers to the direction of cruising levels over the FRA significant points as published in State AIP in accordance with ERNIP Part 1, Chapter 6. It is named “External” as this FLOS is published in AIP and is known by all Operational Stakeholders.

- As it is a “unidirectional” FRA point, if there is no difference in FLOS from ENR 1.7 additional AIP publication is not required.

  Such action is not recommended in order to avoid incoherent publication with all other FRA boundary significant points from ENR 4.1 / ENR 4.4. In the case of non-publication, airspace users shall refer to ENR 1.7 and ENR 4.1 / ENR 4.4 for FLOS reference, while with publication in ENR 4.1 / ENR 4.4 there will be a single source of the relevant data.

- Change of relevance from FRA (E) point to FRA (I) point during defined periods mainly in cross-border FRA. Unless it is a mandatory FRA (I) point in this cross-border FRA there is no requirement for FLOS publication in AIP.

2.1.7. The RAD may describe other more specific flow conditions by using a FRA (E) point.

2.2 FRA Horizontal Exit Point (X)

2.2.1. A FRA (X) point is a published significant point (5LNC or NAVAID) on the horizontal boundary of the Free Route Airspace to which FRA operations are allowed.

2.2.2. A FRA (X) point should be located exactly on the horizontal boundary of the relevant FRA area. In exceptional circumstances, only when an airspace design solution cannot be found the FRA (X) point can be located inside or outside the FRA area within certain limits and after appropriate coordination with EUROCONTROL NM.

2.2.3. If the proposed location of a particular FRA (X) point cannot be on a relevant FRA area boundary:

  a) A new significant point over that boundary should be established and referenced as a FRA (X); or
  b) Adaptation of the FRA area boundary, via that FRA (X) point should be considered, in order to reduce to a minimum the existence of inside/outside FRA (X) points.

2.2.4. In cross-border FRA operations, a FRA (X) point should be changed to a FRA (I), where and when it is required depending on the nature of the traffic flows. There is no requirement that this FRA (I) point should be used as mandatory point for flight planning unless explicitly stated in the RAD.

2.2.5. The FRA relevance of such a point is publish in AIP ENR 4.1 / ENR 4.4 either in the Column “Remarks” as FRA (X) or in a new Column “FRA relevance” as (X).
2.2.6. When required, specific information with respect to a FRA (X) point is published in the AIP referring to:

a) Vertical FL band of a FRA (X) point, if different inside the FRA area from general FRA vertical limits (e.g. a “balcony” in the FRA area definition);

b) FLOS over a relevant FRA (X) point (see also Chapter 4):
   - The “External” AIP FLOS, regardless of whether being published in ENR 1.7 or ENR 4.1 / ENR 4.4, shall be fully compatible with the:
     - “Internal” ATC FLOS in LoAs and
     - “External” AIP FLOS of adjacent FRA area/s;
   Notes:
   1. The term “Internal” FLOS refers to the Flight Allocation (direction of cruising levels) as defined in the Common format Letter of Agreement between Air Traffic Services Units, Annex D. Procedures for Coordination, Chapter D.2 ATS Routes, Coordination Points and Level Allocation and/or Chapter D.3 Special Procedures. It is named “Internal” as in majority of cases this FLOS is known only by the relevant ATS Units.
   2. The term “External” FLOS refers to the direction of cruising levels over the FRA significant points as published in State AIP in accordance with ERNIP Part 1, Chapter 6. It is named “External” as this FLOS is published in AIP and is known by all Operational Stakeholders.
   - As it is a “unidirectional” FRA point, if there is no difference in FLOS from ENR 1.7 additional AIP publication is not required.
   Such action is not recommended in order to avoid incoherent publication with all other FRA boundary significant points from ENR 4.1 / ENR 4.4. In case of non-publication, airspace users shall refer to ENR 1.7 and ENR 4.1 / ENR 4.4 for FLOS reference while with publication in ENR 4.1 / ENR 4.4 there will be a single source of the relevant data.

2.2.7. The RAD may describe other more specific flow conditions by using an FRA (X) point.
2.3 Combined FRA Horizontal Entry and FRA Horizontal Exit Point (EX)

2.3.1. A FRA (EX) point is a published significant point (5LNC or NAVAID) on the horizontal boundary of the Free Route Airspace from which and to which FRA operations are allowed.

2.3.2. A FRA (EX) point should be located exactly on the horizontal boundary of the relevant FRA area. In exceptional circumstances, only when an airspace design solution cannot be found the FRA (EX) point can be located inside or outside that FRA area within certain limits and after appropriate coordination with EUROCONTROL NM.

2.3.3. If proposed location of a particular FRA (EX) point cannot be on a relevant FRA area boundary:
   a) A new significant point over that boundary should be established and referenced as a FRA (EX); or
   b) Adaptation of the FRA area boundary via that FRA (EX) point should be considered in order to reduce to a minimum the existence of inside/outside FRA (EX) points.

2.3.4. In cross-border FRA operations, a FRA (EX) point should be changed to a FRA (I), where and when it is required depending on the nature of traffic flows. There is no requirement that this FRA (I) point should be used as mandatory point for flight planning unless explicitly stated in the RAD.

2.3.5. The FRA relevance of such a point is published in AIP ENR 4.1 / ENR 4.4 either in the Column “Remarks” as FRA (EX) or in a new Column “FRA relevance” as (EX).

2.3.6. When required, specific information with respect to a FRA (EX) point is published in the AIP referring to:
   a) Vertical FL band of a FRA (EX) point, if different inside the FRA area from general FRA vertical limits (e.g. a “balcony” in the FRA area definition);

   b) FLOS over a relevant FRA (EX) point (see also Chapter 4):
      - The “External” AIP FLOS, regardless of whether it is published in ENR 1.7 or ENR 4.1 / ENR 4.4, shall be fully compatible with the:
        o “Internal” ATC FLOS in LoAs; and
        o “External” AIP FLOS of adjacent FRA area/s;

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Figure 3: Example of a different FL band of a FRA (EX) point
Notes:
1. The term “Internal” FLOS refers to the Flight Allocation (direction of cruising levels) as defined in the Common format Letter of Agreement between Air Traffic Services Units, Annex D. Procedures for Coordination, Chapter D.2 ATS Routes, Coordination Points and Level Allocation and/or Chapter D.3 Special Procedures. It is named “Internal” as in majority of cases this FLOS is known only by the relevant ATS Units.
2. The term “External” FLOS refers to the direction of cruising levels over the FRA significant points as published in State AIP in accordance with ERNIP Part 1, Chapter 6. It is named “External” as this FLOS is published in AIP and is known by all Operational Stakeholders.
   - Despite that, it is a “bi-directional” FRA point, if there is no difference in FLOS from ENR 1.7 additional AIP publication is not required. Such action is not recommended in order to avoid incoherent publication with all other FRA boundary significant points from ENR 4.1 / ENR 4.4. In case of non-publication, airspace users shall refer to ENR 1.7 and ENR 4.1 / ENR 4.4 for FLOS reference while with publication in ENR 4.1 / ENR 4.4 there will be a single source of the relevant data.
   c) Change of relevance from a FRA (EX) point to a FRA (I) point during defined periods mainly in cross-border FRA. Unless it is a mandatory FRA (I) point in this cross-border FRA there is no requirement for FLOS publication in the AIP.

2.3.7. For each FRA area any significant point defined as a FRA (EX) is eligible for Entry and Exit if:
   a) Entry is performed:
      - from outside of that FRA area; and
      - towards a:
        o FRA relevant significant point (I or A or D or AD) located inside that FRA area; or
        o FRA (X) point for that FRA area.
   and
   b) Exit is performed:
      - from inside of that FRA area; and
      - towards a FRA relevant significant point inside the adjacent FRA area; or
      - towards a significant point inside the adjacent non-FRA area; or
      - via an ATS route located inside the adjacent non-FRA area.

These provisions define that none of the published FRA (EX) points shall be used as FRA (I) point. In the red example below, point JJJJJ is not eligible for Entry and Exit as a flight is not passing the FRA1 / FRA2 boundary.

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Figure 4 : Example of non-eligibility (red) and eligibility (purple) of FRA (EX) point
2.3.8. The RAD may describe other more specific flow conditions by using a FRA (EX) point.

2.4 **FRA Arrival Connecting Point (A)**

2.4.1. A FRA (A) point is a published significant point (5LNC or NAVAID) to which FRA operations are allowed for arriving traffic to specific aerodromes.

2.4.2. A FRA (A) point is not only referenced to the FRA area or State to which the point is actually located. A FRA (A) point can be defined with reference to an aerodrome located in an adjacent FRA or non-FRA area.

2.4.3. In the vertical dimension, theoretically a FRA (A) point can be considered as a FRA (X) point as any arriving flight exists vertically in the FRA area but the FRA (A) point is not marked as such.

2.4.4. The FRA relevance of such a point is published in AIP ENR 4.1 / ENR 4.4 either in the Column “Remarks” as FRA (A) or in a new Column “FRA relevance” as (A).

2.4.5. When required, specific information with respect to a FRA (A) point is published in the AIP referring to:

a) **FLOS over relevant FRA (A) point** (see also Chapter 4):
   - The “External” AIP FLOS, regardless if published in ENR 1.7 or ENR 4.1 / ENR 4.4, shall be fully compatible with the:
     - “Internal” ATC FLOS in LoAs; and
     - “External” AIP FLOS of adjacent FRA area/s;

   **Notes:**
   1. The term “Internal” FLOS refers to the Flight Allocation (direction of cruising levels) as defined in the Common format Letter of Agreement between Air Traffic Services Units, Annex D. Procedures for Coordination, Chapter D.2 ATS Routes, Coordination Points and Level Allocation and/or Chapter D.3 Special Procedures. It is named “Internal” as in majority of cases this FLOS is known only by the relevant ATS Units.
   2. The term “External” FLOS refers to the direction of cruising levels over the FRA significant points as published in State AIP in accordance with ERNIP Part 1, Chapter 6. It is named “External” as this FLOS is published in AIP and is known by all Operational Stakeholders.

   - As it is a “unidirectional” FRA point, if there is no difference in FLOS from ENR 1.7 additional AIP publication is not required.
     Such action is not recommended in order to avoid incoherent publication with all other FRA boundary significant points from ENR 4.1 / ENR 4.4. In case of non-publication, airspace users shall refer to ENR 1.7 and ENR 4.1 / ENR 4.4 for FLOS reference, while with publication in ENR 4.1 / ENR 4.4, there will be a single source of the relevant data.

b) Aerodrome/s related to the appropriate FRA (A) point.

2.4.6. A FRA Arrival Connecting Point, marked as FRA (A), depending on the lower limit of the FRA area or State requirements, may be established as follows:

a) For an aerodrome with designated STARs:
   - At a significant point located on CTR / TMA boundary.
     This FRA (A) point is collocate with the first point of the STAR.

     **Note:** In exceptional cases, the first point of the STAR might not be located on CTR / TMA boundary but this significant point might be established as FRA (A) point based on provision above.
At a significant point located outside the relevant CTR / TMA;
This FRA (A) point is link via specifically defined (mandatory) FRA Arrival Connecting Route with the first point of the STAR.

**Figure 5:** Example of a FRA (A) point location for aerodrome with STARs

b) For an aerodrome without a designated STAR:
- At significant point located on CTR / TMA boundary.
  This FRA (A) point is describe in the RAD as connecting point for that aerodrome.
- At significant point located outside relevant CTR / TMA;
  This FRA (A) point is link:
  o via specifically defined (mandatory) FRA Arrival Connecting Route with FRA (I) point in close proximity to that aerodrome and described in the RAD as a connecting point for that aerodrome; or
  o directly (DCT) to the aerodrome, if this FRA (A) point is described in the RAD as a connecting point for that aerodrome.

**Figure 6:** Example of a FRA (A) point location for aerodrome without STARs

2.4.7. The RAD may describe other more specific flow conditions by using a FRA (A) point e.g. use for arrivals to specific aerodromes, use for arrivals only via specific FRA significant points.
2.5 **FRA Departure Connecting Point (D)**

2.5.1. A FRA (D) point is a published significant point (5LNC or NAVAID) from which FRA operations are allowed for departing traffic from specific aerodromes.

2.5.2. A FRA (D) point is not only referenced to the FRA area or State to where the point is actually located. A FRA (D) point can be defined with reference to aerodromes located in an adjacent FRA or non-FRA area.

2.5.3. In the vertical dimension, theoretically a FRA (D) point can be consider as FRA (E) point as any departing flight enters vertically the FRA area but the FRA (D) point is not marked as such.

2.5.4. The FRA relevance of such a point is published in AIP ENR 4.1 / ENR 4.4 either in the Column “Remarks” as FRA (D) or in the new Column “FRA relevance” as (D).

2.5.5. When required, specific information with respect to a FRA (D) point is published in the AIP referring to:

a) **FLOS over relevant FRA (D) point (see also Chapter 4):**

- The “External” AIP FLOS, regardless if published in ENR 1.7 or ENR 4.1 / ENR 4.4, shall be fully compatible with the:
  - “Internal” ATC FLOS in LoAs; and
  - “External” AIP FLOS of adjacent FRA area/s;

**Notes:**
1. The term “Internal” FLOS refers to the Flight Allocation (direction of cruising levels) as defined in the Common format Letter of Agreement between Air Traffic Services Units, Annex D. Procedures for Coordination, Chapter D.2 ATS Routes, Coordination Points and Level Allocation and/or Chapter D.3 Special Procedures. It is named “Internal” as in majority of cases this FLOS is known only by the relevant ATS Units.
2. The term “External” FLOS refers to the direction of cruising levels over the FRA significant points as published in State AIP in accordance with ERNIP Part 1. Chapter 6. It is named “External” as this FLOS is published in AIP and is known by all Operational Stakeholders.
- As it is a “unidirectional” FRA point, if there is no difference in FLOS from ENR 1.7 additional AIP publication is not required.
  Such action is not recommended in order to avoid incoherent publication with all other FRA boundary significant points from ENR 4.1 / ENR 4.4. In case of non-publication, airspace users shall refer to ENR 1.7 and ENR 4.1 / ENR 4.4 for FLOS reference, while with publication in ENR 4.1 / ENR 4.4, there will be a single source of the relevant data;
- Aerodrome/s related to the appropriate FRA (D) point.

2.5.6. A FRA Departure Connecting Point, marked as FRA (D), depending on the lower limit of the FRA area or State requirements, might be established as follows:

a) **For aerodromes with designated SIDs:***

- At significant point located on the CTR / TMA boundary.  
  This FRA (D) point is colocate with the last point of the SID.
  **Note:** In exceptional cases, the last point of the SID might not be located on CTR / TMA boundary but this significant point might be established as FRA (D) point based on provision above.
- At a significant point located outside the relevant CTR / TMA;  
  This FRA (D) point is link via specifically defined (mandatory) FRA Departure Connecting Route with the last point of the SID.
b) For aerodromes without designated SIDs:
   - At significant point located on the CTR / TMA boundary.
     This FRA (D) point is described in the RAD as connecting point for that aerodrome.
   - At significant point located outside the relevant CTR / TMA;
     This FRA (D) point is link:
     o via specifically defined (mandatory) FRA Departure Connecting Route with FRA (I) point in close proximity to that aerodrome and described in the RAD as connecting point for that aerodrome; or
     o directly (DCT) from the aerodrome, if this FRA (D) point is described in the RAD as connecting point for that aerodrome.

2.5.7. The RAD may describe other more specific flow conditions by using the FRA (D) point e.g. use for departures from specific aerodromes, use for departures only via specific FRA significant points, are described in the RAD.
2.6 Combined FRA Arrival Connecting and FRA Departure Connecting Point (AD)

2.6.1. A FRA (AD) point is a published significant point (5LNC or NAVAID) to/from which FRA operations are allowed for arriving/departing traffic to/from specific aerodromes.

2.6.2. A FRA (AD) point is not only referenced to the FRA area or State where the point is actually located. A FRA (AD) point can be defined with reference to aerodromes located in an adjacent FRA or non-FRA area.

2.6.3. In the vertical dimension, theoretically the FRA (AD) point can be considered as a FRA (EX) point as any arriving/departing flight exists/enters vertically the FRA area but the FRA (AD) point is not marked as such.

2.6.4. The FRA relevance of such a point is published in AIP ENR 4.1 / ENR 4.4 either in the Column “Remarks” as FRA (AD) or in the new Column “FRA relevance” as (AD).

2.6.5. When required, specific information with respect to a FRA (AD) point is published in the AIP referring to:

a) FLOS over a relevant FRA (AD) point (see also Chapter 4):
   • The “External” AIP FLOS, regardless if published in ENR 1.7 or ENR 4.1 / ENR 4.4, shall be fully compatible with the:
     o “Internal” ATC FLOS in LoAs; and
     o “External” AIP FLOS of adjacent FRA area/s;

Notes:
1. The term “Internal” FLOS refers to the Flight Allocation (direction of cruising levels) as defined in the Common format Letter of Agreement between Air Traffic Services Units, Annex D. Procedures for Coordination, Chapter D.2 ATS Routes, Coordination Points and Level Allocation and/or Chapter D.3 Special Procedures. It is named “Internal” as in majority of cases this FLOS is known only by the relevant ATS Units.
2. The term “External” FLOS refers to the direction of cruising levels over the FRA significant points as published in State AIP in accordance with ERNIP Part 1, Chapter 6. It is named “External” as this FLOS is published in AIP and is known by all Operational Stakeholders.
   • Despite that, it is a “bi-directional” FRA point, if there is no difference in FLOS from ENR 1.7 additional AIP publication is not required.
     Such action is not recommended in order to avoid incoherent publication with all other FRA boundary significant points from ENR 4.1 / ENR 4.4. In case of non-publication airspace users shall refer to ENR 1.7 and ENR 4.1 / ENR 4.4 for FLOS reference while with publication in ENR 4.1 / ENR 4.4 there will be a single source of the relevant data;

b) Aerodrome/s related to the appropriate FRA (AD) point.

2.6.6. Combined FRA Arrival / Departure Connecting Point, marked as a FRA (AD), depending on the lower limit of the FRA area or State requirements, may be established as follows:

a) For aerodrome with designated STARs / SIDs (see Figures 5 and 7 above):
   • At significant point located on CTR / TMA boundary.

This FRA (AD) point is collocate with the first / last point of the STAR/SID.
   Note: In exceptional cases, the first / last point of the STAR/SID might not be located on CTR / TMA boundary but this significant point might be established as FRA (AD) point based on provision above.

   • At a significant point located outside the relevant CTR / TMA;

This FRA (AD) point is link via specifically defined (mandatory) FRA Arrival / Departure Connecting Route with the first / last point of the STAR / SID.
b) For an aerodrome without designated STARs/SIDs (see Figures 6 and 8 above):

- At a significant point located on the CTR / TMA boundary,
  *This FRA (AD) point is describe in the RAD as connecting point for that aerodrome.*
- At a significant point located outside relevant CTR / TMA;
  *This FRA (AD) point is link:
  - via specifically defined (mandatory) FRA Arrival / Departure Connecting Route with FRA (I) point in close proximity to that aerodrome and described in the RAD as connecting point for that aerodrome;
  - or
  - directly (DCT) to/from the aerodrome, if this FRA (AD) point is described in the RAD as connecting point for that aerodrome.

2.6.7. The RAD may describe other more specific flow conditions by using the FRA (AD) point e.g. use for arrivals/departures to/from specific aerodromes, use for arrivals/departures only via specific FRA significant points.

2.7 **FRA Intermediate Point (I)**

2.7.1. A FRA (I) point is a published significant point (5LNC or NAVAID) or unpublished point, defined by geographical coordinates or by bearing and distance via which FRA operations are allowed.

2.7.2. A FRA (I) is located inside the FRA area.

2.7.3. In the vertical dimension, theoretically any FRA (I) point can be considered as a FRA (E) or FRA (X) or FRA (EX) point for any flight entering or existing vertically in the FRA area. None of the FRA (I) points is marked as either FRA (E) or FRA (X) or FRA (EX), as any allowed FRA (I) point could be used to enter or exit FRA area depending on its lower limit.

2.7.4. A FRA (I) point can be used as a point for:

a) Planning of user preferred trajectory;

b) As a point where a change of speed or level, a change of track, or a change of flight rules is planned;

c) Special area avoidance;

d) Transition between FRA and the ATS route network (similar use as FRA (E) or FRA (X) points but not indicated as such).
2.7.5. For avoidance of a special area, there is no mandatory requirement to establish a point for that purpose if the number of existing FRA (I) points is assessed as sufficient to allow flight planning around the area. In the case of the need to create a specific point, it may be defined as a FRA (I) point and can be used in flight planning when the relevant special area is active or not. In order to avoid misinterpretation it is not recommended that such a point be termed as either an “anchor” or “arbitrary” point.

2.7.6. In defining FRA (I) points there is:

a) No mandatory requirement that only a selected number of existing 5LNCs and NAVAIDs shall be used;

For proper and easy flight processing and coding into different systems, the logical way is that all significant points published in AIP ENR 4.1 / ENR 4.4 to be defined as FRA (I) points. Sometimes there is a possibility of flight planning between closely located (for example 3NM) significant points this might be considered as inappropriate. The reason not to allow all significant points as FRA (I) might be to limit some possible FRA flight planning options to avoid possible limitations/restrictions.

b) No mandatory requirement that only “en-route” 5LNCs shall be used.

A “terminal” 5LNCs can also be defined as a FRA (I) point following an assessment that existing FRA (I) points might not be sufficient to allow proper and optimum flight planning options. The use of such points as FRA (I) points is feasible, as the position sensor for performing PBN remains GNSS.

c) No mandatory requirement that only “en-route” NAVAIDs shall be used.

An “aerodrome” NAVAIDs can also be defined as a FRA (I) points following an assessment that existing FRA (I) points might not be sufficient for allowing proper and optimum flight planning options. This is feasible as the position sensor for performing area navigation remains either GNSS or VOR/DME depending on the coverage of the relevant “aerodrome” NAVAID.

2.7.7. The FRA relevance of such points is publish in AIP ENR 4.1 / ENR 4.4 either in the Column “Remarks” as FRA (I) or in the new Column “FRA relevance” as (I).

2.7.8. When required, specific information with respect to FRA (I) point is published in the AIP referring to:

a) Vertical FL band in a FRA (I) point, if different inside the FRA area from general FRA vertical limits (e.g. the “balcony” in FRA area definition):

b) Change of relevance from FRA (E) or FRA (X) or FRA (EX) to FRA (I) during defined periods mainly in cross-border FRA.
2.7.9. The RAD may describe other more specific flow conditions by using a FRA (I) point.

2.8 FRA Significant Points at collocated boundaries

2.8.1. Common boundaries of FRA area and internal non-FRA area CTR / TMA
A significant point (JJJJJ) located at such a boundary shall be:

a) Established as a FRA Arrival Connecting point or a FRA Departure Connecting point or a combined FRA Arrival / Departure Connecting point; and

b) Defined and published as (XA) or (EXA) or (ED) or (EXD) or (EXAD) by this FRA area State with proper indication of related aerodromes.

![Diagram of FRA Significant Points at collocated boundaries](image)

**Figure 11:** Example of a "border" FRA significant point designation inside same FRA area

2.8.2. Common boundaries of a FRA area, internal non-FRA area CTR / TMA and adjacent FRA area
A significant point (JJJJJ) located at such a boundary shall be:

a) Established as a FRA Arrival Connecting point or a FRA Departure Connecting point or a combined FRA Arrival / Departure Connecting point; and

b) Be defined and published as:
   - (X) or (E) or (EX) by adjacent FRA area State; and
   - (A) or (D) or (AD), respectively by State where CTR / TMA is located with proper indication of related aerodromes. A special reference that this FRA significant point is related to adjacent FRA area shall also be published.

![Diagram of FRA Significant Points at collocated boundaries](image)

**Figure 12:** Example of a "border" FRA significant point designation between different FRA areas - Option 1
(XA) or (EXA) or (ED) or (EXD) or (EXAD) by an adjacent FRA area or State with a proper indication of related aerodromes within the other State. The State where CTR / TMA is located will not publish the FRA relevance for such FRA significant point.

**Figure 13:** Example of a “border” FRA significant point designation between different FRA areas - Option 2

2.8.3. Common boundaries of a FRA area, internal non-FRA area CTR / TMA and adjacent non-FRA area

A significant point (SSSSS) located at such boundary:

a) Shall not be established as FRA Arrival Connecting point or FRA Departure Connecting point or combined FRA Arrival / Departure Connecting point; and

b) Shall be defined and published as (X) or (E) or (EX) but not as (XA) or (ED) or (EXAD) by the FRA area State.

**Figure 14:** Example of a “border” FRA significant point designation between FRA area and non-FRA area
2.8.4. Common boundaries of a FRA area, internal FRA area CTR / TMA and adjacent non-FRA area

A significant point (SSSSS) located at such boundary and used for en-route FRA operations inside the FRA area:

a) Shall not be established as FRA Arrival Connecting point or FRA Departure Connecting point or combined FRA Arrival / Departure Connecting point; and

b) Shall be defined and published as (X) or (E) or (EX) but not as (XA) or (ED) or (EXAD) by the FRA area State.

Note: The definition of significant point TTTTT as FRA relevant is the same as in provisions of paragraph 2.8.1.

Figure 15: Example of a “border” FRA significant point designation between/inside FRA area and non-FRA area

A significant point (SSSSS) located at such boundary and not used for en-route FRA operations inside the FRA area:

a) Shall not be defined and published as FRA relevant point by the FRA area State.

Note: The definition of significant point TTTTT as FRA relevant is the same as in provisions of paragraph 2.8.1.

Figure 16: Example of a “border” FRA significant point designation between/inside FRA area and non-FRA area
2.9  FRA Significant Points Relevance - Combinations

2.9.1. Theoretically, any unique combination of letter/s can be publish in accordance with provisions in ERNIP Part 1.

2.9.2. In a practical FRA area definition, any five-letter combination (for example EXADI) is only possible when FRA (EX) point is located inside the FRA area.

2.10  NAVAIDs as FRA Significant Points

2.10.1. In accordance with ICAO Annex 11, the two-letter or three-letter coded designators for significant points marked by the site of a radio navigation aid are not “unique” worldwide.

2.10.2. Any NAVAID position can be used as a FRA significant point.

2.10.3. Following the implementations of cross-border FRAs and their stepped expansions relevant ATC systems might encounter problems with flight plan processing due to duplicated NAVAIDs as FRA significant points.

2.10.4. In order to avoid such potential problems and based on a network agreement:
   a) States should not define relevant NAVAID as FRA significant point; or
   b) States should co-locate the NAVAID position with “unique” 5LNC.
3 Fixed ATS Route Network in FRA

3.1 General Issues

3.1.1. Historically, ATS routes have been the preferred tools to allow the safe and efficient management of high density air traffic and to facilitate the early detection of possible conflicts and their resolution. Based on ICAO provisions, there is no particular requirement for ATS routes to co-exist in Free Route Airspace where the Air Traffic Services (ATS) can be assured in a safe, efficient and sustainable manner.

3.1.2. States shall decide to maintain or remove the fixed ATS route network during Free Route Airspace operations and all details shall be published in AIS publications. There is no mandatory requirement that the fixed ATS route network be either maintained or removed when FRA is implemented.

3.2 FRA with fixed ATS route network

3.2.1. A FRA operations and the use of the fixed ATS route network can be allowed simultaneously either inside the entire FRA area or in certain FIR/s within the same FRA area. FRA operations can provide additional flight planning options outside the scope of the fixed ATS route network e.g. flight planning outside the ATS route vertical limits, flight planning opposite of unidirectional ATS route, etc.

3.2.2. The fixed ATS route network can be maintained for flight planning purposes:
   a) Within the relevant FRA area to ensure smooth vertical transition between FRA and non-FRA area;
   b) During the FRA applicability period to ensure smooth lateral transition between FRA and non-FRA period;
   c) For airspace users that would rather file their flight plans the traditional way;
   d) For airspace users that are not eligible for FRA operation.

3.2.3. In FRA areas where the fixed ATS route network is maintained:
   a) There shall not be a specific requirement for flight planning by using only FRA flight planning procedures;
   b) Parallel development of FRA and ATS routes cannot be considered as mandatory. Establishment of a new FRA significant point shall not be supported by establishment of ATS route/s as all relevant new FRA options cannot be covered by ATS routes.

3.3 FRA without fixed ATS route network

3.3.1. The fixed ATS route network might be suspended or completely removed either inside the entire FRA area or in certain FIR/s within the same FRA area.

3.3.2. Removal of the fixed ATS route network within the vertical dimensions of the FRA area shall be subject of detailed discussions and evaluations between States / FABs / ANSPs and the NM.
3.3.3. The following non-exhaustive list of actions shall be consider before deciding on fixed ATS route network removal:

   a) Creation of comprehensive list of ATS routes in FRA area to be removed;
   b) In case of different FRA lower limit and CTR / TMA upper limit (“mushrooms” existence of CTRs / TMAs within FRA area) - Creation of comprehensive list of all ATS routes passing via relevant CTRs / TMAs with their lower and upper limits;
   c) Analyses and assessment of the way ATS routes will be withdrawn from State AIP;
   d) Analyses and assessment of each ATS route passing via relevant CTRs / TMAs and requirements for the establishment of a possible new 5LNCs on the CTR / TMA boundaries in support of ATS routes withdrawal and proper AIP publication;
   e) Analyses and assessment of possible route designators to be retained or changed.
      The removal of ATS routes outside CTRs / TMAs might lead to several route designator breaks inside the relevant FRA area. This is not acceptable as the remaining ATS route segments inside CTRs / TMAs are considered as different ATS routes and will require new route designators;
   f) Analyses and assessment of the positive and negative influence on flight planning systems.
      Theoretically, in non-H24 FRA area during the FRA applicability the transition from FRA to non-FRA applicability period shall be done exactly at defined times. Practically in most of the automated systems such swap is difficult and cannot be done smoothly without time overlapping. In such case, certain time buffers shall be considered allowing overlapping of the FRA and ATS route availability periods.

3.3.4. Where considered feasible, to ensure proper vertical connectivity, the upper limit of the underlying fixed ATS route network can be overlapped with FRA at certain levels.
4 Flight Level Orientation Scheme (FLOS) in FRA

4.1 General Issues

4.2.1. As FRA in principle is classified as Class C airspace, with certain agreed exemptions, a flight operating in level flight in such controlled airspace shall be flown at a cruising level, or, if authorized to employ cruise climb techniques, between two levels or above a level, selected from the tables of cruising levels in ICAO Annex 2, Appendix 3, a).

4.2.2. The cruising levels are defined by the projection on the earth’s surface of the path of an aircraft known as track. The direction of that path is expressed usually in degrees from North (true, magnetic or grid).

4.2.3. When expressing the direction of cruising levels the terms ODD and EVEN are used with the following meaning:
   a) “ODD” are considered those FLs which are within magnetic track margin of either 000° - 179° (“East-West FLOS”) or 090° - 269° (“North-South FLOS”) (FL010, FL030 …, FL310, FL330 …FL410…etc.);
   b) “EVEN” are considered those FLs which are within magnetic track margin of either 180° - 359° (“East-West FLOS”) or 270° - 089° (“North-South FLOS”) (FL020, FL040 …, FL300, FL320 …FL430…etc.).

4.2.4. At a strategic phase, the exemption from above rules is applicable when specified by the appropriate ATS authority in Aeronautical Information Publications.

4.2 FLOS inside single FRA area

4.2.1. Inside a single FRA area (within a State or FIR/UIR or CTA/UTA) as there are no fixed ATS route network and fixed DCT segments between the FRA significant points the direction of cruising levels to be used shall be in accordance with AIP ENR 1.7.

   Any exemption from these rules shall be published in State AIP and relevant provisions presented below shall be described in LoAs, when necessary.

   FRA boundary points requirements

4.2.2. At single FRA area boundary, the direction of cruising levels for entry over FRA (E) / FRA (EX) point and for exit over FRA (X) / FRA (EX) point shall be defined:
   • Assuring proper and harmonized ATC procedures; and
   • In accordance with FLOS of adjacent State.

4.2.3. FRA area - adjacent non-FRA area boundary
   The FLOS inside single FRA area shall follow the FLOS along the fixed ATS route network of adjacent non-FRA area. In such case, the FLOS defined in AIP ENR 1.7 of the FRA area State might not be fully applicable and relevant exceptions shall be announced.

4.2.4. FRA area - adjacent FRA area boundary
   For the FLOS inside single FRA area with adjacent FRA area a simple ODD / EVEN FLs rule, especially on FRA (EX) points shall be established.
All flights from FRA1 to FRA2 shall be on ODD FLs and all flights from FRA2 to FRA1 shall be on EVEN FLs aiming that the same ATC unit / Control Sector control the aircraft on the same cruising level.

Figure 17: Example of a FRA boundary FLOS inside adjacent FRA areas over bi-directional FRA significant point

4.2.5. In the establishment of the FRA boundary FLOS requirements appropriate coordination shall be performed and agreement reached between States / ANSPs concerned. Contradicting FLOS on both sides of the common boundary shall be avoided and can be considered as unacceptable.

Requirement for FL change inside a FRA area

4.2.6. In relevant FRA area, there might be a requirement to change the direction of cruising level between FRA (E) / FRA (EX) and FRA (X) / FRA (EX) points in order to comply with the FLOS of adjacent FRA or non-FRA area. Such a FL change shall be planned inside that FRA area over a defined FRA (I) point.

4.2.7. In complex airspace where State / ANSP decides to implement FRA on a structurally limited basis such FRA (I) point can be defined as mandatory for FL change. In all other FRA implementations there might not be a limitation where and when the FL change shall be performed.

No requirement for FL change inside a FRA area

4.2.8. In relevant FRA area, there might not be a requirement to change the direction of cruising level between FRA (E) / FRA (EX) and FRA (X) / FRA (EX) points and maintain the “entry” direction of cruising level along all DCT segments.

4.2.9. During the flight, there might be one or several DCT segments with such magnetic tracks where the direction of cruising level, theoretically is required to be changed one or several times in accordance with State ENR 1.7 FLOS (“East-West” or “North-South”).

An aircraft flying at ODD FL / EVEN FL and continuing along DCT segment with magnetic track on or near 180° and 360° or 090° and 270° also needs to change the direction of cruising level to EVEN FL / ODD FL, respectively. The same aircraft might further continue along a DCT segment with a magnetic track where a swap back to the original or other ODD FL / EVEN FL is required.
In such cases and along these DCT segments, the “entry” direction of cruising levels shall be maintained in order to ensure that the FL changes will not lead to opposite aircraft flying on the same cruising level.

**Figure 18:** Example of a specific “East-West” FLOS requirement inside single FRA area

**Figure 19:** Example of a specific “North-South” FLOS requirement inside single FRA area

### 4.3 FLOS inside cross-border FRA area

#### 4.3.1. In a cross-border FRA area, provisions from Chapter 4.2 are valid and require appropriate coordination between States concerned for their harmonised application and coherent publication in State AIPs.

#### 4.3.2. LoAs shall also include proper procedures in case States / ANSPs decide to implement cross-border FRA operations with different FLOS in accordance with State AIP ENR 1.7.

#### 4.3.3. Additionally in cross-border FRA operations as there are no fixed FRA significant points for aircraft transfer, the rules regarding the direction of cruising levels to be used when crossing the FIR / CTA boundary no longer apply.
4.3.4. Inside relevant cross-border FRA area over or near the FIR / CTA boundary a simple ODD / EVEN FL rule shall be established, i.e. all flights from FIR1 / CTA1 to FIR2 / CTA2 shall be on ODD FLs and all flights from FIR2 / CTA2 to FIR1 / CTA1 shall be on EVEN FLs. This is more convenient than the standard ICAO ODD / EVEN FL orientation because:

- Aircraft on the same cruising level are controlled by the same ATC unit / Control Sector;
- Determining the ODD / EVEN FLs for magnetic tracks near 180° and 360° or 090° and 270° could be arbitrary which could lead to opposite aircraft flying on the same cruising level.

![Figure 20](image_url)  
*Example of a FLOS inside cross-border FRA area*

4.4 FLOS requirements publication in State AIP

4.4.1. In order to reflect all of the above FRA FLOS provisions the following text and tables shall be published based on a proposed ERNIP Part 1, FRA AIP Template.

**ENR 1.3**

4.4 Additional FRA Procedures

*Flight Level Orientation Scheme*

Cruising levels shall be planned in accordance with the information provided in the column “Remarks/Usage” in ENR 4.4. The direction of cruising levels (ODD FL or EVEN FL) shall be chosen depending on the direction of cruising level required over the FRA (E), FRA (X) and FRA (EX) points as described in the following tables:

<table>
<thead>
<tr>
<th>Direction of Cruising levels within FRA area - Overflights</th>
<th>FLs over FRA (E)</th>
<th>FLs over FRA (X)</th>
<th>FLs inside FRA area</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVEN ODD</td>
<td>ODD FLs for all DCT segments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ODD EVEN</td>
<td>EVEN FLs for all DCT segments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVEN ODD</td>
<td>A change from EVEN FLs to ODD FLs shall be planned inside FRA area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ODD EVEN</td>
<td>A change from ODD FLs to EVEN FLs shall be planned inside FRA area</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 1: Example of an En-route FLOS*
### FRA Design - Guidelines

#### Direction of Cruising levels within FRA area - Departures

<table>
<thead>
<tr>
<th>FLs over FRA (X)</th>
<th>FLs inside FRA area</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVEN</td>
<td>EVEN FLs for all DCT segments</td>
</tr>
<tr>
<td>ODD</td>
<td>ODD FLs for all DCT segments</td>
</tr>
</tbody>
</table>

Table 2: Example of a DEP FLOS

#### Direction of Cruising levels within FRA area - Arrivals

<table>
<thead>
<tr>
<th>FLs over FRA (E)</th>
<th>FLs inside FRA area</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVEN</td>
<td>EVEN FLs for all DCT segments</td>
</tr>
<tr>
<td>ODD</td>
<td>ODD FLs for all DCT segments</td>
</tr>
</tbody>
</table>

Table 3: Example of an ARR FLOS

Note: ODD is the direction of IFR cruising levels with a magnetic track between 000° and 179° or 269° and 089° while EVEN is the direction of IFR cruising levels with a magnetic track between 180° and 359° or 270° as described in the table of cruising levels in each State AIP ENR 1.7.

Cruising levels shall also be planned in accordance with the Flight Level Orientation Scheme of an adjacent ATS route network and/or FRA.

4.4.2. Explanation of the purpose of the AIP publication

4.4.2.1. Table 1 is applicable in any FRA area (single or cross-border) depending on State/s decision. The expression means that for any flight entering the FRA area at:

   - **a)** EVEN FL and obliged to exit same FRA area at EVEN FL all flight planned DCT segments within that FRA area shall be at EVEN FLs. No ODD FLs allowed to be planned between FRA (E) and FRA (X) points;
   - **b)** ODD FL and obliged to exit same FRA area at ODD FL all flight planned DCT segments within that FRA area shall be at ODD FLs. No EVEN FLs allowed to be planned between FRA (E) and FRA (X) points;
   - **c)** FACE FL and obliged to exit same FRA area at ODD FL a change from EVEN to ODD FLs shall be planned over defined FRA (I) inside the FRA area. No limitation where and when the FL change shall be performed;
   - **d)** ODD FL and obliged to exit same FRA area at EVEN FL a change from ODD to EVEN FLs shall be planned over defined FRA (I) inside the FRA area. No limitation where and when the FL change shall be performed.

4.4.2.2. Table 2 is applicable in any FRA area (single or cross-border) depending on State/s decision. The expression means that for any flight departing from an aerodrome within the FRA area and obliged to exit same FRA area at:

   - **a)** EVEN FL all flight planned DCT segments within that FRA area shall be at EVEN FLs. No ODD FLs allowed to be planned between FRA (D) and FRA (X) points;
   - **b)** ODD FL all flight planned DCT segments within that FRA area shall be at ODD FLs. No EVEN FLs allowed to be planned between FRA (D) and FRA (X) points.

4.4.2.3. Table 3 is applicable in any FRA area (single or cross-border) depending on State/s decision. The expression means that for any flight arriving at an aerodrome within the FRA area and obliged to enter same FRA area at:

   - **a)** EVEN FL all flight planned DCT segments within that FRA area shall be at EVEN FLs. No ODD FLs allowed to be planned between FRA (X) and FRA (A) points;
   - **b)** ODD FL all flight planned DCT segments within that FRA area shall be at ODD FLs. No EVEN FLs allowed to be planned between FRA (X) and FRA (A) points.

4.4.2.4. The Note shall be properly adapted in each AIP depending on FLOS applied in accordance with ICAO Annex 2, Appendix 3, a).
4.4.2.5. Cruising levels shall also be planned in accordance with FLOS of the adjacent ATS route network and/or FRA, which by default means that proper coordination between adjacent States shall be performed before publishing any data in AIPs. Publication of contradicting FLOS data on both sides of the common border shall be avoided and can be considered as unacceptable.
5 FRA Connecting Routes

5.1 General Issues

5.1.1. Proper access to/from terminal airspace and connecting to/from aerodromes located in close proximity outside the relevant FRA area may need to be considered.

5.1.2. This may require a definition of FRA Connecting Routes to facilitate flight planning and traffic distribution, providing the route from a specific FRA (A), FRA (D), FRA (AD) or FRA (I) points to a FRA (X), FRA (E) or FRA (EX) point or vice-versa.

5.2 FRA Arrival Connecting Routes

5.2.1. FRA Arrival Connecting Routes may be established for aerodromes located either inside or outside the FRA area.

5.2.2. When FRA (A) point is established outside relevant CTR / TMA any arriving flight can be planed via specifically defined (mandatory) FRA Arrival Connecting Routes which link the FRA (A) point with:
   a) The first point of the STAR - for aerodromes with designated STARs; or
   b) Any FRA (I) point in close proximity to the relevant aerodrome described in the RAD as connecting point for that aerodrome - for aerodromes without designated STARs.

5.2.3. The FRA Arrival Connecting Routes can be established along:
   a) Existing ATS routes; or
   b) Newly established ATS routes; or
   c) Direct (DCT) flight planning options.

5.2.4. In FRA area with fixed ATS route network, FRA Arrival Connecting Routes shall be based on ATS routes. This is to avoid overlapping of allowed Direct (DCT) flight planning options with these ATS routes, which might lead to systems flight plan processing difficulties or unnecessary data loading.

![Diagram of FRA Arrival Connecting Routes]

**Figure 21**: Example of FRA Arrival Connecting Routes

Significant points NN, RRRRR, PPPPP and JJJJJ are established as FRA (A) point while MMMMMM is the first point of the STAR and/or FRA (I) point.
5.3 FRA Departure Connecting Routes

5.3.1. FRA Departure Connecting Routes may be established for aerodromes located either inside or outside the FRA area.

5.3.2. When FRA (D) point is established outside relevant CTR / TMA any departing flight can be planned via specifically defined (mandatory) FRA Departure Connecting Routes which link the FRA (D) point with:
   a) The last point of the SID - for aerodromes with designated SIDs; or
   b) Any FRA (I) point in close proximity to the relevant aerodrome described in the RAD as connecting point for that aerodrome - for aerodromes without designated SIDs.

5.3.3. The FRA Departure Connecting Routes can be established along:
   a) Existing ATS routes; or
   b) Newly established ATS routes; or
   c) Direct (DCT) flight planning options.

5.3.4. In an FRA area with a fixed ATS route network, FRA Departure Connecting Routes shall be based on ATS routes. This is to avoid overlapping of allowed Direct (DCT) flight planning options with these ATS routes, which might lead to systems flight plan processing difficulties or unnecessary data loading.

Table 4: Example of expressing FRA Arrival Connecting Routes

<table>
<thead>
<tr>
<th>FRA Arrival Connecting Route</th>
<th>STAR first point</th>
<th>Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>NN M1 or DCT QQQQQ L1 or DCT MMMMM</td>
<td>MMMMM</td>
<td>ZZZZ</td>
</tr>
<tr>
<td>RRRRR P1 or DCT QQQQQ L1 or DCT MMMMM</td>
<td>MMMMM</td>
<td>ZZZZ</td>
</tr>
<tr>
<td>PPPPP L1 or DCT MMMMM</td>
<td>MMMMM</td>
<td>ZZZZ</td>
</tr>
<tr>
<td>JJJJJ N1 or DCT MMMMM</td>
<td>MMMMM</td>
<td>ZZZZ</td>
</tr>
</tbody>
</table>

Figure 22: Example of FRA Departure Connecting Routes

Significant points NN, RRRRR, PPPPP and JJJJJ are established as FRA (D) point while MMMMM is the last point of the SID and/or FRA (I) point.
5.4 Publication of FRA Connecting Routes

5.4.1. The FRA Arrival / Departure Connecting Routes can be published in the AIP using the examples above in:
   a) ENR 1.3 or ENR 1.10 - textual description and ENR 3.5 - in dedicated section named "FRA Connecting Routes", table and graphical description; or
   b) ENR 1.3 or ENR 1.10 - textual and table description and ENR 6 - graphical description; or
   c) AD 2.21 Flight procedures.

5.4.2. For proper flight plan processing the representation of the FRA Arrival / Departure Connecting Routes can be done via RAD Appendix 5 or the Pan-European Annex depending of their definition.

<table>
<thead>
<tr>
<th>Airport</th>
<th>SID last point</th>
<th>FRA Departure Connecting Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZZZZ</td>
<td>MMMMM</td>
<td>MMMMM L1 or DCT QQQQQ M1 or DCT NN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MMMMM L1 or DCT QQQQQ P1 or DCT RRRRR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MMMMM L1 or DCT PPPPP L1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MMMMM N1 or DCT JJJJJ</td>
</tr>
</tbody>
</table>

Table 5: Example of expression of FRA Departure Connecting Routes
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## ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5LNC</td>
<td>Five Letter Name-Codes</td>
</tr>
<tr>
<td>A</td>
<td>Arrival (point)</td>
</tr>
<tr>
<td>ACC</td>
<td>Area Control Centre</td>
</tr>
<tr>
<td>AD</td>
<td>Arrival / Departure (point)</td>
</tr>
<tr>
<td>AIP</td>
<td>Aeronautical Information Publication</td>
</tr>
<tr>
<td>AIS</td>
<td>Aeronautical Information Service</td>
</tr>
<tr>
<td>ANSP</td>
<td>Air Navigation Service Provider</td>
</tr>
<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
</tr>
<tr>
<td>ATS</td>
<td>Air Traffic Services</td>
</tr>
<tr>
<td>CTA</td>
<td>Control Area</td>
</tr>
<tr>
<td>CTR</td>
<td>Control Zone</td>
</tr>
<tr>
<td>D</td>
<td>Departure (point)</td>
</tr>
<tr>
<td>DCT</td>
<td>Direct</td>
</tr>
<tr>
<td>DME</td>
<td>Distance Measuring Equipment</td>
</tr>
<tr>
<td>E</td>
<td>Entry (point)</td>
</tr>
<tr>
<td>EANPG</td>
<td>European Air Navigation Planning Group</td>
</tr>
<tr>
<td>ENR</td>
<td>En Route</td>
</tr>
<tr>
<td>ERNIP</td>
<td>European Route Network Improvement Plan</td>
</tr>
<tr>
<td>EUROCONTROL</td>
<td>European Organisation for the Safety of Air Navigation</td>
</tr>
<tr>
<td>EX</td>
<td>Entry/Exit (point)</td>
</tr>
<tr>
<td>FIR</td>
<td>Flight Information Region</td>
</tr>
<tr>
<td>FL</td>
<td>Flight Level</td>
</tr>
<tr>
<td>FLOS</td>
<td>Flight Level Orientation Scheme</td>
</tr>
<tr>
<td>FRA</td>
<td>Free Route Airspace</td>
</tr>
<tr>
<td>GNSS</td>
<td>Global Navigation Satellite System</td>
</tr>
<tr>
<td>H24</td>
<td>Continuous day and night service</td>
</tr>
<tr>
<td>I</td>
<td>Intermediate (point)</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>LoA</td>
<td>Letter of Agreement</td>
</tr>
<tr>
<td>NAVAID</td>
<td>Navigation Aid</td>
</tr>
<tr>
<td>NM</td>
<td>Network Manager / Nautical Mile</td>
</tr>
<tr>
<td>PBN</td>
<td>Performance Base Navigation</td>
</tr>
<tr>
<td>RAD</td>
<td>Route Availability Document</td>
</tr>
<tr>
<td>SID</td>
<td>Standard Instrument Departure</td>
</tr>
<tr>
<td>STAR</td>
<td>Standard Instrument Arrival</td>
</tr>
<tr>
<td>TMA</td>
<td>Terminal Control Area</td>
</tr>
<tr>
<td>VOR</td>
<td>Very High Frequency Omnidirectional Range</td>
</tr>
<tr>
<td>X</td>
<td>Exit (point)</td>
</tr>
</tbody>
</table>
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