SAFE SKIES.
SUSTAINABLE FUTURE.

ICAO APAC/MID ATFM-FF-ICE Seminar 2025

Dubai, UAE, 23 – 26 February 2025

Augustin Gheorghe

Senior Expert/EUROCONTROL

FF-ICE – EUROCONTROL NM Experience

ICAO

Overview

01 FF-ICE/R1 Services and Processes – NM

02 What's new with FF-ICE for NM

SHARING

MAINTAINING

ICAO CONCEPT

FF-ICE

Flight & Flow Information for a Collaborative Environment

TBO FOUNDATION

REPLACES FPL2012

SWIM SERVICES

STANDARD FORMAT

USING

INCREASED INFORMATION SHARING

DIGITALISED AND STRUCTURED

FPL 2012

```
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-N0445F370 ROTAX3S ROTAX L603 LATLO DCT OBEDI DCT NEMEK DCT VRANA
DCT PETAK/N0445F390 DCT PINDO UL607 XORKI
-LGAV0208 LGSA
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AO4DT)
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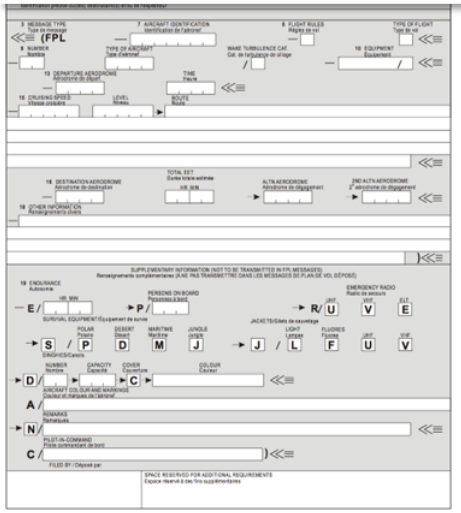

FF-ICE Flight Plan (eFPL)

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ICAO

FF-ICE Services

Planning Service

Related Messages:

Preliminary Flight Plan Message
Flight Plan Update Message
Flight Cancellation Message
Submission Response Message
Planning Status Message

Filing Service

Related Messages:

Filed Flight Plan Message
Flight Plan Update Message
Flight Cancellation Message
Submission Response Message
Filing Status Message

Trial Service

Related Messages:

Trial Request Message
Submission Response Message
Trial Response Message

Flight Data Request Service

Related Messages:

Flight Data Request Message
Submission Response Message
Flight Data Response Message

Publication Service

Related Messages:

No specific messages defined. Information on that match a set of criteria are transmitted to registered subscribers in response to certain conditions. An eASP will indicate the events and/or criteria to which a subscriber can subscribe

Notification Service

Related Messages:

Flight Departure Message
Flight Arrival Message
Submission Response Message

Ancillary FF-ICE processes

Translation

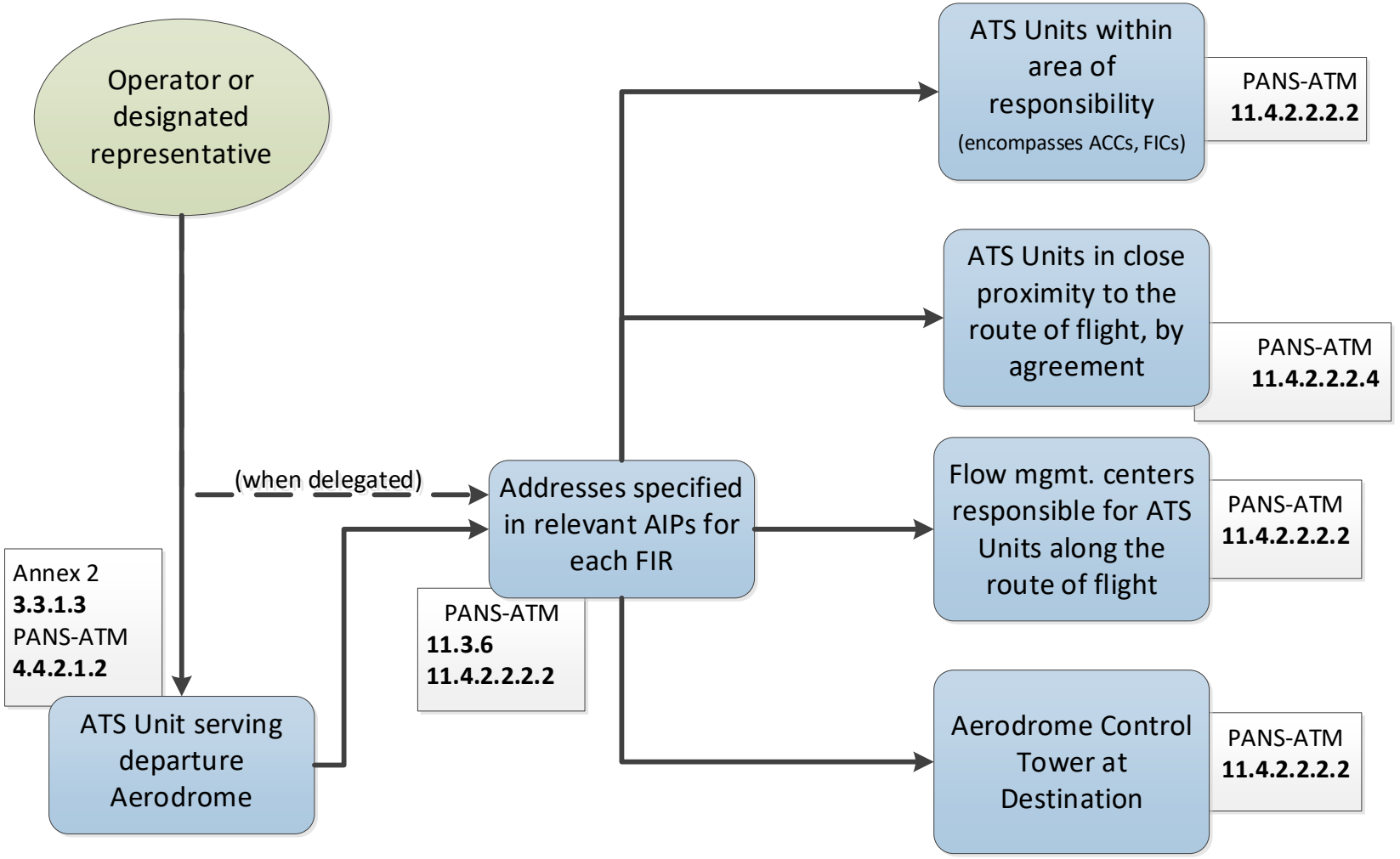
Re-evaluation

Translation & Delivery

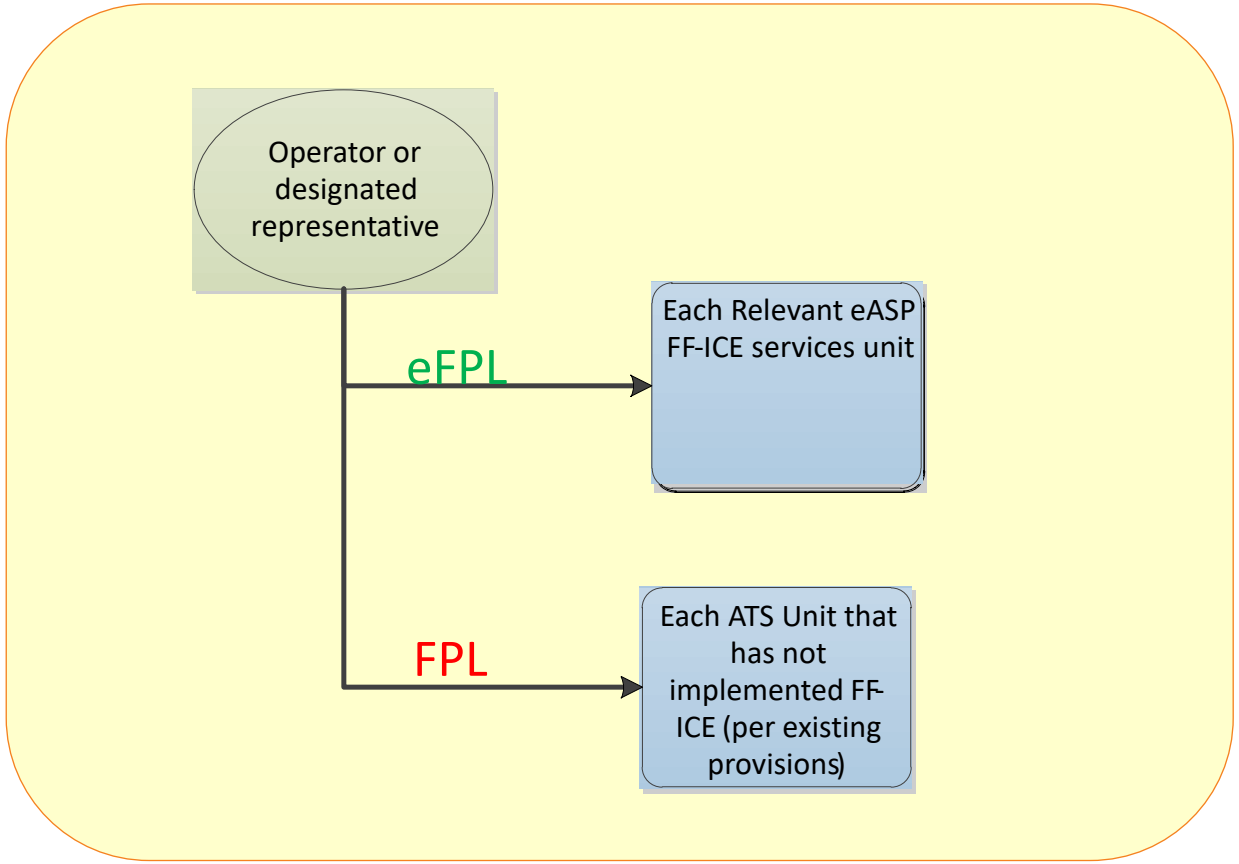
FF-ICE – What's New?

- Planning Service
  - Negotiation procedure – collaborative 4DT determination
- Submission procedures
  - Operator distributes directly to the appropriate ASP
- ATM feedback & Operator participation/ engagement
  - Automation
- Globally Unique Flight Identification (GUFI)
- 4DT exchange (inc. FSPD)
  - granularity/fidelity of data, accuracy
- Exchange format, networks & services
  - FIXM, SWIM
- Versioning & Reference information
  - Facilitate systematic exchange of data

FPL Submission

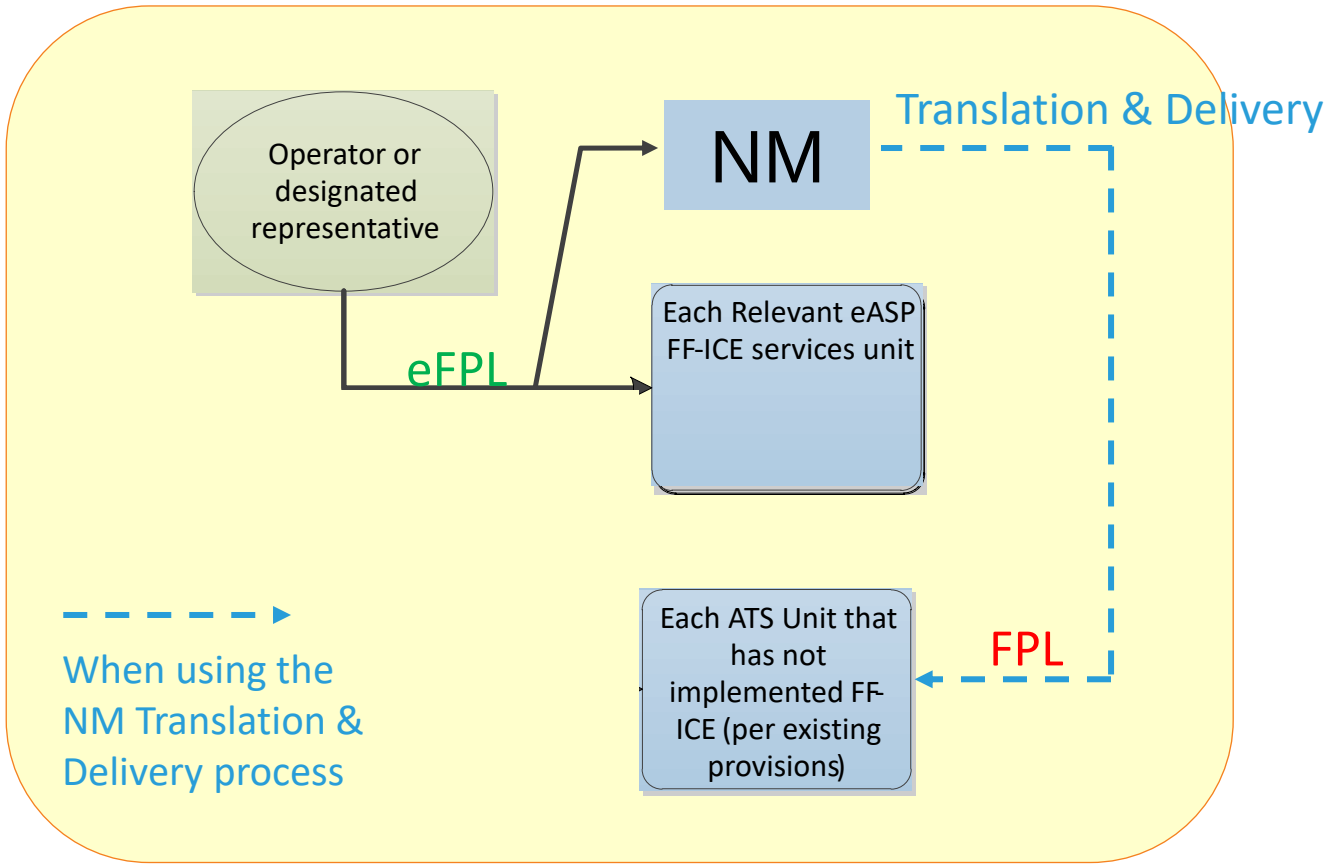


eFPL submission during transition - Case1



Flight departs from an aerodrome under the responsibility of an eASP (e.g. NM)

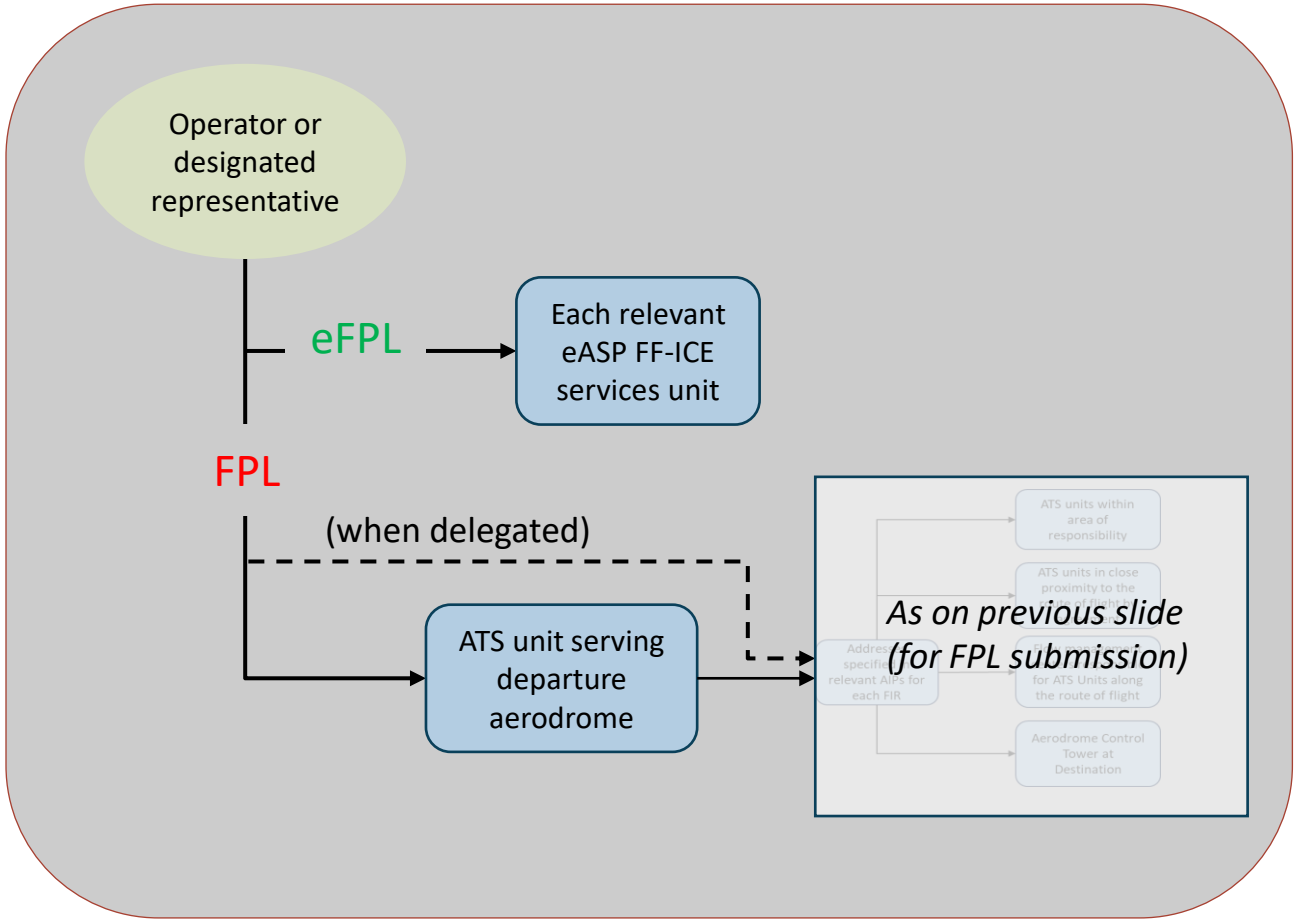
eFPL submission during transition - Case1



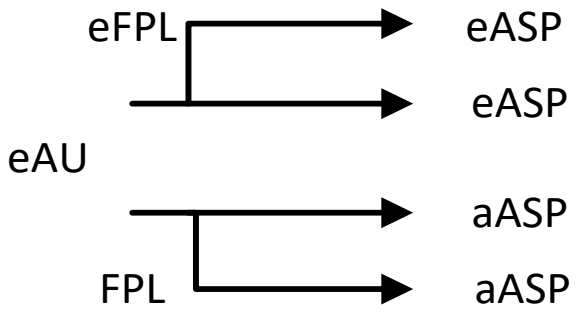
Flight departs from an aerodrome under the responsibility of an eASP (e.g. NM)

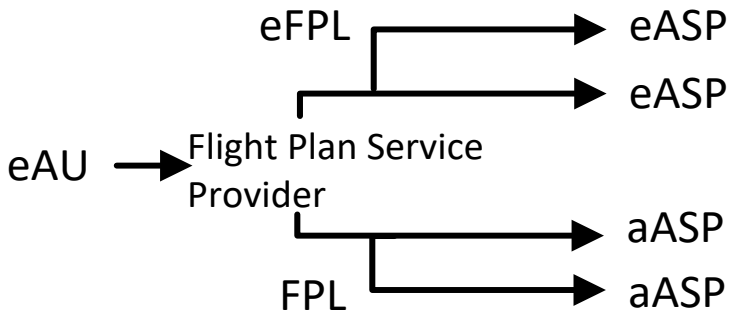
eFPL submission during transition Case2 (1)

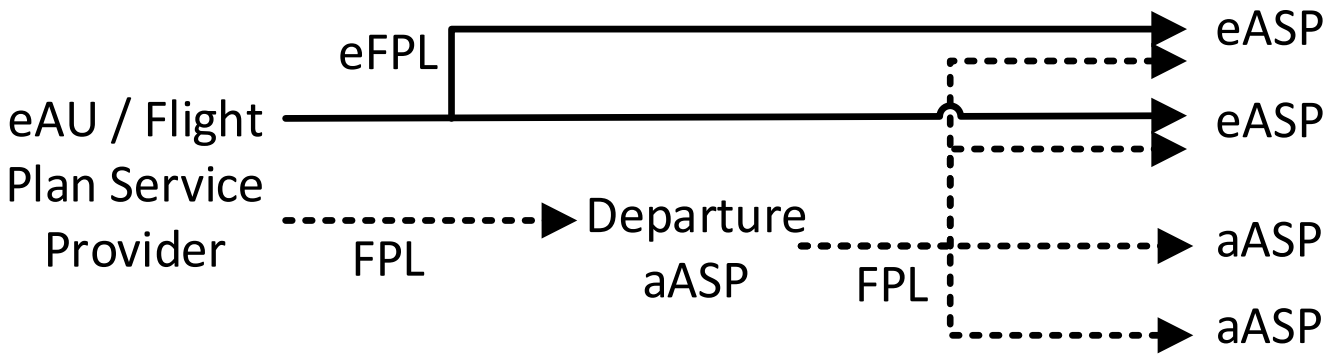
Flight departs from an aerodrome under the responsibility of an aASP (e.g. outside NM)



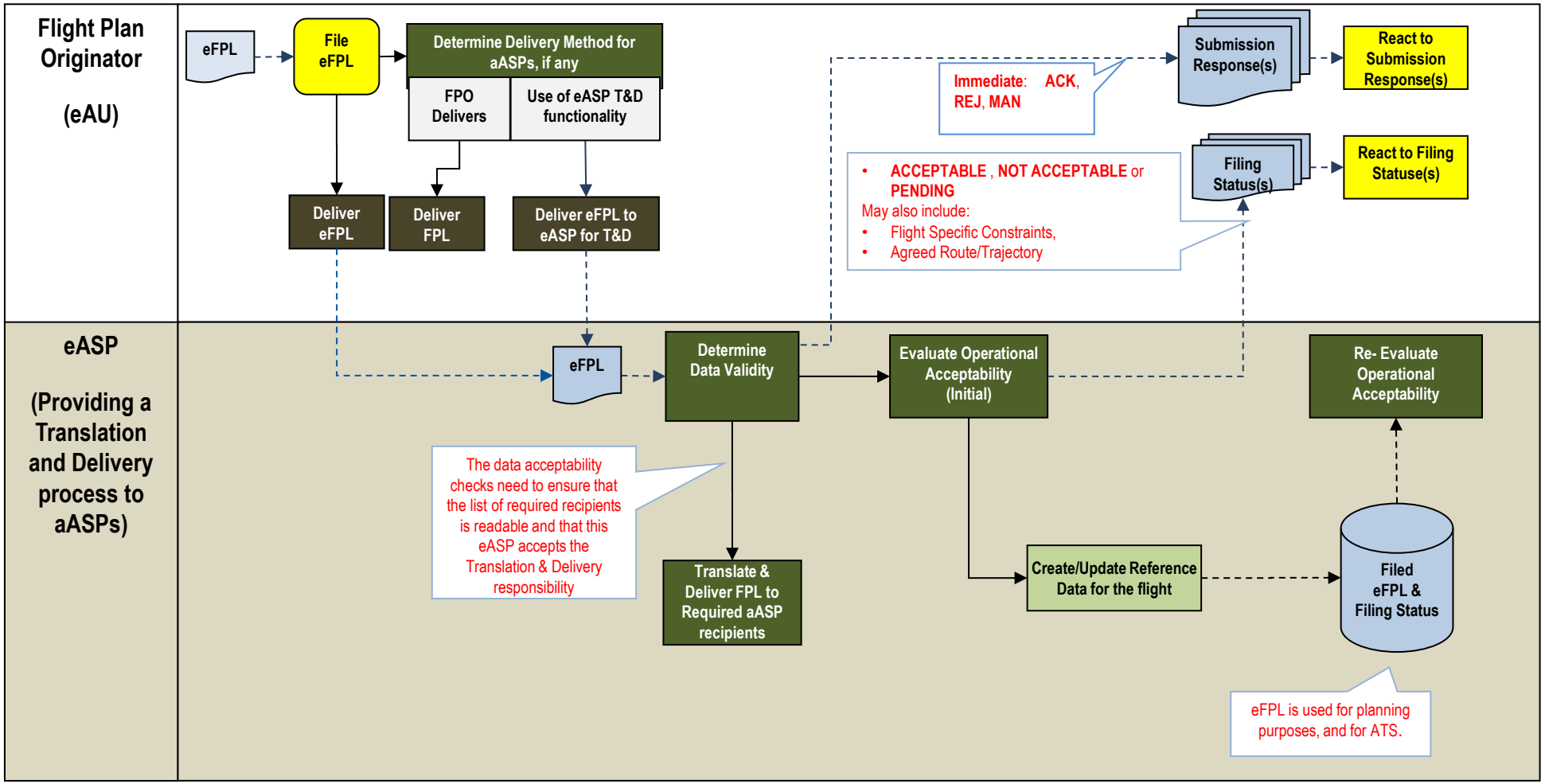
eFPL submission during transition Case2 (2)



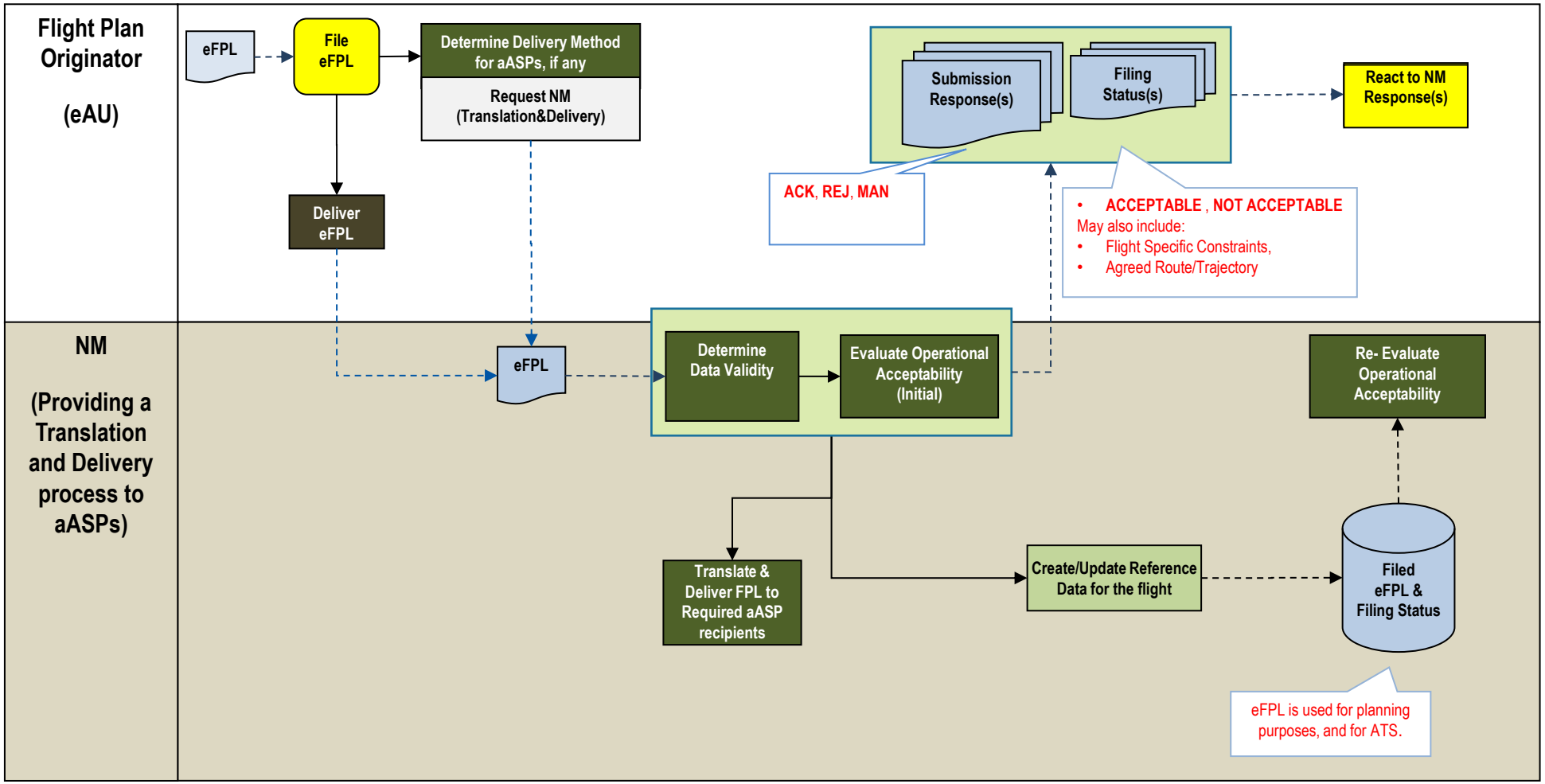




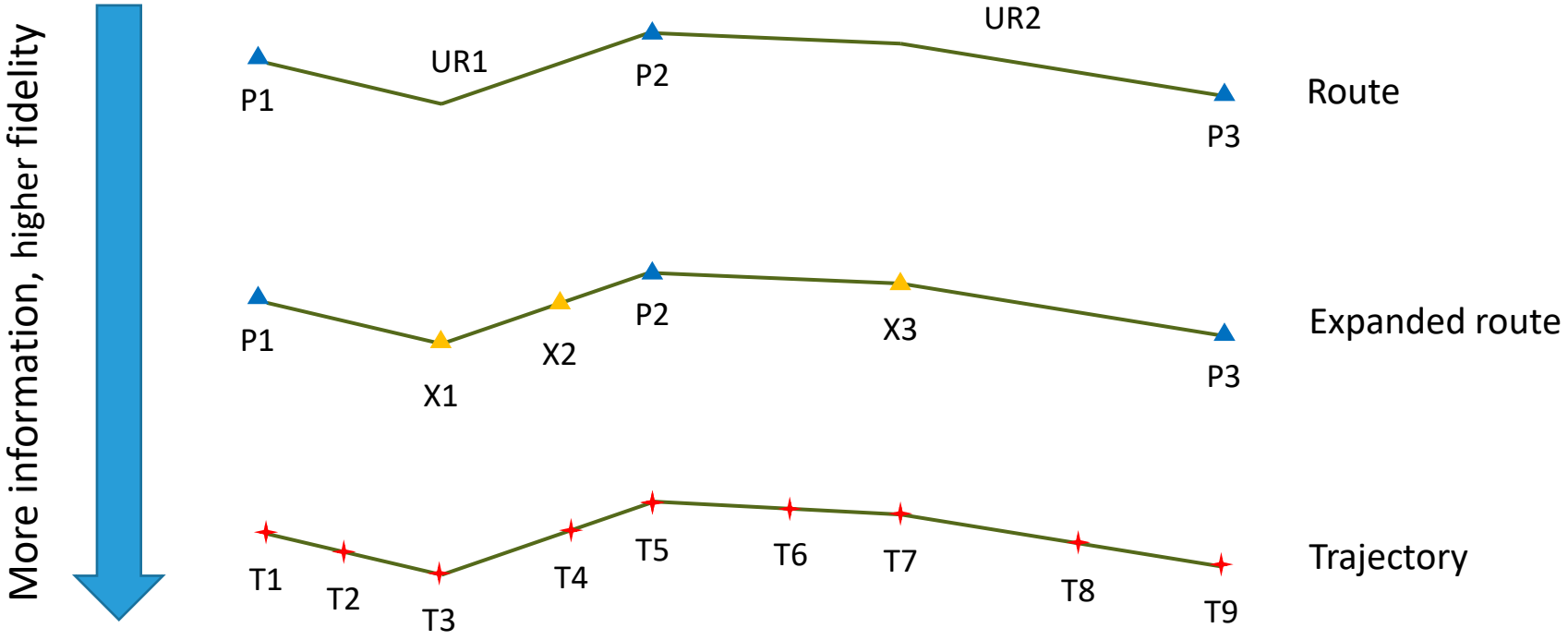
Filing procedure and ATM responses



Filing procedure and ATM responses (NM)



4DT exchanges - Route & Trajectory Data



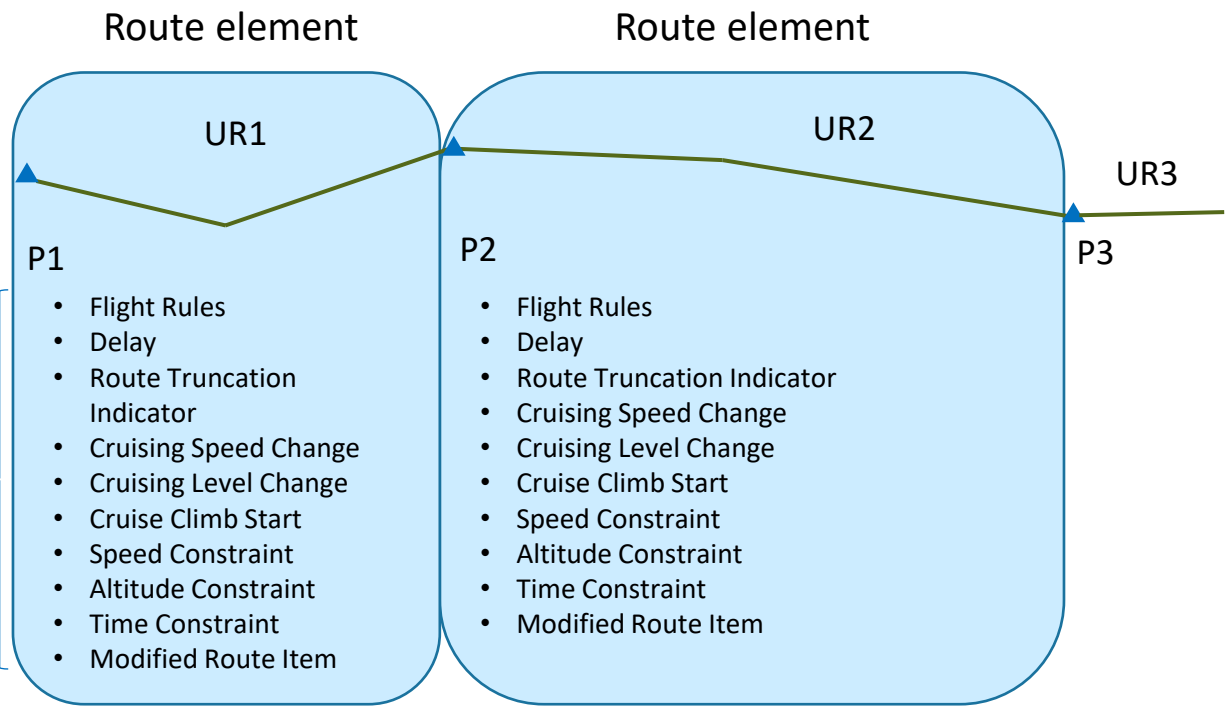
Route

Ordered sequence of Route elements

Route to next element

Route element start point

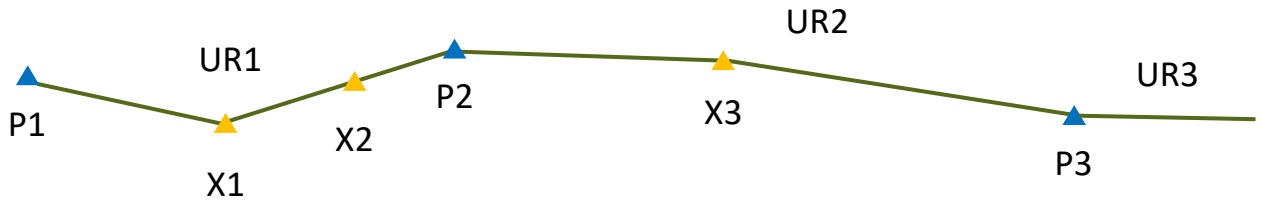
Route element may also contain the following items



Ordered Route Elements

Route Element Start Point	Route to Next Element	Route Items
P1	UR1	RI1
P2	UR2	RI2
P3	UR3	RI3

Expanded Route



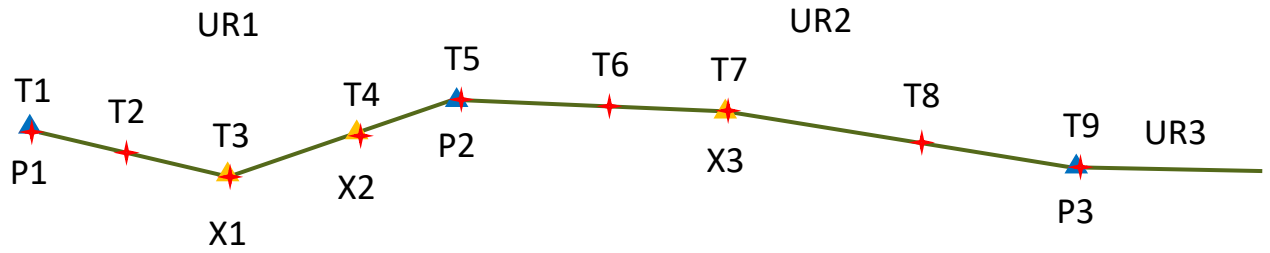
Route element may contain

- Any of the route items
- Along Route Distance

Ordered Route Elements

Route Element Start Point	Route to Next Element
P1	UR1
X1	UR1
X2	UR1
P2	UR2
X3	UR2
P3	UR3

Trajectory



Trajectory Points may contain following items

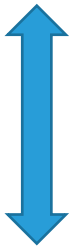
- Point 4D
- Meteo Data
- Assumed Altimeter Setting
- Predicted Airspeed
- Predicted Groundspeed
- Trajectory Point Property

Ordered Route/ Trajectory Elements

Trajectory Element Start Point	Route to Next Element	Trajectory Point
P1	UR1	T1
	UR1	T2
X1	UR1	T3
X2	UR1	T4
P2	UR2	T5
	UR2	T6
X3	UR2	T7
	UR2	T8
P3	UR3	T9

Level related information (1)

Route Element Item



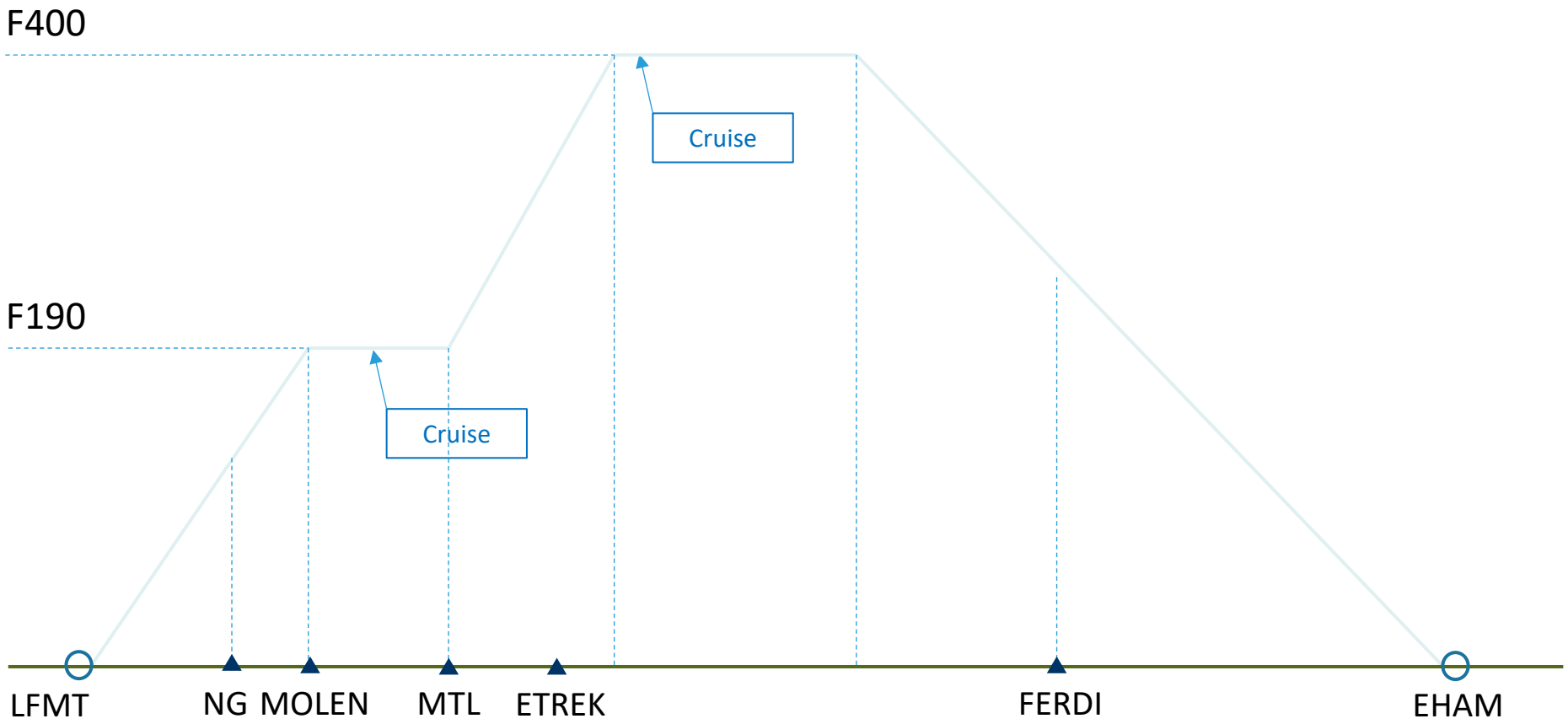
Trajectory Point Property

Name	Definition
Cruising Level Change	Describes a new planned cruising level at the associated point. The item indicates whether the change to the new level is planned to commence or planned to be attained at the associated point.

Point Property	Definition
Top of Climb	(From ARINC 702A) The point where the trajectory arrives at the cruise flight level after a climb. There will be one top-of-climb for each cruise flight level.
Top of Descent	The point where the trajectory begins a descent from the final cruise flight level.
TCP – Vertical	Indicates that the associated trajectory change point (TCP) is one at which a level segment (intermediate or cruise) will be initiated or terminated.

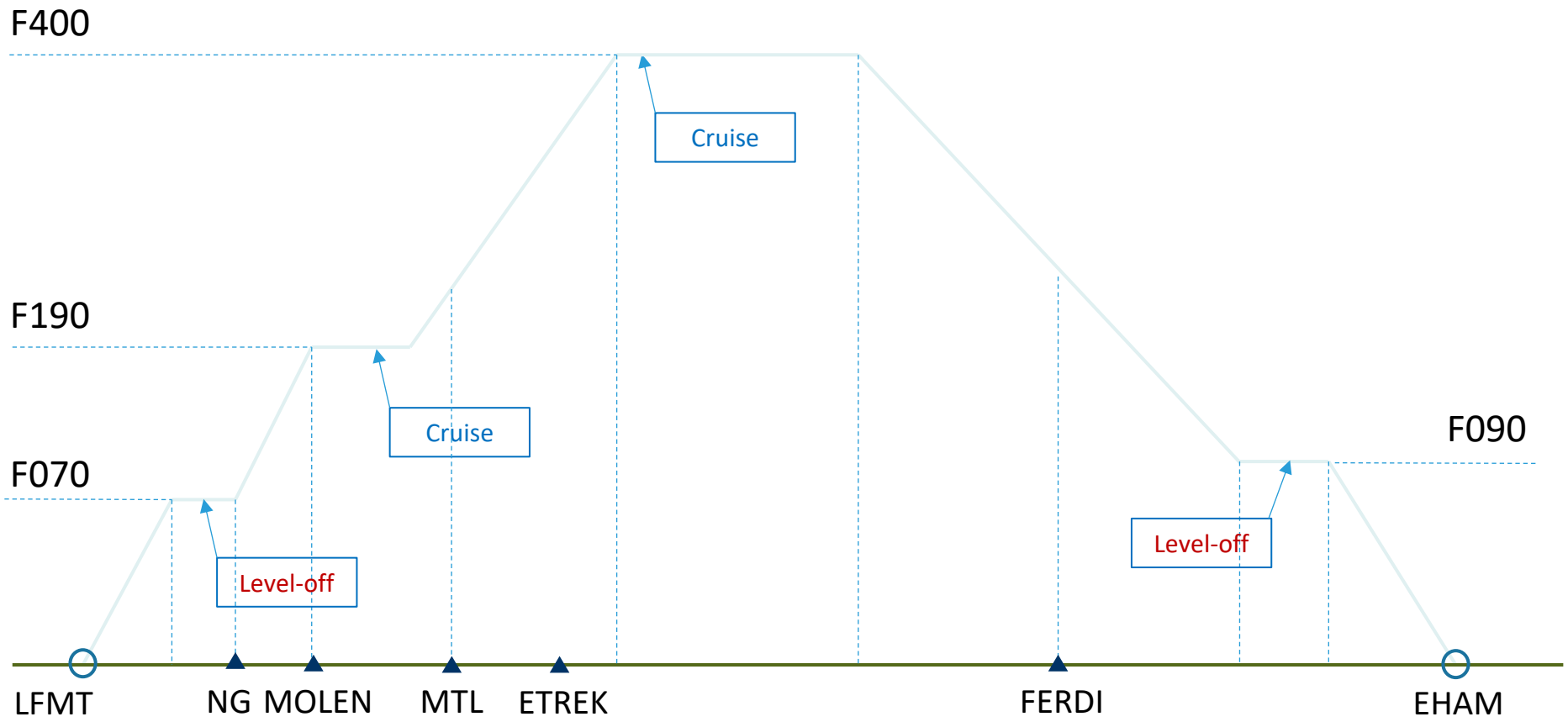
Using level information in FF-ICE

F15 - N0344F190 NG6N NG DCT MOLEN DCT MTL/N0454F400 UN854 FERDI DCT



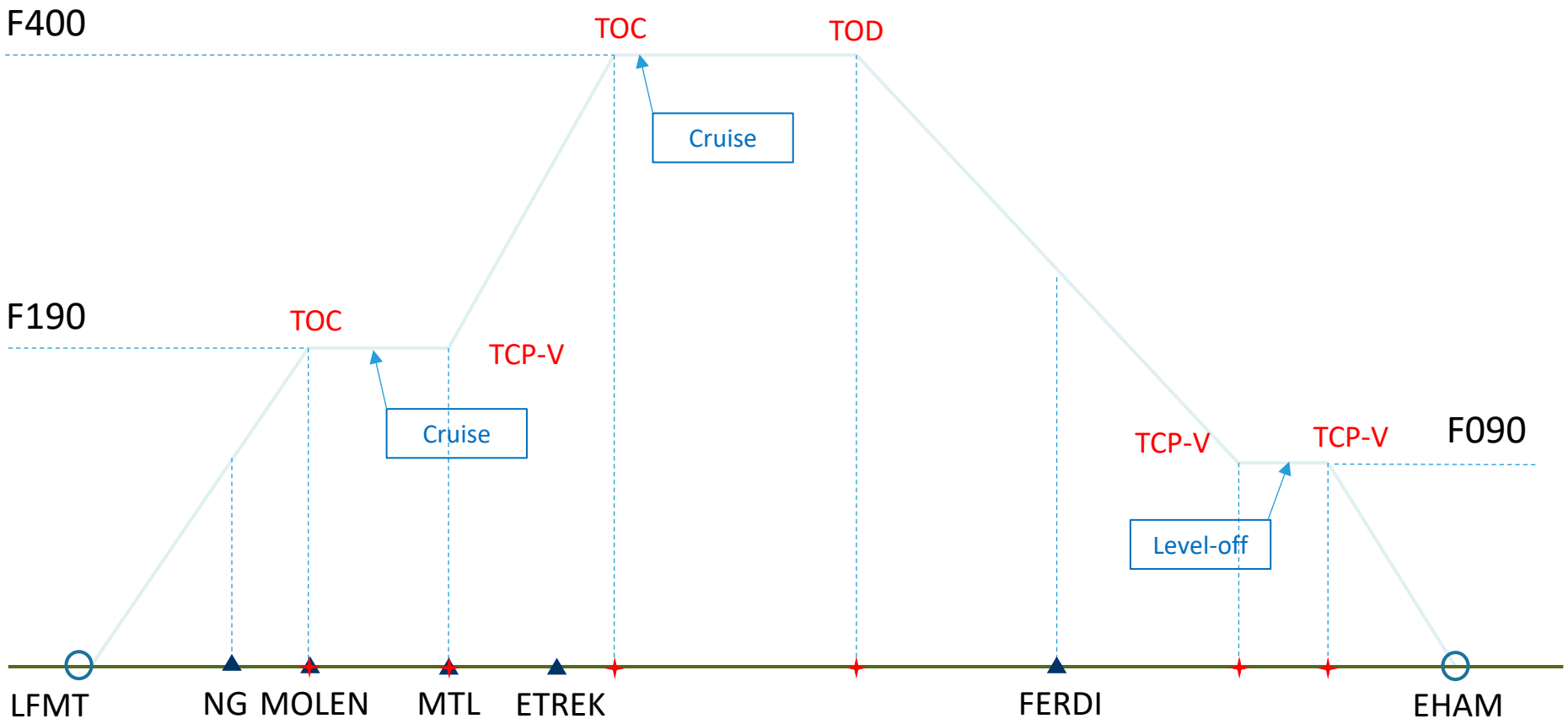
Using level information in FF-ICE

F15 - N0344F190 NG6N NG DCT MOLEN DCT MTL/N0454F400 UN854 FERDI DCT



Using level information in FF-ICE

F15 - N0344F190 NG6N NG DCT MOLEN DCT MTL/N0454F400 UN854 FERDI DCT



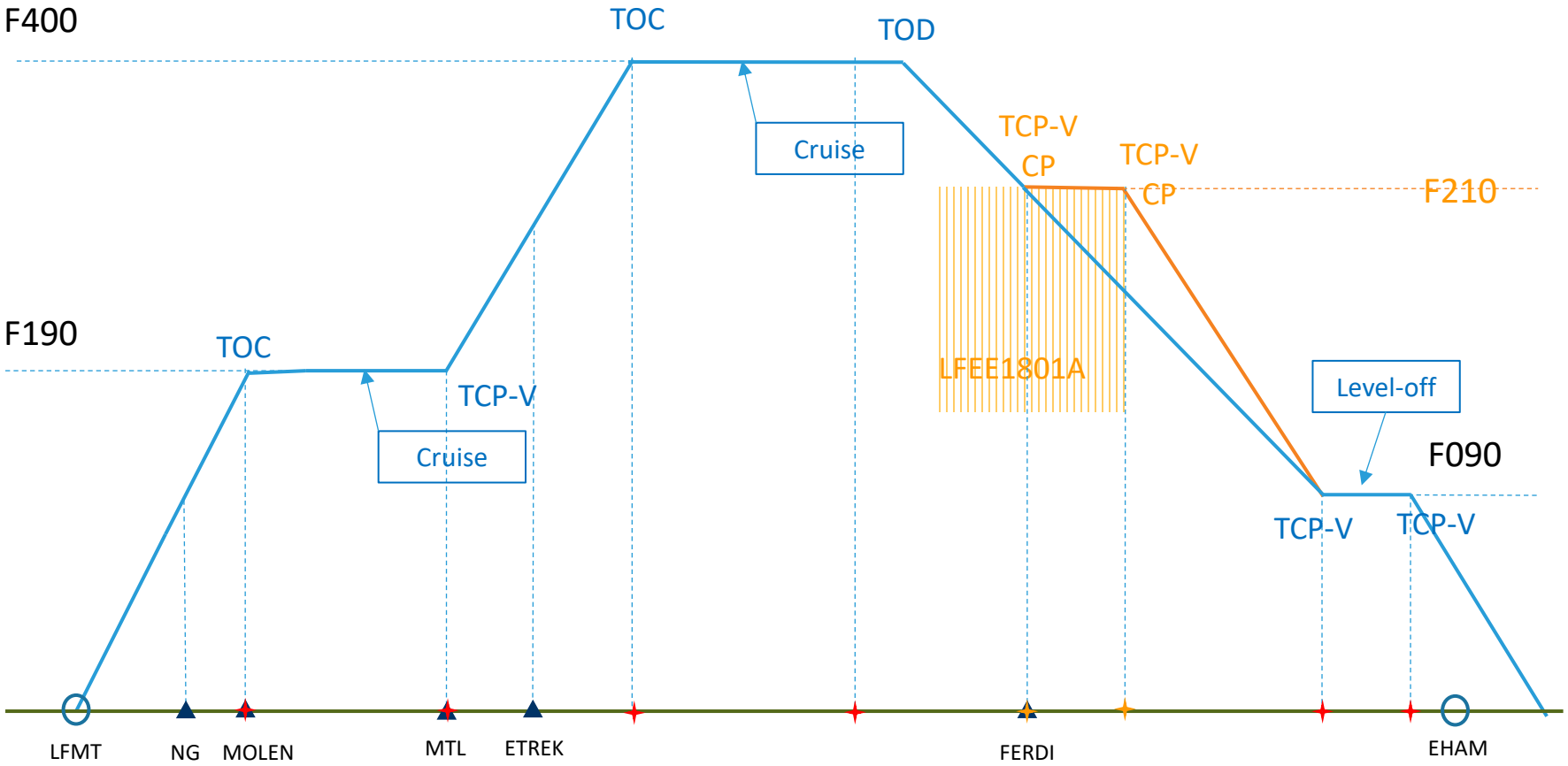
Ordered Route/Trajectory Elements

F15 - N0344F190 NG6N NG DCT MOLEN DCT MTL/N0454F400 UN854 FERDI DCT

Route Element	Route Element Start Point	Route to Next Element	Speed/Cruising Level Change (KT/FL)	Trajectory Point Property	Geographical Position	Level (FL/m)	Time (hhmm)
1	LFMT	NG6N		Initial Prediction Point Airport Reference Location	433500N 0035741E	17	1447(a)
2	NG	Direct			435126N 0042423E	161	0015(r)
3	MOLEN	Direct		TOP OF CLIMB	440319N 0043046E	190	0018(r)
4	MTL	UN854	454 / 400	TCP-Vertical	443318N 0044647E	190	0023(r)
5	ETREK	UN854			451116N 0043819E	283	0028(r)
6		UN854		TOP OF CLIMB	465254N 0041254E	400	0041(r)
7		UN854		TOP OF DESCENT	500312N 0025841E	400	0108(r)
8	FERDI	Direct			505445N 0033813E	210	0115(r)
9		Direct		TCP-Vertical	515446N 0040757E	90	0125(r)
19		Direct		TCP-Vertical	520047N 0041641E	90	0127(r)
11	EHAM	STAR		End Prediction Point Airport Reference Location	521829N 0044551E	-11	0135(r)

Constraints in NM feedback (1)

F15 - N0344F190 NG6N NG DCT MOLEN DCT MTL/N0454F400 UN854 FERDI DCT



Constraints in NM feedback(2)

Route Element	Route Element Start Point	Route to Next Element	Trajectory Point Property	RouteTrajectoryConstraint restrictionReference	Geographical Position	Level (*FL*)	Time (*hh:mm:ss*)
1	LFMT	NG6N	Airport Reference Location		433500N 0035741E	17	1447(a)
				.....			
7		UN854			500312N 0025841E	400	....
8	FERDI	Direct	TCP_VERTICAL CONSTRAINT POINT	LFEE1801A	505445N 0033813E	210	....
		Direct	TCP_VERTICAL CONSTRAINT POINT	LFEE1801A	510942N0033912E	210	....
				.....			

Exchange format & networks - NM B2B Services

Flight Services

- Flight Filing
- Flight Preparation
- Flight Management
  - ATFCM Slot Related Messages
  - Departure Planning Information
  - Arrival Planning Information
  - Publish/Subscribe
  - Flight Data Retrieval
  - Flight Update Information
- Flight Safety

Airspace Services

- Airspace Structure
- Airspace Availability
  - FUA
  - Restrictions/Constraints

Flow Services

- Regulation List
- ATFCM Situation
- ATFCM Tactical Updates
- Measures Management
- Scenario Management
- Simulations
- Measure Collaboration Decision Making

FFICE Services

- Filing
- Trial
- Flight Data Request
- Notification
- Publication

FF-ICE in the NM B2B

- FF-ICE Services are integrated in the NM B2B Services, making use of both request/reply and publish/subscribe communication models
  - Published on SWIM Registry - https://eur-registry.swim.aero/home
- NM supports FIXM 4.3
- Follows the ICAO implementation guidance, reflecting at the same time the European specificity of the IFPZ
- NM Feedback does not include the flow impact - not yet defined by ICAO, nor supported in FIXM

Highlights

FF-ICE enables transitioning to an environment where the flight trajectory is shared and optimized during all phases of flight

FF-ICE aims to align trajectories between airspace users and NM, and ultimately the ANSPs

Thank You

ffice@eurocontrol.int

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