

Flight Information Exchange Model Operational Data Description

The Flight Information Exchange Model (FIXM) is an exchange model capturing Flight and Flow information that is globally standardised. The need for FIXM was identified by the International Civil Aviation Organisation (ICAO) Air Traffic Management Requirements and Performance Panel (ATMRPP) in order to support the exchange of flight information as described in Flight and Flow Information for a Collaborative Environment (FF-ICE).

This FIXM Operational Data Description (FIXM ODD) defines the concepts of the flight data elements expected to be exchanged using the FIXM standard, it provides requirements traceability, cataloguing the sections of the "Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444)" and "Flight and Flow - Information for a Collaborative Environment Step 1" (FF-ICE/1) documents that specify the need for each element.

October 31, 2016

Version: 4.0.0

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The authoritative reference for FIXM is <u>www.FIXM.aero</u>.

Details on Airservices Australia: http://www.airservicesaustralia.com/

Details on DSNA: http://www.developpement-durable.gouv.fr/-Navigation-aerienne-.html

Details on EUROCONTROL: <u>http://www.eurocontrol.int/</u>

Details on IATA: <u>http://www.iata.org/Pages/default.aspx</u>

Details on JCAB: <u>http://www.mlit.go.jp/en/koku/index.html</u>

Details on NATS Limited: http://www.nats.co.uk/

Details on NAV CANADA: http://www.navcanada.ca/

Details on the SESAR JU and its members: <u>http://www.sesarju.eu/discover-sesar/partnering-smarter-aviation/members</u>

Details on the US FAA: http://www.faa.gov/

Table of Contents

1	Intro	oduction	11
2	Elen	nent Metadata Definitions	11
	2.1	Name	11
	2.2	Definition	12
	2.3	Alternate Names	12
	2.4	Has Parts	12
	2.5	Is Part Of	12
	2.6	Data Type(s)	12
	2.7	Range of Values	12
	2.8	FIXM UML Path	12
	2.9	Business Rules	12
	2.10	Notes	12
	2.11	References/Requirements Justification	13
3	Data	a Types	14
	3.1	Primitives Data Types	14
	3.2	Flight Information Data Types	16
4	Data	a Elements	23
	4.1	4D Point	23
	4.2	Action Taken By Reporting Unit	24
	4.3	Activity	24
	4.4	Additional Handling Information	25
	4.5	Aerodrome of Loading	26
	4.6	Aerodrome of Unloading	26
	4.7	Agreed 4D Trajectory	27
	4.8	Air Waybill Number	28
	4.9	Aircraft Address	29
	4.10	Aircraft Approach Category	30
	4.11	Aircraft Colour and Markings	30
	4.12	Aircraft Dangerous Goods Limitation	31
	4.13	Aircraft Identification	32
	4.14	Aircraft Operator Identity	33
	4.15	Aircraft Quantity	34
	4.16	Aircraft Registration Mark	35

4.17	Aircraft Type Reference	.36
4.18	Airfile Route Start Time	. 37
4.19	Airspeed - Predicted	. 37
4.20	All Packed In One	. 38
4.21	Along Route Distance	. 38
4.22	Altitude Constraint	. 39
4.23	Arrival Aerodrome	.40
4.24	Arrival Runway	.41
4.25	Assumed Altimeter Setting	.42
4.26	Boundary Crossing Level - Cleared/Coordinated	.43
4.27	Boundary Crossing Level - Transition/Coordinated	.43
4.28	Boundary Crossing Point/Coordinated	.44
4.29	Boundary Crossing Time/Coordinated	.44
4.30	City Name	.45
4.31	Communications Capabilities	.46
4.32	Compatibility Group	.47
4.33	Consignee Address	.48
4.34	Consignee Contact Name	.48
4.35	Consignee Name	.49
4.36	Consignee Name and Address	.50
4.37	Consignee Phone Number	. 50
4.38	Control Temperature	.51
4.39	Country Code	. 52
4.40	Country Name	. 52
4.41	Criticality Safety Index	. 53
4.42	Cruise Climb Start	. 54
4.43	Cruising Altitude - Requested	.55
4.44	Cruising Speed	.55
4.45	Current 4D Trajectory	.56
4.46	Dangerous Goods Gross Weight	.57
4.47	Dangerous Goods List of Line Item Detail	.57
4.48	Dangerous Goods List of Overpack Detail	.58
4.49	Dangerous Goods List of Package Detail	. 59
4.50	Dangerous Goods Net Weight	. 59
4.51	Dangerous Goods Package Details	. 60

4.52	Dangerous Goods Quantity	.61
4.53	Dangerous Goods Screening Location	.61
4.54	Dangerous Goods Type of Packaging	. 62
4.55	Dangerous Goods Volume	.63
4.56	Data Link Communication Capabilities	.63
4.57	Declaration Text: Compliance	.65
4.58	Declaration Text: Consignor	.65
4.59	Declaration Text: Shipper	.66
4.60	Department	.67
4.61	Departure Aerodrome	.67
4.62	Departure Country	.68
4.63	Departure Runway	.69
4.64	Desired 4D Trajectory	.69
4.65	Destination Aerodrome	.70
4.66	Destination Aerodrome - Alternate	.71
4.67	Destination Country	.72
4.68	Destination Runway	.72
4.69	Dinghy Colour	.73
4.70	Dinghy Cover Status	.74
4.71	Dinghy Number	.74
4.72	Dinghy Total Capacity	.75
4.73	Elapsed Time - Estimated	.76
4.74	Emergency Description	.77
4.75	Emergency Message Originator	.77
4.76	Emergency Phase	.78
4.77	Emergency Radio Capability Type	.78
4.78	Emergency Response Guidebook Number	.79
4.79	Emergency Temperature	.80
4.80	En Route Alternate Aerodrome	.80
4.81	En Route Delay	.81
4.82	En Route Delay Reference	.82
4.83	En Route Delay Type	.82
4.84	En Route Delay Value	.83
4.85	Exclusive Use Shipment Indicator	.84
4.86	Filed 4D Trajectory	.85

4.87	Fissile Excepted Indicator
4.88	Flight Plan Originator
4.89	Flight Plan Reference Version
4.90	Flight Plan Submitter
4.91	Flight Plan Version
4.92	Flight Rules90
4.93	Flight Rules Change90
4.94	Flight Type91
4.95	Fuel Endurance
4.96	Globally Unique Flight Identifier93
4.97	Ground Speed - Predicted93
4.98	Hazard Class and Division94
4.99	Last Contact Radio Frequency95
4.100	Last Contact Time95
4.101	Last Contact Unit
4.102	Last Known Position Report97
4.103	Last Known Position Report - Determination Method97
4.104	Level or Altitude Change
4.105	Life Jacket Type99
4.106	Low Dispersible Material Indicator100
4.107	Marine Pollutant Indicator
4.108	Message Date-Time
4.109	Message Identifier102
4.110	Message Originator102
4.111	Meteorological Data103
4.112	Modified Route Item
4.113	Modified Route Item Reference104
4.114	Navigation Capabilities105
4.115	Negotiating 4D Trajectory106
4.116	Negotiating Route
4.117	Number of Persons on Board108
4.118	Off Block Time - Estimated109
4.119	On Board Dangerous Goods Location
4.120	Operational Acceptability
4.121	Operational Acceptability Reason111

4.122	Other Search and Rescue Information	
4.123	Overpack Indicator	
4.124	Package Height	
4.125	Package Length	
4.126	Package Width	
4.127	Packing Group	115
4.128	Packing Instruction Number	115
4.129	Performance Climb Profile	116
4.130	Performance Descent Profile	
4.131	Performance-Based Navigation Capabilities	
4.132	Physical and Chemical Form	
4.133	Pilot In Command	
4.134	Planning Status	
4.135	Planning Status Reason	
4.136	Post Office Box	
4.137	Postal Structured Address	
4.138	Product Name	
4.139	Profile Altitude	
4.140	Profile Distance	
4.141	Profile Point	
4.142	Profile Time	
4.143	Profile True Airspeed	
4.144	Proper Shipping Name	
4.145	Q Value	
4.146	Radio Failure Remarks	
4.147	Radioactive Material Category	
4.148	Radioactive Materials	
4.149	Radionuclide	
4.150	Radionuclide ID	
4.151	Radionuclide Name	
4.152	Ranked 4D Route	
4.153	Ranked 4D Trajectory	
4.154	Ranked 4D Trajectory Identifier	
4.155	Recipient	
4.156	Recipient Delivery Responsibility	133

4.157	Reference Message	
4.158	Region Name	
4.159	Remaining Communication Capabilities	
4.160	Remarks	
4.161	Reportable Quantity	
4.162	Route - Agreed To	
4.163	Route - Current	
4.164	Route - Desired	
4.165	Route - Filed	140
4.166	Route - Revised Destination	140
4.167	Route Designator To Next Element	141
4.168	Route Point	142
4.169	Route String	143
4.170	Route Truncation Indicator	143
4.171	Runway Arrival Time - Actual	144
4.172	Runway Departure Time - Actual	144
4.173	Selective Calling Code	145
4.174	Shipment Authorizations	146
4.175	Shipment Type	147
4.176	Shipper Address	147
4.177	Shipper Emergency Phone Number	148
4.178	Shipper Name	149
4.179	Shipper Name and Address	149
4.180	Shipper's Declaration For Dangerous Goods	150
4.181	Shipper's Declaration For Dangerous Goods Header	150
4.182	Shipper's Declaration For Dangerous Goods Line Item Details	151
4.183	Shipper's Declaration For Dangerous Goods Packaging Detail	152
4.184	Shipper's Declaration For Dangerous Goods Summary	152
4.185	Special Form Indicator	153
4.186	Special Handling Reason	153
4.187	Speed Change	154
4.188	Speed Constraint	155
4.189	Speed Schedule - Climb	157
4.190	Speed Schedule - Descent	158
4.191	SSR Code	

4.192	Standard Capabilities Indicator		
4.193	Standard Instrument Arrival Designator		
4.194	Standard Instrument Departure Designator		
4.195	Street		
4.196	Submission Status		
4.197	Submission Status Reason		
4.198	Subsidiary Hazard Class and Division		
4.199	Supplementary Shipping Information		
4.200	Surveillance Capabilities		
4.201	Survival Equipment Remarks		
4.202	Survival Equipment Type		
4.203	Takeoff Alternate Aerodrome		
4.204	Takeoff Weight		
4.205	Technical Name		
4.206	Temperature		
4.207	Time Constraint		
4.208	Time En Route - Estimated		
4.209	Trajectory Point		
4.210	Trajectory Point Property		
4.211	Trajectory Point Reference		
4.212	Transfer Aerodromes		
4.213	Transport Index		
4.214	United Nations Number		
4.215	Vertical Range		
4.216	Wake Turbulence Category		
4.217	Wind Direction		
4.218	Wind Speed		
4.219	ZIP or Postal Code		
Appendix A	Appendix A: Acronym List		

Document History

Version	Date	Description	Entered By
1.00	Aug 12, 2012	 Produced the first draft based on the Flight Object Ontology FIXM report Incorporated updates from stakeholder feedback and updated with minor editorial changes Added 2 data elements: Departure Time - Actual, Arrival Time - Estimated 	FAA FIXM Development Team
1.10	Dec 20, 2012	 Added Hazardous data elements Added the use of 'container' elements Incorporated minor editorial changes resulting from comments to v1.0 	FAA FIXM Development Team
2.00	Aug 22, 2013	 Added data elements for ATS Messages, AIDC Messages, TFM-DE, CDM (FAA), CDM (Airservices Australia), fleet prioritization, ANSP-ANSP Boundary Crossing, ASDI/FTM Connect, Add Code Share, and Airport CDM Minor edits to element level metadata Minor grammatical edits throughout 	FAA FIXM Development Team
3.00	Aug 20, 2014	 Added 4D Trajectory Elements Minor edits as a result of CCB review 	FAA FIXM Development Team
3.0.1	Feb 11, 2015	 This version is identical to FIXM Core Data Dictionary v3.00 and is released as part of the FIXM Core v3.0.1 maintenance release 	FAA FIXM Development Team
4.0.0	Oct 31, 2016	 Changed document title from FIXM Data Dictionary to FIXM Operational Data Description Aligned data elements with ICAO, FF-ICE/1 requirements Optimized route and 4DT data structure Added FF-ICE/1 Messaging support Removed Appendix B - Glossary 	FAA FIXM Development Team

1 Introduction

This FIXM Operational Data Description (FIXM ODD) defines the concepts of flight data elements expected to be exchanged using the FIXM standard. Currently, the FIXM ODD includes a definition for each flight data element, as well as alternate names that reflect various nomenclatures across systems and operational domains, relationships among data elements, data types, value ranges (where applicable), business rules, and references to authoritative sources where more information can be found regarding the data element (including why each element is required in the FIXM standard).

The FIXM ODD is complementary to the other FIXM artifacts such as the FIXM models and the FIXM schemas.

Organization of this document is as follows:

- Chapter 1 Introduction this chapter
- Chapter 2 Element Metadata Definitions explains Metadata used to describe Data Elements
- Chapter 3 Data Types defines Data Types for ODD Data Elements
- Chapter 4 Data Elements defines Data Elements
- Appendix A Acronyms

2 Element Metadata Definitions

Element-level metadata are used to capture the meaning of the data elements, to provide the context in which they appear and their associated business rules. The element-level metadata are:

2.1 Name

This metadata captures a unique, descriptive name for the data element. The naming convention used in this document attempts to fulfil the following goals:

- The data element name should not contain acronyms to the extent possible. The use of acronyms raises the risk of the names being used erroneously. Commonly used aviation domain terms are optimal for naming conventions; however, in some cases, the use of synonyms may be the most practical approach.
- 2. The name should express as much as possible the type of data it represents (e.g., time, speed, altitude).
- 3. Whenever possible the names should follow ICAO standards as defined in PANS-ATM ICAO 4444 or FF-ICE/1.
- 4. The names should be constructed such that related data elements are adjacent in an alphabetized list. For example, "Alternate Destination Aerodrome" was named "Destination Aerodrome Alternate", to allow its record to be documented adjacent to another related data element called "Destination Aerodrome".

2.2 **Definition**

This metadata describes the data element in unambiguous and universal terms such that a reader, with a basic level of aviation domain knowledge, can have a clear understanding of what information the data element represents.

2.3 Alternate Names

This metadata captures alternate terms (i.e., terms from other domains that are used synonymously), and any other information that would facilitate the discovery of semantically equivalent (or related) data elements.

2.4 Has Parts

This metadata lists any other (possibly more basic) data elements contained by the data element to which the metadata refers.

2.5 Is Part Of

This metadata will be populated if the referenced data element is part of another data element.

2.6 Data Type(s)

This metadata indicates the data type for the data element being described. All available ODD data types are defined in the Chapter 3 Data Types.

2.7 Range of Values

This metadata indicates the range of values the data element can take. This is accomplished by either providing upper and lower threshold values or by explicitly enumerating all the possible values.

2.8 FIXM UML Path

This metadata indicates the location of this element in the FIXM UML Model.

2.9 Business Rules

This metadata defines or constrains some aspect of the use of a particular data element. They have the following functions:

- 1. Describes how data elements are used together in a functional or operational context
- 2. Defines roles or functionality associated with data elements
- 3. Describes rules for using the data elements in specific contexts

2.10 Notes

This field captures any other pertinent information or knowledge regarding the referenced data element that does not fit in any of the other data fields.

2.11 References/Requirements Justification

This metadata lists specific sources which further define, explain, and/or provide additional information about the data element, its context and its role, as well as justification for inclusion of the data element in FIXM.

3 Data Types

Data Types in the FIXM Operational Data Description are created to better represent concepts of data elements and to limit duplication of information. There are two categories of Data Types in this document:

- Primitives used to represent basic building blocks for information representation; these types are not traceable to specific ICAO or FF-ICE/1 requirements
- Flight Information used to describe flight information common for multiple data elements; these types are traceable to specific ICAO or FF-ICE/1 requirements

3.1 Primitives Data Types

Alpha String	
Definition String containing only upper-case alphabetic characters in the range [A-Z].	
Notes	
Reference	Basic building blocks for information representation.

Array	
Definition The array data type stores a number of elements of same type in a specific order.	
Notes	
Reference	Basic building blocks for information representation.

Boolean	
Definition	The Boolean type represents the values: true and false.
Notes	
Reference	Basic building blocks for information representation.

Character String	
Definition	A string of characters as standardized by UTF-8
Notes	UTF-8 is the default encoding for XML.
Reference	Basic building blocks for information representation.

Enumeration			
Definition	Represents one or multiple choices from a finite, predefined collection of choices (controlled vocabulary).		
Notes	 The controlled vocabulary is specified in the "Range of Values" field, whenever practicable. If the enumeration is too large to be included explicitly, a reference is provided. 		
Reference	Basic building blocks for information representation.		

Float		
Definition	The floating point data type contains fractional values. In the context of FIXM it represents single-precision, 32-bit floating-point numbers.	
Notes		
Reference	Basic building blocks for information representation.	

Frequency		
Definition	Describes the radio frequency used for communications and navigation between aircraft- ground, ground-ground, or aircraft-aircraft.	
Notes	Expressed in megahertz (MHz)	
Reference	Basic building blocks for information representation.	

Integer		
Definition	The integer data type represents positive whole numbers {1, 2, 3}, negative whole numbers {-1, -2, -3}, and zero {0}.	
Notes		
Reference	Basic building blocks for information representation.	

Numeric String		
Definition	ring containing only numeric characters in the range [0-9].	
Notes		
Reference	Basic building blocks for information representation.	

	Record
Definition	The record data type is a value that contains other values, typically in fixed number and sequence and typically indexed by names. The elements of records are usually called fields or members.
Notes	
Reference	Basic building blocks for information representation.

3.2 Flight Information Data Types

	4D Trajectory		
Definition	A construct containing the four-dimensional (x, y, z, and time) trajectory of an aircraft from gate-to-gate, at the level of fidelity required for attaining the agreed ATM system performance levels.		
Has Parts	Trajectory Point		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory		
Notes			
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF- ICE Model & Data 		
	 B-3.6.1 General: The FF-ICE shall allow definition of route and four-dimensional trajectory () 		

	Aerodrome
Definition	 An aerodrome reference being either: the ICAO location indicator of the aerodrome, as listed in ICAO Doc 7910 (E.g. "KDFW") if no location indicator is available, the aerodrome name (E.g. "Dallas Fort Worth") or the identifier assigned to the aerodrome location in accordance with rules (resolution 767) governed by the International Air Transport Association (IATA). (E.g. "DFW") [FIXM]
Has Parts	
Range of Values	
FIXM UML Path	Fixm.Base.Aerodrome.AerodromeReference
Notes	 This data type can be described as one of the following: The four (4) character code from ICAO 7910 that identifies the aerodrome, if one is available If a code is not available, then Aerodrome Location (location)

	0	Aerodrome Name or Alternate Identifier (character string)
References/ Requirements Justification	 Aerodrome Name or Alternate Identifier (character string) FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-ICE Model & Data section B-2.4 Aerodrome B-2.4.1 The specification of an Aerodrome shall allow use of an appropriate location identifier per ICAO Doc. 7910. B-2.4.2 The specification of an Aerodrome shall allow identification of an aerodrome that has no Doc. 7910 location identifier, along with the geographical position of the aerodrome (per B-2.2.2) and indication 	

Air Traffic Services Unit		
Definition	 A reference to an area control centre, approach control unit or aerodrome control tower being either: the ICAO location indicator of the atc unit, as listed in ICAO Doc 7910 if no ICAO location indicator is available, the ATC unit name and optionally its geographical position. [FIXM] 	
Has Parts		
Range of Values		
FIXM UML Path	Fixm.Base.Organization.AtcUnitReference	
Notes	 This data type contains the four (4) character code from ICAO 7910 that identifies the unit, if one is available (enumerated type) If a code is not available, a character string contains the unit name or alternate Air Traffic Services Unit (ATSU) identifier (character string) 	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-ICE Model & Data Table B-5 Flight Characteristics: Supplemental Data Source = ATS unit or other entity from which to obtain Supplemental Data, expressed as either: 	

Contact Information		
Definition The expression of contact information shall allow for name, phon number, email, and/or physical address.		
Has Parts		
Range of Values		
FIXM UML Path	Fixm.Base.Address.ContactInformation	

Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-ICE Model & Data B-2.12.1 The expression of contact information shall allow for name, phone number, email, and/or physical address.

Date Time		
Definition	A combination of a date and a time type. [ISO 19103, chapter 6.5.2.10]. A Time instant placeholder for gml: TimePositionType, in its XML dataTime variation [FIXM]	
Has Parts		
Range of Values		
FIXM UML Path	Fixm.Base.Types.Time	
Notes	 The pattern for this data type is YYYY-MMDDThh: mm:ss[.SSS]Z where YYYY represents the year, MM the month, and DD the day, preceded by an optional leading negative (-) character to indicate a negative number. If the negative character is omitted, positive (+) is assumed. The T is the date/time separator, and hh, mm, and ss represent hours, minutes, and seconds respectively. Additional digits can be used to increase the precision of fractional seconds, if desired. For example, the format ss.ss, with any number of digits after the decimal point is supported. Specifying fractions of a second is optional. This representation is immediately followed by a "Z" to indicate Coordinated Universal Time (UTC). 	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-ICE Model & Data section B-2.21 Date B-2.21.1 Expression of a date shall allow explicit identification of the year, month, and day. section B-2.22 Time B-2.22.1 Expression of a time should use a resolution appropriate to the operational use of the event being communicated. B-2.22.2 Expression of an absolute time shall be in Universal Coordinated Time (UTC). B-2.22.3 Expression of an absolute time shall include the date on which it occurs. 	

Direction	
Definition	Indicates direction relative to either true north or magnetic north.
Has Parts	
Range of Values	
FIXM UML Path	Fixm.Base.Measures.Bearing
Notes	 Range of values is [0-360], expressed in degrees Include all data elements that represent a heading, bearing, or ground track
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data Table B-11. Route/Trajectory Point: MetData = Wind direction and speed, together with Temperature which were used for the trajectory prediction at the associated Four Dimensional Point.

Initial Flight Rules	
Definition	Rules of the flight as dictated by regulations, weather, and separation minimums for IFR and VFR flights.
Has Parts	
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation. flightRulesCategory
Notes	 An enumerated listing of an Aircraft's flight rules {I, V, Y, Z}, as defined in ICAO 4444 where: I - Instrument Flight Rules (IFR) V - Visual Flight Rules (VER)
	 Y - IFR first (followed by one or more subsequent changes of flight rules) Z - VFR first (followed by one or more subsequent changes of flight rules)
References/ Requirements Justification	 ICAO Doc 4444, Appendix 2, Item 8 FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-ICE Model & Data section B-2.7 Initial Flight Rules B-2.7.1 A Flight Rules designator shall allow communication of the following types of flight rules:

Position		
Definition	A place indicating a specified location used to define an ATS route or the	
	flight path of an aircraft or for other navigation/ATS purposes.	
Has Parts		
Range of Values		
FIXM UML Path	Fixm.Base.Airspace.SignificantPoint	
Notes	This data type can be identified in any of the following ways:	
	 Location Identifier (enumerated): a predefined two (2) to five (5) character string. This string can be a fix name 	
	 Latitude/Longitude (record): defined by a pair of latitude and longitude coordinates. 	
	 Reference point-bearing-distance (character string): defined by three values: a navigation aid identifier (typically a VOR), a magnetic heading (expressed as a "Direction"), and a distance (expressed in nautical miles). 	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-ICE Model & Data section B-2.2 Position B-2.2.1 The FF-ICE shall allow specification of a position as a latitude/longitude referencing the WGS-84 ellipsoidal earth. B-2.2.2 The FF-ICE shall allow latitude/longitude to be expressed with precision appropriate to the operational use of the data. B-2.2.3 The FF-ICE shall allow specification of a position as a significant point as described in Appendix 2 of PANS-ATM. B-2.2.4 The FF-ICE shall allow specification of a position as a bearing and distance from a significant point expressed as in Appendix 2 of PANS-ATM. 	

Route	
Definition	A Route defines the path of a flight over the surface of the earth. It also includes altitude and speed information. It represents the intent of the flight.
Has Parts	 Route Designator To Next Element Route Point Route Truncation Indicator Cruising Speed
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory

Notes	
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS- ATM ICAO 4444), 2007 Appendix 3, Field Type 15c (Route)

Route Identifier	
Definition	The expression of a route identifier shall allow for the specification of an ATS Route, Standard Departure Route, and Standard Arrival Route as described in Appendices 1 and 3 of PANS-ATM.
Has Parts	
Range of Values	
FIXM UML Path	Fixm.Base.Airspace.RouteDesignator Fixm.Base.Airspace.SidStarDesignator
Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-ICE Model & Data B-2.3.1 The expression of a route identifier shall allow for the specification of an ATS Route, Standard Departure Route, and Standard Arrival Route as described in Appendices 1 and 3 of PANS-ATM.

Speed	
Definition	An instantaneous measurement of the rate of movement for an aircraft.
Has Parts	
	 Range of [0-2500] when expressed in knots
Range of Values	 Range of [0-4630] when expressed as KPH
	 Range of [0-3.8] when expressed in Mach
FIXM UML Path	Fixm.Base.Measures.Speed
Notes	
References/	• FF-ICE Implementation Guidance, ICAO Draft, 2016, APPENDIX B - FF-
Requirements Justification	ICE Model & Data
	 section B-2.11 True Airspeed
	 B-2.11.1 Expression of true airspeed shall support at a
	minimum:
	- True Airspeed in knots;
	- True Mach to hundredths; and
	- True Airspeed in kilometers per hour.

Time Duration	
Definition	Length or distance in the temporal dimension. [ISO 19108, chapter 5.2.3.7]
Has Parts	
Range of Values	
FIXM UML Path	Fixm.Base.Types.Duration
Notes	 The pattern for duration is nYnMnDTnHnMnS, where nY represents the number of years, nM the number of months, nD the number of days, T the date/time separator, nH the number of hours, nM the number of minutes, and nS the number of seconds.
References/ Requirements Justification	• ISO 19108, chapter 5.2.3.7

	Vertical Position	
Definition	The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.	
Has Parts		
Range of Values		
FIXM UML Path	Fixm.Base.Measures.VeritcalDistance	
Notes	 The altitude can be expressed in two ways: 1. Flight Level character string is a standard nominal altitude of an aircraft, calculated from the international standard pressure datum of 1013.25 hPa (29.92 inches in Hg), the average sea-level pressure. Flight Level is expressed in metres or feet. It is not necessarily the same as the aircraft's true altitude, either above mean sea level or above ground level. Two alternative conventions are available for the expression of flight level data: "F" followed by three (3) decimal numeric characters: indicates a flight level number, e.g. Flight Level 330 is expressed as "F330"; "S" followed by four (4) decimal numeric characters: indicates standard metric level in tens of metres, i.e. Standard Metric Level 11,300 metres (Flight Level 370) is expressed as "S1130"; 	
	 Altitude (character string) is the real altitude calculated by the aircraft, by measuring the air pressure and adjusting it for the local air pressure. Altitude is expressed in metres or feet. Two alternative conventions are available for the expression of altitude: "A" followed by three (3) decimal numeric characters: indicates altitude in hundreds of feet, e.g. an altitude of 4,500 feet is expressed as "A045"; "M" followed by four (4) decimal numeric characters: indicates altitude in tens of metres, e.g. an altitude of 8,400 metres is expressed as "M0840". 	

	Range of values: [0-130,000] when expressed in feet, [0-40,000] when expressed in metres.
References/ Requirements Justification	

4 Data Elements

4.1 4D Point

4D Point	
Definition	Identifies the location, altitude and time of a trajectory point.
Alternate Names	Four Dimensional Point
Has Parts	
Is Part Of	Trajectory Point
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPoint4D Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteElement.point4D
Business Rules	
Notes	 Includes latitude, longitude, altitude, and time. The time in the point may be expressed as a choice between an absolute time and a relative time (either relative to the previous 4D point or to the first 4D point). The relative time may be used to express an EET by an AU when associated with an appropriate significant point.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 Global Air Navigation Plan, ASBU-Block 1, ICAO DOC 9750, 4th Edition 2013 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data: B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Table B-11. Route/Trajectory Point: Four Dimensional Point = The location (expressed as a latitude/longitude per B-2.2), the time and the barometric altitude of a point on a computed flight path and associated with a Route/Trajectory Segment. When the flight can operate within a range, a lateral, temporal or vertical point range may be provided. Prior to departure, the time may be expressed as a choice between an absolute time or a relative time. This choice is indicated as an attribute of the point (Pefarence to Appendix 2 Eigld Type 18 EET/)

4.2 Action Taken By Reporting Unit

Action Taken By Reporting Unit				
Definition	A description of the actions taken by the reporting Air Traffic Service (ATS) unit, in the event of search and rescue.			
Alternate Names				
Has Parts				
Is Part Of				
Data Type(s)	Character String			
Range of Values				
FIXM UML Path	Fixm.Flight.Emergency.FlightEmergency.actionTaken			
Business Rules				
Notes	 This data element contains free-form text. [ICAO Standard ATS Messages] Transmitted in Alerting Messages (ALR) as ICAO Field Type 20g. [ICAO] When the information is not available, value should be NIL or NOT KNOWN. 			
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 20g (Alerting search and rescue information: Action Taken by Reporting Unit) 			

4.3 Activity

	Activity			
Definition	The measure of the rate of decay, or activity, of a radioactive material.			
Alternate Names				
Has Parts				
Is Part Of	Radionuclide			
Data Type(s)	Float			
Range of Values				
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.Radionuclide.activity			
Business Rules				
Notes	 For the attribute unit of measurement - Indicates the Unit of Measure (UOM) from the Code List. United Nations (UN) Economic Commission for Europe (UNECE) Recommendation Number 20 - Codes for Units of Measure Used in International Trade - Annex I can be used. In case of transport of radioactive materials, the units of measure to be used are Becquerel or multiples of Becquerel. 			
	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name 			

	 =ram:ApplicableRadioactiveisotope/ram:ActivityLevelMeasure Limit length to 100 characters to reduce risk of code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 UNECE Recommendation Number 20, Annex I IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FE ICE Implementation Cuidance, ICAO Draft, 2016, Appendix B, EE ICE Model &
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.4 Additional Handling Information

	Additional Handling Information				
Definition	Additional information related to the handling of dangerous goods, as identified on the Shipper's Declaration for Dangerous Goods.				
Alternate Names	Handling Information, Other Information, Handling Instructions				
Has Parts					
Is Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail, Dangerous Goods Package Details				
Data Type(s)	Character String				
Range of Values					
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods.handlingInformation				
Business Rules					
Notes	 This data element contains free-form text. This element comes from the Additional Handling Information field on the Shipper's Declaration for Dangerous Goods form. May include such items as 'Control Temperature' for substances stabilized by temperature control, or name and telephone number of a responsible person for infectious substances, or any other handling information not specified elsewhere. Often times, the emergency phone number is listed in this field on the Shipper's Declaration for Dangerous Goods. IATA does not specify a size limitation.IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:HandlingInstructions/ram:Description Limit length to 100 characters to reduce risk of code insertion. 				
References/ Requirements Justification	 IATA SDDG Specification v2.1 Shipper's Declaration for Dangerous Goods FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data 				

 B-2.8.1 Expression of information regarding dangerous goods being
carried on a flight shall support all items defined in the Technical
Instructions for the Safe Transport of Dangerous Goods by Air (ICAO
Document 9284), Part 7, Section 4.3.

4.5 Aerodrome of Loading

	Aerodrome of Loading				
Definition	The aerodrome where dangerous goods were loaded onto the flight.				
Alternate Names	Loading Location Name, Loading Location Code				
Has Parts					
Is Part Of					
Data Type(s)	Aerodrome				
Range of Values	If expressed as ICAO location identifier, values comply with ICAO Doc. 7910 - Location Indicators				
FIXM UML Path	ixm.Flight.Cargo.DangerousGoods.ShippingInformation.aerodromeOfLoading				
Business Rules	 Per ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010, NNN should not be used as the second, third and fourth letters of a location indicator such as the name of the destination aerodrome. 				
Notes	 When expressed as a free-form alphanumeric string, it contains the actual name of the departure aerodrome (e.g., Flagstaff Pulliam Airport). IATA Model Namespace =xmlns:ram='iata:datamodel:3' XML Element = ram:LoadingEvent/ram:OccurrenceLoadingLocation/ram:Name 				
References/ Requirements Justification	 IATA SDDG Specification v2.1 ICAO Doc 7910 - Location Identifiers IATA Dangerous Goods Regulations, January 2011 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 				

4.6 Aerodrome of Unloading

Aerodrome of Unloading				
Definition	he aerodrome where dangerous goods were unloaded from the flight.			
Alternate Names	Inloading Location Code, Unloading Location Name			
Has Parts				
Is Part Of				
Data Type(s)	Aerodrome			
Range of Values	If expressed as ICAO location identifier, values comply with ICAO Doc. 7910 - Location			
	Indicators			

FIXM UML Path	ixm.Flight.Cargo.DangerousGoods.ShippingInformation.aerodromeOfUnloading			
Business Rules	 Per ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010, NNN should no be used as the second, third and fourth letters of a location indicator such as the name of the destination aerodrome. 			
Notes	This may not necessarily be the destination airport, but rather where the package will be next unloaded off the plane (either for a transfer or a final destination). When expressed as a free-form alphanumeric string, it contains the actual name of the departure aerodrome (e.g., Flagstaff Pulliam Airport). IATA model Namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1', xmlns:ram='iata:datamodel:3', rsm:ShippersDeclarationForDangerousGoods/rsm:SpecifiedLogisticsConsignment/ ram:IncludedSupplyChainConsignment/ram:PreCarriageLogisticsTransportMovem ent/ram:UnloadingTransportEvent/ram:OccurrenceLogisticsLocation/ram:Name ram:UnloadingTransportEvent/ram:OccurrenceLogisticsLocation/ram:ID			
References/ Requirements Justification	 IATA SDDG Specification v2.1 ICAO Doc 7910 - Location Identifiers IATA Dangerous Goods Regulations, January 2011 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 			

4.7 Agreed 4D Trajectory

Agreed 4D Trajectory				
Definition	The 4D Trajectory agreed to by a FF-ICE enabled Air Traffic Management Service Providers (eASP) after collaboration between the FF-ICE enabled airspace user (eAU) and the eASP.			
Alternate Names				
Has Parts				
Is Part Of				
Data Type(s)	4D Trajectory			
Range of Values				
FIXM UML Path	Fixm.Flight.FlightData.Flight.agreed			
Business Rules				
Notes	 This agreed 4D trajectory includes all amendments made as the flight progresses. This element, along with the "Route - Agreed To" element, are always grouped together within an "Agreed Route Trajectory Group". Multiple instances of the agreed trajectory may be required (multiple messages being exchanged by the eAU with multiple eASPs), but only one instance of an agreed trajectory is associated with the flight data within one message. As such, 			

•	the cardinality of this item should be 01 in the FIXM model. The Agreed 4D Trajectory is used by an eASP to share the agreement with othe eASPs.			
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four- dimensional trajectory consisting of the components illustrated in Figure B-1. The FF-ICE shall support at a minimum the following types of Route/Trajecetory Groups:			

4.8 Air Waybill Number

Air Waybill Number				
Definition	The number referencing the air waybill.			
Alternate Names	Document Reference Number, Air Consignment Number, AWB			
Has Parts				
Is Part Of	Shipper's Declaration For Dangerous Goods Header			
Data Type(s)	Numeric String			
Range of Values				
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods.airWayBill Fixm.Flight.Cargo.DangerousGoods.AirWaybill			
Business Rules				
Notes	 The air waybill is a contract between the shipper and airline that states the terms and conditions of transportation. It is a receipt and evidence of the carriage of goods but is not a document of title to the goods. This element contains free-form text. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:AssociatedReferencedDocument/ram:IssuerAssignedID Limit length to 11 characters to reduce the risk of code insertion. 			

References/	• IATA	IATA SDDG Specification v2.1		
Requirements	• IATA	IATA Shipper's Declaration for Dangerous Goods		
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE M			
	Data			
		B-2.8.1 Expression of information regarding dangerous goods being		
		carried on a flight shall support all items defined in the Technical		
		Instructions for the Safe Transport of Dangerous Goods by Air (ICAO		
		Document 9284), Part 7, Section 4.3.		

4.9 Aircraft Address

Aircraft Address	
Definition	A code that enables the exchange of text-based messages between suitably equipped Air Traffic Service (ATS) ground systems and aircraft cockpit displays.
Alternate Names	24-bit Address, Mode S Address
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	[F00001-FFFFF] (hexadecimal numbers)
FIXM UML Path	Fixm.Flight.Aircraft.Aircraft.aircraftAddress
Business Rules	 Assigned in accordance with the provisions of ICAO Annex 10, Volume 3, Aeronautical Telecommunications.
Notes	 In addition to the standard hexadecimal representation, the Aircraft Address is sometimes published in its octal or decimal representation. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, SPL as ICAO Field Type 18, preceded by 'CODE/'.
References/ Requirements Justification	 Annex 10 to the Convention on International Civil Aviation: Aeronautical Telecommunications, Vol. III, Communication Systems, Second Edition, 2007 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.16.1 An aircraft address shall be expressed as a hexadecimal number in accordance with Annex 10, Volume 3, Chapter 9. B-3.3.2 FF-ICE flight data exchanges shall support information to identify a specific airframe relevant to a flight as described in Table B-3. Table B-3. Airframe Identification: Aircraft Address = A code conforming to B-2.16. (Reference to Appendix 3 Field Type: 18 CODE/)

4.10 Aircraft Approach Category

	Aircraft Approach Category
Definition	Classification of aircraft based on 1.3 times stall speed in landing configuration at maximum certified landing mass. [AIXM 5.1]
Alternate Names	Aircraft Performance Data, Performance Category
Has Parts	
Is Part Of	
Data Type(s)	Enumeration
Range of Values	{A, B, C, D, E, H}
FIXM UML Path	Fixm.Flight.Aircraft.Aircraft.aircraftApproachCategory Fixm.Flight.Aircraft.AircraftApproachCategory
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'PER/'. The letters in the range of values represent the following: A - Less than 169 km/h (91 kts) indicated airspeed (IAS) B - 169 km/h (91 kts) or more but less than 224 km/h (121 kts) IAS C - 224 km/h (121 kts) or more but less than 261 km/h (141 kts) IAS D - 261 km/h (141 kts) or more but less than 307 km/h (166 kts) IAS E - 307 km/h (166 kts) or more but less than 391 km/h (211 kts) IAS H - Helicopters
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Procedures for Air Navigation Services Aircraft Operations: Flight Procedures Doc. 8168 (Vol. I, Section 4, Chapter 1, paragraph 1.3.5) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.18.1 Aircraft performance data shall be expressed as one of the aircraft categories specified in the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume I, Section 4, Chapter 1, paragraph 1.3. B-3.5.1 The FF-ICE shall allow definition of aircraft and crew characteristics as defined in Table B-6. Table B-6 Aircraft Characteristics: Aircraft Approach Category = A code conforming to B-2.18 (Reference to Appendix 3 Field Type: 18 PER/)

4.11 Aircraft Colour and Markings

Aircraft Colour and Markings	
Definition	The colours of the aircraft and a description of the aircraft's significant markings.
Alternate Names	Significant Markings, Aircraft Color and Markings

Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Aircraft.Aircraft.aircraftColours
Business Rules	
Notes	 This data element contains free-form text. Supplementary information is stored with the flight planning service (wherever the flight plan is entered, e.g., FSS, DUATS, AOC, etc.). [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19g, preceded by 'A/'. This information is part of the supplementary flight plan data and shall be kept readily available by the operator at the departure aerodrome or another agreed location, so it can be supplied without delay when requested by ATS units.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Item 19: Supplementary Information A/ Aircraft Colour and Markings Item 19 appears in ICAO Flight Plan FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. B-16 Supplemental Information: Aircraft Color and Markings = Aircraft Color and Markings (Reference to Appendix 3 Field Type: 19 A/)

4.12 Aircraft Dangerous Goods Limitation

Aircraft Dangerous Goods Limitation	
Definition	Describes whether the shipment is packed to comply with the limitations prescribed
	for passenger and cargo aircraft or the limitations for cargo aircraft only.
Alternate Names	Aircraft Limitations Information, Aircraft Limitations Compliance, Aircraft DG
	Limitation
Has Parts	
Is Part Of	Shipper's Declaration For Dangerous Goods Header
Data Type(s)	Enumeration
Range of Values	{PASSENGER AND CARGO AIRCRAFT, CARGO AIRCRAFT ONLY}
	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods.aircraftLimitation
FIXM UML Path	${\sf Fixm}. {\sf Flight}. {\sf Cargo}. {\sf Packaging}. {\sf Dangerous} {\sf Goods} {\sf Package}. {\sf dangerous} {\sf Goods} {\sf Limitation}$
	Fixm.Flight.Cargo.DangerousGoods.AircraftDangerousGoodsLimitation
Business Rules	
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name =

	ram:ApplicableTransportDangerousGoods/ram:AircraftLimitationInformation
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 Shipper's Declaration for Dangerous Goods FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being
	carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.13 Aircraft Identification

Aircraft Identification	
Definition	A group of letters, figures or a combination thereof which is either identical to, or the coded equivalent of, the aircraft call sign to be used in air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communications. [ICAO Doc 4444]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.FlightIdentification.aircraftIdentification
Business Rules	
Notes	 This field identifies the flight from a controller's point-of-view (POV). In FIXM, the flight will be uniquely identified by the Globally Unique Flight Identifier (GUFI). [ICAO Standard ATS Messages] Transmitted in ALR, RCF, FPL, CHG, CNL, DLA, DEP, ARR, CPL, EST, CDN, ACP, RQP, RQS, and SPL as ICAO Field Type 7a. [ICAO]: The ICAO designator for the aircraft is a 1-7 character string. The ICAO designator for the aircraft operating agency followed by the flight identification (e.g. KLM511, NGA213, JTR25); when in radiotelephony, the call sign to be used by the aircraft will consist of the ICAO telephony designator for the operating agency followed by the flight identification (e.g. KLM511, NIGERIA 213). The nationality or common mark and registration marking of the aircraft (e.g., EIAKO, 4XBCD, N2567GA), when:
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic

Requirements	Management (PANS-ATM ICAO 4444)
Justification	ICAO Doc. 8585, Designators for Aircraft Operating Agencies, Aeronautical
	Authorities and Services
	• Annex 7 to the Convention on International Civil Aviation, 5th Edition, 2003
	Annex 10 to the Convention on International Civil Aviation: Aeronautical
	Telecommunications, Vol. II, Communication Procedures including those with
	PANS status, Sixth Edition, 2001
	Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO
	4444), 2007
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	• B-2.6.1 An Aircraft Identification for purposes of communication with Air
	Traffic Services shall allow any of the following:
	a) The ICAO designator for the aircraft operating agency as defined in
	ICAO Doc. 8585 followed by the flight identification (e.g. KLM511,
	NGA213, JTR25);
	b) The nationality or common mark and registration mark of the aircraft
	consistent with Annex 7 (e.g. EIAKO, 4XBCD, N2567GA); or
	c) A two to seven character identifier as specified by an ATM Service
	Provider.
	 Table B-2 Flight Identification: Aircraft Identification = Identifier for the
	flight conforming to B-2.6. (Reference to Appendix 3 Field Type: 7a)
	 B-3.3.1 FF-ICE flight data exchanges shall support information to identify a
	flight plan as described in Table Table B-2.
	 Table B-2. Flight Identification: Aircraft Identification = Identifier for the
	flight conforming to B-2.6. (Reference to Appendix 3 Field Type: 7a)

4.14 Aircraft Operator Identity

Aircraft Operator Identity	
Definition	Identity of a person, organization or enterprise engaged in or offering to engage in aircraft operation.
Alternate Names	Operator
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.operator
Business Rules	 Per ICAO Doc. 8585 - Designators for Aircraft Agencies, Aeronautical Authorities and Services: This data element is transmitted only when the operator is not obvious or is different from what is used as the Aircraft Identification.
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'OPR/'. Also transmitted in ALR as Field Type 20a.
References/ Requirements	ICAO Doc. 8585 - Designators for Aircraft Agencies, Aeronautical Authorities and

Justification	 Services Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic
	Management (PANS-ATM ICAO 4444)
	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007
	 Chapter 1. Definitions: Operator
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	• B-3.4.1 The FF-ICE shall allow definition of flight characteristics including
	the information defined in Table B-5.
	 Table B-5. Flight Characteristics: Operator = A text description of the operator of the aircraft. (Reference to Appendix 3 Field Type: 18 OPR/)

4.15 Aircraft Quantity

Aircraft Quantity	
Definition	The number of aircraft, if more than one. [ICAO Doc 4444, Appendix 2, ITEM 9]
Alternate Names	Number of Aircraft
Has Parts	
Is Part Of	
Data Type(s)	Integer
Range of Values	[2 - 99]
FIXM UML Path	Fixm.Flight.Aircraft.Aircraft.numberOfAircraft
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 9a.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 2, ITEM 9 (Number of aircraft) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.5 Aircraft Characteristics B-3.5.1 The FF-ICE shall allow definition of aircraft and crew characteristics as defined in Table B-6. B-3.5.2 The FF-ICE shall allow at least 99 aircraft to be specified for a formation flight. Table B-6. Aircraft Characteristics: Number of Aircraft = The number of aircraft in a formation flight. (Reference to Appendix 3 Field Type: 9a)

4.16 Aircraft Registration Mark

Aircraft Registration Mark	
Definition	A unique, alphanumeric string that identifies a civil aircraft and consists of the Aircraft Nationality or Common Mark and an additional alphanumeric string assigned by the state of registry or common mark registering authority. [FIXM]
Alternate Names	Registration Number, Tail Number, Registration
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Aircraft.Aircraft.registration Fixm.Flight.Aircraft.AircraftRegistration
Business Rules	 The Supplement to Annex 7 to the Convention on International Civil Aviation provides the national prefixes and common marks and describes the formats for each state and common mark registering authority. Aircraft must establish registration with a national aviation authority or common mark registering authority. This data element is transmitted only when the Aircraft Identification (ACID) is not equal to the tail number.
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'REG/'.
References/ Requirements Justification	 Supplement to Annex 7 to the Convention on International Civil Aviation - Aircraft Nationality and Registration Marks Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Annex 7 to the Convention on International Civil Aviation, 5th Edition, 2003 Annex 10 to the Convention on International Civil Aviation: Aeronautical Telecommunications, Vol. II, Communication Procedures including those with PANS status, Sixth Edition, 2001 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.17 Registration B-2.17.1 - An aircraft registration number shall be expressed in accordance with the requirements and assignments in Chapter 3 of Annex 7. Table B-3. Airframe Identification: Registration = A code conforming to B-2.17. (Reference to Appendix 3 Field Type: 18

4.17 Aircraft Type Reference

Aircraft Type Reference	
Definition	An aircraft type reference being either: - the ICAO designator of the aircraft type, as specified in ICAO Doc 8643, Aircraft Type Designators. - if no such designator has been assigned, any other identification of the aircraft type.[FIXM]
Alternate Names	Type of Aircraft
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	Valid range of identifiers described in ICAO Doc. 8643 - Aircraft Type Designators.
FIXM UML Path	Fixm.Flight.Aircraft.AircraftTypeReference
Business Rules	 Approved aircraft type designators are defined in ICAO Doc. 8643 - Aircraft Type Designators.
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 9b. If no designator has been assigned or if there is more than one type of aircraft in the flight, the string 'ZZZZ' is used in Item 9b. In this case, the type(s) of aircraft is (are) to be shown in Field Type 18, preceded by 'TYP/' and, if necessary, the number of aircraft of the type specified.
Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Aircraft Type Designators - Doc. 8643 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.5.1 The specification of an aircraft type shall allow expression of a type designator per ICAO Doc. 8643. B-2.5.2 The specification of an aircraft type shall allow expression of a type that has no Doc. 8643 identifier, with indication that it is not a standard identifier. B-3.5 Aircraft Characteristics
4.18 Airfile Route Start Time

Airfile Route Start Time			
Definition	The actual or estimated time of departure from the first point on the route for a flight filed in the air		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	Date Time		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.airfileRoute StartTime		
Business Rules	[ICAO Standard ATS Messages] This data element is a combination of ICAO Field Type 13b (time) and 18 DOF/ (date). The time is transmitted in FPL messages derived from flight plans filed in the air, as shown by the letters AFIL in ICAO Field Type 13a.		
Notes			
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ITEM 13: DEPARTURE AERODROME AND TIME (AFIL) Appendix 3, Field Type 13b (Departure Aerodrome and Time: Time) The actual or estimated time of departure from the first point shown in the Route Field (see Field Type 15) in FPL messages derived from flight plans filed in the air, as shown by the letters AFIL in (a). 		

4.19 Airspeed - Predicted

Airspeed - Predicted		
Definition	The airspeed of the flight at the 4D Point expressed as either Indicated Airspeed or	
	Mach.	
Alternate Names	Predicted Airspeed	
Has Parts		
Is Part Of	Trajectory Point	
Data Type(s)	Speed	
Range of Values		
EIXM LIMI Dath	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPoint4D.predictedAirspe	
	ed	
Business Rules		
Notes	Choice of Mach or Indicated Air Speed (IAS).	
References/	• ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE	
Requirements	Step 1, Feb 2015	
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &	

Data	
0	B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11.
0	Table B-11. Route/Trajectory Point: Predicted Airspeed = The predicted Indicated Airspeed or Mach at the associated Four Dimensional Point.

4.20 All Packed In One

All Packed In One		
Definition	A statement identifying the dangerous goods listed are all contained within the same outer packaging.	
Alternate Names		
Has Parts		
ls Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail, Dangerous Goods Package Details	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.Packaging.AllPackedInOne Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.allPackedInOne	
Business Rules		
Notes	 Takes the form 'All packed in one aaaa (description of packaging type) x nn (number of packages)'. IATA model Namespace = xmlns:ram='iata:datamodel:3' IATA XML element name = ram:SpecifiedLogisticsPackage/ram:AllPackedInOneInformation Limit length to 11 characters to reduce the risk of code insertion. 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284). Part 7. Section 4.3. 	

4.21 Along Route Distance

Along Route Distance		
Definition	The distance along the route, computed from the first converted fix in the ASP's	
	airspace for each point in the route or trajectory.	
Alternate Names		
Has Parts		

Is Part Of	Trajectory Point	
Data Type(s)	Float	
Range of Values	non-negative	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteElement.alongRouteDist ance	
Business Rules		
Notes	 Used in the identification of constraints, and provides a unique reference to significant points that may be crossed more than once. Measured in Nautical Miles or Kilometres 	
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data: B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Table B-11. Route/Trajectory Point: Along Route Distance = The distance from a reference point, along the route of flight to the associated Four Dimensional Point. 	

4.22 Altitude Constraint

Altitude Constraint		
Definition	The altitude constraint applicable to a specific point or segment on the route or trajectory.	
Alternate Names	Constraints, Route/Trajectory Point Constraints	
Has Parts		
Is Part Of	Trajectory Point	
Data Type(s)	Record	
Range of Values	Type {AT, AT_OR_ABOVE, AT_OR_BELOW, BETWEEN} Activation Type {PLAN_TO_COMMENCE, PLAN_TO_ATTAIN} Departure or Arrival {DEP, ARR}	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.Constraints.LevelConstraint	
Business Rules		
Notes	 In the route or trajectory, used to express constraints associated with route elements (e.g., procedures). This complex data type is comprised of: Value Type Activation Type Departure or Arrival Reference Value is the level or altitude associated with the constraint. There can be one or two Values. Two are used when Type is BETWEEN (see below), otherwise one is 	

	used.
	 Type is relative to Value and can include:
	 AT - The altitude or level is required to be at the given Value.
	 AT_OR_ABOVE - The altitude or level is required to be at or above the
	given Value.
	 AT_OR_BELOW - The altitude or level is required to be at or below the
	given Value.
	 BETWEEN - The altitude or level is required to be between two given
	Values.
	• Activation Type provides an indication of whether the profile constraint is met or
	initiated at the Location and can include:
	 PLAN_TO_COMMENCE - constraint is initiated at the given Location.
	 PLAN_TO_ATTAIN - constraint must be met by the given Location.
	• The Departure or Arrival indicator identifies whether the profile constraint is
	applicable on climb or descent. This provides an indication of which constraints
	take priority in the event of conflict when establishing a profile and can include:
	o DEP - applicable on climb.
	• ARR - applicable on descent.
	• Reference is a reference to a named constraint, if applicable. This field will be a
	character string used to add additional information (no predefined reasons /
	enumerations are required).
References/	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a
Requirements	Collaborative Environment (FF-ICE), First Edition - 2012
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-3.6.11 Route/Trajectory Constraints:
	 The ATM Collaborative Environment shall allow identification of
	constraints associated with each route/trajectory point as
	described in Table B-15.
	 The ATM Collaborative Environment shall allow definition of
	altitude, speed, or time constraints at specific trajectory points.
	 Table B-15. Route/Trajectory Constraints: Altitude Constraint = The
	altitude constraint applicable to the associated route point or trajectory
	point. Includes a type (AT, AT OR GREATER, AT OR LESS or BETWEEN),
	value as the altitude(s) or level(s), activation type (begin at or reach by),
	an indication if the constraint is for departure or arrival and a reference
	loentifier if applicable.

4.23 Arrival Aerodrome

Arrival Aerodrome		
Definition	The aerodrome at which the flight has actually arrived. [FIXM]	
Alternate Names	Arrival Airport	
Has Parts		
Is Part Of		

Data Type(s)	Aerodrome	
Range of Values	If expressed as ICAO location identifier values comply with ICAO Doc. 7910 - Location Indicators.	
FIXM UML Path	Fixm.Flight.Arrival.Arrival.aerodrome	
Business Rules	 An Aerodrome location identifier is per ICAO Doc. 7910 - Location Indicators. If none is available for the aerodrome, this data element will be free-form text following standard FIXM usage for locations. 	
Notes	 [ICAO Standard ATS Messages] Transmitted in ARR as ICAO Field Type 17a. Expressed as a four-letter ICAO location indicator. The letters 'ZZZZ' are used, if no indicator has been allocated to the arrival aerodrome. If the letters ZZZZ are used, the name of the arrival aerodrome is inserted in ICAO Field Type 17c. When expressed as a free-form alphanumeric string, it contains the actual name of the arrival aerodrome (e.g., 'Baltimore Washington International Thurgood Marshall Airport'). This data element is similar to Destination Aerodrome, and the two have equal values in most cases. However, they remain conceptually different as standalone data elements. 	
References/ Requirements Justification	 ICAO Doc. 7910 - Location Indicators, Edition No. 138, 2010 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.3.3 FF-ICE flight data exchanges shall support Flight Status items as described in Table B-4. Table B-4. Flight Status: Arrival Aerodrome = The actual aerodrome of arrival, conforming to B-2.4. (Reference to Appendix 3 Field Type: 17a) 	

4.24 Arrival Runway

Arrival Runway		
Definition	The runway direction on which the flight has actually landed. [FIXM]	
Alternate Names	ARWY	
Has Parts		
Is Part Of		
Data Type(s)	Character String	
Range of Values	[0-9]{2}[LCR]? (2 figures 01 to 36 may be followed by Letters L, C or R)	
FIXM UML Path	Fixm.Flight.Arrival.Arrival.runwayDirection	
Business Rules		
Notes	 This data element is associated with the Aeronautical Information Exchange Model (AIXM) "Runway" data element. Usually assigned prior to arrival. Can be used for the allocation of Standard 	
	Terminal Arrival Route (STAR). Can also be used to calculate taxi-in times	

	(durations). Updated with the actual arrival runway upon landing, if different from the expected or assigned runway.	
References/ Requirements Justification	 AIXM 5.1 (www.aixm.aero) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data Section 11.6 SID / STAR DATA (11.6.1: "Inclusion of runway, SID/STAR in the 4DT") 	

4.25 Assumed Altimeter Setting

	Assumed Altimeter Setting	
Definition	The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92).	
Alternate Names		
Has Parts		
Is Part Of	Trajectory Point	
Data Type(s)	Float	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPoint4D.altimeterSetting	
Business Rules		
Notes	 Flight levels are pressure altitudes with respect to the pressure datum 1013.2 expressed in hPa. Altitudes are pressure altitudes with respect to local surface pressure measurements. If the altitude at the 4D Point is below the transition level, the assumed altimeter setting for the 4D Point is indicated. 	
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 Global Air Navigation Plan, ASBU-Block 1, ICAO DOC 9750, 4th Edition 2013 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Each Route/Trajectory Point shall be associated with a Route/Trajectory Segment as described in B-3.6.5. Table B-11. Route/Trajectory Point: Assumed Altimeter Setting = The altimeter setting that was assumed at the associated Four Dimensional Point for the computation of the barometric altitude is provided. 	

4.26 Boundary Crossing Level - Cleared/Coordinated

Boundary Crossing Level - Cleared/Coordinated	
Definition	The cleared altitude (flight level) at which the aircraft will cross the boundary crossing point if in level cruising flight or, if the aircraft is climbing or descending at the boundary crossing point, the cleared flight level to which it is proceeding.
Alternate Names	Cleared Level
Has Parts	
Is Part Of	
Data Type(s)	Vertical Position
Range of Values	
FIXM UML Path	Fixm.Flight.EnRoute.BoundaryCrossing.clearedLevel
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in CPL, and EST as ICAO Field Type 14c. Flight levels are pressure altitudes with respect to the pressure datum 1013.2 expressed in hPa. Altitudes are pressure altitudes with respect to local surface pressure measurements. This concept reflects coordination between ATCs.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 14c (Estimate data: Cleared level)

4.27 Boundary Crossing Level - Transition/Coordinated

Boundary Crossing Level - Transition/Coordinated	
Definition	An altitude (flight level) at or above/below which an aircraft will cross the associated boundary point.
Alternate Names	Supplementary Crossing Data
Has Parts	
Is Part Of	
Data Type(s)	Record
Range of Values	Altitude Condition {A, B}
FIXM UML Path	Fixm.Flight.EnRoute.AltitudeInTransition
Business Rules	
Notes	 This data element is composed of the following pieces of information. The data type is listed after the colon. Altitude Value: AltitudeAltitude Condition: Enumeration The Altitude Condition comes from a Controlled List containing: A - at or above

•	 B - at or below [ICAO Standard ATS Messages] Transmitted in CPL, and EST as ICAO Field Type 14d. Flight levels are pressure altitudes with respect to the pressure datum 1013.2 expressed in hPa. Altitudes are pressure altitudes with respect to local surface pressure measurements. [ICAO Standard ATS Messages] Transmitted in CPL, and EST as ICAO Field Type 14e.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Definitions: Transition level Appendix 3, Field Type 14d (Estimate data: Supplementary crossing data) Appendix 3, Field Type 14e (Estimate data: Crossing condition)

4.28 Boundary Crossing Point/Coordinated

Boundary Crossing Point/Coordinated	
Definition	A point used to coordinate a boundary crossing from one ATS facility to another.
Alternate Names	
Has Parts	Boundary Crossing Time/Coordinated, Boundary Crossing - Off Track Deviation/Coordinated,
Is Part Of	
Data Type(s)	Position, Record
Range of Values	
FIXM UML Path	Fixm.Flight.EnRoute.BoundaryCrossing.crossingPoint
Business Rules	 Must be associated with a Boundary Crossing Time.
Notes	 [ICAO Standard ATS Messages] Transmitted in CPL, and EST as ICAO Field Type 14a.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 14a (Estimate data: Boundary point)

4.29 Boundary Crossing Time/Coordinated

Boundary Crossing Time/Coordinated	
Definition	The estimated time at which a flight will cross the associated boundary crossing point.
Alternate Names	Time at Boundary Point
Has Parts	

Is Part Of	Boundary Crossing Point/Coordinated
Data Type(s)	Date Time
Range of Values	
FIXM UML Path	Fixm.Flight.EnRoute.BoundaryCrossing.crossingTime
Business Rules	 Must be associated with a Boundary Crossing Point.
Notes	 [ICAO Standard ATS Messages] Transmitted in CPL and EST as ICAO Field Type 14b.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007
	 Appendix 3, Field Type 14b (Estimate data: Time at boundary point)

4.30 City Name

	City Name	
Definition	The name of the city the package is being shipped to.	
Alternate Names		
Has Parts		
Is Part Of	Postal Structured Address	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress	
Business Rules	 IATA limits the size of the text to 17 characters. 	
Notes	 The code related to the name can be identified in the UNECE Recommendation Number 16 - LOCODE - Code for Trade and Transport Locations. IATA Data Model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:PostalTradeAddress/ram:CityName 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.31 Communications Capabilities

	Communications Capabilities
Definition	The serviceable communications equipment, available on the aircraft at the time of flight, and associated flight crew qualifications that may be used to communicate with ATS units. [FIXM]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Record
Range of Values	One or more of the following values (if enumeration): {E1, E2, E3, H, M1, M2, M3, P1, P2, P3, P4, P5, P6, P7, P8, P9, U, V, Y}
FIXM UML Path	Fixm.Flight.Capability.FlightCapabilities.communication Fixm.Flight.Capability.CommunicationCapabilities
Business Rules	 Standard equipment is VHF RTF, VOR and ILS unless another set is prescribed by the appropriate ATS authority.
Notes	 This data element can contain either an alphanumeric string (free-form text) and/or a combination of the following ICAO codes for communication capabilities: E1 - FMC WPR ACAR E2 - D-FIS ACARS E3 - PDC ACARS E3 - PDC ACARS H - HF RTF M1 - ATC RTF SATCOM (INMARSAT) M2 - ATC RTF (MTSAT) M3 - ATC RTF (Iridium) P1-P9 - reserved for RCP U - UHF RTF V - VHF RTFY - ATS VHF w/ 8.33 kHz channel spacing capability [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 10a, or transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'COM/' (only when equipment cannot be expressed with the 10a predefined values).
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 10a (Equipment and Capabilities: Radiocommunication, navigation and approach aid equipment and capabilities) Appendix 3, Field Type 18 (Other information: COM/) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.10.1 Expression of Equipment and Capability shall support at a minimum the following equipment/capability categories: () 3. Communication

• a. VHF
o iv. 8.33 kHZ VHF
• b. HF
• c. UHF
d. Satcom
o i. Inmarsat
o ii. MTSat
o iii. Iridium
 B-3.4.1 The FF-ICE shall allow definition of flight characteristics including
the information defined in Table B-5.
 Table B-5. Flight Characteristics: Equipment and Capabilities = Description
of capabilities conforming to B-2.10 (Reference to Appendix 3 Field Type:
18 COM/

4.32 Compatibility Group

	Compatibility Group
Definition	When shipping dangerous goods, the reference to the group which identifies the kind of substances and articles deemed to be compatible.
Alternate Names	
Has Parts	
ls Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of Line Item Detail, Dangerous Goods List of Line Item Details
Data Type(s)	Enumeration
Range of Values	[A-S] excluding {I, M, O, P, Q, R}
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.compatibilityGroup Fixm.Flight.Cargo.Packaging.CompatibilityGroup
Business Rules	 Required for explosive dangerous goods.
Notes	 Explosive Dangerous Goods have compatibility group letters assigned to facilitate segregation during transport. The actual letter indicated depends on the specific properties of the substance being transported. The letters used range from A to S excluding the letters I, M, O, P, Q and R. For example, an explosive with a compatibility group 'A' is shown as 1.1A. IATA model Namespace = xmlns:ram='iata:datamodel:3' IATA XML element name = ram:ApplicableTransportDangerousGoods/ram:ExplosiveCompatibilityGroupCode
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being

carried on a flight shall support all items defined in the Technical
Instructions for the Safe Transport of Dangerous Goods by Air (ICAO
Document 9284), Part 7, Section 4.3.

4.33 Consignee Address

Consignee Address	
Definition	Specifies the consignee's mailing address.
Alternate Names	
Has Parts	
Is Part Of	Consignee Name and Address, Shipper's Declaration For Dangerous Goods Header
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.consignee
Business Rules	 The Shipper Address is mandatory when used in the IATA SDDG message.
Notes	 This data element contains free-form text. The address consists of PO Box, Street, City, Region or State, ZIP or Postal Code, Country Code, and Country Name. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element = rsm:ShipppersDeclarationForDangerousGoods/rsm:MasterConsignment/ram:Incl udedHouseConsignment/ram:ConsignorParty/ram:PostalStructuredAddress
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.34 Consignee Contact Name

Consignee Contact Name	
Definition	The name of the consignee contact department or person responsible in the event of an emergency, security event, or when further information about the shipment is needed.
Alternate Names	
Has Parts	
Is Part Of	Consignee Name and Address, Shipper's Declaration For Dangerous Goods Header

Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.consignee
Business Rules	• In case of transport of infectious substances, this element should be populated.
Notes	 This element contains free-form text. Can be different from the Consignee Name, for example, when the Consignee Name is a company and the Consignee Contact Name is an individual. IATA does not specify a size. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ConsigneeParty/ram:DefinedTradeContact/ram:PersonName Limit max size to 100 characters to limit the vulnerability of code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.35 Consignee Name

Consignee Name	
Definition	Contains the name or legal identity of the organization or person receiving the package.
Alternate Names	
Has Parts	
Is Part Of	Consignee Name and Address, Shipper's Declaration For Dangerous Goods Header
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.consignee
Business Rules	 Additional names may be specified in this field.
Notes	 This element contains free-form text. IATA specifies a maximum size of 35 characters. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ConsigneeTradeParty/ram:Name
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011

Shipper's Declaration for Dangerous Goods
 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284)
• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.36 Consignee Name and Address

Consignee Name and Address	
Definition	The grouping element unites the Consignee Name with the Postal Structure Address (detailed breakout of address components).
Alternate Names	
Has Parts	Consignee Phone Number, Postal Structured Address, Consignee Contact Name, Consignee Name
Is Part Of	Shipper's Declaration For Dangerous Goods Header
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.consignee
Business Rules	This information is required for an IATA SDDG.
Notes	 IATA model namespace = xmlns:ram='iata:datamodel:3' XML Element = ram:ConsigneeParty
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.37 Consignee Phone Number

Consignee Phone Number	
Definition	The phone number of the consignee contact department or person to call, in the event of an emergency, security event, or when further information about the shipment is needed.
Alternate Names	
Has Parts	
Is Part Of	Consignee Name and Address, Shipper's Declaration For Dangerous Goods Header
Data Type(s)	Character String

Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.consignee
Business Rules	
Notes	 Includes country code (if necessary), area code, and phone number. IATA specifies a maximum size of 25 characters. It may include extra characters to identify, if a particular telephone extension is needed to reach inside the organization. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ConsigneeParty/ram:DefinedTradeContact/ram:DirectTelephoneCommunicat ion/ram:CompleteNumber
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.38 Control Temperature

Control Temperature	
Definition	The maximum temperature at which the substance can be safely transported.
Alternate Names	
Has Parts	
Is Part Of	Dangerous Goods List of Line Item Detail
Data Type(s)	Float
Range of Values	[-200, 200]
FIXM UML Path	Fixm.Flight.Cargo.Packaging.Temperatures.controlTemperature
Business Rules	
Notes	 Control Temperature is in Degrees Celsius. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:ControlTemperatureMeasuremen t/ram:ActualMeasure
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 UNECE Recommendation Number 20, Annex I IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc

•	9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.39 Country Code

Country Code	
Definition	A code that indicates a country.
Alternate Names	
Has Parts	
Is Part Of	Destination Country, Postal Structured Address, Departure Country
Data Type(s)	Numeric String
Range of Values	Country Codes are per International Organization for Standardization (ISO) 3166- 1/1998, and UNECE Recommendation Number 3 - Code for Representation of Names of Countries.
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress
Business Rules	
Notes	 IATA specifies a size of two characters. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:CountryIdentificationTradeCountry/ram:ID
References/ Requirements Justification	 IATA SDDG Specification v2.1 ISO 3166-1/1998 UNECE Recommendation Number 3 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.40 Country Name

Country Name	
Definition	The name of a country.
Alternate Names	
Has Parts	
Is Part Of	Destination Country, Postal Structured Address, Departure Country
Data Type(s)	Character String
Range of Values	

FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress
Business Rules	
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:CountryIdentificationTradeCountry/ram:Name Limit length to 100 characters to reduce the risk of code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.41 Criticality Safety Index

Criticality Safety Index	
Definition	The dimensionless number (rounded up to the next tenth) assigned to and placed on the label of a fissile material package to designate the degree of control of accumulation of packages containing fissile material during transportation.
Alternate Names	CSI
Has Parts	
Is Part Of	Radioactive Materials
Data Type(s)	Float
Range of Values	[0.0-100.0]
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.RadioactiveMaterial.criticalitySafetyIndex
Business Rules	Applies to fissile material only.
Notes	 CSI designates the degree of control of accumulation of packages containing fissile material during transportation. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:Critical itySafetyIndexNumeric Limit maximum size of 10 characters to limit the vulnerability to code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.42 Cruise Climb Start

Cruise Climb Start		
Definition	Describes the cruise climb parameters at the point at which a cruise climb is planned to commence. Includes the speed, the lower level and the upper level of the cruise climb.	
Alternate Names	Cruise Climb, Events, Route/Trajectory Point Changes	
Has Parts		
Is Part Of	Route Point, Trajectory Point	
Data Type(s)	Record	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteChanges.CruiseClimbStart	
Business Rules		
Notes	 This element can be associated with a point in a trajectory or a point in a route. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15c6. It contains the following parameters: the speed to be maintained during cruise climb; either the minimum and maximum levels defining the layer to be occupied during cruise climb, or the level above which cruise climb is planned. This complex data type is comprised of: Speed Altitude May be used for describing the desired vertical profile when trajectory modelling. 	
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information: Cruise Climb = At the associated route/trajectory point, specifies the speed to be maintained during a cruise climb, together with the two levels defining the layer to be occupied during the cruise climb, or the lower level above which cruise 	

4.43 Cruising Altitude - Requested

Cruising Altitude - Requested	
Definition	The filed altitude (flight level) for the first or the whole cruising portion of the flight.
Alternate Names	Requested Cruising Level
Has Parts	
Is Part Of	Route
Data Type(s)	Vertical Position
Range of Values	
FIXM UML Path	eq:Fixm.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.cruisingLevel
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15b. This value represents the first cruising portion, if there are level changes in 15c; otherwise, it represents the level for the whole cruising portion.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Field Type 15b (Route: Requested cruising level) Field Type 15c4 (Route: Significant point/cruising speed and cruising level) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.4 Route/Trajectory Initial Cruise and Estimates: The FF-ICE shall allow definition of Route/Trajectory speed, level and time target data described in Table B-9. Table B-9. Route/Trajectory Speed, Level, and Time: Requested Cruising Level = The planned cruising level for the first or the whole portion of the route to be flown, conforming to B-2.1. (Reference to Appendix 3 Field Type: 15b)

4.44 Cruising Speed

Cruising Speed	
Definition	The true airspeed for the first or the whole cruising portion of the flight. This can be for a filed flight or an active flight. This element is strategic in nature.
Alternate Names	Requested Cruising Speed or Mach
Has Parts	
Is Part Of	Route
Data Type(s)	Speed
Range of	

Values	
FIXM UML Path	eq:Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.cruisingSpeed
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15a. If multiple cruising speeds are needed to describe the route in an unambiguous manner (see ICAO PANS-ATM), these can be expressed using Change Points. The method of measurement is True Airspeed (TAS).
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 15a (Route: Cruising speed or Mach number) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.4 Route/Trajectory Initial Cruise and Estimates: The FF-ICE shall allow definition of Route/Trajectory speed, level and time target data described in Table B-9. Table B-9. Route/Trajectory Speed, Level, and Time: Requested Cruising Speed or Mach = The true airspeed for the first or the whole cruising portion of the flight conforming to B-2.11. (Reference to Appendix 3 Field Type: 15a)

4.45 Current 4D Trajectory

Current 4D Trajectory	
Definition	This trajectory expresses the 4D trajectory currently being executed by the Air Traffic Services unit.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	4D Trajectory
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.current
Business Rules	
Notes	 This element, along with the "Route - Current" element, are always grouped together within a Current Route Trajectory Group
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 11.4.2.3.2 CURRENT FLIGHT PLAN (CPL) MESSAGES Appendix 3, CPL message ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015

4.46 Dangerous Goods Gross Weight

Dangerous Goods Gross Weight	
Definition	The total gross weight of dangerous goods transported for each unique UN number.
Alternate Names	
Has Parts	
Is Part Of	Dangerous Goods List of Line Item Detail
Data Type(s)	Float
Range of Values	non-negative
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsDimensions.grossWeight
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage.
Notes	 The unit of measure is an attribute to the Gross Weight. Units of Measure selected from Code List. UNECE Recommendation Number 20 - Codes for Units of Measure Used in International Trade - Annex I can be used. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:GrossWeightMeasure
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 UNECE Recommendation Number 20, Annex I IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO

4.47 Dangerous Goods List of Line Item Detail

Dangerous Goods List of Line Item Detail	
Definition	The part of the Shipper's Declaration For Dangerous Goods that contains the Line Item information for the shipment.
Alternate Names	
Has Parts	Packing Group, Dangerous Goods Volume, Compatibility Group, Hazard Class and Division, Reportable Quantity, United Nations Number, Emergency Temperature, Control Temperature, Marine Pollutant Indicator, Dangerous Goods Net Weight, Subsidiary Hazard Class and Division, Technical Name, Shipment Authorizations, Proper Shipping Name, Packing Instruction Number, Dangerous Goods Gross Weight, Supplementary Information
Is Part Of	Shipper's Declaration For Dangerous Goods Line Item Details

Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackageGroup.dangerousGoodsPackage
Business Rules	 If the parent grouping element (Shipper's Declaration For Dangerous Goods Line Item Details) is present, this grouping element is required.
Notes	 IATA model Namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1' and xmlns:ram='iata:datamodel:3' XML Element = rsm:MasterConsignment/ram:IncludedHouseConsignment
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.48 Dangerous Goods List of Overpack Detail

Dangerous Goods List of Overpack Detail	
Definition	The part of the Shipper's Declaration For Dangerous Goods that contains the Overpack Detail for the shipment.
Alternate Names	
Has Parts	Package Gross Weight, Package Length, Package Net Weight, Package Volume, Package Width, Radioactive Materials, Package Height
Is Part Of	Shipper's Declaration For Dangerous Goods Line Item Details
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage
Business Rules	 If the parent grouping element (Shipper's Declaration For Dangerous Goods Line Item Details) is present, this grouping element is optional. It is required, if multiple packages are grouped together.
Notes	 IATA model Namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1' and xmlns:ram='iata:datamodel:3' XML Element = rsm:MasterConsignment/ram:IncludedHouseConsignment
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.49 Dangerous Goods List of Package Detail

Dangerous Goods List of Package Detail	
Definition	The part of the Shipper's Declaration For Dangerous Goods that contains the Package Details for the shipment.
Alternate Names	
Has Parts	Dangerous Goods Package Details
Is Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage
Business Rules	 If the parent grouping element (Shipper's Declaration For Dangerous Goods Packaging Details) is present, this grouping element is required.
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element = ram:IncludedHouseConsignment/ram:RelatedCommercialTradeTransaction
References/	IATA SDDG Specification v2.1
Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.50 Dangerous Goods Net Weight

Dangerous Goods Net Weight		
Definition	The total net weight of dangerous goods transported for each unique UN number.	
Alternate Names		
Has Parts		
Is Part Of	Dangerous Goods List of Line Item Detail	
Data Type(s)	Float	
Range of Values	non-negative	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsDimensions.netWeight	
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage. 	
Notes	 The unit of measure is an attribute to the Net Weight. Units of Measure selected from Code List. UNECE Recommendation Number 20 - Codes for Units of Measure Used in International Trade - Annex I can be used. For the attribute unit of measurement - Indicates the Unit of Measure from the Code List. In case of transport of radioactive materials, the units of measure to be used are Grams or multiples of Grams. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:NetWeightMeasure 	

References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 UNECE Recommendation Number 20, Annex I IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods
	 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	 Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.51 Dangerous Goods Package Details

Dangerous Goods Package Details		
Definition	The part of the Shipper's Declaration For Dangerous Goods that contains the Package Details for the shipment.	
Alternate Names		
Has Parts	Exclusive Use Shipment Indicator, Dangerous Goods Quantity, Package Gross Weight, Package Length, All Packed In One, Additional Handling Information, Dangerous Goods Type of Packaging, Package Net Weight, Q Value, Package Width, Package Volume, Package Height	
Is Part Of	Dangerous Goods List of Package Detail	
Data Type(s)	Record	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackageGroup	
Business Rules	 If the parent grouping element (Shipper's Declaration For Dangerous Goods Line Item Details) is present, this grouping element is required. 	
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element = ram:RelatedCommercialTradeTransaction/ram:SpecifiedLogisticsPackage 	
References/ Requirements	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & 	
Justification	Data	
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.52 Dangerous Goods Quantity

Dangerous Goods Quantity		
Definition	The total number of dangerous good packages of the same type and content.	
Alternate Names	Number of Packages, Quantity, Amount	
Has Parts		
Is Part Of	Dangerous Goods Package Details	
Data Type(s)	Integer	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.dangerousGoodsQuantity	
Business Rules		
Notes	 This element should not contain the weight or volume. The total weight or volume should be specified in the Shipment Gross Weight, Shipment Net Weight, and Shipment Volume elements. IATA model ram:SpecifiedLogisticsPackage/ram:ItemQuantity unitCode 	
References/ Requirements Justification	 ATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Degree 0284) 	

4.53 Dangerous Goods Screening Location

Dangerous Goods Screening Location	
Definition	The name of the Certified Cargo Screening Facility, as approved by the Transportation
	Security Administration (TSA), or the location/name of any screening performed.
Alternate Names	HC Screening Location
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	${\sf Fixm}. {\sf Flight}. {\sf Cargo}. {\sf DangerousGoods}. {\sf ShippingInformation}. {\sf dangerousGoodsScreeningLob}. {\sf Constraint} {\sf Constraint}$
	cation
Business Rules	
Notes	• If the location is unspecified, this data element will signify the package has not
	been screened or the screening status is unknown.

	•	This element is not required by IATA and was included to be used for operational security purposes. Limit to 100 characters to reduce risk of code insertion.
References/ Requirements Justification	•	49 CFR Part 1549: Certified Cargo Screening Program FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
		 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.54 Dangerous Goods Type of Packaging

	Dangerous Goods Type of Packaging
Definition	The material or container in which the dangerous good is packaged.
Alternate Names	Type of Packaging, Package Type
Has Parts	
Is Part Of	Dangerous Goods Package Details
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.typeOfPackaging
Business Rules	
Notes	 This element contains free-form text. IATA model ram:SpecifiedLogisticsPackage/ram:UsedSupplyChainPackaging/ram:Type
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284). Part 7. Section 4.3.

4.55 Dangerous Goods Volume

Dangerous Goods Volume		
Definition	The total displacement of dangerous goods transported for each unique UN number.	
Alternate Names		
Has Parts		
Is Part Of	Dangerous Goods List of Line Item Detail	
Data Type(s)	Float	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsDimensions.volume	
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage. 	
Notes	 The unit of measure is an attribute (unitCode) to the Volume. Units of Measure selected from Code List. UNECE Recommendation Number 20 - Codes for Units of Measure Used in International Trade - Annex I can be used. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:GrossVolumeMeasure 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 UNECE Recommendation Number 20, Annex I IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.56 Data Link Communication Capabilities

Data Link Communication Capabilities	
Definition	A code indicating the capability of the aircraft to communicate or receive data. [FIXM]
Alternate	
Names	
Has Parts	
Is Part Of	
Data Type(s)	Record
Range of Values	{J1, J2, J3, J4, J5, J6, J7}
FIXM UML	eq:Fixm.Flight.Capability.CommunicationCapabilities.datalinkCommunicationCapabilityCode

Fixm.Flight.Capability.DatalinkCommunicationCapabilityCode
 This data element can contain either an alphanumeric string (free-form text) and/or a combination of the following enumerated ICAO codes for communication capabilities: J1 - CPDLC ATN VDL Mode 2 J2 - CPDLC FANS 1/A HFDL J3 - CPDLC FANS 1/A VDL Mode A J4 - CPDLC FANS 1/A VDL Mode 2 J5 - CPDLC FANS 1/A SATCOM (INMARSAT) J6 - CPDLC FANS 1/A SATCOM (MTSAT) J7 - CPDLC FANS 1/A SATCOM (Iridium) [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 10a, or transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'DAT/' (only when equipment cannot be expressed with the 10a pre-defined values).
 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 10a (Equipment and capabilities: Radiocommunication, navigation and approach aid equipment and capabilities) Appendix 3, Field Type 10a (Equipment and approach aid equipment and capabilities) Appendix 3, Field Type 18 (Other Informatation: DAT/) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.10.1 Expression of Equipment and Capability shall support at a minimum the following equipment/capability categories:

4.57 Declaration Text: Compliance

Declaration Text: Compliance		
Definition	The warning message for not complying with the regulations.	
Alternate Names		
Has Parts		
Is Part Of	Shipper's Declaration For Dangerous Goods Header	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DeclarationText Fixm.Flight.Cargo.DangerousGoods.DeclarationText.compliance	
Business Rules	 This is mandatory for Hazardous/Dangerous Goods transported by air. 	
Notes	 This data element contains free-form text. Often found on shipping papers. IATA does not specify a size.IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element name = ram:ApplicableTransportDangerousGoods/ram:ComplianceDeclarationInformation Limit max size to 300 characters to limit the vulnerability of code insertion. 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 Shipper's Declaration for Dangerous Goods FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.58 Declaration Text: Consignor

Declaration Text: Consignor	
Definition	The consignor's statement indicating the dangerous goods have been packaged and handled according to regulations.
Alternate Names	
Has Parts	
Is Part Of	Shipper's Declaration For Dangerous Goods Summary
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DeclarationText.consignor Fixm.Flight.Cargo.DangerousGoods.DeclarationText
Business Rules	 This is mandatory for Dangerous Goods shipments.

Notes	 This data element contains free-form text. IATA does not specify a size. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element name = ram:BusinessHeaderDocument/ram:SignatoryConsignorAuthentication/ram:State ment Limit max size to 300 characters to limit the vulnerability of code insertion
References/	IATA SDDG Specification v2.1
Requirements	• 49 CFR 172/173/175
Justification	Shipper's Declaration for Dangerous Goods
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part
	7, Section 4.3.

4.59 Declaration Text: Shipper

Declaration Text: Shipper		
Definition	This shipper's statement indicating the dangerous goods have been packaged and handled according to regulations.	
Alternate Names		
Has Parts		
Is Part Of	Shipper's Declaration For Dangerous Goods Header	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DeclarationText Fixm.Flight.Cargo.DangerousGoods.DeclarationText.shipper	
Business Rules	This is mandatory for Dangerous Goods transported by air.	
Notes	 This data element contains free-form text. IATA does not specify a size. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element name = ram:ApplicableTransportDangerousGoods/ram:ShipperDeclarationInformation Limit max size to 300 characters to limit the vulnerability of code insertion. 	
References/ Requirements Justification	 49 CFR 172/173/175 Shipper's Declaration for Dangerous Goods FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.60 Department

Department	
Definition	Contains the Department Name portion of the Address.
Alternate Names	
Has Parts	
Is Part Of	Postal Structured Address
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress
Business Rules	
Notes	 This element contains free-form text. IATA Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:PostalTradeAddress/ram:DepartmentName Limit length of field to 100 characters to reduce the risk of code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.61 Departure Aerodrome

Departure Aerodrome	
Definition	The aerodrome from which the flight departs. [FIXM]
Alternate Names	Departure Airport
Has Parts	
Is Part Of	
Data Type(s)	Aerodrome
Range of Values	
FIXM UML Path	Fixm.Flight.Departure.Departure.aerodrome
Business Rules	
Notes	 [ICAO Standard ATS Messages] If the Departure Aerodrome has a four character ICAO location indicator (as described in ICAO 7910), it is populated in field 13a of the Flight Plan and transmitted in all standard ATS messages except RCF and LAM. If not, the string 'ZZZZ' is inserted in field 13a, and the Departure Aerodrome information is inserted in field 18 (transmitted in ALR, FPL, CPL, and SPL), preceded by the string 'DEP/'. If the flight plan is filed while the aircraft is in flight, the string AFIL is inserted in field 13a, and the four-letter ICAO location indicator of the ATS unit from which supplementary flight plan data can be obtained is inserted in field 18, preceded by

	 the string 'DEP/'. When expressed as a free-form alphanumeric string, it contains the actual name of the departure aerodrome (e.g., 'Flagstaff Pulliam Airport').
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007
	ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-3.6.2 Route/Trajectory Basic Data: The FF-ICE shall allow definition of the basic data described in Table B-7.
	 Table B-7. Route/Trajectory Basic Data: Departure Aerodrome = An aerodrome (or other point of departure) conforming to B-2.4

4.62 Departure Country

Departure Country	
Definition	The Code and Name of the departure country where the package originated.
Alternate Names	Departure Country Name, Export Trade Country
Has Parts	Country Name, Country Code
Is Part Of	Shipper's Declaration For Dangerous Goods Header
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.originCountry
Business Rules	
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ExportTradeCountry/ The Country Code is actually stored in ram:ExportTradeCountry/ram:ID
References/ Requirements Justification	 IATA SDDG Specification v2.1 ISO 3166-1/1998 UNECE Recommendation Number 3 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.63 Departure Runway

Departure Runway	
Definition	The runway direction used for taking off. [FIXM]
Alternate Names	DRWY
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	[0-9]{2}[LCR]? (2 figures 01 to 36 may be followed by Letters L, C, or R)
FIXM UML Path	Fixm.Flight.Departure.Departure.runwayDirection
Business Rules	
Notes	 Usually assigned prior to departure and can be linked with allocation of the Standard Instrument Departure (SID). Also, used to derive taxi out time (duration).Updated with the actual departure runway upon take-off, if different from the expected/assigned runway.
References/ Requirements Justification	 AIXM 5.1 (www.aixm.aero). FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data Section 11.6 SID / STAR DATA (11.6.1: "Inclusion of runway, SID/STAR in the 4DT")

4.64 Desired 4D Trajectory

Desired 4D Trajectory	
Definition	This trajectory indicates the preferred 4D trajectory submitted by the FF-ICE enabled airspace user (eAU) to the FF-ICE enabled Air Traffic Management Service Providers (eASP) subject to required constraints.
Alternate Names	
Has Parts	Ranked 4D Trajectory Identifier
Is Part Of	
Data Type(s)	4D Trajectory
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.desired
Business Rules	
Notes	 Provided by the eAU submission to initiate or re-initiate negotiation during planning. It represents the top Ranked 4D Trajectory submitted by an eAU. This element, along with the "Route - Desired" element, are always grouped together within a Desired Route Trajectory Group. If this element is used simultaneously with Ranked 4D Trajectories, include top choice in Desired and any remaining ranked trajectories in Ranked.
References/ Requirements	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012

Justification	 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE
	Step 1, Feb 2015
	 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and
	Distribution Provisions, Feb 2015
	• ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE
	Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015
	• ICAO ATMRPP-WG/29-WP/672, FF-ICE Step 1 Submission, Maintenance, and
	Distribution Provisions, Jul 2015
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-3.6.1 General: The FF-ICE shall allow definition of route and four-
	dimensional trajectory consisting of the components illustrated in Figure
	B-1.
	The FF-ICE shall support at a minimum the following types of
	Route/Trajcectory Groups:
	a) Desired - A Desired Route/Trajectory is one for which an Operator
	is requesting evaluation and which indicates the Operator's best
	estimate of the expected Route/Trajectory;
	()

4.65 Destination Aerodrome

Destination Aerodrome	
Definition	The aerodrome of intended landing. [ICAO Doc 4444 - extracted from the definition of Destination Alternate]. This is the aerodrome at which the flight is scheduled to arrive. [FIXM]
Alternate Names	Destination Airport
Has Parts	
Is Part Of	
Data Type(s)	Aerodrome
Range of Values	
FIXM UML Path	Fixm.Flight.Arrival.Destination.aerodrome
Business Rules	 Per ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010, NNN should not be used as the second, third and fourth letters of a location indicator such as the name of the destination aerodrome. This data element is updated while in flight, if new destination aerodrome(s) is/are assigned.
Notes	 This data element is similar to Arrival Aerodrome, and the two have equal values in most cases. However, they remain conceptually different as standalone data elements. [ICAO Standard ATS Messages] If the Destination Aerodrome has a four character ICAO location indicator (as described in ICAO 7910), it is populated in field 16a of the Flight Plan and transmitted in all Standard ATS Messages except RCF and LAM. If not, the string 'ZZZZ' is inserted in field 16a, and the Destination Aerodrome information is inserted in field 18 (transmitted in ALR, FPL, and SPL), preceded by

	 'DEST/'. When expressed as a free-form alphanumeric text, it contains the actual name of the departure aerodrome.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.2 Route/Trajectory Basic Data: "The FF-ICE shall allow definition of the basic data described in Table B-7." Table B-7. Route/Trajectory Basic Data (excerpt): Departure Aerodrome = An aerodrome (or other point of departure) conforming to B-2.4

4.66 Destination Aerodrome - Alternate

Destination Aerodrome - Alternate	
Definition	An alternate aerodrome to which an aircraft may proceed should it become either impossible or inadvisable to land at the aerodrome of intended landing. [ICAO Doc 4444]
Alternate Names	Destination Alternate Aerodrome, Alternate Airport, Alternate Destination Aerodrome(s)
Has Parts	
Is Part Of	
Data Type(s)	Aerodrome
Range of Values	
FIXM UML Path	Fixm.Flight.Arrival.Destination.aerodromeAlternate
Business Rules	 Per ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010, NNN should not be used as the second, third, and fourth letters of a location indicator such as the name of the destination aerodrome.
Notes	 [ICAO Standard ATS Messages] Transmitted in the Standard ATS Messages ALR, FPL and SPL as ICAO Field Type 16c. If 'ZZZZ' is used in 16c (in cases where no ICAO location indicator has been allocated for the aerodrome), the name of the alternate aerodrome is transmitted as Field Type 18, preceded by 'ALTN/'. When expressed as a free-form alphanumeric text, it contains the actual name of the alternate destination aerodrome (e.g., 'Seattle-Tacoma International Airport Sea-Tac Airport').
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007

ICAO E	Ooc. 7910: Location Indicators, Edition No. 138, 2010
• FF-ICE	Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
Data	
0	B-3.6.3 Route/Trajectory Alternate Destination Data: "The FF-ICE shall
	allow definition of the alternate destination data described in Table B-8."
0	Table B-8. Route/Trajectory Alternate Destinations (excerpt): Alternate
	Destination Aerodrome(s) = One or more designators conforming to B-
	2.4. (Reference to Appendix 3 Field Type: 16c, 18 ALTN/)

4.67 Destination Country

Destination Country			
Definition	The Name and Code of the dangerous good's country of destination.		
Alternate Names	Final Destination Trade Country		
Has Parts	Country Name, Country Code		
Is Part Of	Shipper's Declaration For Dangerous Goods Header		
Data Type(s)	Record		
Range of Values			
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.destinationCountry		
Business Rules			
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:FinalDestinationTradeCountry/ The Country Code is stored in ram:FinalDestinationTradeCountry/ram:ID. Country Code (aka ram:ID) is mandatory 		
References/ Requirements Justification	 IATA SDDG Specification v2.1 ISO 3166-1/1998 UNECE Recommendation Number 3 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 		

4.68 Destination Runway

Destination Runway			
Definition	The expected or assigned runway for an intended landing.		
Alternate Names	DRWY		
Has Parts			
Is Part Of			
Data Type(s)	Character String		
Range of Values	[0-9]{2}[LCR]? (2 figures 01 to 36 may be followed by Letters L, C or R)		
FIXM UML Path	Fixm.Flight.Arrival.Destination.runwayDirection		
--	--	--	
Business Rules			
Notes	 This data element is associated with the Aeronautical Information Exchange Model (AIXM) "Runway" data element. Usually assigned prior to arrival. Can be used for the allocation of Standard Terminal Arrival Route (STAR). Can also be used to calculate taxi-in times (durations). Updated with the actual arrival runway upon landing, if different from the expected or assigned runway. 		
References/ Requirements Justification	 AIXM 5.1 (www.aixm.aero) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data Section 11.6 SID / STAR DATA (11.6.1: "Inclusion of runway, SID/STAR in the 4DT") 		

4.69 Dinghy Colour

	Dinghy Colour
Definition	The colour of the dinghies carried by the aircraft.[FIXM]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Capability.Dinghies.colour
Business Rules	
Notes	 This data element contains free-form text. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19f, preceded by 'D/'. [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units.
References/ Requirements Justification	 Amendment No. 1 To The Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 19f (Supplementary information followed by D/: The colour of the dinghies) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Dinghies = The number of dinghies carried, their capacity in number of persons, and other characteristics.

(Reference to Appendix 3 Field Type: 19 D/)	

4.70 Dinghy Cover Status

	Dinghy Cover Status		
Definition	Indication of the covered/uncovered nature of the dinghies carried by the aircraft. [FIXM]		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	Enumeration		
Range of Values	{C, U}		
FIXM UML Path	Fixm.Flight.Capability.Dinghies.covered Fixm.Flight.Capability.DinghyCoverIndicator		
Business Rules			
Notes	 The meaning of the value is as follows: U - uncovered C - covered [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19f, preceded by 'D/'. 		
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 19f (Supplementary information followed by D/: C if dinghies are covered.) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Dinghies = The number of dinghies carried, their capacity in number of persons, and other characteristics. (Reference to Appendix 3 Field Type: 19 D/) 		

4.71 Dinghy Number

Dinghy Number		
Definition	The number of dinghies carried by the aircraft. [adapted from ICAO Doc 4444, Appendix 2, ITEM 19 D/]	
Alternate Names		
Has Parts		

Is Part Of			
Data Type(s)	Integer		
Range of Values	[0-99]		
FIXM UML Path	Fixm.Flight.Capability.Dinghies.number		
Business Rules			
Notes	 [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19f, preceded by 'D/'. 		
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 (Appendix 2, ITEM 19 D/) Appendix 3, Field Type 19f (Supplementary information followed by D/: 2 NUMERICS giving the number of dinghies carried) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Dinghies = The number of dinghies carried, their capacity in number of persons, and other characteristics. (Reference to Appendix 3 Field Type: 19 D/) 		

4.72 Dinghy Total Capacity

Dinghy Total Capacity		
Definition	Total capacity, in persons, of all dinghies carried. [ICAO Doc 4444, Appendix 2, ITEM 19 D/]	
Alternate Names	Total Capacity	
Has Parts		
Is Part Of		
Data Type(s)	Integer	
Range of Values	[0-999]	
FIXM UML Path	Fixm.Flight.Capability.Dinghies.totalCapacity	
Business Rules		
Notes	 [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19f, preceded by 'D/'. 	
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 (Appendix 2, ITEM 19 D/) 	

0	Appendix 3, Field Type 19f (Supplementary information followed by D/: 3 NUMERICS giving the total capacity, in persons carried, of all dinghies.)
• FF-ICE	Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
Data	
0	B-3.7 Supplemental Information: FF-ICE flight data exchanges shall
	support supplemental information as described in Table B-16.
0	Table B-16. Supplemental Information: Dinghies = The number of dinghies
	carried, their capacity in number of persons, and other characteristics.
	(Reference to Appendix 3 Field Type: 19 D/)

4.73 Elapsed Time - Estimated

	Elapsed Time - Estimated		
Definition	The estimated amount of time from takeoff to reach a significant point or Flight		
	Information Region (FIR) boundary along the route of flight.		
Alternate Names	EET, Boundary Crossings		
Has Parts			
Is Part Of			
Data Type(s)	Time Duration		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.estimatedE lapsedTime		
	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.EstimatedElapsedTime		
Business Rules	• This data element is always used in combination with a Significant Point.		
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'EET/'. 		
	Example:EET/EINN0026 EGGX0111 52N20W0136 CYQX0228 52N40W0330 52N50W0415		
References/ Requirements	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) 		
Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 		
	 Appendix 3, Field Type 18 (Other informationa: EET/ Significant points or FIR boundary designators and accumulated estimated elapsed times from take-off to such points or FIR boundaries, when so prescribed on the basis of regional air navigation agreements, or by the appropriate ATS authority.) 		
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data 		
	 B-3.6.5 Route/Trajectory Segments: The FF-ICE shall allow definition of route and trajectory segments as described in Table B-10. Table B-10 Route/Trajectory Segment: Boundary Crossings = Boundary crossings of interest including the estimated elapsed time to the boundary. (Reference to Appendix 3 Field Type: 18 EET/) 		

4.74 Emergency Description

	Emergency Description		
Definition	A short, plain-language description of the nature of the emergency.		
Alternate Names	Nature of Emergency, Description of Emergency		
Has Parts			
Is Part Of			
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Flight.Emergency.FlightEmergency.emergencyDescription		
Business Rules			
Notes	This data element contains free-form text.		
	 [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 5c. 		
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic		
Requirements	Management (PANS-ATM ICAO 4444)		
Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 		
	4444), 2007		
	 Appendix 3, Field Type 5c (Description of emergency: Nature of 		
	emergency)		

4.75 Emergency Message Originator

Emergency Message Originator			
Definition	The ICAO identifier of the ATS unit originating the emergency message.		
Alternate Names	Originator of Message		
Has Parts			
Is Part Of			
Data Type(s)	Character String		
Range of Values	ATS unit identifier values are published in ICAO Doc. 7910 - Location Identifiers.		
FIXM UML Path	Fixm.Flight.Emergency.FlightEmergency.originator		
Business Rules			
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 5b. 		
References/	ICAO Doc. 7910 - Location Indicators, Edition No. 138, 2010.		
Requirements	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic		
Justification	Management (PANS-ATM ICAO 4444)		
	• Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO		
	4444), 2007		
	 Appendix 3, Field Type 5b (Description of emergency: Originator of 		
	message)		

4.76 Emergency Phase

	Emergency Phase		
Definition	A generic term meaning, as the case may be, uncertainty phase, alert phase or distress phase. [ICAO Annex 11]. This is the stage of emergency the flight is currently under as designated by an ATS unit. [FIXM]		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	Enumeration		
Range of Values	{INCERFA, ALERFA, DETRESFA}		
FIXM UML Path	Fixm.Flight.Emergency.FlightEmergency.phase Fixm.Flight.Emergency.EmergencyPhase		
Business Rules			
Notes	 The meaning of the values is as follows: INCERFA - uncertainty phase ALERFA - alert phase DETRESFA - distress phase [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 5a. 		
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 5a (Description of emergency: Phase of emergency) 		

4.77 Emergency Radio Capability Type

Emergency Radio Capability Type	
Definition	The type of serviceable communication devices available on the aircraft that are able to transmit an emergency radio signal. [FIXM]
Alternate Names	Emergency, Communication Mode Type Code, Emergency Radio
Has Parts	
Is Part Of	
Data Type(s)	Enumeration
Range of Values	One or more of the following: {U, V, E}
FIXM UML Path	Fixm.Flight.Capability.SurvivalCapabilities.emergencyRadioCapabilityType Fixm.Flight.Capability.EmergencyRadioCapabilityType
Business Rules	
Notes	 The meaning of the values is as follows: U - UHF (243.0 MHz) V - VHF (121.5 MHz) E - ELT

	 [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19c, preceded by 'R/'.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 (Appendix 2, ITEM 19 R/]) Appendix 3, Field Type 19c (Supplementary information: preceded by 'R/') FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Emergency Radio = The type(s) of
	emergency radios on board. (Reference to Appendix 3 Field Type: 19 R/)

4.78 Emergency Response Guidebook Number

	Emergency Response Guidebook Number
Definition	A reference to a set of instructions to handle a specific dangerous goods situation.
Alternate Names	ERG #
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods.guidebookNumber
Business Rules	
Notes	 The Emergency Response Guidebook (ERG) currently has about 170 guides for hazmat emergency response. It is published jointly by the United States (US) Department of Transportation (DOT), Transport Canada (TC), and the Secretariat of Communications and Transportation (SCT) of Mexico, with collaboration with the Chemistry Information Centre for Emergencies (CIQUIME) of Argentina. The Emergency Response Guidebook provides first responders with a go-to manual to help deal with hazmat accidents during the critical first 30 minutes. It is often called the 'Little Orange Book'. It can be searched by UN # or Guidebook Number.
References/ Requirements Justification	 PHMSA 2012 Emergency Response Guidebook FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.79 Emergency Temperature

	Emergency Temperature
Definition	The temperature at which emergency procedures shall be implemented in the event of loss of temperature control.
Alternate Names	
Has Parts	
Is Part Of	Dangerous Goods List of Line Item Detail
Data Type(s)	Float
Range of Values	[-200, 200]
FIXM UML Path	Fixm.Flight.Cargo.Packaging.Temperatures.emergencyTemperature
Business Rules	
Notes	 Specified in degrees Celsius. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:EmergencyTemperatureMeasure ment/ram:ActualMeasure
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 UNECE Recommendation Number 20, Annex I IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.80 En Route Alternate Aerodrome

En Route Alternate Aerodrome	
Definition	An ICAO designator of the aerodrome to which a flight could be diverted while en
	route, if needed.
Alternate Names	Enroute Alternate, Enroute Alternates, Alternate En Route Aerodrome(s)
Has Parts	
Is Part Of	
Data Type(s)	Aerodrome
Range of Values	
FIXM UML Path	Fixm.Flight.EnRoute.EnRoute.alternateAerodrome
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as Field Type 18 preceded by 'PALT/'
	to, preceded by NALLY.

	 When expressed as a free-form alphanumeric text, it contains the actual name of the alternate en route aerodrome (e.g., 'Washington Dulles International Airport').
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic
Requirements	Management (PANS-ATM ICAO 4444)
Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Definitions FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	 Data B-3.6.3 Route/Trajectory Alternate Destination Data: The FF-ICE shall allow definition of the alternate destination data described in Table B-8. Table B-8. Route/Trajectory Alternate Destinations: Alternate Destination Aerodrome(s) = One or more designators conforming to B-2.4. (Reference to Appendix 3 Field Type: 16c 18 ALTN/)

4.81 En Route Delay

En Route Delay	
Definition	En Route delay or holding planned to occur at a significant point or along a route element.
Alternate Names	Delay, Events, Route/Trajectory Point Changes
Has Parts	En Route Delay Value, En Route Delay Type, En Route Delay Reference
Is Part Of	Route Point,Trajectory Point
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.EnRouteDelay Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteElement.enRouteDelay
Business Rules	
Notes	 En Route Delay is mapped to FF-ICE/1 Delay. Used for indicating planned airborne holding, or for Airspace User (AU)-specified operations at a defined location.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information: Delay = Enroute delay or holding planned to occur at the associated route point or trajectory point. Includes an indication if the delay is planned airborne holding, or AU-requested operations at a specified location. Includes a reference to a named hold pattern, airspace or aerodrome at which the delay is

expected. (Reference to Appendix 3 Field Type: 18 DLE/)

4.82 En Route Delay Reference

	En Route Delay Reference
Definition	Indicates a named hold pattern, airspace or aerodrome at which the en route delay is
	expected to occur.
Alternate Names	
Has Parts	
Is Part Of	En Route Delay
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.EnRouteDelay.delayReference
Business Rules	
Notes	
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information: Delay = Enroute delay or holding planned to occur at the associated route point or trajectory point. Includes an indication if the delay is planned airborne holding, or AU-requested operations at a specified location. Includes a reference to a named hold pattern, airspace or aerodrome at which the delay is expected. (Reference to Appendix 3 Field Type: 18 DLE/)

4.83 En Route Delay Type

En Route Delay Type	
Definition	Indicates if the en route delay is planned airborne holding, or Airspace User (AU)- requested operations at a specified location.
Alternate Names	
Has Parts	
Is Part Of	En Route Delay
Data Type(s)	Enumeration
Range of Values	{AU_REQUEST_POINT, AU_REQUEST_SEGMENT, AU_REQUEST_AIRSPACE, AU_REQUEST_AERODROME, AU_REQUEST_HOLDING, ATFM}
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.EnRouteDelay.delayType Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.EnRouteDelayType
Business Rules	

Notes	 AU_REQUEST_POINT: The delay is an AU request to "spend time" at the point, thus the delay has to be added to the flight duration to the next point to compute the estimate to the next point. AU_REQUEST_SEGMENT: The delay is an AU request to spend time at the segment starting at point, thus the delay has to be understood as the total duration between the point and the next one. AU_REQUEST_AIRSPACE: The delay is an AU request to spend time in an airspace after the RoutePoint the name of which is in delayReference, the delayValue is the time in that airspace, the entry and exit time into that airspace is in theBEGIN_STAY and END_STAY info of the trajectory. AU_REQUEST_AERODROME: The delay is an AU request to spend time at an aerodrome after the RoutePoint, the name of the aerodrome is in the delayReference field, the points at which the AU leaves its route and rejoin it go to the aerodrome are in the BEGIN_STAY and END_STAY and END_STAY info of the trajectory. AU_REQUEST_HOLDING: The delay is an AU request to spend time at an aerodrome after the RoutePoint, the name of the aerodrome is in the delayReference field, the points at which the AU leaves its route and rejoin it go to the aerodrome are in the BEGIN_STAY and END_STAY info of the trajectory. AU_REQUEST_HOLDING: The delay is an AU request to spend time at a holding pattern the anchor point of which is the RoutePoint. The holding pattern name if any is in delayReference. delayValue used to compute estimates as in AU_REQUEST_POINT. ATFM: the delay is an ASP request to do Enroute Holding names in delayReference. delayValue used to compute estimates as in AU_REQUEST_POINT.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information: Delay = Enroute delay or holding planned to occur at the associated route point or trajectory point. Includes an indication if the delay is planned airborne holding, or AU-requested operations at a specified location. Includes a reference to a named hold pattern, airspace or aerodrome at which the delay is expected. (Reference to Appendix 3 Field Type: 18 DLE/)

4.84 En Route Delay Value

En Route Delay Value	
Definition	The length of time the flight is expected to be delayed at a specific point en route.
Alternate Names	Delay (at a fix)
Has Parts	
Is Part Of	En Route Delay
Data Type(s)	Time Duration
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.EnRouteDelay.delayValue

Business Rules	This data element must be used in combination with a Route Point.		
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Fi Type 18, preceded by 'DLE/'. Note: ICAO cannot represent en route delays larger than 24 hours. 		
Notes References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007; ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information: Delay = Enroute delay or holding planned to occur at the associated route point or trajectory point. Includes an indication if the delay is planned airborne holding, or AU-requested operations at a specified location. Includes a reference to a named hold pattern, airspace or aerodrome at which the delay is expected. (Reference to Appendix 3 Field Type: 18 DLE/) 		

4.85 Exclusive Use Shipment Indicator

Exclusive Use Shipment Indicator			
Definition	An indicator of sole use, by a single shipper, of an aircraft or of a large freight container, of which all initial, intermediate and final loading and unloading is carried out in accordance with the directions of the shipper or consignee.		
Alternate Names			
Has Parts			
Is Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail, Dangerous Goods Package Details		
Data Type(s)	Boolean		
Range of Values			
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackageGroup.shipmentUseIndicator Fixm.Flight.Cargo.Packaging.ShipmentUse		
Business Rules	 This data element is used for radioactive material only. If exclusive use is true, no other dangerous goods can be on board the aircraft. 		
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element name = ram:MasterConsignment/ram:IncludedHouseConsignment/ram:HandlingInstructi ons/ram:ExclusiveUsageIndicator 		
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 		

•	9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.86 Filed 4D Trajectory

Filed 4D Trajectory			
Definition	This trajectory expresses the 4D trajectory filed by the FF-ICE enabled airspace user (eAU) with the FF-ICE enabled Air Traffic Management Service Providers (eASP).		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	4D Trajectory		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightData.Flight.filed		
Business Rules			
Notes	 Provided by the eAU as filed flight plan data. Provided by the eAU to update filed flight plan data. Used by the eASP to share filed flight plan data after filing. This element, along with the "Route - Filed" element, are always grouped together within a Filed Route Trajectory Group. 		
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four- dimensional trajectory () The FF-ICE shall support at a minimum the following types of Route/Trajcectory Groups:		

4.87 Fissile Excepted Indicator

Fissile Excepted Indicator				
Definition	An indicator of whether the restrictions for fissile material are excepted for a			
	particular package.			
Alternate Names				
Has Parts				
Is Part Of	Radioactive Materials			
Data Type(s)	Boolean			
Range of Values				
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.RadioactiveMaterial.fissileExceptedIndicator Fixm.Flight.Cargo.RadioactiveMaterials.FissileExcepted			
Business Rules				
Notes	 Regulations provide some exceptions from the requirements for packages containing fissile material, for example if the uranium-235 concentration is less than 1% or if the package contains only limited quantities of fissile material. These are known as fissile excepted packages. Other packaging requirements still apply. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:FissileEx ceptionIndicator Limit size to 10 characters to reduce risk of code insertion. 			
References/	IATA SDDG Specification v2.1			
Requirements	• 49 CFR 172/173/175			
Justification	 IATA Dangerous Goods Regulations, January 2011 			
	 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) 			
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &			
	Data			
	• B-2.8.1 Expression of information regarding dangerous goods being			
	carried on a flight shall support all items defined in the Technical			
	Instructions for the Safe Transport of Dangerous Goods by Air (ICAO			
	Document 9204), Part 7, Section 4.5.			

4.88 Flight Plan Originator

Flight Plan Originator		
Definition	Originator of the Flight Plan, can be FF-ICE Participant or a non-upgraded ASP. [adapted from ICAO Draft FF-ICE Implementation Guidance] Equivalent to ATS 18 ORGN/.	
Alternate Names		
Has Parts		
Is Part Of		
Data Type(s)	Contact Information	
Range of Values	The range of values for the 4-letter location identifiers is published in ICAO Doc. 7910	

	Location Indicators			
	Three letter designators are published in ICAO Doc. 8585 - Designators for Aircraft			
	Incenting Agencies Aeronautical Authorities and Services			
	Operating Agencies, Aeronautical Authorities and Services.			
FIXM UML Path	ixm.Flight.FlightData.Flight.flightPlanOriginator			
Business Rules				
Notes	 This data element can contain free-form text. This data element is comprised of a four-letter ICAO location indicator, followed by three letters identifying the organization or service address, followed by one letter identifying the department or division within the organization addressed. If a specific one-letter identifier is not required, the letter X is used as the final character. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'ORGN/'. 			
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic			
Requirements	Management (PANS-ATM ICAO 4444)			
Justification	ICAO Doc. 8585, Designators for Aircraft Operating Agencies, Aeronautical Authorities and Service			
	ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010			
	• Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007			
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C, Table C-1. Message Information: Flight Plan Originator = The FF-ICE Participant that originated the flight plan, if different from the Flight Plan Submitter (e.g. a service provider may send a flight plan message on behalf of the operator that originated the flight plan).(B-3.2 FF-ICE Participant) The AFTN address of the flight plan originator, for use when a non-upgraded ASP needs to communicate with the originator. (B-3.2 AFTN Address) Point of Contact for the originator of the flight plan, normally the operator (B-3.2 Contact) 			

4.89 Flight Plan Reference Version

Flight Plan Reference Version			
Definition	he reference of the Flight Plan Version to which the response pertains.		
Alternate Names	Reference (Message Identifier of message being responded to)		
Has Parts			
Is Part Of			
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Messaging.FlightPlanVersion.referenceVersion		
Business Rules			
Notes			

References/	•	FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &	
Requirements		Data	
Justification		0	B-3.2 Flight Data Messaging Support
		0	B-3.2.4 The FF-ICE shall allow a recipient to determine the version of a
			flight plan.
	•	FF-ICE	Implementation Guidance, 2016, Appendix C - FF-ICE Messages,
		0	C-2.2.4 A Planning Response shall reference the GUFI and the Flight Plan
			Version to which the response pertains.
		0	C-3.4.4 A Filing Response shall reference the GUFI and the Flight Plan
			Version to which the response pertains.

4.90 Flight Plan Submitter

	Flight Plan Submitter		
Definition	The FF-ICE Participant that submitted the flight plan. [ICAO Draft FF-ICE Implementation Guidance].		
Alternate Names	Filed By		
Has Parts			
Is Part Of			
Data Type(s)	Contact Information		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightData.Flight.flightPlanSubmitter		
Business Rules			
Notes	 This data element may contain free-form text or, if the flight was filed in the air, it may contain the four-letter ICAO location indicator of the ATS unit from which supplementary flight plan data can be obtained. [ICAO Standard ATS Messages] If the flight plan is filed while the aircraft is in flight, the string AFIL is inserted in field 13a, and the four-letter ICAO location indicator of the ATS unit, from which supplementary flight plan data can be obtained, is inserted in field 18, preceded by the string 'DEP/'. 		
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C, Table C-1. Message Information: Flight Plan Submitter = The FF-ICE Participant that submitted the flight plan. This may be an operator, or may be a service provider that submitted the flight plan on behalf of an operator. (B-3.2 FF-ICE Participant) Point of Contact for the submitter of the flight plan, which may be the operator or a designated representative. (B-3.2 Contact Information) 		

4.91 Flight Plan Version

	Flight Plan Version		
Definition	The flight plan version shall indicate uniquely the latest version of a flight plan. Two different kinds of version can exist for a given flight plan: one from the AU and one from the ASP. [adapted from ICAO FF-ICE Implementation Guidance]		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Messaging.FlightPlanVersion.version		
Business Rules			
Notes	Flight Plan Version can have two forms:		
	 Operator Flight Plan Version - A unique identifier for the latest version of a flight plan submitted by an Airspace User. A flight plan version should be operationally usable for verification that the pilot or operator and ATM personnel are using the same information for the flight. [adapted from ICAO FF-ICE Implementation Guidance] ASP Flight Plan Version - A unique identifier for the latest version of a flight plan as distributed by the sending ASP. A flight plan version should be operationally usable for verification that the pilot or operator and ATM personnel are using the same information for the flight. [adapted from ICAO FF-ICE Implementation Guidance] 		
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data: B-2.14.1 A flight plan version shall indicate uniquely the latest version of a flight plan submitted by an Airspace User. B-2.14.2 A flight plan version should be operationally usable for verification that the pilot or operator and ATM personnel are using the same information for the flight. B-3.3.3 FF-ICE flight data exchanges shall support Flight Status items as described in Table B- 4. Table B-4. Flight Status: Operator Flight Plan Version = An identifier conforming to B-2.14 and identifying the latest version submitted by the operator.		

4.92 Flight Rules

Flight Rules			
Definition	The category of flight rules with which the pilot intends to comply. [ICAO Doc 4444, Appendix 2, Item 8]		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	Initial Flight Rules		
Range of Values	{I,V,Y,Z}		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.flightRules Category		
Business Rules	 May be changed by Route-Change Flight Rules (ICAO Item 15c5). 		
Notes	 The meaning of the values is as follows: I - Instrument Flight Rules (IFR) V - Visual Flight Rules (VFR) Y - IFR first (followed by one or more subsequent changes of flight rules) Z - VFR first (followed by one or more subsequent changes of flight rules) [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 8a. 		
References/ Requirements Justification	 Amendment No. 1 To The Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.4.1 The FF-ICE shall allow definition of flight characteristics including the information defined in Table B-5. Table B-5 Flight Characteristics: Initial Flight Rules = Planned rules the flight expects to operate under, conforming to B-2.7. (Reference to Appendix 3 Field Type: 8a) Note— When Composite flight rules are specified, the changeover points to IFR or VFR as applicable shall be specified in the Route. 		

4.93 Flight Rules Change

Flight Rules Change	
Definition	Describes the planned change of flight rules (e.g., IFR/VFR) associated with a route
	point.
Alternate Names	Indicator, Events, Change of Flight Rules, Route/Trajectory Point Changes
Has Parts	
Is Part Of	Route Point, Trajectory Point
Data Type(s)	Enumeration
Range of Values	{IFR, VFR}

FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteElement.flightRulesChange
Business Rules	
Notes	 This element can be associated with a point in a trajectory or a point in a route. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15c5. The significance of the values is the following 'VFR' if a change to VFR is to be made at the associated Change Point 'IFR' if a change to IFR is to be made at the associated Change Point Used for eligibility checking and identify ATS Services provided.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007; ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow definition of changes of flight rules planned for specific trajectory points. Table B-13. Route/Trajectory Change Information: Change of Flight Rules = Describes the planned change of flight rules (IFR or VFR) for the associated with a route point. (Reference to Appendix 3 Field Type: 15c5)

4.94 Flight Type

	Flight Type
Definition	Indication of the rule under which an air traffic controller provides categorical handling of a flight. [FIXM]
Alternate Names	Type of Flight
Has Parts	
Is Part Of	
Data Type(s)	Enumeration
Range of Values	{M, G, N, X, S}
FIXM UML Path	Fixm.Flight.FlightData.TypeOfFlight
Business Rules	
Notes	 The meaning of the values is as follows: M - Military G - General Aviation N - Non-Scheduled Air Transport S - Scheduled Air Service X - Other [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL, populated in

	Field 8b.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	 Data B-2.19 Type of Flight B-2.19.1 Expression of type of flight shall be traceable to one of the following: a) Scheduled Air Transport; b) Non-Scheduled Air Transport; c) General Aviation; d) Military; e) Other. B-3.4.1 The FF-ICE shall allow definition of flight characteristics including the information defined in Table B-5. Table B-5 Flight Characteristics: Type of Flight = Category of flight operation conforming to B-2.19. (Reference to Appendix 3 Field Type: 8b)

4.95 Fuel Endurance

Fuel Endurance	
Definition	The estimated maximum length of time the aircraft can spend in the cruise phase of flight, determined by the amount of fuel at takeoff.
Alternate Names	Endurance
Has Parts	
Is Part Of	
Data Type(s)	Time Duration
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.SupplementaryData.fuelEndurance
Business Rules	
Notes	 [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied, without delay, when requested by ATS units. [ICAO Standard ATS Messages] Fuel Endurance is transmitted in the ICAO SPL and ALR messages as ICAO Field Type 19a, preceded by 'E/'.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall

 support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Fuel Endurance = The number of hours and minutes of fuel on board. (Reference to Appendix 3 Field Type:
19 E/)

4.96 Globally Unique Flight Identifier

	Globally Unique Flight Identifier
Definition	A single reference for FF-ICE information pertinent to a flight that is unique globally. [ICAO Doc 9965]. This is a reference that uniquely identifies a specific flight and is independent of any particular system. [FIXM]
Alternate Names	GUFI
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.gufi
Business Rules	
Notes	 Per the referenced documents, every flight data transaction includes the GUFI. The GUFI is to be a "Universally Unique Identifier" (UUID), standardized by the Open Software Foundation (OSF). It is a 128 bit number, represented by 32 hexadecimal digits. The GUFI is essentially a random number - Version 4 of the UUID specification. Six of the bits are reserved. Therefore the format of the GUFI is: xxxxxxx-xxxx-4xxx-yxxx-xxxxxx, where "4" indicates the version and "y" can be 8, 9, a or b.
References/ Requirements Justification	 Globbally Unique Flight Identified (GUFI) Requirements version 2.1 (June 23, 2014) Globbally Unique Flight Identified (GUFI) Format and Content version 2.1 (June 23, 2014) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.3.1 FF-ICE flight data exchanges shall support information to identify a flight plan as described in Table Table B-2. Table B-2. Flight Identification: GUFI = A Globally Unique Flight Identifier assigned to the subject flight.

4.97 Ground Speed - Predicted

Ground Speed - Predicted	
Definition	Aircraft predicted ground speed at this point.
Alternate Names	Predicted Groundspeed
Has Parts	
Is Part Of	Trajectory Point

Data Type(s)	Speed
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPoint4D.predictedGroun dspeed
Business Rules	
Notes	
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 Global Air Navigation Plan, ASBU-Block 1, ICAO DOC 9750, 4th Edition 2013 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Each Route/Trajectory Point shall be associated with a Route/Trajectory Segment as described in B-3.6.5. Table B-11. Route/Trajectory Point: Predicted Groundspeed = The predicted Groundspeed at the associated Four Dimensional Point.

4.98 Hazard Class and Division

Hazard Class and Division	
Definition	A number assigned to a dangerous good that represents a classification (Class) according to the most dominant hazard it represents, potentially followed by a number representing a subdivision (Division) within the Class.
Alternate Names	HAZMAT Class, UN Class, Hazard Classification ID, Hazard Class / Division
Has Parts	
ls Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of Line Item Detail, Dangerous Goods List of Line Item Details
Data Type(s)	Character String
Range of Values	Class: [1,9], Division: [0, 99]
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.hazardClass Fixm.Flight.Cargo.Packaging.HazardClass
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage.
Notes	 Class 1: Explosives, 2: Gases, 3: Flammable Liquid and Combustible Liquid, 4: Flammable Solid, Spontaneously Combustible, Dangerous When Wet, 5: Oxidizer and Organic Peroxide, 6: Poison (Toxic) and Poison Inhalation Hazard, 7: Radioactive, 8: Corrosive, 9: Miscellaneous. Some classes are subdivided with Class and Division separated by a decimal. Classifications are defined by the United Nations. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:HazardClassificationID Maximum 100 characters to limit risk of code insertion.

References/	IATA SDDG Specification v2.1
Requirements	• 49 CFR 172/173/175
Justification	IATA Dangerous Goods Regulations, January 2011
	Shipper's Declaration for Dangerous Goods
	• Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284)
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.99 Last Contact Radio Frequency

Last Contact Radio Frequency	
Definition	The transmitting/receiving frequency of the last two-way contact between the aircraft and an ATS unit.
Alternate Names	Frequency of Last Contact
Has Parts	
Is Part Of	
Data Type(s)	Frequency
Range of Values	
FIXM UML Path	Fixm.Flight.Emergency.LastContact.lastContactFrequency
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 20d, or in RCF as ICAO Field Type 21b. If the information is not available, value should be NIL or NOT KNOWN.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 20d (Alerting search and rescue information: Frequency of last contact)

4.100 Last Contact Time

Last Contact Time	
Definition	The time of the last two-way contact between the aircraft and an ATS unit. The time is
	given in UTC.
Alternate Names	Time of Last Two-way Contact
Has Parts	
Is Part Of	

Data Type(s)	Date Time
Range of Values	
FIXM UML Path	Fixm.Flight.Emergency.LastContact.lastContactTime
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 20c, or in RCF as ICAO Field Type 21a. If the information is not available, value should be NIL or NOT KNOWN.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 20c (Alerting search and rescue information: Time of last two-way contact)

4.101 Last Contact Unit

Last Contact Unit	
Definition	The last ATS unit which had two-way contact with the aircraft.
Alternate Names	Unit Which Made Last Contact
Has Parts	
Is Part Of	
Data Type(s)	Air Traffic Services Unit
Range of Values	ATS unit indicators are published in ICAO Doc. 7910- Location Indicators.
FIXM UML Path	Fixm.Flight.Emergency.RadioCommunicationFailure.contact Fixm.Flight.Emergency.LastContact.lastContactUnit Fixm.Flight.Emergency.FlightEmergency.lastContact Fixm.Flight.Emergency.LastContact
Business Rules	 Per ICAO Doc. 7910 - Location Indicators, the first letter shall be the letter assigned to the routing area within which the location is situated. The second letter shall be the letter assigned to the state or territory. The third letter should be assigned to assist in the process of routing to that communication centre. States assigned the letter N should arrange their specific four-letter locations so as to avoid the use of the combination NN for the third and fourth letters.
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 20b. If the information is not available, value should be NIL or NOT KNOWN.
References/ Requirements Justification	 ICAO Doc. 7910 - Location Indicators, Edition No. 138, 2010 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 20b (Alerting search and rescue information: Unit which made last contact)

4.102 Last Known Position Report

Last Known Position Report	
Definition	The position of the aircraft last known to ATS and a corresponding timestamp.
Alternate Names	Last Reported Position
Has Parts	
Is Part Of	
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Emergency.LastPositionReport Fixm.Flight.Emergency.LastContact.position
Business Rules	
Notes	 This is a compound data element. It has both a position component and a time component. [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 20e. The ICAO field 20e contains both the last reported position and the time over that position. When used in the ICAO FPL field 20, if the information is not available, value should be NIL or NOT KNOWN. Also transmitted in RCF as ICAO Field Type 21c (position) and 21d (time).
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 20e (Alerting search and rescue information: Last reported position)

4.103 Last Known Position Report - Determination Method

	Last Known Position Report - Determination Method
Definition	A plain-language description of the method used to determine the last known position
	of an aircraft.
Alternate Names	Method of Determining Last Known Position
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Emergency.LastPositionReport.determinationMethod
Business Rules	
Notes	This data element contains free-form text.
	• [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 20f. When
	used in the ICAO FPL field 20, if the information is not available, value should be
	NIL or NOT KNOWN.
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic

Requirements	Management (PANS-ATM ICAO 4444)
Justification	• Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO
	4444), 2007
	 Appendix 3, Field Type 20f (Alerting search and rescue information:
	Method of determining last known position)

4.104 Level or Altitude Change

Level or Altitude Change	
Definition	Describes a new planned altitude or level at the specified point at which the change is planned to commence. (May also describe a point at which the altitude or level change is planned to be attained.)
Alternate Names	Change of Level, Events, Route/Trajectory Point Changes
Has Parts	
Is Part Of	Route Point, Trajectory Point
Data Type(s)	Record
Range of Values	Condition {PLAN_TO_COMMENCE, PLAN_TO_ATTAIN}
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteChanges.LevelChange
Business Rules	
Notes	 This element can be associated with a point in a trajectory or a point in a route. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15c4. This complex data type is comprised of: Altitude Condition: Enumeration The Condition is relative to the associated point: PLAN_TO_COMMENCE - The change is required subsequent to the point. PLAN_TO_ATTAIN - The change is required to be completed by the point. A combination of these two conventions will describe a clearance with a defined starting and completion point. May be used for describing the desired vertical profile when trajectory modelling.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Asia/Pacific Regional Interface Control Document (ICD) For ATS Interfacility Data Communications (AIDC), version 3, September 2007 The North Atlantic Common Coordination Interface Control Document, Version 1.2.8 December 2010 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data Data

 Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information (Change of Level = Specifies a new requested level at the associated route/trajectory point
Indicates whether the change to the new level is planned to commence at or planned to be attained by the point. (Reference to Appendix 3 Field Type: 15c4)

4.105 Life Jacket Type

Life Jacket Type	
Definition	The type of life jackets available on board the aircraft. [FIXM]
Alternate Names	Jackets, Life Jacket Characteristics
Has Parts	
Is Part Of	
Data Type(s)	Enumeration
Range of Values	One or more of the following: {L, F, U, V}
FIXM UML Path	Fixm.Flight.Capability.LifeJacketType Fixm.Flight.Capability.SurvivalCapabilities.lifeJacketType
Business Rules	
Notes	 The meaning of the values is as follows: L - Lights F - Fluorescein U - UHF frequency 243.0MHz V - VHF frequency 121.5MHz [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19e, preceded by 'J/'.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 (Appendix 2, ITEM 19 J/ and R/) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information Life Jacket Characteristics = Features present on life jackets on board. (Reference to Appendix 3 Field Type: 19 J/)

4.106 Low Dispersible Material Indicator

Low Dispersible Material Indicator	
Definition	An indicator the dangerous good is a low dispersible radioactive material, a solid radioactive material or a solid radioactive material in a sealed capsule, which has limited dispersibility and is not in powder form.
Alternate Names	Low Dispersible Radioactive Material, LDM
Has Parts	
Is Part Of	Radioactive Materials, Radionuclide
Data Type(s)	Boolean
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.Radionuclide.lowDispersibleMaterialIndicator Fixm.Flight.Cargo.RadioactiveMaterials.MaterialDispersability
Business Rules	
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:Applicab leRadioactiveIsotope//ram:LowDispersibleNote
References/	IATA SDDG Specification v2.1
Requirements	 IATA Dangerous Goods Regulations, January 2011
Justification	 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284)
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.107 Marine Pollutant Indicator

Marine Pollutant Indicator	
Definition	An indicator if the transported dangerous goods have marine pollutant content.
Alternate Names	Marine Pollutant
Has Parts	
Is Part Of	Dangerous Goods List of Line Item Detail
Data Type(s)	Boolean
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.marinePollutantIndicator Fixm.Flight.Cargo.Packaging.MarinePollutantIndicator
Business Rules	
Notes	 Marine pollutants could cause significant damage, if released into a water source or ocean. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name =

	ram:ApplicableTransportDangerousGoods/ram:MarinePollutantIndicator
References/ Requirements Justification	 49 CFR 172.203 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 49 CFR 172.101, Appendix B, Table of Hazardous Materials and Special Provisions, Purpose and Use of Hazardous Materials Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.108 Message Date-Time

Message Date-Time	
Definition	The time and date that the communication was sent. [ICAO FF-ICE Implementation Guidance]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Date Time
Range of Values	
FIXM UML Path	Fixm.Messaging.AbstractMessage.messageDateTime
Business Rules	
Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.2.3 The FF-ICE shall provide identifying information for tracking communications, including date/time a message was sent and a unique message identifier. Table B-1. Flight Data Messaging Support: Message Date-Time = The time and date that the communication was sent. Message date and time should be to at least 1 second granularity. (Reference to Appendix 3 Field Type: Annex 10) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages,
	Table C-1. Message Information: o The time and date that the communication was sent. (B-3.2 Message Date-Time)

4.109 Message Identifier

	Message Identifier
Definition	A unique message identifier for FIXM-based messages. [FIXM]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Messaging.AbstractMessage.FIXMUniqueMessageIdentifier
Business Rules	
Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.26.1 A message identifier shall permit identification of a message sent between two parties. B-2.26.2 A message identifier between two parties shall be unique for at least 24 hours. B-3.2.1 The FF-ICE shall support the types of flight data communications information described in Table Table B-1. B-3.2.3 The FF-ICE shall provide identifying information for tracking communications, including date/time a message was sent and a unique message identifier. Table B-1. Flight Data Messaging Support: Message Identifier = An identifier per B-2.26. (Reference to Appendix 3 Field Type: 3b) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages, Table C-1. Message Information: A unique message identifier. (B-3.2 Message Identifier)

4.110 Message Originator

Message Originator	
Definition	Sender of the message [adapted from ICAO FF-ICE Implementation Guidance]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Contact Information
Range of Values	
FIXM UML Path	Fixm.Messaging.AbstractMessage.messageOriginator
Business Rules	
Notes	 The FF-ICE Participant that is initiating the message.
	 The AFTN address of the filer, for use when a non-upgraded ASP needs to communicate with the filer.

References/	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
Requirements	Data
Justification	 B-3.2.2 The FF-ICE shall provide a means of communicating network
	addresses and points of contact for originators, senders, and recipients of
	flight data.
	 Table B-1. Flight Data Messaging Support: Contact Information = Contact
	Information as described in B-2.12, for use in resolving issues regarding a
	received message. (Reference to Appendix 3 Field Type: 18 ORGN/)
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages,
	Table C-1. Message Information
	 The FF-ICE Participant that is initiating the message. (B-3.2 FF-ICE
	Participant)
	 The AFTN address of the filer, for use when a non-upgraded ASP needs to
	communicate with the filer. (B-3.2 AFTN Address)
	 Point of Contact for the sender of the message. (B-3.2 Contact
	Information)

4.111 Meteorological Data

Meteorological Data	
Definition	In a predicted trajectory, the instantaneous temperature and wind vector used at the 4D Point for creating the 4D trajectory.
Alternate Names	MetData
Has Parts	Temperature, Wind Direction, Wind Speed
Is Part Of	Trajectory Point
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPoint4D.metData Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.MeteorologicalData
Business Rules	 Used to normalize for differences when sharing predictions.
Notes	 These indicate the meteorological data used at the 4D Point for creating the trajectory as part of a predicted trajectory. In conjunction with the airspeed and track, can be used to obtain a more accurate estimate of the groundspeed when winds change from the forecast time. Should use WXXM data types for wind and temperature at a point. Wind Speed Wind Direction Temperature
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 Global Air Navigation Plan, ASBU-Block 1, ICAO DOC 9750, 4th Edition 2013 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative

 environment shall allow definition of a route/trajectory point as described in Table B-11. Table B-11. Route/Trajectory Point: MetData = Wind direction and speed, together with Temperature which were used for the trajectory prediction
at the associated Four Dimensional Point.

4.112 Modified Route Item

Modified Route Item	
Definition	Identifies if the route point or element was modified from the reference version, identified in the message, during negotiation by an ASP.
Alternate Names	Route/Trajectory Point Changes
Has Parts	
Is Part Of	Route Point, Route Element
Data Type(s)	Boolean
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.ModifiedRouteItemIndicator
Business Rules	
Notes	 May be used to indicate a change by the ASP in the lateral path when feedback is provided. All the route points (including the points which mark the start and the end of the route modification) need to be clearly identified.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information: Modified Route item = Indicates whether this portion of the route has been modified.

4.113 Modified Route Item Reference

Modified Route Item Reference	
Definition	A reference to an ATFM program name that modified the route.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.ModifiedRouteItemReference
Business Rules	

Notes	
References/ Requirements	 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015
Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13.
	 Table B-13. Route/Trajectory Change Information: Modified Route item = Indicates whether this portion of the route has been modified.

4.114 Navigation Capabilities

	Navigation Capabilities
Definition	The serviceable navigation equipment available on board the aircraft at the time of flight and for which the flight crew is qualified.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Record
Range of Values	One or more of the following: {A, B, C, D, F, G, I, K, L, O, T, W, X}
FIXM UML Path	Fixm.Flight.Capability.FlightCapabilities.navigation Fixm.Flight.Capability.NavigationCapabilities
Business Rules	
Notes	 This data element can contain either an alphanumeric string (free-form text) or a combination of the following enumerated ICAO codes for navigation capabilities: A - GBAS B - LPV C - LORAN C D - DME F - ADF G - GNSS I - Inertial Navigation K - MLS L - ILS O - VOR T - TACAN W - RVSM X - MNPS [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 10a, combined with Communications Capabilities. If navigation capabilities other than those included in the range of values or specific in 'PBN/' need to be indicated, they are transmitted in ALR, FPL, and SPL as ICAO Field Type 18 preceded by 'NAV/' (only when equipment cannot be expressed with the 10a predefined values). GNSS augmentation is also indicated as Field Type 18 preceded

	by 'NAV/', and 'G' is used in item 10a in this case.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.10.1 Expression of Equipment and Capability shall support at a minimum the following equipment/capability categories:

4.115 Negotiating 4D Trajectory

Negotiating 4D Trajectory	
Definition	The 4D Trajectory used during the collaboration between the FF-ICE enabled airspace user (eAU) and the FF-ICE enabled Air Traffic Management Service Providers (eASP) in order to agree on a 4D trajectory. This trajectory is intended to be transitory.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	4D Trajectory
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.negotiating
Business Rules	
Notes	 Multiple instances of the negotiating trajectory may be required (multiple messages being exchanged by the eAU with multiple eASPs), but only one instance of a negotiating trajectory is associated with the flight data within one message. This element, along with the "Negotiating Route" element, is always grouped together within a Negotiating Route Trajectory Group.

	 The eASP provided Negotiating 4D Trajectory includes known constraints and changes that would be imposed should this flight operate as planned. The Negotiating 4D Trajectory provided by the eASP indicates constraints and changes to the latest Desired or Negotiating. The Negotiating 4D Trajectory provided by the eAU indicates changes during negotiation for evaluation by the eASP.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four- dimensional trajectory consisting of the components illustrated in Figure B-1. The FF-ICE shall support at a minimum the following types of Route/Trajecetory Groups:

4.116 Negotiating Route

Negotiating Route		
Definition	This Route is used during collaboration between the FF-ICE enabled airspace user (eAU) and the FF-ICE enabled Air Traffic Management Service Providers (eASP) in order to agree on a route. This route field is intended to be transitory.	
Alternate Names		
Has Parts		
Is Part Of		
Data Type(s)	Route	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightData.Flight.negotiating	
Business Rules		
Notes	 This element, along with the "Negotiating 4D Trajectory" element, is always grouped together within a Negotiating Route Trajectory Group. Multiple instances of the route as part of the Negotiating 4D Trajectory may be 	

	 required (multiple messages being exchanged by the eAU with multiple eASPs), but only one instance of a route is associated with the flight data within one message. This construct is to be used during ASP to ASP Coordination as well. This is equivalent to ICAO Item 15c, as used in the ATS Interfacility Data Communications (AIDC) CDN (Coordination) message.
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, and the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, FF-ICE step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four-dimensional trajectory consisting of the components illustrated in Figure B-1. The FF-ICE shall support at a minimum the following types of Route/Trajecctory Groups:

4.117 Number of Persons on Board

Number of Persons on Board		
Definition	The total number of persons (passengers and crew) on board the aircraft. [ICAO Doc	
	4444, Appendix 2, Item 19]	
Alternate Names	Persons on Board, Souls on Board	
Has Parts		
Is Part Of		
Data Type(s)	Integer	
Range of Values	[0-999]	
FIXM UML Path	Fixm.Flight.FlightData.SupplementaryData.personsOnBoard	
Business Rules		
Notes	• [ICAO] Since this data is not part of the filed flight plan, it must be made available	
	by the operator, so it can be supplied without delay when requested by ATS units.	
	 [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19b, preceded by 'P/'. 	
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References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data 	
	 B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Persons on Board = The number of persons on board. (Reference to Appendix 3 Field Type: 19 P/) 	

4.118 Off Block Time - Estimated

	Off Block Time - Estimated
Definition	The estimated time at which the aircraft will commence movement associated with departure. [ICAO Doc 4444]
Alternate Names	Estimated Gate Time of Departure, LGTD, Estimated Off Block Time, EOBT
Has Parts	
Is Part Of	
Data Type(s)	Date Time
Range of Values	
FIXM UML Path	Fixm.Flight.Departure.Departure.estimatedOffBlockTime
Business Rules	 As this element represents the time for an aircraft to depart the gate, an Airfile flight will not have a time populated in this element.
Notes	 ICAO defines this element as the estimated time at which the aircraft will start movement associated with departure. This data element can be used to communicate a revised departure time due to a delay. [ICAO Standard ATS Messages] This data element is a combination of ICAO Field Type 13b (time) and 18 DOF/ (date). Currently, the ICAO FPL allows specification of the date of flight through a two digit prefix to the departure time. The time is transmitted in FPL, ARR, CHG, CNL, and DLA and RQS messages transmitted before departure and in RQP message, if known, as ICAO Field Type 13b. The date is transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'DOF/'.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.2 Route/Trajectory Basic Data: The FF-ICE shall allow definition of the basic data described in Table B-7.

 Table B-7. Route/Trajectory Basic Data: Estimated Off Block Time = The
date and time at which the aircraft is expected to become off-blocks,
conforming B-2.22. (Reference to Appendix 3 Field Type: 13b, 18 DOF/)

4.119 On Board Dangerous Goods Location

On Board Dangerous Goods Location	
Definition	The location of a dangerous goods shipment inside the airframe.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods.onboardLocation
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage.
Notes	 This data element contains free-form text. Certain hazardous material (HAZMAT) shipments have restrictions on where they can be placed on board the airframe (CFR 49 172.101). For example, Acetone can be stored either on deck or under deck. However, this data element is envisioned to be more specific to include text such as rear cargo hold. Maximum size of 100 characters to limit risk of code insertion
References/ Requirements Justification	 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.120 Operational Acceptability

Operational Acceptability	
Definition	The Operational Acceptability provides information concerning the status of the route
	and trajectory, as submitted.[adapted from ICAO FF-ICE Implementation Guidance]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Enumeration
Range of Values	{Acceptable, Not Acceptable}

FIXM UML Path	Fixm. Messaging. Operational Acceptability
Business Rules	
Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Chapter 6 Flight Plan Filing 6.3.4: Provide a description of the feedback/response (asynchronous response) and what each response, 'Acceptable & 'Not Acceptable' means. Indicate how the Filing response is only applicable to eASP recipients of the flight plan. FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-3.3.3 FF-ICE flight data exchanges shall support Flight Status items as described in Table B- 4. Table B-4. Flight Status: Operational Acceptability = One of Acceptable, Not Acceptable.

4.121 Operational Acceptability Reason

	Operational Acceptability Reason
Definition	Textual explanation of the operational acceptability returned. [ICAO FF-ICE Implementation Guidance]
Alternate Names	Reason for Operational Acceptability Status
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Messaging.OperationalAcceptability.statusReason
Business Rules	
Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages, Table C-1. Message Information Table C-13. Filing Response: Reason for Operational Acceptability Status = Textual explanation of the operational acceptability returned.

4.122 Other Search and Rescue Information

Other Search and Rescue Information	
Definition	Other pertinent information not captured elsewhere needed to notify appropriate organizations regarding aircraft in need of search and rescue.
Alternate Names	Other Pertinent Information
Has Parts	
Is Part Of	
Data Type(s)	Character String

Range of Values	
FIXM UML Path	Fixm.Flight.Emergency.FlightEmergency.otherInformation
Business Rules	
Notes	 This data element contains free-form text. [ICAO Standard ATS Messages] Transmitted in ALR as ICAO Field Type 20h. When used in the ICAO FPL field 20, if the information is not available, value should be NIL or NOT KNOWN.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 20h (Alerting search and rescue information: Other pertinent information

4.123 Overpack Indicator

Overpack Indicator	
Definition	An indicator that individual packages are assembled into a single unit for handling.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Boolean
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.OverpackIndicator Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.overpackIndicator
Business Rules	
Notes	 This element used to be referenced from IATA's schema, but since v2.1 of the dangerous good specifications was released, it no longer references IATA for this element. This is because there is no longer a single element for Overpack, but rather an entire grouping describing what is in an overpack down to the subpackage level. This element will be used to signify if the specific material is contained within an overpack or not. The statement 'Overpack Used' or 'Overpack' must be inserted for packages within an overpack.
References/ Requirements Justification	 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO

Document 9284), Part 7, Section 4.3.

4.124 Package Height

Package Height	
Definition	The vertical component of the package's volumetric dimensions.
Alternate Names	
Has Parts	
Is Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail, Dangerous Goods List of Overpack Detail, Dangerous Goods Package Details
Data Type(s)	Float
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.packageDimensions
Business Rules	
Notes	 The units of measure are an attribute (unitCode) to the Package Height. Units of Measure selected from Code List. UNECE Recommendation Number 20 - Codes for Units of Measure Used in International Trade - Annex I can be used. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:LinearSpatialDimension/ram:HeightMeasure the units of measure are expressed in the unitCode attribute. ram:LinearSpatialDimension is used within ram:SpecifiedLogisticsPackage and ram:SpecifiedOverpackPackage.
References/ Requirements Justification	 ATA SDDG Specification v2.1 UNECE Recommendation Number 20, Annex I FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.125 Package Length

Package Length	
Definition	The lateral component of the package's volumetric dimensions.
Alternate Names	
Has Parts	
ls Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail, Dangerous Goods List of
	Overpack Detail, Dangerous Goods Package Details
Data Type(s)	Float
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.packageDimensions
Business Rules	

Notes	 The UOM are an attribute (unitCode) to the Package Length. Units of Measure selected from Code List. UNECE Recommendation Number 20 - Codes for Units of Measure Used in International Trade - Annex I can be used. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:LinearSpatialDimension/ram:LengthMeasure. The units of measure are identified in the unitCode attribute. The ram:LinearSpatialDimension element is used by both the ram:SpecifiedLogisticsPackage and the ram:SpecifiedOverpackPackage.
References/	IATA SDDG Specification v2.1
Requirements	UNECE Recommendation Number 20, Annex I
Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.126 Package Width

Package Width	
Definition	The depth component of the package's volumetric dimensions.
Alternate Names	
Has Parts	
ls Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail, Dangerous Goods List of Overpack Detail, Dangerous Goods Package Details
Data Type(s)	Float
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.packageDimensions
Business Rules	
Notes	 The UOM are an attribute (unitCode) to the Package Width. Units of Measure selected from Code List. UNECE Recommendation Number 20 - Codes for Units of Measure Used in International Trade - Annex I can be used. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:LinearSpatialDimension/ram:WidthMeasure. The units of measure are identified in the unitCode attribute. The ram:LinearSpatialDimension element is used by both the ram:SpecifiedLogisticsPackage and the ram:SpecifiedOverpackPackage.
References/ Requirements Justification	 IATA SDDG Specification v2.1 UNECE Recommendation Number 20, Annex I FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO

Document 9284), Part 7, Section 4.3.

4.127 Packing Group

	Packing Group
Definition	A code that indicates the relative degree of danger presented by various articles and substances within a Class or Division.
Alternate Names	
Has Parts	
ls Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of Line Item Detail, Dangerous Goods List of Line Item Details
Data Type(s)	Enumeration
Range of Values	{I, II, III}
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.packingGroup Fixm.Flight.Cargo.Packaging.PackingGroup
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage.
Notes	 Roman numerals I, II and III are used to represent high danger, medium danger, and low danger, respectively. IATA specifies a maximum size of three characters. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:PackagingDangerLevelCode
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284) Part 7 Section 4.3

4.128 Packing Instruction Number

Packing Instruction Number	
Definition	A number that corresponds to packing instructions required by international
	regulations.
Alternate Names	
Has Parts	
Is Part Of	Dangerous Goods List of Line Item Detail

Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.packingInstructionNumber
Business Rules	
Notes	 The packing instruction number is applicable to a UN number/Proper Shipping Name entry. It is a three-numeric value which may be preceded by the letter 'Y'. Format: nnn or Ynnn IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:PackingInstructionTypeCode
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.129 Performance Climb Profile

Performance Climb Profile	
Definition	A zero-wind, standard atmosphere, unconstrained climb profile reflective of the flight capabilities and desired parameters.
Alternate Names	
Has Parts	Profile Point
Is Part Of	
Data Type(s)	Array
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteTrajectory.climbProfile Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.PerformanceProfile
Business Rules	
Notes	 Used by the ASP to improve trajectory prediction in climb.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data • B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall allow definition of route/trajectory specific aircraft performance

characteristics.

4.130 Performance Descent Profile

Performance Descent Profile	
Definition	A zero-wind, standard atmosphere, unconstrained descent profile reflective of the flight capabilities and desired parameters.
Alternate Names	
Has Parts	Profile Point
Is Part Of	
Data Type(s)	Array
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteTrajectory.descentProfile Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.PerformanceProfile
Business Rules	
Notes	 Used by the ASP to improve trajectory prediction in descent.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall allow definition of route/trajectory specific aircraft performance characteristics.

4.131 Performance-Based Navigation Capabilities

Performance-Based Navigation Capabilities	
Definition	A coded category denoting which Required Navigation Performance (RNP) and Area Navigation (RNAV) requirements can be met by the aircraft while operating in the context of a particular airspace when supported by the appropriate navigation infrastructure. [FIXM]
Alternate Names	PBN, Performance Based Navigation
Has Parts	Modified Route Item
Is Part Of	
Data Type(s)	Enumeration
Range of Values	One or up to 8 of the following: {A1, B1, B2, B3, B4, B5, B6, C1, C2, C3, C4, D1, D2, D3, D4, L1, O1, O2, O3, O4, S1, S2, T1, T2}
FIXM UML Path	Fixm.Flight.Capability.NavigationCapabilities.performanceBasedCode Fixm.Flight.Capability.PerformanceBasedNavigationCapabilityCode
Business Rules	
Notes	 The meanings of the values are as follows: A1 - RNAV 10 (RNP 10)

	 B1 - RNAV 5 All Permitted Sensors
	o B2 - RNAV 5 GNSS
	O B3 - RNAV 5 DME/DME
	 B4 - RNAV 5 VOR/DME
	 B5 - RNAV 5 INS or IRS
	o B6 - RNAV 5 LORAN-C
	 C1 - RNAV 2 All Permitted Sensors
	o C2 - RNAV 2 GNSS
	o C3 - RNAV 2 DME/DME
	o C4 - RNAV 2 DME/DME/IRU
	 D1 - RNAV 1 All Permitted Sensors
	o D2 - RNAV 1 GNSS
	 D3 - RNAV 1 DME/DME
	o D4 - RNAV 1 DME/DME/IRU
	o L1 - RNP 4
	 O1 - Basic RNP 1 All Permitted Sensors
	• O2 - Basic RNP 1 GNSS
	 O3 - Basic RNP 1 DME/DME
	• O4 - Basic RNP 1 DME/DME/IRU
	o S1 - RNP APCH
	 S2 - RNP APCH with Barometric Vertical Navigation
	 T1 - RNP AR APCH with RF (Authorization Required)
	• T2 - RNP AR APCH without RF (Authorization Required)
	• [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field
	Type 18, preceded by 'PBN/'. The letter 'R' is included in ICAO Field Type 10a,
	transmitted in ALR, FPL, and CPL, to indicate performance based navigation levels
	are specified in Item 18.
D. (
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic
Requirements	Management (PANS-ATM ICAO 4444)
Justification	Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO
	4444), 2007
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-2.23 Performance Based Navigation (PBN) Capability
	 B-2.23.1 Expression of PBN capability shall support the PBN
	specifications defined in ICAO Doc. 9613.
	 B-2.23.2 Expression of PBN capability shall permit identification of
	the type(s) of navigation capability used to achieve an identified
	PBN specification.
	 B-2.23.3 Expression of PBN capability shall permit identification of
	optional functional capabilities described in ICAO Doc. 9613 (e.g.
	Fixed Radius Path capabilities including RF legs and Fixed Radius
	Turns).
	 B-3.4 Flight Characteristics
	 B-3.4.1 The FF-ICE shall allow definition of flight characteristics
	including the information defined in Table B-5.
	Table B-5. Flight Characteristics: Performance Based Navigation =

Description of PBN capability conforming to B-2.23. (Reference to
Appendix 3 Field Type: 18 PBN/)

4.132 Physical and Chemical Form

	Physical and Chemical Form	
Definition	A description of the physical and chemical form when the dangerous goods are radioactive.	
Alternate Names		
Has Parts		
Is Part Of		
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.Radionuclide.physicalChemicalForm	
Business Rules		
Notes	 This element contains free-form text. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:ApplicableRadioactiveIsotope/ram:PhysicalChemicalFormNote Maximum size of 100 characters to limit risk of code insertion. 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.133 Pilot In Command

Pilot In Command		
Definition	The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight. [ICAO Doc 4444]	
Alternate Names	PIC	
Has Parts		
Is Part Of		
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightData.SupplementaryData.pilotInCommand	

Business Rules	
Notes	• This data element contains free-form text.[ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units.[ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19i, preceded by 'C/'.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Pilot in Command = Name of the pilot in command. (Reference to Appendix 3 Field Type: 19 C/)

4.134 Planning Status

Planning Status			
Definition	The Planning Status provides information concerning the status of the route and trajectory, as submitted.[adapted from ICAO FF-ICE Implementation Guidance]		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	Enumeration		
Range of Values	[Concur, Non Concur, Negotiate}		
FIXM UML Path	Fixm.Messaging.PlanningStatus		
Business Rules			
Notes			
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Chapter 5 Planning Service 5.4.1: Provide a description of the feedback/response and what each response, 'Concur', Non- Concur' & 'Negotiate' means FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.3.3 FF-ICE flight data exchanges shall support Flight Status items as described in Table B- 4. Table B-4. Flight Status: Planning Status = One of Concur, Non Concur, Negotiate. 		

4.135 Planning Status Reason

Planning Status Reason		
Definition	Textual explanation of the Planning Status returned [FF-ICE Implementation Guidance]	
Alternate Names	Reason for Planning Status	
Has Parts		
Is Part Of		
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Messaging.PlanningStatus.statusReason	
Business Rules		
Notes		
References/ Requirements Justification	 FF-ICE Implementation Guidance, 2016, Appendix C - FF-ICE Messages, Section C- 2.2. Planning Status Table C-4. Planning Response: Reason for Planning Status = Textual explanation of the Planning Status returned. 	

4.136 Post Office Box

Post Office Box		
Definition	The Post Office (PO) Box number portion of a structured postal address.	
Alternate Names		
Has Parts		
Is Part Of	Postal Structured Address	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress	
Business Rules		
Notes	 IATA specifies a maximum size of 100 characters. IATA data model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:PostalTradeAddress/ram:PostOfficeBox 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.137 Postal Structured Address

Postal Structured Address		
Definition	The grouping element that contains the parts of a Postal Address broken into its component parts (Structured).	
Alternate Names		
Has Parts	Department, ZIP or Postal Code, Post Office Box, City Name, Region Name, Country Name, Street, Country Code	
Is Part Of	Consignee Name and Address, Other Party Name and Address, Shipper Name and Address	
Data Type(s)	Record	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress	
Business Rules	 The Address of Shipper (Consignor), Consignee, and Other Party should be in a structured format for compatibility with IATA. 	
Notes	 IATA model namespace = xmlns:ram='iata:datamodel:3' XML Element = ram:PostalStructuredAddress 	
References/	IATA SDDG Specification v2.1	
Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data 	
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.138 Product Name

Product Name			
Definition	The commonly used trade name associated with a dangerous good.		
Alternate Names	Trade Name, Hazardous Material		
Has Parts			
Is Part Of			
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.productName		
Business Rules			
Notes	 This data element contains free form text. The Product Name (also known as the Trade Name) is important for obtaining material handling instructions from the Material Safety Data Sheet (MSDS). The Product Name is the key to the MSDS, which provides guidance for emergency responders who may not be familiar with the Proper Shipping Name. 		
References/ Pequirements	Interview with Emergency Response Stakeholder FE ICE Implementation Guidence, ICAO Draft, 2016, Appendix B, FE ICE Model 8		
requirements	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &		

Justification	Data	
	0	B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.139 Profile Altitude

Profile Altitude		
Definition	The altitude of a point in a zero-wind, unconstrained profile.	
Alternate Names		
Has Parts		
Is Part Of	Profile Point	
Data Type(s)	Vertical Position	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.ProfilePoint.level	
Business Rules		
Notes		
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall allow definition of route/trajectory specific aircraft performance characteristics. 	

4.140 Profile Distance

Profile Distance		
Definition	The distance (from the start of the profile) at a point in a zero-wind, unconstrained profile.	
Alternate Names		
Has Parts		
Is Part Of	Profile Point	
Data Type(s)	Float	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.ProfilePoint.distance	
Business Rules		
Notes	 Unit of Measure: {NAUTICAL_MILES, KILOMETERS} 	
References/	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a 	
Requirements	Collaborative Environment (FF-ICE), First Edition - 2012	
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &	

Data	
0	B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall
	allow definition of route/trajectory specific aircraft performance characteristics

4.141 Profile Point

	Profile Point		
Definition	A point in a performance climb or descent profile.		
Alternate Names			
Has Parts	Profile Altitude, Profile Time, Profile Distance, Profile True Airspeed		
Is Part Of	Performance Climb Profile, Performance Descent Profile		
Data Type(s)	Record		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.ProfilePoint		
Business Rules			
Notes	 Profile points contain an aggregation of profile information including altitude, time, distance, and true airspeed. 		
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall allow definition of route/trajectory specific aircraft performance characteristics. 		

4.142 Profile Time

Profile Time		
Definition	The time (from the start of the profile) at a point in a zero-wind, unconstrained profile.	
Alternate Names		
Has Parts		
Is Part Of	Profile Point	
Data Type(s)	Time Duration	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.ProfilePoint.time	
Business Rules		
Notes		
References/	 CAO Doc 9965 AN/483, Manual on Flight and Flow - information for a 	
Requirements	Collaborative Environment (FF-ICE), First Edition - 2012	
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &	

Data	
0	B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall
	allow definition of route/trajectory specific aircraft performance
	characteristics.

4.143 Profile True Airspeed

	Profile True Airspeed
Definition	The true airspeed of a point in a zero-wind, standard atmosphere, unconstrained profile.
Alternate Names	
Has Parts	
Is Part Of	Profile Point
Data Type(s)	Speed
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.ProfilePoint.airspeed
Business Rules	
Notes	Unit of Measure: {KNOTS, KPH}
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall allow definition of route/trajectory specific aircraft performance
	characteristics.

4.144 Proper Shipping Name

Proper Shipping Name		
Definition	The name used to describe a particular article or substance in all shipping documents and notifications and, where appropriate, on packaging, as shown in the UN Model Regulations Dangerous Goods List.	
Alternate Names	Hazardous Material	
Has Parts		
ls Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of Line Item Detail, Dangerous Goods List of Line Item Details	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.properShippingNam	
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage. 	
Notes	This element contains free-form text.Each article or substance offered for	

	 transportation must be declared by its Proper Shipping Name. IATA specifies a maximum size of 65 characters.IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:ProperShippingName
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.145 Q Value

	Q Value		
Definition	The amount of energy released in a reaction.		
Alternate Names			
Has Parts			
Is Part Of	Shipper's Declaration For Dangerous Goods Packaging Detail, Dangerous Goods Package Details		
Data Type(s)	Float		
Range of Values	[0.0-1.0]		
FIXM UML Path	Fixm.Flight.Cargo.Packaging.AllPackedInOne.qValue		
Business Rules	 Field is mandatory, if All Packed In One is set. The Q-value must be calculated, when shippers pack different dangerous goods in the same outer packaging for air shipment. 		
Notes	 IATA does not specify a size limitation. Most instances of 'All packed in one' will require the addition of the Q values to be <= 1. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:RelatedCommercialTradeTransaction /ram:SpecifiedLogisticsPackage/ram:QValueNumeric Limit length to 100 characters to reduce the risk of code insertion. 		
References/ Requirements Justification	 IATA SDDG Specification v2.1 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & 		

Data	
 B-2.8.1 Expression of information regarding dangerous goods being 	
carried on a flight shall support all items defined in the Technical	
Instructions for the Safe Transport of Dangerous Goods by Air (ICAO	
Document 9284), Part 7, Section 4.3.	

4.146 Radio Failure Remarks

	Radio Failure Remarks		
Definition	Pertinent information needed to notify appropriate organizations regarding loss of radio communication capabilities.		
Alternate Names	Any Necessary Remarks		
Has Parts			
Is Part Of			
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Flight.Emergency.RadioCommunicationFailure.radioFailureRemarks		
Business Rules			
Notes	 This data element contains free-form text. [ICAO Standard ATS Messages] Transmitted in RCF as ICAO Field Type 21f. If the information is not available, value should be NIL or NOT KNOWN. 		
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 21f (Radio failure information: Any necessary remarks) 		

4.147 Radioactive Material Category

Radioactive Material Category		
Definition	A category used for radioactive materials in a package, overpack or freight container,	
	based on their maximum radiation level.	
Alternate Names	Category	
Has Parts		
Is Part Of	Radioactive Materials	
Data Type(s)	Enumeration	
Range of Values	{I-White, II-Yellow, III-Yellow}	
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.RadioactiveMaterialCategory	
	Fixm.Flight.Cargo.RadioactiveMaterials.RadioactiveMaterial.category	
Business Rules		

Notes	 I-White: Surface radiation <0.5 millirem/hr, 1 meter radiation: N/A II-Yellow: Surface radiation <50 millirem/hr, 1 meter radiation: <1 millirem/hr III-Yellow: Surface radiation >50 millirem/hr, 1 meter radiation >1 millirem/hr IATA does not specify a size. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods /ram:RadioactiveMaterial /ram:TypeCode
References/ Requirements Justification	 IATA SDDG Specification v2.1 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.148 Radioactive Materials

Radioactive Materials	
Definition	The grouping element for goods that contain radioactive materials.
Alternate Names	
Has Parts	Radioactive Material Category, Transport Index, Fissile Excepted Indicator, Criticality Safety Index, Radionuclide
Is Part Of	Dangerous Goods List of Overpack Detail
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.RadioactiveMaterial
Business Rules	
Notes	 The parts of this element should be filled out, if there are radioactive materials on board the flight. IATA does not specify a size.IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial This complex XML element is a grouping element that contains the XML elements with radioactive material information.
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.149 Radionuclide

Radionuclide	
Definition	The sub-grouping element for Radioactive Materials.
Alternate Names	Radionuclide Name, Activity, Low Dispersible Material Indicator, Special Form
	Indicator, Physical and Chemical Form, Radionuclide ID
Has Parts	
Is Part Of	Radioactive Materials
Data Type(s)	Record
Range of Values	
FIVA LIAL Dath	Fixm.Flight.Cargo.RadioactiveMaterials.Radionuclide
FIXIVI OIVIL Patri	Fixm.Flight.Cargo.RadioactiveMaterials.RadioactiveMaterial.radionuclide
Business Rules	
Notes	 The parts of this element should be filled out, if there are radioactive materials on board the flight. IATA does not specify a size. IATA Model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:ApplicableRadioactiveIsotope
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.150 Radionuclide ID

Radionuclide ID	
Definition	Identification number of each radionuclide or for mixtures of radionuclides.
Alternate Names	
Has Parts	
Is Part Of	Radionuclide
Data Type(s)	Character String
Range of Values	"UN" or "NA" followed by [0000-9999]
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.Radionuclide.radionuclideId
Business Rules	 UN/ID numbers range from UN0001-UN3600; NA numbers range from NA8000- NA9999.
Notes	 IATA does not specify a size. IATA model Namespace = xlms:ram='iata:datamodel:3' XML element name = ram:RadioactiveMaterial/ram:ApplicableRadioactiveIsotope/ram:ID Limit max size to six characters to limit the vulnerability of code insertion.

References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FE ICE Implementation Guidance ICAO Draft 2016 Appendix B FE ICE Model 8
	Data Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.151 Radionuclide Name

	Radionuclide Name
Definition	The name or symbol of each radionuclide or for mixtures of radionuclides, an appropriate general description, or a list of the most restrictive nuclides.
Alternate Names	Radionuclide, Isotope Name
Has Parts	
Is Part Of	Radioactive Materials, Radionuclide
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.Radionuclide.radionuclideName
Business Rules	
Notes	 This element contains free-form text.IATA does not specify a size. IATA data model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:Applicab leRadioactiveIsotope/ram:Name Limit size to 100 to limit the vulnerability of code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.152 Ranked 4D Route

Ranked 4D Route	
Definition	This is the route associated with a single Ranked 4D trajectory for a flight. It indicates the intent of the flight and includes the path over the surface of the earth, the altitude and the speed for the flight.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Route
Range of Values	
FIXM UML Path	Fixm.Flight.RankedTrajectory.RankedTrajectory
Business Rules	
Notes	 The Ranked 4D route construct provided by the airspace user associated with an identifier such that the receiver of the trajectory can confirm the route construct has been assigned or is in the negotiation process.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four-dimensional trajectory consisting of the components illustrated in Figure B-1. The FF-ICE shall support at a minimum the following types of Route/Trajecctory Groups:

4.153 Ranked 4D Trajectory

Ranked 4D Trajectory	
Definition	A candidate 4D Trajectory, with tolerances supplied if necessary by the airspace user
	to define when the next ranked trajectory should be used.
Alternate Names	
Has Parts	Ranked 4D Trajectory Identifier
Is Part Of	
Data Type(s)	4D Trajectory
Range of Values	
FIXM UML Path	Fixm.Flight.RankedTrajectory.RankedTrajectory
Business Rules	
Notes	 There is only one Desired 4D Trajectory for any given flight at any time.
	The Desired 4D Trajectory represents the best suited Ranked 4D trajectory chosen

	 by the airspace user to meet their mission objectives. If this element is used simultaneously with Desired 4D Trajectory, include the top choice in Desired and any remaining ranked trajectories in Ranked. The airspace user may elect to preemptively circumvent operational constraints and resource contention — or engage in collaboration on the trajectory. The tolerances provided with the Ranked 4D trajectories are used to express the bounds of variation on the trajectory triggering a preference for the next ranked
	trajectory
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-3.6.1 General: The FF-ICE shall allow definition of route and four- dimensional trajectory consisting of the components illustrated in Figure B-1.
	The FF-ICE shall support at a minimum the following types of Route/Trajcectory Groups: ()
	d) Ranked - A set of Negotiating Route/Trajectories submitted in order of preference.

4.154 Ranked 4D Trajectory Identifier

Ranked 4D Trajectory Identifier	
Definition	Unique Identifier used to differentiate the 4D trajectories.
Alternate Names	Trajectory Index
Has Parts	
Is Part Of	Ranked 4D Trajectory
Data Type(s)	Numeric String
Range of Values	[1-99]
FIXM UML Path	Fixm.Flight.RankedTrajectory.RankedTrajectory.identifier
Business Rules	
Notes	 The options in a Trajectory Option Set list use indexes of 1, 2, 3, etc., to make them unique within the flight.
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, TERMINOLOGY Ranked 4D trajectories — A series of desired 4D trajectories, with tolerances supplied if necessary by the airspace user to define when the next ranked trajectory should be used. FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-3.6.1 General: The FF-ICE shall support at a minimum the following types of Route/Trajectory Groups: () d) Ranked - A set of Negotiating Route/Trajectories submitted in

order of preference.

4.155 Recipient

	Recipient
Definition	The -one or more- intended recipients of the flight information. [adapted from ICAO FF-ICE Implementation Guidance]
Alternate Names	Recipient List
Has Parts	
Is Part Of	
Data Type(s)	Contact Information
Range of Values	
FIXM UML Path	Fixm.Messaging.AbstractMessage.recipient
Business Rules	
Notes	 This is used when the filer requests an eASP to provide the flight plan to the Relevant ASPs. Note that this list must support AFTN addresses for non-upgraded ASPs
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.2.2 The FF-ICE shall provide a means of communicating network addresses and points of contact for originators, senders, and recipients of flight data. Table B-1. Flight Data Messaging Support: FF-ICE Participant = Identification of a sender or receiver for an FF-ICE message. FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages Table C-1. Message Information: One or more intended recipients of the flight information. This is used when the filer requests an eASP to provide the flight plan to the Relevant ASPs. Note that this list must support AFTN addresss for non-upgraded ASPs. (B-3.2 FF-ICE Participant, B-3.2 AFTN Address) 4.3.1: Recipient List shall be used to provide the list of recipients for the flight as currently proposed. The identity and the address data of each entity may be provided.

4.156 Recipient Delivery Responsibility

Recipient Delivery Responsibility	
Definition	The party responsible for ensuring everyone in the recipient list gets the flight data (either the filer or someone in the recipient list). [ICAO FF-ICE Implementation Guidance]
Alternate Names	
Has Parts	
Is Part Of	

Data Type(s)	Contact Information
Range of Values	
FIXM UML Path	Fixm.Messaging.AbstractMessage.recipientDeliveryResponsibillity
Business Rules	
Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages Table C-1. Message Information: The party responsible for ensuring everyone in the recipient list gets the flight data (either the filer or someone in the recipient list). (B-3.2 FF-ICE Participant) 4.3.1: Recipient Delivery Responsibility shall be used to indicate the entity responsible for the delivery of the flight plan information to the relevant ASPs. If direct submission, as per 4.1.2 a) is being employed, then the AU or his representative (usually the message originator) should be indicated. If submission via an eASP, as per 4.1.2 b) is being employed, then the eASP is indicated.

4.157 Reference Message

Reference Message	
Definition	The unique message identifier of the message being responded to. [FIXM]
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Messaging.Message.referenceMessage
Business Rules	
Notes	
References/ Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.2.3 The FF-ICE shall provide identifying information for tracking communications, including date/time a message was sent and a unique message identifier. FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Message Table C-2. Submission Response: Reference (Message being responded to) (B-3.2 Message Identifier)

4.158 Region Name

Region Name	
Definition	The name of the region within a country specific to this address.
Alternate Names	State
Has Parts	
Is Part Of	Postal Structured Address
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress
Business Rules	 The code related to the name can be identified in the UNECE Recommendation Number 16 - LOCODE - Code for Trade and Transport Locations. IATA specifies a maximum size of nine characters.
Notes	 IATA data model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:PostalStructuredAddress/ram:RegionName
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.159 Remaining Communication Capabilities

Remaining Communication Capabilities	
Definition	The remaining communication capability of the aircraft following radio failure.
Alternate Names	Remaining COM Capability
Has Parts	
Is Part Of	
Data Type(s)	Record
Range of Values	If enumeration, one or more of the following: {N, S, E1, E2, E3, H, M1, M2, M3, P1, P2, P3, P4, P5, P6, P7, P8, P9, U, V, Y}
FIXM UML Path	Fixm.Flight.Emergency.RadioCommunicationFailure.remainingComCapability
Business Rules	
Notes	 This data element can contain either free-form alphanumeric text or a combination of one or more of the following enumerated ICAO codes for communication capabilities: N - No serviceable communication equipment for the route flown S - Standard equipment for the route flown (VHF RTF) E1 - FMC WPR ACAR E2 - D-FIS ACARS E3 - PDC ACARS

	O H - HF RTF
	 M1 - ATC RTF SATCOM (INMARSAT)
	o M2 - ATC RTF (MTSAT)
	o M3 - ATC RTF (Iridium)
	 P1-P9 - reserved for RCP
	o U - UHF RTF
	o V - VHF RTF
	 Y - ATS VHF w/ 8.33 kHz channel spacing capability
	• [ICAO Standard ATS Messages] Transmitted in RCF as ICAO Field Type 21e. When
	the information is not available, the value should be NIL or NOT KNOWN.
References/ Requirements	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444)
Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO)
	4444) 2007
	• Appendix 3. Field Type 21e (Radio failure information: Remaining COM
	capability)

4.160 Remarks

Remarks	
Definition	Plain language remarks providing additional information about the flight (e.g., requested flight level changes after takeoff).
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.remarks
Business Rules	
Notes	 This data element contains free-form text. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'RMK/'.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 18 (Other information: proceded by 'RMK/') FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.4.1 The FF-ICE shall allow definition of flight characteristics including the information defined in Table B-5. Table B-5. Flight Characteristics: Remarks = Plain-language remarks when required by the appropriate ATS authority or deemed necessary.(Reference to Appendix 3 Field Type: 18 RMK/)

4.161 Reportable Quantity

Reportable Quantity	
Definition	The minimum amount of hazardous substance released into the environment before the Environmental Protection Agency (EPA) requires notification of the release to the National Response Centre.
Alternate Names	RQ
Has Parts	
ls Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of Line Item Detail, Dangerous Goods List of Line Item Details
Data Type(s)	Integer
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.reportableQuantity
Business Rules	
Notes	 IATA does not specify a size. ATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:ReportableQuantity
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 49 CFR 172.101, Appendix A, Table 1 and Table 2, Hazardous Materials Table Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.162 Route - Agreed To

Route - Agreed To	
Definition	The route of flight agreed to by a FF-ICE enabled Air Traffic Management Service Providers (eASP) after collaboration between the FF-ICE enabled airspace user (eAU) and the eASP.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Route
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.agreed
Business Rules	

Notes	 This element, along with the "Agreed 4D Trajectory" element, is always grouped together within an "Agreed Route Trajectory Group". Multiple instances of the route as part of the Agreed 4D Trajectory may be required (multiple messages being exchanged by the eAU with multiple eASPs), but only one instance of an agreed route is associated with the flight data within one message. As such, the cardinality of this item should be 01 in the FIXM model.
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four-dimensional trajectory consisting of the components illustrated in Figure B-1. The FF-ICE shall support at a minimum the following types of Route/Trajecetory Groups:

4.163 Route - Current

Route - Current	
Definition	The route of flight currently being executed by the Air Traffic Services unit.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Route
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.current
Business Rules	
Notes	This is equivalent to ICAO Item 15 of a CPL.
	 This element, along with the "Current 4D Trajectory" element, are always grouped

	together within a Current Route Trajectory Group
References/ Requirements	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007
Justification	 11.4.2.3.2 CURRENT FLIGHT PLAN (CPL) MESSAGES
	 Appendix 3, CPL message

4.164 Route - Desired

Route - Desired	
Definition	The preferred route of flight submitted by the FF-ICE enabled airspace user (eAU) to the FF-ICE enabled Air Traffic Management Service Providers (eASP) subject to required constraints.
Alternate Names	
Has Parts	
Is Part Of	
Data Type(s)	Route
Range of Values	
FIXM UML Path	Fixm.Flight.FlightData.Flight.desired
Business Rules	
Notes	• This element, along with the "Desired 4D Trajectory" element, is always grouped together within a Desired Route Trajectory Group.
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, and the step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, and the step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, and the step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, and the step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 IFF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four-dimensional trajectory consisting of the components illustrated in Figure B-1. The FF-ICE shall support at a minimum the following types of Route/Trajecctory Groups:

4.165 Route - Filed

Route - Filed			
Definition	The route of flight filed by the FF-ICE enabled airspace user (eAU) with the FF-ICE enabled Air Traffic Management Service Providers (eASP).		
Alternate Names			
Has Parts			
Is Part Of			
Data Type(s)	Route		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightData.Flight.filed		
Business Rules			
Notes	 This is equivalent to ICAO Item 15c. This element, along with the "Filed 4D Trajectory" element, is always grouped together within a Filed Route Trajectory Group. 		
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, and the top 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, iff-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, iff-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.1 General: The FF-ICE shall allow definition of route and four-dimensional trajectory consisting of the components illustrated in Figure B-1. The FF-ICE shall support at a minimum the following types of Route/Trajecetory Groups:		

4.166 Route - Revised Destination

Route - Revised Destination		
Definition	The route (from some point on the filed route) to the revised destination aerodrome. [FIXM]	
Alternate Names	Revised Route	

Has Parts	
Is Part Of	
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Arrival.ReclearanceInFlight.routeToRevisedDestination
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'RIF/'. The revised route is subject to re-clearance in flight. This information is filed with the flight plan. This record data type is comprised of: Route Elements: Route Standard Instrument Arrival Designator: Character String Arrival Aerodrome: Aerodrome
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 18 (Other information: proceded by 'RIF/')

4.167 Route Designator To Next Element

Route Designator To Next Element		
Definition	The route element describes a Standard Departure Route, an ATS Route Designator, or a Standard Arrival Route that the flight plans to navigate from the Route Point that begins the segment. A direct route may also be indicated.	
Alternate Names	ATS Route Designator, Track, Airway, Route Element	
Has Parts	Modified Route Item	
Is Part Of	Route	
Data Type(s)	Route Identifier	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteElement Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteDesignatorToNextElement.rc uteDesignator	
Business Rules		
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15c1, 15c2, and 15c7. Used to describe the lateral path and procedures. Used for trajectory modelling and eligibility checking. 	
References/ Requirements Justification	 Annex 11 to the Convention on International Civil Aviation, 13th Edition, 2001 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 	

• Appendix 3, Field Type 15c2 (Route: ATS route designator)
 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012
• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
Data
 B-3.6.5 Route/Trajectory Segments: The FF-ICE shall allow definition of route and trajectory segments as described in Table B-10.
 Table B-10. Route/Trajectory Segment: Route Element = The route element describes a Standard Departure Route, an ATS Route Designator, or a Standard Arrival Route (in conformance with B-2.3) that the flight
plans to navigate from the Route Point that begins the segment. A direct route may also be indicated. (Reference to Appendix 3 Field Type: 15c2)

4.168 Route Point

Route Point		
Definition	Describes the significant points (i.e., point at which a change in ATS Route occurs) contained in the route and points at which certain events occur (e.g., change of speed or level, change of flight rules, start of cruise climb).	
Alternate Names	Route Segment Start Point	
Has Parts	Route–Change Speed and Altitude at Time, Flight Rules Change, Speed Change, Level or Altitude Change, Cruise Climb Start, En Route Delay, Modified Route Item	
Is Part Of	Route	
Data Type(s)	Position	
Range of Values	If expressed as ICAO location identifier, values comply with ICAO Doc. 7910 - Location Indicators.	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteElement.routePoint	
Business Rules	 This data element is associated with Flight Rules Change, Speed Change, Level or Altitude Change, and Cruise Climb Start only if any of these values are expected to change at the location defined by the route point. 	
Notes	 A Route Point may or may not be associated with a change in the flight's speed or altitude or type or flight rules. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15c3. Used to describe the lateral path. Used for trajectory modelling and eligibility checking. 	
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 15c3 (Route: Significant point) ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.5 Route/Trajectory Segments: The FF-ICE shall allow definition of 	

route and trajectory segments as described in Table B-10.
 Table B-10. Route/Trajectory Segment: Route Segment Start Point = Describes a significant point contained in the route per B-2.2. (Deference)
to Appendix 3 Field Type: 15c3)
to Appendix 3 Field Type: 15c3)

4.169 Route String

Route String			
Definition	The ICAO route string as depicted from the flight plan.		
Alternate Names			
Has Parts			
Is Part Of	Route		
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.routeText		
Business Rules			
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15c. 		
References/ Requirements	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) 		
Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Appendix 3, Field Type 15c (Route) 		
	• This is provided to support legacy systems, and to support stakeholders who may not be in full possession of all necessary aeronautical resource information.		

4.170 Route Truncation Indicator

Route Truncation Indicator		
Definition	Indicates that the route is incomplete and the remainder should be sought from other	
	sources.	
Alternate Names	Route Termination Indicator	
Has Parts		
Is Part Of	Route	
Data Type(s)	Boolean	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteTruncationIndicator	
Business Rules		
Notes		
References/	ICAO ATMRPP-WG/30-WP/698, MANUAL ON FF-ICE IMPLEMENTATION	
Requirements	GUIDANCE, April 2016	
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &	

Data	
0	B-3.6.5 Route/Trajectory Segments: The FF-ICE shall allow definition of route and trajectory segments as described in Table B-10.
0	Table B-10. Route/Trajectory Segment: Route Termination Indicator = Optionally indicates that the route is incomplete and the remainder should be sought from other sources. (Reference to Appendix 3 Field Type: 15c5)

4.171 Runway Arrival Time - Actual

	Runway Arrival Time - Actual	
Definition	The actual time of arrival. [ICAO Doc 4444, Appendix 3, Field Type 17]	
Alternate Names	Time of Arrival, Actual Time of Arrival, Actual Landing Time (ALDT), Actual Runway	
Has Parts		
Is Part Of		
Data Type(s)	Date Time	
Range of Values		
FIXM UML Path	Fixm.Flight.Arrival.Arrival.actualTimeOfArrival	
Business Rules		
Notes	 [ICAO Standard ATS Messages] Transmitted in ARR as ICAO Field Type 17b. 	
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) 2007 	
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.3.3 FF-ICE flight data exchanges shall support Flight Status items as described in Table B-4. Table B-4. Flight Status: Arrival Time = The actual date and time of arrival at the arrival aerodrome, conforming to B-2.22. (Reference to Appendix 3 Field Type: 17b) 	

4.172 Runway Departure Time - Actual

Runway Departure Time - Actual		
Definition	The actual time of departure from the aerodrome. [ICAO Doc 4444, Appendix 3, Field	
	Lybe 12]	
Alternate Names	Actual Take-Off Time (ATOT), Actual Runway Time of Departure (ARTD), Actual	
	Runway Departure Time, OFF Time, Departure Time	
Has Parts		
Is Part Of		
Data Type(s)	Date Time	
Range of Values		
--	---	--
FIXM UML Path	Fixm.Flight.Departure.Departure.actualTimeOfDeparture	
Business Rules		
Notes	 [ICAO Standard ATS Messages] This data element is a combination of ICAO Field Type 13b (time) and 18 DOF/ (date). The time is transmitted in ALR, DEP, and SPL messages. The date is transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'DOF/'. The field is null until the flight takes off. 	
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.3.3 FF-ICE flight data exchanges shall support Flight Status items as described in Table B-4. Table B-4. Flight Status: Departure Time = The actual date and time of departure, conforming to B-2.22. (Reference to Appendix 3 Field Type: 13b) 	

4.173 Selective Calling Code

	Selective Calling Code	
Definition	A code that consists of two 2-letter pairs and acts as a paging system for an ATS unit to establish voice communications with the pilot of an aircraft.	
Alternate Names	SELCAL Code	
Has Parts		
Is Part Of		
Data Type(s)	Alpha String	
Range of Values	[A-S] excluding {I, N, O}	
FIXM UML Path	Fixm.Flight.Capability.SelectiveCallingCode	
Business Rules	 SELCAL codes use letters [A-S] excluding I, N, and O. Duplicate letters, in the same pair, are not allowed. The succeeding letter, in the same pair, must be higher than the preceding one. Aviation Spectrum Resources (ASRI) is the registrar and issuer of SELCAL codes worldwide. Used during HF communications, when aircraft are overflying large unpopulated areas such as oceans and deserts. 	
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'SEL/'. This code is permanently assigned to individual aircraft. Selective calling is mostly used by Oceanic Enroute Facilities. 	
References/ Requirements Justification	 Aviation Spectrum Resources, Inc. Selective Calling (SELCAL) Users Guide Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 	

4444),	2007
• FF-ICE	Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
Data	
0	B-2.15.1 Expression of a Selective Calling (SELCAL) code shall be four
	letters consistent with the definitions in Annex 10, Volume 3, Chapter 3.
0	B-3.3.2 FF-ICE flight data exchanges shall support information to identify a
	specific airframe relevant to a flight as described in Table B-3.
0	Table B-3. Airframe Identification: SELCAL Code = A code conforming to B-
	2.15. (Reference to Appendix 3 Field Type: 18 SEL/)

4.174 Shipment Authorizations

	Shipment Authorizations	
Definition	Additional information related to an approval, permission, or other specific detail regarding the shipment of dangerous goods.	
Alternate Names	Authorizations	
Has Parts		
Is Part Of	Dangerous Goods List of Line Item Detail	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.shipmentAuthorizations	
Business Rules		
Notes	 This data element contains free-form text. State variation codes, or special provision codes, can be entered into this field. IATA does not specify a size limitation. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element = ram:ApplicableTransportDangerousGoods/ram:AuthorizationInformation 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods 49 CFR 172.203a Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.175 Shipment Type

	Shipment Type		
Definition	An indicator used for dangerous cargo of whether the package is radioactive or not.		
Alternate Names	Shipment DG Type		
Has Parts			
Is Part Of	Shipper's Declaration For Dangerous Goods Header		
Data Type(s)	Enumeration		
Range of Values	{Radioactive, Non-Radioactive}		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods.shipment		
Business Rules			
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:HazardTypeCode 		
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284). Part 7. Section 4.3 		

4.176 Shipper Address

	Shipper Address		
Definition	The shipper's mailing address.		
Alternate Names			
Has Parts			
Is Part Of	Shipper's Declaration For Dangerous Goods Header, Shipper Name and Address		
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.shipper		
Business Rules	• The Shipper Address is mandatory when used in the IATA SDDG message.		
Notes	 This data element contains free-form text. 		
	• The address consists of PO Box, Street, City, Region or State, ZIP or Postal Code,		
	Country Code, and Country Name.		
	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML Element = rsm:ShipppersDeclarationForDangerousGoods/rsm:MasterConsignment/ram:Incl udedHouseConsignment/ram:ConsignorParty/ram:PostalStructuredAddress 		

	_			
References/	•	IATA SDDG Specification v2.1		
Requirements	•	49 CFR 172/173/175		
Justification	•	IATA Dangerous Goods Regulations, January 2011		
	•	Shipper's Declaration for Dangerous Goods		
	•	Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284)		
	•	FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &		
		Data		
		 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 		

4.177 Shipper Emergency Phone Number

	Shipper Emergency Phone Number	
Definition	Phone number of the shipper or someone who is not on board the aircraft and who can be reached in an emergency involving the dangerous good.	
Alternate Names	Phone Number	
Has Parts		
Is Part Of	Shipper's Declaration For Dangerous Goods Header	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.shipper	
Business Rules		
Notes	 Includes country code (if necessary), area code, and phone number. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:EmergencyTradeContact/ram:DirectTelephoneCommunication/ram:Complet eNumber IATA specifies a maximum size of 25 characters. 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.178 Shipper Name

	Shipper Name		
Definition	The Shipper's name, legal identity, and/or organization.		
Alternate Names	Shipping Company, Shipper		
Has Parts			
Is Part Of	Shipper's Declaration For Dangerous Goods Header, Shipper Name and Address		
Data Type(s)	Character String		
Range of Values			
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.shipper		
Business Rules			
Notes	 This data element contains free-form text. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:IncludedHouseConsignment/ram:ConsignorTradeParty/ram:Name IATA specifies a maximum size of 35 characters. 		
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284). 		

4.179 Shipper Name and Address

	Shipper Name and Address	
Definition	The grouping element unites the Shipper (Consignor) Name with the Postal Structure Address (detailed breakout of address components).	
Alternate Names		
Has Parts	Postal Structured Address, Shipper Name	
Is Part Of	Shipper's Declaration For Dangerous Goods Header	
Data Type(s)	Record	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.shipper	
Business Rules	 An IATA SDDG must have this information. 	
Notes	 IATA data model xmlns:ram='iata:datamodel:3' XML Element = 'ram:ConsignorParty' 	

References/ Requirements	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
Justification	 Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.180 Shipper's Declaration For Dangerous Goods

	Shipper's Declaration For Dangerous Goods	
Definition	Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions. [ICAO Annex 18]	
Alternate Names		
Has Parts	Shipper's Declaration For Dangerous Goods Line Item Details, Shipper's Declaration For Dangerous Goods Packaging Detail, Shipper's Declaration For Dangerous Goods Header, Shipper's Declaration For Dangerous Goods Summary	
Is Part Of		
Data Type(s)	Record	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods	
Business Rules	Required if the shipment contains dangerous goods.All parts are mandatory.	
Notes	 IATA model namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1' XML Element = ram:ShippersDeclarationForDangerousGoods This complex Element is a Grouping element for XML. 	
References/	IATA SDDG Specification v2.1	
Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data 	
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.181 Shipper's Declaration For Dangerous Goods Header

Shipper's Declaration For Dangerous Goods Header	
Definition	The part of the Shipper's Declaration For Dangerous Goods that contains the basic header information on who is sending and receiving this shipment.
Alternate Names	
Has Parts	Destination Country, Declaration Text: Compliance, Aircraft Dangerous Goods

	Limitation, Air Waybill Number, Departure Country, Shipper Emergency Phone Number, Shipment Type, Consignee Name and Address, Shipper Name and Address, Declaration Text: Shipper
Is Part Of	Shipper's Declaration For Dangerous Goods
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DeclarationText
Business Rules	
Notes	 IATA model Namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1' XML Element = rsm:MasterConsignment
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.182 Shipper's Declaration For Dangerous Goods Line Item Details

	Shipper's Declaration For Dangerous Goods Line Item Details
Definition	The part of the Shipper's Declaration For Dangerous Goods contains the line items details for this shipment.
Alternate Names	
Has Parts	Dangerous Goods List of Line Item Detail, Dangerous Goods List of Overpack Detail
Is Part Of	Shipper's Declaration For Dangerous Goods
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage
Business Rules	
Notes	 IATA model Namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1' XML Element = rsm:MasterConsignment
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being
	carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.183 Shipper's Declaration For Dangerous Goods Packaging Detail

	Shipper's Declaration For Dangerous Goods Packaging Detail
Definition	The part of the Shipper's Declaration For Dangerous Goods that contains the packaging details for this shipment.
Alternate Names	
Has Parts	Dangerous Goods List of Package Detail
Is Part Of	Shipper's Declaration For Dangerous Goods
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangreousGoodsPackage
Business Rules	
Notes	 IATA model Namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1' XML Element = rsm:MasterConsignment/ram:IncludedHouseConsignment
References/	IATA SDDG Specification v2.1
Requirements	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
Justification	 Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.184 Shipper's Declaration For Dangerous Goods Summary

Shipper's Declaration For Dangerous Goods Summary	
Definition	The section of the Shipper's Declaration For Dangerous Goods required at the end portion of the SDDG for a shipment.
Alternate Names	
Has Parts	Declaration Text: Consignor
Is Part Of	Shipper's Declaration For Dangerous Goods
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.DangerousGoods
Business Rules	This is the final compliance declaration of the document.
Notes	 IATA model Namespace = xmlns:rsm='iata:shippersdeclarationfordangerousgoods:1' XML Element = rsm:MasterConsignment/ram:IncludedHouseConsignment
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical

Instructions for the Safe Transport of Dangerous Goods by Air (ICAO
Document 9284), Part 7, Section 4.3.

4.185 Special Form Indicator

	Special Form Indicator	
Definition	A notation that the material is 'special form' and cannot produce radioactive contamination.	
Alternate Names		
Has Parts		
Is Part Of	Radioactive Materials, Radionuclide	
Data Type(s)	Boolean	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.RadioactiveMaterials.Radionuclide.specialFormIndicator Fixm.Flight.Cargo.RadioactiveMaterials.SpecialForm	
Business Rules		
Notes	 Special Form is used to describe radioactive material which is in a sealed integral form and so cannot, for all practical purposes, produce radioactive contamination. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:Applicabl eRadioactiveIsotope/ram:SpecialFormNote 	
References/	IATA SDDG Specification v2.1	
Requirements	• 49 CFR 172/173/175	
Justification	 IATA Dangerous Goods Regulations, January 2011 	
	 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) 	
	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data 	
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.186 Special Handling Reason

Special Handling Reason	
Definition	The reason for special handling of a flight by ATS. [adapted from ICAO Doc 4444, Appendix 2, ITEM 18 STS/]
Alternate Names	Reason for Special Handling, Special Handling
Has Parts	
Is Part Of	
Data Type(s)	Enumeration

Range of Values	{ALTRV, ATFMX, FFR, FLTCK, HAZMAT, HEAD, HOSP, HUM, MARSA, MEDEVAC,
	NUNRVSM, SAR, STATE}
FIXM UML Path	Fixm.Flight.FlightData.Flight.specialHandling
	Fixm.Flight.FlightData.SpecialHandlingReasonCode
Business Rules	
Notes	• The meaning of the values is as follows:
	 ALTRV - Operated IAW altitude reservation
	• ATFMX - Approved for exemption from ATFM measures by ATS authority
	 FFR - Fire fighting
	 FLTCK - Flight check for calibration of NAVAIDs
	 HAZMAT - Carrying hazardous material
	 HEAD - Head of State status
	 HOSP - Medical flight declared by medical authorities
	 HUM - On humanitarian mission
	 MARSA - Military entity assumes responsibility for separation of military aircraft
	aircrait
	O MEDEVAC - Life chilical medical emergency evacuation
	o NONRVSIVI - NON-RVSIVI Capable flight intending to operate in RVSIVI
	an space
	o STATE Engaged in military systems or police services
	5 STATE - Engaged III military, customs of police services
	• [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'STS/'.
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic
Requirements	Management (PANS-ATM ICAO 4444)
Justification	Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) 2007
	FE ICE Implementation Cuidance ICAO Draft 2016 Annandix P. FE ICE Model 8
	FF-ICE Implementation Guidance, ICAO Drait, 2010, Appendix B - FF-ICE Model &
	Dald
	the information defined in Table B-5.
	 Table B-5. Flight Characteristics: Special Handling = Reasons that a flight requires special handling, conforming to B-2.20. (Reference to Appendix 3 Field Type: 18 STS/)

4.187 Speed Change

Speed Change	
Definition	Describes the new planned speed at the specified point at which the change to the new speed is planned to commence. (May also describe a point at which the speed change is planned to be attained.)
Alternate Names	Change of Speed, Change of Level, Events, Changes in Lateral and Vertical Speed, Route/Trajectory Point Changes
Has Parts	
Is Part Of	Route Point, Trajectory Point

Data Type(s)	Record
Range of Values	Condition {PLAN_TO_COMMENCE, PLAN_TO_ATTAIN}
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteChanges.SpeedChange Fixm.Flight.FlightRouteTrajectory.RouteChanges.SpeedChange.speed
Business Rules	
Notes	 This element can be associated with a point in a trajectory or a point in a route. [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 15c4. This complex data type is comprised of: Speed Condition: Enumeration The Condition is relative to the associated point: PLAN_TO_COMMENCE AT_OR_AFTER_POINT - The change is required subsequent to the point.; PLAN_TO_ATTAIN - The change is required to be completed by the point. A combination of these two conventions will describe a clearance with a defined starting and completion point.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Asia/Pacific Regional Interface Control Document (ICD) For ATS Interfacility Data Communications (AIDC), version 3, September 2007 The North Atlantic Common Coordination Interface Control Document, Version 1.2.8 December 2010 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.9 Route/Trajectory Change Information: The ATM Collaborative Environment shall allow identification of changes associated with a Route/Trajectory Point as described in Table B-13. Table B-13. Route/Trajectory Change Information (Change of Speed = Specifies a new requested speed at the associated route/trajectory point. Indicates whether the change to the new speed is planned to commence at or planned to be attained by the point. (Reference to Appendix 3 Field Type: 15c4)

4.188 Speed Constraint

Speed Constraint	
Definition	The speed constraint applicable to a specific point or segment on the route or
	trajectory.
Alternate Names	Constraints, Route/Trajectory Point Constraints
Has Parts	

Is Part Of	Frajectory Point		
Data Type(s)	Record		
Range of Values	Speed UOM {KPH, KNOTS, MACH} Type {AT, AT_OR_GREATER, AT_OR_LESS, BETWEEN} Activation Type {PLAN_TO_COMMENCE, PLAN_TO_ATTAIN} Departure or Arrival {DEP, ARR}		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.Constraints.SpeedConstraint		
Business Rules			
Notes	 In the route or trajectory, used to express constraints associated with route elements (e.g., procedures). This complex data type is comprised of: Value Type Activation Type Departure or Arrival Reference Value is the speed (in KPH, KNOTS, or MACH) associated with the constraint. There can be one or two Values. Two are used when Type is BETWEEN (see below), otherwise one is used. Type is relative to Value and can include: AT - The speed is required to be at the given Value. AT_OR_GREATER - The speed is required to be at or above the given Value. BETWEEN - The speed is required to be between two given Value. BETWEEN - The speed is required to be between two given Value. BETWEEN - The speed is required to be between two given Value. PLAN_TO_COMMENCE - constraint is initiated at the given Location. PLAN_TO_COMMENCE - constraint must be met by the given Location. PLAN_TO_ATTAIN - constraint must be met by the given Location. DEP - applicable on climb. ARR - applicable on climb. ARR - applicable on descent. 		
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.11 Route/Trajectory Constraints: The ATM Collaborative Environment shall allow identification of constraints associated with each route/trajectory point as described in Table B-15. The ATM Collaborative Environment shall allow definition of 		

altitude, speed, or time constraints at specific trajectory points.
 Table B-15. Route/Trajectory Constraints: Speed Constraint = The speed constraint applicable to the associated route point or trajectory point. Includes a type (AT, AT OR GREATER, AT OR LESS or BETWEEN), value as the speed(s), activation type (begin at or reach by), an indication if the
constraint is for departure or arrival and a reference identifier if applicable.

4.189 Speed Schedule - Climb

	Speed Schedule - Climb			
Definition	Initially submitted by the airspace user, this defines the target speed in both Indica Airspeed (IAS) and MACH so the aircraft can climb through the crossover altitude a target the MACH speed when needed.			
Alternate Names				
Has Parts				
Is Part Of				
Data Type(s)	Record			
Range of Values				
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteTrajectory.climbSchedule			
Business Rules				
Notes	 This data element is composed of the following pieces of information. The data type is listed after the colon. Initial Speed: Speed in IAS Subsequent Speed: Speed in MACH. Used by the ASP to improve trajectory prediction in climb. Note for modelling, this element may be grouped under RTG. 			
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, 2016, Appendix B - FF-ICE Model & Data B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall allow definition of route/trajectory specific aircraft performance characteristics. Input to FIXM CCB of Four-Dimensional Trajectory Items for FF-ICE Step 1, November 2015 Table 3 3. Optional Trajectory-specific items provided by the AU (see Section A.2): Name: Climb and descent speed schedule Description: Anticipated target IAS and Mach schedule in climb and descent Uses: Used by the ASP to improve trajectory prediction in climb and descent 			

4.190 Speed Schedule - Descent

	Speed Schedule - Descent			
Definition	Initially submitted by the airspace user, this defines the target speed in both Indicate Airspeed (IAS) and MACH so the aircraft can descend through the crossover altitude and target IAS speed when needed.			
Alternate Names				
Has Parts				
Is Part Of				
Data Type(s)	Record			
Range of Values				
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteTrajectory.descentSchedule			
Business Rules				
Notes	 This data element is composed of the following pieces of information. The data type is listed after the colon. Initial Speed: Speed in MACH Subsequent Speed: Speed in IAS. Used by the ASP to improve trajectory prediction in descent. Note for modelling, this element may be grouped under RTG 			
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, 2016, Appendix B - FF-ICE Model & Data B-3.6.6 Route/Trajectory Specific Aircraft Performance: The FF-ICE shall allow definition of route/trajectory specific aircraft performance characteristics. Input to FIXM CCB of Four-Dimensional Trajectory Items for FF-ICE Step 1, November 2015 Table 3 3. Optional Trajectory-specific items provided by the AU (see Section A.2): Name: Climb and descent speed schedule Description: Anticipated target IAS and Mach schedule in climb and descent Uses: Used by the ASP to improve trajectory prediction in climb and descent 			

4.191 SSR Code

	SSR Code
Definition	The assigned four-character numeric code transmitted by the aircraft transponder in response to a secondary surveillance radar interrogation signal which is used to assist air traffic controllers to identify aircraft.
Alternate Names	Squawk Code, Transponder Code, Mode 3A, Mode A, Beacon Code, Mode A Code
Has Parts	
Is Part Of	

Data Type(s)	Numeric String	
Range of Values	[0000 - 7777] (expressed as octal numbers)	
FIXM UML Path	Fixm.Flight.EnRoute.EnRoute.currentSsrCode	
Business Rules		
Notes	 The discrete transponder code (often called a squawk code) is assigned by air traffic controllers to uniquely identify an aircraft. Beacon Codes are four-digit octal numbers. Thus, the lowest possible squawk is 0000 and the highest is 7777. Four octal digits can represent up to 4096 different codes. [ICAO Standard ATS Messages] Transmitted in ALR, RCF, FPL, CHG, CNL, DLA, DEP, ARR, CPL, EST, CDN, ACP, RQP, RQS, and SPL as ICAO Field Type 7c. 	
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.3.2 FF-ICE flight data exchanges shall support information to identify a specific airframe relevant to a flight as described in Table B-3. Table B-3. Airframe Identification: Mode A Code = A beacon code conforming to B-2.25. 	

4.192 Standard Capabilities Indicator

Standard Capabilities Indicator		
Definition	This element indicates the aircraft carries the set of capabilities considered "standard" by the appropriate authority.	
Alternate Names		
Has Parts		
Is Part Of		
Data Type(s)	Boolean	
Range of Values		
FIXM UML Path	Fixm.Flight.Capability.StandardCapabilitiesIndicator	
Business Rules		
Notes	 [ICAO] One of the values of Item 10a is the "S" for standard. Item 10a contains "S" if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable. If the letter S is used, standard equipment is considered to be VHF RTF, VOR and ILS, unless another combination is prescribed by the appropriate ATS authority. 	
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 	

 Field Type 10a — Equipment and capabilities (Radiocommunication,
navigation and approach aid equipment and capabilities S)

4.193 Standard Instrument Arrival Designator

	Standard Instrument Arrival Designator		
Definition	The textual designator of the Standard Instrument Arrival (STAR).		
Alternate Names	STAR, Standard Terminal Arrival Route, Route Element		
Has Parts			
Is Part Of			
Data Type(s)	Route Identifier		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteDesignatorToNextElement.st andardInstrumentArrival		
Business Rules			
Notes	 A STAR is a designated instrument flight rule (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced. The elements of this part of the route are not expected to be filed as part of the flight plan submission, but may be assigned at a later time and used to complete the route information between the en route elements and the airport runway. This element is identified & modelled in AIXM. For example, - FUL3A - a Standard Arrival beginning at designated point FUL. The name of a published route that contains fix and leg elements that need to connect with the end of the enroute route elements and connect between that and the assigned landing runway at the airport. It would be expected the route elements of the identified STAR would be added to the enroute elements to complete the aircrafts overall expected routing to the landing runway. 		
References/ Requirements Justification	 AIXM Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Chapter 1 Definitions: Standard instrument arrival (STAR). A designated instrument flight rule (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced. FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.5 Route/Trajectory Segments: The FF-ICE shall allow definition of route and trajectory segments as described in Table B-10. Table B-10. Route/Trajectory Segment: Route Element = The route element describes a Standard Departure Route, an ATS Route Designator, or a Standard Arrival Route (in conformance with B-2.3) that the flight plans to navigate from the Route Point that begins the segment. A direct 		

	route may also be indicated. (Reference to Appendix 3 Field Type: 15c7)
0	Section 11.6 SID / STAR DATA (11.6.1: "Inclusion of runway, SID/STAR in
	the 4DT")

4.194 Standard Instrument Departure Designator

Standard Instrument Departure Designator			
Definition	This is the name of a published procedure extending from the departure runway to		
	the start of the en route part of the aircraft's route.		
Alternate Names	SID, Route Element		
Has Parts			
Is Part Of			
Data Type(s)	Route Identifier		
Range of Values			
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteDesignatorToNextElement.st and ardInstrumentDeparture		
Business Rules			
Notes	 The elements of this part of the route are not expected to be filed as part of the flight plan submission, but may be assigned at a later time and are used to complete the airport departure route information between the airport runway and the en route part of the route. It is believed this item is included/modelled in AIXM. It represents the expected/allocated departure route to be followed by the aircraft immediately following takeoff from the departure airport. The name of a published route that contains fix and leg elements that connect the assigned takeoff runway to the aircraft's starting point on the en route part of its route. It would be expected these SID route elements would be added to the start of the en route elements (and any later STAR additions) to complete the overall expected route of the aircraft. 		
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Chapter 1 Definitions: Standard instrument departure (SID). A designated instrument flight rule (IFR) departure route linking the aerodrome or a specified runway of the aerodrome with a specified significant point, normally on a designated ATS route, at which the en-route phase of a flight commences. FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.5 Route/Trajectory Segments: The FF-ICE shall allow definition of route and trajectory segments as described in Table B-10. Table B-10. Route/Trajectory Segment: Route Element = The route element describes a Standard Departure Route, an ATS Route Designator, or a Standard Arrival Route (in conformance with B-2.3) that the flight plans to navigate from the Route Point that begins the segment. A direct route may also be indicated. (Reference to Appendix 3 Field Type: 15c1) 		

 Section 11.6 SID / STAR DATA (11.6.1: "Inclusion of runway, SID/STAR in
the 4DT")

4.195 Street

Street		
Definition	The building number and Street Name portion of the Address.	
Alternate Names		
Has Parts		
Is Part Of	Postal Structured Address	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress	
Business Rules		
Notes	 This element contains free-form text. IATA data model Namespace = xmlns:ram='iata:datamodel:3' and XML element name = ram:PostalStructuredAddress/ram:Street IATA specifies a maximum size of 35 characters. 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.196 Submission Status

Submission Status		
Definition	A status indicating if a message could be processed and acted on. [adapted from ICAO FF-ICE Implementation Guidance]	
Alternate Names		
Has Parts		
Is Part Of		
Data Type(s)	Enumeration	
Range of Values	{Ack, Reject or Manual}	
FIXM UML Path	Fixm.Messaging.SubmissionStatus	
Business Rules		
Notes	 A submission status of "Ack" shall indicate that a message could be processed and acted on. A submission status of "Reject" shall indicate that a message could not be processed and acted on, and was not retained by the receiving system. 	

	•	A submission status of "Manual" shall indicate that a message could not be processed and acted on, and the receiving unit is attempting manual handling of the message.
References/ Requirements Justification	•	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - Model & Data B-2.27.1 A submission status of "Ack" shall indicate that a message could be processed and acted on. B-2.27.2 A submission status of "Reject" shall indicate that a message could not be processed and acted on, and was not retained by the receiving system. B-2.27.3 A submission status of "Manual" shall indicate that a message could not be processed and acted on, and the receiving unit is attempting manual handling of the message. FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages, Table C 2, Submission Researce.
		 Submission Response: Submission Response (C-1.2 Submission Status)

4.197 Submission Status Reason

Submission Status Reason		
Definition	A textual description of the reason a message was rejected. [ICAO FF-ICE Implementation Guidance]	
Alternate Names	Rejection Reason	
Has Parts		
Is Part Of		
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Messaging.SubmissionStatus.statusReason	
Business Rules		
Notes		
References/	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix C - FF-ICE Messages,	
Requirements	Table C-2. Submission Response:	
Justification	 Rejection Reason = A textual description of the reason a message was rejected. 	

4.198 Subsidiary Hazard Class and Division

Subsidiary Hazard Class and Division		
Definition	An identifier of any subsidiary hazard class(es)/division(s) in addition to the primary	
Alternate Names	Subsidiary Hazard Class / Division	
Has Parts		
ls Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of	
	Line Item Detail, Dangerous Goods List of Line Item Details	

Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.subsidiaryHazardClass Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.subsidiaryHazardClassAndDiv ision
	Fixm.Flight.Cargo.Packaging.HazardClass
Business Rules	 There may be 0, 1, or 2 subsidiary risk classes or divisions. If there is more than one, each should be separated by a comma. The subsidiary risk must be shown in parentheses.
Notes	 IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:AdditionalHazardClassificationID Limit max size to 100 characters to limit the vulnerability of code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO

4.199 Supplementary Shipping Information

Supplementary Shipping Information		
Definition	Additional information that may be added to the proper shipping name to more fully describe the goods or to identify a particular condition.	
Alternate Names	Supplementary Information	
Has Parts		
ls Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of Line Item Detail, Dangerous Goods List of Line Item Details	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.supplementaryInformation	
Business Rules		
Notes	 This element contains free form text. IATA does not specify a size. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:SupplementaryInformation Limit max size to 100 characters to limit the vulnerability of code insertion. 	

References/	IATA SDDG Specification v2.1
Requirements Justification	 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.200 Surveillance Capabilities

	Surveillance Capabilities
Definition	The serviceable Secondary Surveillance Radar (SSR) and/or Automatic Dependent Surveillance (ADS) equipment available on the aircraft at the time of flight that may be used to identify and/or locate the aircraft. [FIXM]
Alternate Names	Surveillance Equipment
Has Parts	
Is Part Of	
Data Type(s)	Enumeration
Range of Values	{A, B1, B2, C, D1, G1, E, H, I, L, P, S, U1, U2, V1, V2, X}
FIXM UML Path	Fixm.Flight.Capability.FlightCapabilities.surveillance Fixm.Flight.Capability.SurveillanceCapabilities
Business Rules	 Either one or more of the descriptors 'l', 'P', 'X', 'A', 'C' (of which 'l', 'P' and 'X' are mutually exclusive, i.e. only one may be present) or one or more of the descriptors 'A', 'C', 'E', 'H', 'L', or 'S'. Optionally one or more of the descriptors 'B1', 'B2', 'D1', 'G1', 'U1', 'U2', 'V1', 'V2' without repetition.
Notes	 This data element contains one or a combination of the following ICAO codes for surveillance capabilities: A - Transponder-Mode A (4 digits-4,096 codes) B1 - ADS-B with dedicated 1090 MHz ADS-B out capability B2 - ADS-B with dedicated 1090 MHz ADS-B out and in capability C - Transponder-Mode A (4 digits-4,096 codes) and Mode C D1 - ADS-C with FANS 1/A capabilities G1 - ADS-C with FANS 1/A capabilities E - Transponder Mode S including aircraft identification, pressure-altitude, and extended squitter capability (ADS-B) H - Transponder Mode S including aircraft identification, pressure-altitude, and enhanced surveillance capability I - Transponder Mode S including aircraft identification, but no pressure-altitude capability I - Transponder Mode S including aircraft identification, but no pressure-altitude capability F - Transponder Mode S including aircraft identification, but no pressure-altitude capability I - Transponder Mode S including aircraft identification, but no pressure-altitude capability I - Transponder Mode S including aircraft identification, pressure-altitude, extended squitter, and enhanced surveillance capability V - Transponder Mode S including pressure-altitude, but no aircraft identification capability S - Transponder-Mode S, including both pressure-altitude and aircraft

	identification transmission
	 U1 - ADS-B out capability using UAT
	 U2 ADS-B out and in capability using UAT
	 V1 - ADS-B out capability using VDL mode 4
	 V2 - ADS-B in and out capability using VDL mode 4
	• X - Transponder Mode S with neither aircraft identification nor pressure- altitude capability
	• [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field
	Type 10b. Additional surveillance capabilities that cannot be listed here are
	transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'SUR/'.
References/	Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic
Requirements	Management (PANS-ATM ICAO 4444)
JUSTIFICATION	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007
	 Appendix 3, Field Type 10b (Equipment and capabilities: Surveillance
	equipment and capabilities)
	 Appendix 3, Field Type 18 preceded by SUR/
	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-2.10.1 Expression of Equipment and Capability shall support at a
	minimum the following equipment/capability categories:
	• ()
	 6. Surveillance
	a. Transponder
	o i. Mode A
	o II. Mode C
	o III. Mode S
	 1. Altitude encoding 2. Altitude tip
	 Z. Aircraft ID J. Enhanced Mode C
	3. EIManced Mode S
	- 4. Extended Squitter
	the information defined in Table R-5
	\sim Table B-5. Elight Characteristics: Equipment and Canabilities – Description
	of canabilities conforming to B-2 10 (Reference to Annendix 3 Field Type)
	18 SUR/)

4.201 Survival Equipment Remarks

Survival Equipment Remarks		
Definition	A description of survival equipment carried on the aircraft and any other useful	
	remarks regarding survival equipment.	
Alternate Names		
Has Parts		
Is Part Of		

Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Capability.SurvivalCapabilities.survivalEquipmentRemarks
Business Rules	
Notes	 This data element contains free-form text. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19h, preceded by 'N/'.
References/ Requirements Justification	 Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16. Table B-16. Supplemental Information: Remarks = Other survival equipment carried or useful clarifying remarks. (Reference to Appendix 3 Field: 19 N/)

4.202 Survival Equipment Type

Survival Equipment Type	
Definition	The type of equipment carried on board the aircraft that can be used by the crew and passengers to assist survival in harsh environments in case of emergency. [FIXM]
Alternate Names	Survival Capability
Has Parts	
Is Part Of	
Data Type(s)	Enumeration
Range of Values	one or more of the following: {P, D, M, J}
FIXM UML Path	Fixm.Flight.Capability.SurvivalCapabilities.survivalEquipmentType Fixm.Flight.Capability.SurvivalEquipmentType
Business Rules	
Notes	 The meaning of the values is as follows: P - polar survival equipment D - desert survival equipment M - maritime survival equipment J - jungle survival equipment [ICAO] Since this data is not part of the filed flight plan, it must be made available by the operator, so it can be supplied without delay when requested by ATS units. [ICAO Standard ATS Messages] Transmitted in ALR and SPL as ICAO Field Type 19d, preceded by 'S/'.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 (Appendix 3, Field Type 19d)

 Appendix 3, Field Type 19d (Field Type 19 — Supplementary information: preceded by S/)
• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
 B-3.7 Supplemental Information: FF-ICE flight data exchanges shall support supplemental information as described in Table B-16.
 Table B-16. Supplemental Information: Survival Capability = The type(s) of survival equipment on board. (Reference to Appendix 3 Field Type: 19 S/)

4.203 Takeoff Alternate Aerodrome

Takeoff Alternate Aerodrome	
Definition	An alternate aerodrome at which an aircraft can land, should this become necessary shortly after take off, and it is not possible to land at the departure aerodrome. [FIXM]
Alternate Names	Alternate Take-Off Aerodrome(s)
Has Parts	
Is Part Of	
Data Type(s)	Aerodrome
Range of Values	If expressed as ICAO location identifier, values comply with ICAO Doc. 7910
FIXM UML Path	Fixm.Flight.Departure.Departure.takeoffAlternateAerodrome
Business Rules	 A take off alternate airport shall be selected and specified in the operational flight plan, if the weather conditions at the airport of departure are at or below the applicable airport operating minima, or it would not be possible to return to the departure airport for other reasons. The take off alternate must be within a specified distance of the departure airport. For an airport to be selected as a take off alternate, the available information shall indicate, at the estimated time of use, the conditions will be at or above the airport operating minima for that operation.
Notes	 [ICAO Standard ATS Messages] Transmitted in ALR, FPL, CPL, and SPL as ICAO Field Type 18, preceded by 'TALT/'. When expressed as a free-form alphanumeric text, it contains the actual name of the alternate take off aerodrome (e.g., 'Piedmont Triad International Airport').
References/ Requirements Justification	 ICAO Doc. 7910: Location Indicators, Edition No. 138, 2010 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.3 Route/Trajectory Alternate Destination Data: The FF-ICE shall allow definition of the alternate destination data described in Table B-8. Table B-8. Route/Trajectory Alternate Destinations: Alternate Take-Off Aerodrome(s) = One or more designators conforming to B-2.4. (Reference

to Appendix 3 Field Type: 18 TALT/)	

4.204 Takeoff Weight

	Takeoff Weight
Definition	The estimated takeoff weight of the aircraft.
Alternate Names	TakeoffMass
Has Parts	
Is Part Of	
Data Type(s)	Integer
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.RouteTrajectory.takeoffWeight
Business Rules	
Notes	 This data element may become a part of Route Trajectory Group (RTG) Multiple takeoff weights must be allowed in the model for individual takeoff weights to be provided by the eAU for each trajectory.
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 ICAO ATMRPP-WG/29-WP/669, Four-dimensional Trajectory Data Items for FF-ICE Step 1, Feb 2015 ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015 ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015 ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015 ICAO ATMRPP-WG/29-WP/672, and Trajectory Items for FF-ICE Step 1, November 2015 Table 3 3. Optional Trajectory-specific items provided by the AU (see Section A.2): Name: Takeoff weight Description: An estimate of the aircraft takeoff weight Uses: Used by the ASP to improve trajectory prediction in climb

4.205 Technical Name

Technical Name	
Definition	The additional chemical name(s) required for some proper shipping names for
	dangerous goods.
Alternate Names	
Has Parts	
Is Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of

	Line Item Detail, Dangerous Goods List of Line Item Details
Data Type(s)	Character String
Range of Values	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.technicalName
Business Rules	 When added to the proper shipping name, the technical name must be shown in parentheses immediately following the proper shipping name.
Notes	 This element contains free-form text. IATA does not specify a size. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:TechnicalName Limit size to 100 characters to limit the vulnerability of code insertion.
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3.

4.206 Temperature

Temperature	
Definition	In a predicted trajectory, the instantaneous temperature used at the 4D Point for creating the 4D trajectory.
Alternate Names	
Has Parts	
Is Part Of	Meteorological Data
Data Type(s)	Float
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.MeteorologicalData.temperature
Business Rules	
Notes	Unit of measure available include K, C, F or R
References/	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a
Requirements	Collaborative Environment (FF-ICE), First Edition - 2012
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative
	environment shall allow definition of a route/trajectory point as described

in Table B-11.
 Table B-11. Route/Trajectory Point: MetData = Wind direction and speed,
together with Temperature which were used for the trajectory prediction
at the associated Four Dimensional Point.

4.207 Time Constraint

	Time Constraint
Definition	The time constraint applicable to a specific point on the route or trajectory.
Alternate Names	Constraints, Route/Trajectory Point Constraints
Has Parts	
Is Part Of	Trajectory Point
Data Type(s)	Record
Range of Values	Type {AT, AT_OR_BEFORE, AT_OR_AFTER, BETWEEN} Departure or Arrival {DEP, ARR}
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.totalEstima tedElapsedTime
Business Rules	
Notes	 In the route or trajectory, used to express constraints associated with route elements (e.g., procedures). This complex data type is comprised of: Value Type Departure or Arrival Reference Value is the date and time associated with the constraint. There can be one or two Values. Two are used when Type is BETWEEN (see below), otherwise one is used. Type is relative to Value and can include: AT - The time is required to be at the given Value. AT_OR_BEFORE - The time is required to be at or prior to the given Value. AT_OR_AFTER - The speed is required to be at or subsequent to the given Value. BETWEEN - The time is required to fall between two given Values. The Departure or Arrival indicator identifies whether the profile constraint is applicable on climb or descent. This provides an indication of which constraints take priority in the event of conflict when establishing a profile and can include: DEP - applicable on climb. ARR - applicable on descent. Reference is a reference to a named constraint, if applicable. This field will be a character string used to add additional information (no predefined reasons / enumerations are required).
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012

•	FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-3.6.11 Route/Trajectory Constraints:
	 The ATM Collaborative Environment shall allow identification of constraints associated with each route/trajectory point as described in Table B-15.
	 The ATM Collaborative Environment shall allow definition of altitude, speed, or time constraints at specific trajectory points.
	 Table B-15. Route/Trajectory Constraints: Time Constraint = The time target applicable to the associated route point or trajectory point. Includes a type (AT, AT OR GREATER, AT OR LESS or BETWEEN), value as the time(s), and a reference identifier if applicable.

4.208 Time En Route - Estimated

	Time En Route - Estimated
Definition	For IFR flights, the estimated time required from take-off to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from take-off to arrive over the destination aerodrome. [ICAO Doc 4444] For a flight plan received from an aircraft in flight, the total estimated elapsed time is the estimated time from the first point of the route to which the flight plan applies to
	the termination point of the flight plan. [ICAO Doc 4444, Appendix 2, ITEM 16]
Alternate Names	I otal Estimated Elapsed Time
Has Parts	
Is Part Of	
Data Type(s)	Time Duration
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteInformation.totalEstima tedElapsedTime
Business Rules	
Notes	 [ICAO Standard ATS Messages] Transmitted in Standard ATS Messages ALR, FPL and SPL as ICAO Field Type 16b. This is the en route estimate made at filing time by the airspace user, considering wind and speed.
References/ Requirements Justification	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444), 2007 Item P: Destination Aerodrome and Total Estimated Elapsed Time FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data

 B-3.6.4 Route/Trajectory Initial Cruise and Estimates: The FF-I0 	CE shall
allow definition of Route/Trajectory speed, level and time targ	get data
described in Table B-9.	
 Table B-9. Route/Trajectory Speed, Level, and Time: Total Estin 	mated
Elapsed Time = The expected duration of the flight as defined	in
PANSATM Chapter 1. (Reference to Appendix 3 Field Type: 16	o)

4.209 Trajectory Point

	Trajectory Point
Definition	A container for information pertinent to a single point in a trajectory.
Alternate Names	
Has Parts	Trajectory Point Property, Airspeed - Predicted, Ground Speed - Predicted, Meteorological Data, Assumed Altimeter Setting, Route Reference, 4D Point, Point Range, Flow Constrained Area Entered, Along Route Distance, En Route Delay, Flight Rules Change, Flight Type Change, Speed Change, Level or Altitude Change, Cruise Climb Start, Speed Constraint, Time Constraint
Is Part Of	
Data Type(s)	Record
Range of Values	
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.FlightRouteElement
Business Rules	
Notes	
References/ Requirements Justification	 Global Air Navigation Plan, ASBU-Block 1, ICAO DOC 9750, 4th Edition 2013 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Table B-11. Route/Trajectory Point

4.210 Trajectory Point Property

Trajectory Point Property		
Definition	The applicable properties of a trajectory point.	
Alternate Names	Route/Trajectory Point Events, Route/Trajectory Point Boundary Crossings	
Has Parts	Trajectory Point Reference	
Is Part Of	Trajectory Point	
Data Type(s)	Enumeration	
Range of Values	{Top of Climb, Top of Descent, Crossover Altitude, Transition Altitude or Level, TCP – Altitude, TCP – Speed, TCP – Lateral, Runway End, Start of Takeoff Roll, End of Landing	

	Roll, Wheels Off, Wheels On, Entry into Special Activity Airspace, Exit from Special Activity Airspace, Crossing into Constrained Airspace, Exit from Constrained Airspace, Initial Prediction Point, End Prediction Point, Hold Entry, Hold Exit, Begin Stay, End Stay, Start of Expect Vectors, End of Expect Vectors, Constraint Point, FIR Boundary Crossing Point} Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPoint4D.pointProperty
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPointPropertyType Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPointProperty Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPointProperty.propertyT ype
Business Rules	
Notes	Allows the extraction of specific types of points and their associated data where relevant. Facilitates interpolation.
	• Top of Climb - (From ARINC 702A-3) The point where the trajectory arrives at the cruise flight level. There will be one top-of-climb point for each cruise flight level (step climbs).
	 Top of Descent - (From ARINC 702A-3) The point where the trajectory begins a descent from the cruise flight level
	 Crossover Altitude - The point in climb or descent where the aircraft will transition between Mach and Initial Airspeed (IAS) control. (ARINC 702A)
	 Transition Altitude or Level - Indicates that the associated trajectory point is the point at which the trajectory reaches the transition altitude (in climb) or level (in descent).
	• TCP – Altitude - Indicates that the associated trajectory change point (TCP) is one at which an altitude level-off will be initiated or terminated.
	• TCP – Speed - The point where the airplane will begin accelerating or decelerating as a result of speed constraint or limit, or reaches the target speed (ARINC 702A).
	 TCP – Lateral - Indicates that the associated trajectory change point (TCP) is one at which the course, track or heading is expected to change.
	 Runway End - Indicates that the associated trajectory point corresponds to the point at the end of the runway. This point is the threshold (which may be displaced) at the center of the runway at the arrival end when arriving and the departure end when departing.
	 Start of Takeoff Roll - Indicates that the associated trajectory point corresponds to the point at the start of takeoff roll (used for departures only)
	• End of Landing Roll - Indicates that the associated trajectory point corresponds to the point at which the aircraft is predicted to come to a full stop on the arrival runway. (A prediction only, the flight will likely exit the runway without coming to a full stop).
	• Wheels Off - Indicates that the associated trajectory point corresponds to the point at which the aircraft is predicted to be wheels off the runway on departure.
	• Wheels On - Indicates that the associated trajectory point corresponds to the point at which the aircraft is predicted to be wheels on the runway for arrival.
	• Entry into Special Activity Airspace - Indicates that the associated trajectory point is the point at which the flight is projected to enter Special Activity Airspace, including any additional separation requirements. An identifier to the airspace is

		provided in the trajectory change reference.
	•	Exit from Special Activity Airspace - Indicates that the associated trajectory point
		is the point at which the flight is projected to exit Special Activity Airspace,
		including any additional separation requirements. An identifier to the airspace is
		provided in the trajectory change reference.
	•	Crossing into Constrained Airspace - Indicates that the associated trajectory point
		is the point at which the trajectory is projected to cross into designated
		constrained airspace.
	•	Exit from Constrained Airspace - Indicates that the associated trajectory point is
		the point at which the trajectory is projected to exit from designated constrained
		airspace. Note that some constrained airspace is defined through a line crossing
		which would not require the use of this data item.
	•	Initial Prediction Point - Indicates that the associated trajectory point is the initial
		point at which a prediction was made. For FF-ICE/1, an ASP may provide a
		trajectory which is predicted to begin at an entry point into the ASP airspace. This
		includes a point near entry into the Area of Responsibility.
	•	End Prediction Point - Indicates that the associated trajectory point is the final
		point at which a prediction was made. For FF-ICE/1, an ASP may provide a
		trajectory which is predicted to end at an exit point from the ASP airspace.
	•	Hold Entry - Indicates that the associated trajectory point is a point at which the
		flight is expected to enter into planned holding.
	•	Hold Exit - lindicates that the associated trajectory point is a point at which the
		flight is expected to exit from planned holding.
	•	Begin Stay - Indicates that the associated trajectory point is a point at which the
		flight is expected to begin an operation at which the flight will remain for some
		time.
	•	End Stay - Indicates that the associated trajectory point is a point at which the
		flight is expected to terminate an operation at which it remained for some time.
	•	Start of Expect Vectors - When procedures specify "Expect Vectors", the
		associated point identifies the starting point of the vectoring.
	•	End of Expect Vectors - When procedures specify "Expect Vectors", the associated
		point identifies the ending point of the vectoring. The Point4D data at this point
		includes an estimate of the impact of vectoring.
	•	Constraint Point - Indicates that the associated trajectory point is the point of
		application of a constraint. These can include explicit altitude, speed or time
		constraints or implicit MIT/MINIT, or sequencing constraints. For named
		constraints, a reference to the name of the constraint should be provided under
		trajectory point reference.
	•	FIR Boundary Crossing Point - Indicates the point at which the trajectory crosses
		from one FIR into another. A named reference to the FIR being entered may also
		be identified in the Trajectory Point Reference.
References/	•	Global Air Navigation Plan, ASBU-Block 1, ICAO DOC 9750, 4th Edition 2013
Requirements		ICAO Doc 9965 AN/483. Manual on Flight and Flow - information for a
Justification	ľ	Collaborative Environment (FE-ICE). First Edition - 2012
		ICAO ATMRPP-WG/29-WP/669 Four-dimensional Trajectory Data Items for FE-ICE
	ľ	Sten 1 Feb 2015

•	ICAO ATMRPP-WG/28-WP/656, FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Feb 2015
•	ICAO ATMRPP-WG/29-WP/671, Four-dimensional Trajectory Data Items for FF-ICE Step 1 - Addressing Issues from the 4DT Technical Interchange Meeting, Jul 2015
•	ICAO ATMRPP-WG/29-WP/672, , FF-ICE Step 1 Submission, Maintenance, and Distribution Provisions, Jul 2015
•	FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
	 B-3.6.8 Route/Trajectory Events: The ATM Collaborative Environment shall allow definition of the predicted events associated with each Route/Trajectory point as described in Table B-12. The ATM Collaborative Environment shall allow identification of changes in aircraft dynamics that occur at specific trajectory points. The ATM Collaborative Environment shall allow definition of operational events that occur at specific trajectory points. Table B-12 Route/Trajectory Events B-3.6.10 Route/Trajectory Boundary Crossings The ATM Collaborative Environment shall allow identification of boundary crossings associated with each route/trajectory point as described in Table B-14. The ATM Collaborative Environment shall allow identification of boundary crossings, including the type of boundary crossed, associated with a specific trajectory point.
	 Table B-14 Route/Trajectory Boundary Crossings

4.211 Trajectory Point Reference

	Trajectory Point Reference	
Definition	A reference providing an identifier of airspace or program affecting the point.	
Alternate Names	Referenced Constraint, Route/Trajectory Point Constraints	
Has Parts		
Is Part Of	Trajectory Point Property	
Data Type(s)	Record	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPointProperty.reference Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPointReference	
Business Rules	 This data element is always associated with a Trajectory Point Property data element. 	
Notes	 Used for providing feedback on constraints. 	
	 Reference to a named airspace or program affecting a point. Examples of these 	
	include:	
	 Identifier of special activity airspace being entered or exited 	
	 Identifier of constrained airspace being entered 	

	 Identifier of constraint imposed at a point
	 Identifier of a sequencing program applied at a point
	 Identifier for a named holding pattern, aerodrome or airspace associated
	with a hold or stay
	 Identifier of a Ground Delay Program (GDP), Airspace Flow Program (AFP)
	or Collaborative Trajectory Options Program (CTOP) resulting in a time
	constraint at a departure point
	 Identifier of MIT or MINIT constraint.
	 Consists of two free text fields: type and identifier
	\circ Type - The nature of the airspace or program (e.g., special activity
	airspace, GDP, MIT, etc.)
	 Identifier - The name of the particular airspace or program (e.g., FCA016,
	CTP001, RRDCC123)
References/	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a
Requirements	Collaborative Environment (FF-ICE), First Edition - 2012
Justification	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
	Data
	 B-3.6.10 Route/Trajectory Boundary Crossings
	 The ATM Collaborative Environment shall allow identification of
	boundary crossings associated with each route/trajectory point as
	described in Table B-14.
	 The ATM Collaborative Environment shall allow identification of
	boundary crossings, including the type of boundary crossed,
	associated with a specific trajectory point.
	 B-3.6.11 Route/Trajectory Constraints: The ATM Collaborative
	Environment shall allow identification of constraints associated with each
	route/trajectory point as described in Table B-15.
	 Table B-15. Route/Trajectory Constraints: Referenced Constraint =
	Reference to a published constraint such as a Flow Constrained Area, and
	optional information about the type and nature of the constraint.

4.212 Transfer Aerodromes

Transfer Aerodromes		
Definition	A list of the aerodromes through which the package has travelled en route to its final	
	destination.	
Alternate Names		
Has Parts		
Is Part Of		
Data Type(s)	Array	
Panao of Valuos	If expressed as ICAO location identifier, values comply with ICAO Doc. 7910 - Location	
kange of values	Indicators.	
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.ShippingInformation.transferAerodromes	
Business Rules		
Notes	 This complex data type is comprised of one or more Aerodrome types. 	

	•	This element may need input from multiple sources depending on how many times the package is transferred between carriers on a single trip. When expressed as a free-form alphanumeric string, it contains the actual name of the departure aerodrome (e.g., Flagstaff Pulliam Airport).
References/ Requirements Justification	•	ICAO Doc 7910: Location Indicators, Edition No. 138, 2010 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data
		 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7,

4.213 Transport Index

Transport Index		
Definition	A figure representing the radiation level measured at one meter from the package.	
Alternate Names	TI	
Has Parts		
Is Part Of	Radioactive Materials	
Data Type(s)	Float	
Range of Values	[0.0 - 50.0]	
FIXM UML Path	eq:Fixm.Flight.Cargo.RadioactiveMaterials.RadioactiveMaterial.transportIndex	
Business Rules	 The TI is used in calculating how far away from passengers and crew the packages must be stowed. This element applies only to categories of radioactive materials that are II-Yellow and III-Yellow. 	
Notes	 IATA does not specify a size. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:RadioactiveMaterial/ram:TransportIndexNumeric Limit max size to 10 characters to limit the vulnerability of code insertion. 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284), Part 7, Section 4.3. 	

4.214 United Nations Number

United Nations Number		
Definition	A four-digit identification number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods to identify a substance or a particular group of substances considered dangerous goods.	
Alternate Names	UN/ID Number, UN Number, UN #	
Has Parts		
Is Part Of	Shipper's Declaration For Dangerous Goods Line Item Details, Dangerous Goods List of Line Item Detail, Dangerous Goods List of Line Item Details	
Data Type(s)	Character String	
Range of Values	"UN" followed by [0000-9999]	
FIXM UML Path	Fixm.Flight.Cargo.Packaging.DangerousGoodsPackage.unNumber	
Business Rules	 If there are dangerous goods on board the flight, this element should be populated for emergency response usage. UN numbers range from UN0001-UN3600. 	
Notes	 The UN numbers range from UN0001 to about UN3500 and are assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods as an international standard. IATA model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:ApplicableTransportDangerousGoods/ram:UNDGIdentificationCode 	
References/ Requirements Justification	 IATA SDDG Specification v2.1 49 CFR 172/173/175 IATA Dangerous Goods Regulations, January 2011 Shipper's Declaration for Dangerous Goods Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Document 9284) 	

4.215 Vertical Range

Vertical Range		
Definition	Vertical Range representing block altitude clearances.	
Alternate Names		
Has Parts		
Is Part Of	Trajectory Point	
Data Type(s)	Record	
Range of Values		

FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.TrajectoryPoint4D.verticalRange
Business Rules	
Notes	
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 Global Air Navigation Plan, ASBU-Block 1, ICAO DOC 9750, 4th Edition 2013 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data: B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Table B-11. Route/Trajectory Point: Four Dimensional Point = The location (expressed as a latitude/longitude per B-2.2), the time and the barometric altitude of a point on a computed flight path and associated with a Route/Trajectory Segment. When the flight can operate within a range, a lateral, temporal or vertical point range may be provided. Prior to departure, the time may be expressed as a choice between an absolute time or a relative time. This choice is indicated as an attribute of the point. (Reference to Appendix 3 Field Type 18 EET/)

4.216 Wake Turbulence Category

Wake Turbulence Category			
Definition	A grouping of aircraft according to the effect of the rotating air mass created behind the wing tips. [ICAO Doc 4444]		
Alternate Names	Wake Turbulence		
Has Parts			
Is Part Of			
Data Type(s)	Enumeration		
Range of Values	{L, M, H, J}		
FIXM UML Path	Fixm.Flight.Aircraft.Aircraft.wakeTurbulence Fixm.Flight.Aircraft.WakeTurbulenceCategory		
Business Rules			
Notes	 The meaning of the values is as follows: H (Heavy) - Aircraft types of 136,000 kg (300,000 lbs.) or more M (Medium) - Aircraft types less than 136,000 kg (300,000 lbs.) and more than 7,000 kg (15,500 lbs.) L (Light) - Aircraft types of 7,000 kg (15,500 lbs.) or less J (Super Heavy) - For Airbus A380-800 with a maximum take off mass in the order of 560,000 kg [ICAO Standard ATS Messages] Transmitted in ALR, FPL, and CPL as ICAO Field Type 9c. 		
References/ Requirements	 Amendment No. 1 to the Procedures For Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 4444) 		
Justification	•	Proced 4444), 8.7.3.4 Aircraf	ures for Air Navigation Services - Air Traffic Management (PANS-ATM ICAO 2007; Chapter 4, Section 4.9.1; Chapter 5, Section 5.8; Chapter 8 Section ; Appendix A Item 9 t Type Designators - Doc. 8643
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	•	FF-ICE Data	Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &
		0	B-2.9.1 Expression of a Wake Turbulence Category shall support at a minimum the categories defined in PANS-ATM Section 4.9.1.
		0	B-3.5.1 The FF-ICE shall allow definition of aircraft and crew characteristics as defined in Table B-6.
	c	0	Table B-6. Aircraft Characteristics: Wake Turbulence Category = A description of the wake turbulence category in accordance with B-2.9. (Reference to Appendix 3 Field Type: 09c)

4.217 Wind Direction

Wind Direction		
Definition	In a predicted trajectory, the instantaneous wind direction used at the 4D Point for creating the 4D trajectory.	
Alternate Names		
Has Parts		
Is Part Of	Meteorological Data	
Data Type(s)	Direction	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.MeteorologicalData.windDirection	
Business Rules		
Notes	Degrees from True North	
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Table B-11. Route/Trajectory Point: MetData = Wind direction and speed, together with Temperature which were used for the trajectory prediction at the associated Four Dimensional Point. 	

4.218 Wind Speed

Wind Speed		
Definition	In a predicted trajectory, the instantaneous wind speed used at the 4D Point for creating the 4D trajectory.	
Alternate Names		
Has Parts		
Is Part Of	Meteorological Data	
Data Type(s)	Speed	
Range of Values		
FIXM UML Path	Fixm.Flight.FlightRouteTrajectory.RouteTrajectory.MeteorologicalData.windSpeed	
Business Rules		
Notes	Unit of measure available include knots or KPH	
References/ Requirements Justification	 ICAO Doc 9965 AN/483, Manual on Flight and Flow - information for a Collaborative Environment (FF-ICE), First Edition - 2012 FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model & Data B-3.6.7 Flight Data Items - Route/Trajectory Point: The ATM collaborative environment shall allow definition of a route/trajectory point as described in Table B-11. Table B-11. Route/Trajectory Point: MetData = Wind direction and speed, together with Temperature which were used for the trajectory prediction at the associated Four Dimensional Point 	

4.219 ZIP or Postal Code

ZIP or Postal Code		
Definition	The ZIP/Postal Code corresponding to the street address.	
Alternate Names		
Has Parts		
Is Part Of	Postal Structured Address	
Data Type(s)	Character String	
Range of Values		
FIXM UML Path	Fixm.Flight.Cargo.DangerousGoods.StructuredPostalAddress	
Business Rules	 IATA specifies a maximum size of nine characters. 	
Notes	 IATA data model Namespace = xmlns:ram='iata:datamodel:3' XML element name = ram:PostalTradeAddress/ram:PostcodeCode 	
References/	IATA SDDG Specification v2.1	
Requirements	• FF-ICE Implementation Guidance, ICAO Draft, 2016, Appendix B - FF-ICE Model &	
Justification	Data	
	 B-2.8.1 Expression of information regarding dangerous goods being carried on a flight shall support all items defined in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO 	

Document 9284), Part 7, Section 4.3.

Appendix A: Acronym List

Acronym	Definitions
A-CDM	Airport Collaborative Decision Making
ACARS	Aircraft Communications Addressing and Reporting System
ACC	Area Control Centre
ACID	Aircraft Identification
ACP	Acceptance Message
ADEP	Aerodrome of Departure
ADES	Aerodrome of Destination
ADF	Automatic Direction Finder
ADL	Aggregate Demand List
ADS	Automatic Dependent Surveillance
ADS-B	Automatic Dependent Surveillance- Broadcast
ADS-C	Automatic Dependent Surveillance- Contract
AFIL	Air Filed Flight Plan
AFP	Airspace Flow Program
AFTN	Aeronautical Fixed Telecommunication Network
AIDC	ATS Interfacility Data Communications
AIP	Aeronautical Information Publication
AIXM	Aeronautical Information Exchange Model
ALDT	Actual Landing Time
ALERFA	Alert Phase
ALR	ICAO Alerting Message
ALR	Alert
ALTRV	Altitude Reservation
ANSP	Air Navigation Service Provider
AOC	Airline Operations Centre
AOCNET	Airline Operations Centre Network
AOI	Area of Interest
AOR	Area of Responsibility
АРСН	Approach

AR	Arrival
ARTA	Actual Runway Time of Arrival
ARTCC	Air Route Traffic Control Centre
ARTD	Actual Runway Time of Departure
ARWY	Arrival Runway
ASCII	American Standard Code for Information Interchange
ASRI	Aviation Spectrum Resources
ATA	Actual Time of Arrival
ATC	Air Traffic Control
ATD	Actual Time of Departure
ATFMX	Flight Approved for Exemption
ΑΤΙ	Air Transport Industry
АТМ	Air Traffic Management
ATN	Aeronautical Telecommunication Network
ATOT	Actual Take Off Time
ATS	Air Traffic Service
ATSU	Air Traffic Service Unit
AWB	Air Waybill
CAS	Calibrated Air Speed
CDM	Collaborative Decision Making
CDN	Coordination Message
CFR	Code of Federal Regulations
CGTA	Calculated Gate Time of Arrival
CGTD	Calculated Gate Time of Departure
CHG	Modification Message
CIBT	Calculated In Block Time
CIQUIME	Chemistry Information Centre for Emergencies
CLDT	Calculated Landing Time
CMS	Common Message Set
CNL	Flight Plan Cancellation Message
COBT	Calculated Off Block Time
CPDLC	Controller Pilot Data Link Communications

CPL	Current Flight Plan
CRP	Coordinated Research Program
CSI	Criticality Safety Index
СТА	Controlled Time of Arrival
CTD	Control Time of Departure
СТОР	Collaborative Trajectory Operations Program
СТОТ	Calculated Take Off Time
DCL	Departure Clearance
DCT	Direct
DEP	Departure Message
DETRESFA	Distress Phase
DG	Dangerous Goods
DLA	Delay Message
DME	Distance Measuring Equipment
DOF	Date of Flight
DOT	Department of Transportation
DRWY	Departure Runway
DUATS	Direct User Access Terminal Service
DVRSN	Diversion
ELT	Emergency Locator Transmitter
EPA	Environmental Protection Agency
ERG	Emergency Response Guidebook
EST	Estimate Message
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETO	Estimated Time Over
FAA	Federal Aviation Administration
FANS	Future Air Navigation System
FCA	Flow Constrained Area
FCO	Facilities Notification Contact
FDB	Flight Plan Data Bank
FDE	Flight Data Element

FFR	Fire Fighting Aircraft
FIR	Flight Information Region
FIS	Flight Information Service
FIXM	Flight Information Exchange Model
FL	Flight Level
FLTCK	Flight Check Aircraft
FMC	Flight Management Computer
FP	Flight Plan
FPL	Flight Plan Message
FPO	Facilities Notification Current Position
FSS	Flight Service Station
FTM	Flight Table Manager
FUL	Fullerton, California
GAT	General Air Traffic
GBAS	Ground Based Augmentation System
GDP	Ground Delay Program
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GUFI	Globally Unique Flight Identifier
HAZMAT	Hazardous Materials or Carrying Hazardous Materials
HEAD	Head of State Status
HF	High Frequency
HFDL	High Frequency Data Link
Hg	Mercury
HOSP	Hospital Wing Aircraft
hPa	Hecto Pascals
HUM	Humanitarian Mission
IAS	Indicated Airspeed
IATA	International Air Transport Association
IAW	In Accordance With
ICAO	International Civil Aviation Organization
ICD	Interface Control Document

ID	Identification
IFR	Instrument Flight Rules
IGTA	Initial Gate Time of Arrival
IGTD	Initial Gate Time of Departure
ILS	Instrument Landing System
INCERFA	Uncertainty Phase
INS	Inertial Navigation System
IOP	Interoperability
IRS	Inertial Reference System
IRU	Inertial Reference Unit
ISO	International Organization for Standardization
JCAB	Japan Civil Aviation Bureau
JTR	Jet Airways
kHz	Kilohertz
KLM	Royal Dutch Airlines
Km	Kilometre
Kt	Knot
LAM	Logical Acknowledgement Message
LGTD	Airline Gate Time of Departure
LORAN	Long Range Navigation
LPV	Localizer Performance with Vertical Guidance
MARSA	Military Assumes Responsibility for Separation of Aircraft
MEDEVAC	Emergency Medical Evacuation Aircraft
MHz	Megahertz
MLS	Microwave Landing System
MNPS	Minimum Navigation Performance Specification
MSDS	Materials Safety Data Sheet
MTSAT	Multifunction Transport Satellite
NAVAID	Navigational Aid
NDB	Non-Directional Beacon
NGA	Nigeria Airways

PANS	Procedures for Air Navigation Services
PBN	Performance Based Navigation
PDC	Pre-Departure Clearance
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIC	Pilot-in-Command
POV	Point of View
RCF	Radio Communications Failure
RCP	Required Communication Performance
RF	Radio Frequency
RNAV	Area Navigation
RNP	Required Navigation Performance
RQP	Request Flight Plan Message
RQS	Request Message
RTF	Radio Telephone
RVSM	Reduced Vertical Separation Minima
SAR	Search and Rescue
SATCOM	Satellite Communications
SCT	Secretariat of Communications and Transport
SDDG	Shipper's Declaration for Dangerous Goods
SELCAL	Selective Calling Radio System
SESAR	Single European Sky ATM Research
SID	Standard Instrument Departure
SMGCS	Surface Movement Guidance & Control System
SMI	Standard Message Identifier
SSR	Secondary Surveillance Radar
STAR	Standard Terminal Arrival Route
STATE	Engaged in Military, Customs or Police Services
TACAN	Tactical Air Navigation System
TAS	True Airspeed
TC	Transport Canada
TI	Transport Index
TSA	Transportation Security Administration

UAT	Universal Access Transceiver
UHF	Ultra High Frequency
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UOM	Unit of Measure
US	United States
UTC	Universal Coordinated Time
VDL	VHF Digital Link
VFR	Visual Flight Rules
VHF	Very High Frequency
VOR	VHF Omnidirectional Radio Range
WPR	Waypoint Position Reporting
XML	Extensible Markup Language