



**Deciding with Data | Leveraging information to make better data-driven choices.**



# FIXM: 4.3.0 Release

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# Agenda

- FIXM Refresher
  - FIXM Evolution
  - Applications & Message Templates
  - Community
- FIXM 4.3.0 Overview
- FIXM User Manual
- Q & A



# FIXM Evolution



## FIXM 4.0.0

August 2016

- Shift from community driven requirements to requirements based on global standards
- Introduction of the Messaging package
- Consolidation of the Foundation and Base packages



## FIXM 4.1.0

December 2017

- Introduction of the new Extension mechanism
- Focus on improving aeronautical references, simplifying modeling choices, and improving overall model consistency



## FIXM 4.2.0

February 2020

- Introduction of Applications as a third pillar of FIXM content
- Transition from Workbench to EA generated schemas
- Focus on FF-ICE alignment and requirements in preparation for FF-ICE/1 going live



## FIXM 4.3.0

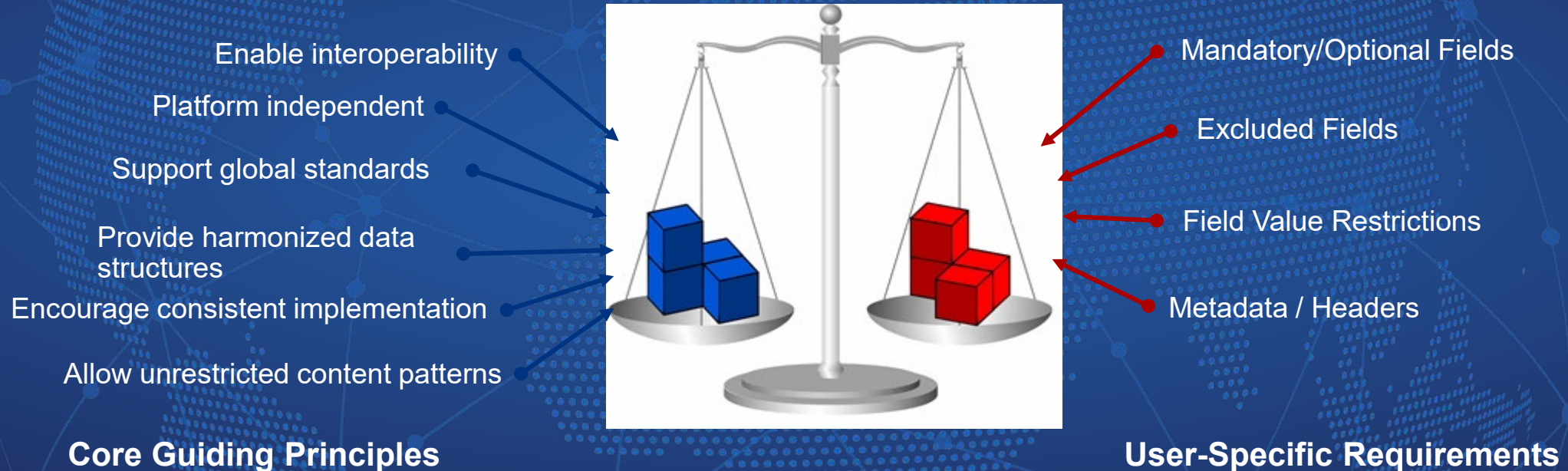
February 2023

- Full FF-ICE alignment in preparation for FF-ICE/1 going live
- Supports additional non FF-ICE ICAO requirements
- General improvements based on user feedback and lessons learned



# FIXM Balancing Act

FIXM continually balances the goal of providing a highly flexible data standard with the need to accommodate user-specific requirements.



FIXM Applications and Message Templates – first introduced with FIXM Core 4.2.0 – are proving beneficial for supporting additional user and exchange requirements without breaking guiding principles.

# FIXM Applications & Message Templates

## What are FIXM Applications?

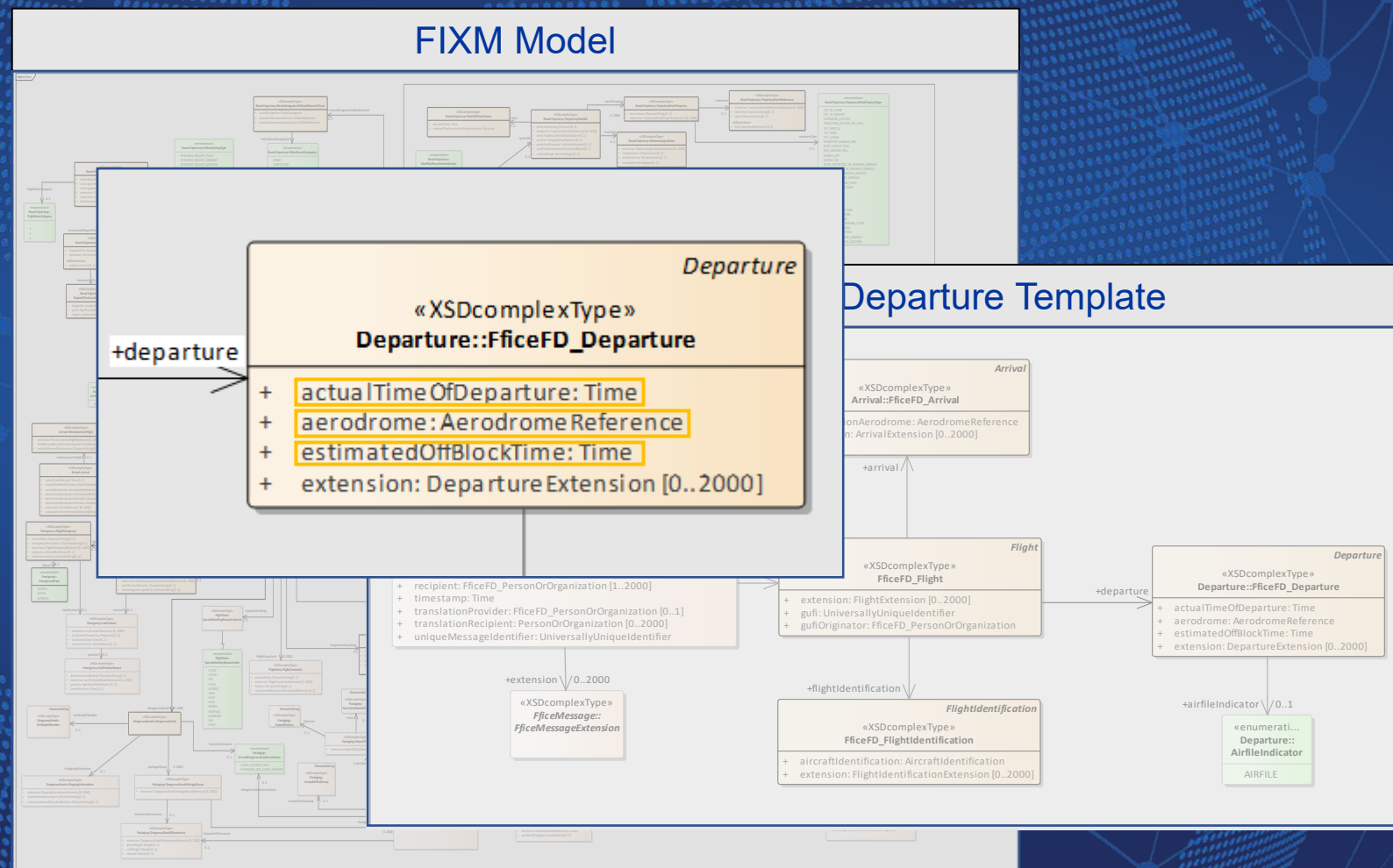
- FIXM is intended to support any and all exchanges of flight information, not just a specific set of pre-defined messages.
- For well-defined message exchanges, this flexibility is unneeded, and it is more useful to enforce syntax and content validation checks to ensure the data being exchanged is of high quality.
- FIXM Applications are successfully filling this gap by providing exchange-specific message data structures (for example, recipient lists, exchange-specific statuses, message type identifiers, sensitivity levels, message provenance, etc.) and message templates.
- FIXM Applications are modeled in UML, realized in XML, and sit at a layer above FIXM Core.

## What are Message Templates?

- A message template is a more restrictive subset of message and flight data structures that are relevant to a given information exchange.
- By removing unused fields, adjusting multiplicities, and adding or further limiting pattern constraints, templates are aiding implementers by tailoring the broad standard represented by FIXM to reflect the content requirements of particular message exchanges.
  - Templates offer message-specific guidance and validation rules while remaining compliant with the broader FIXM structures.



# Message Template Example





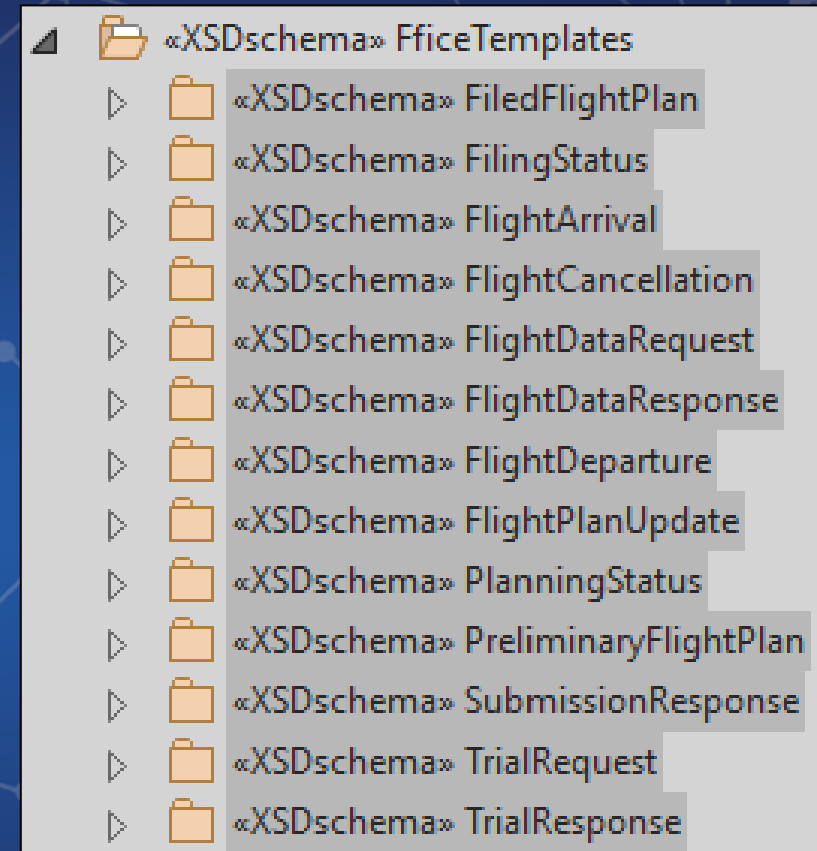
# Message Template Benefits

Benefit of Templates	Without Templates	With Templates
Reduced Development Overhead	Increased development overhead as each user must independently interpret how message content requirements should be represented in FIXM format.	Tailored schemas reduce development overhead by providing additional guidance for creating messages with a FIXM-based content.
Consistent Message Structure	Individual interpretations of requirements could lead to inconsistent message content implementation across users.	Making dedicated message templates available to all users should improve implementation consistency.
Improved XML Validation	XML-based validation limited to data syntax checking with no guidance for required vs. optional or allowed vs. not allowed content (failing to fully leverage a major benefit of using XML).	XML-based validation enforces both syntax and content completeness rules (fully leveraging benefits of XML-based validation).



# FF-ICE Application and Message Templates

- The FIXM CCB created and maintains the FF-ICE Message Application and its thirteen message templates
  - Correspond to the thirteen FF-ICE Messages defined in the FF-ICE Implementation Guidance (IG) Manual
  - Each template's content is based on the tables present in Appendix C of FF-ICE IG



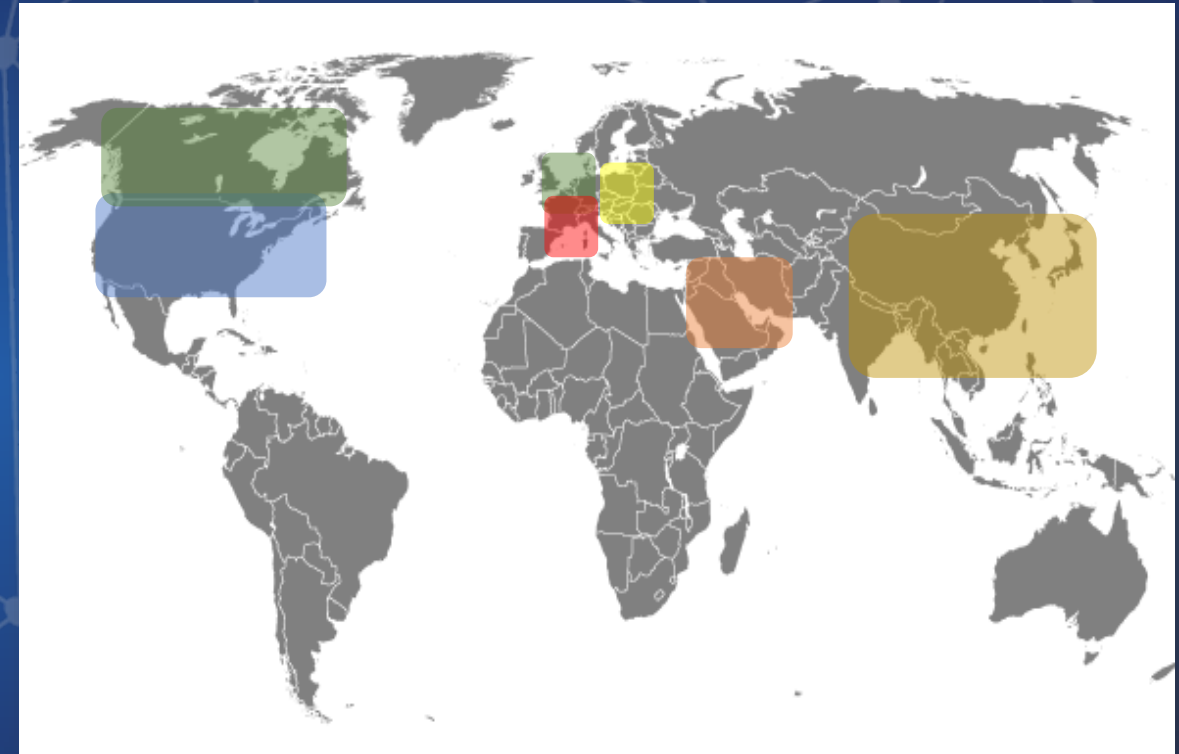
# Community Applications and Message Templates

- The FIXM community is encouraged to create their own Application packages, complete with their own message templates, as needed.
- Most well-defined message exchanges can benefit from these new constructs.
- More information on Applications and message templates, including step-by-step guidance on creating your own, is available in the FIXM User Manual.



# FIXM Community

- FIXM is used across the international community to exchange flight and flow information
- Many regions use FIXM (Core and Applications) in combination with local/regional extensions to satisfy local data exchange use cases
  - Examples include US, APAC, European, and GCAA Extensions
- The international community of users drive the evolution of FIXM through participation in virtual Technical Interchange Meetings (TIM), participation via the online FIXM Work Area, and submittal and review of change requests (CR)



Boxes indicate communities of FIXM users

# Thank You!

- The FIXM Core 4.3.0 development was successful due to significant support from the FIXM Community across a Development Kickoff TIM, Release Overview TIM, and 12 Change Request Review TIMs!



# FIXM 4.3.0 Overview



## FIXM Applications

Contain metadata about the message exchange in addition to guidance for constructing messages, such as XML templates.



## FIXM Core

Contains basic flight data that are globally applicable and which are endorsed by the FIXM CCB.



## FIXM Extensions

Support localized requirements from particular communities of interest.

Extends basic flight data and/or applications.

- Aligns with the ATMRPP's Manual on FF-ICE Implementation Guidance (FF-ICE IG) v0.99
- Incorporates recent non-FF-ICE ICAO requirements
- Incorporate general improvements based on FIXM 4.2.0 feedback and lessons learned
- Both CCB-maintained FIXM Applications were updated to work with the new Core
  - FF-ICE Message 1.1.0
  - Basic Message 1.1.0

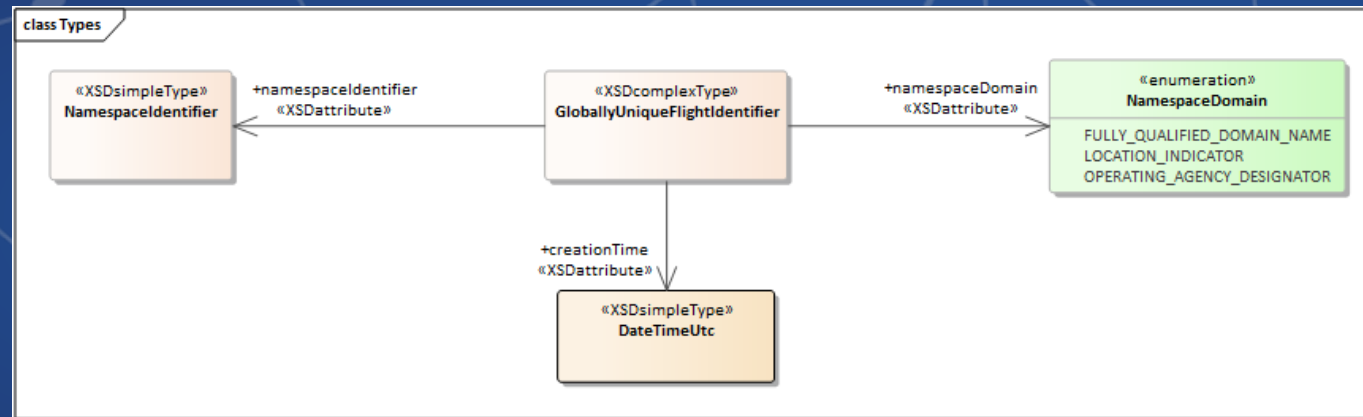
# FIXM 4.3.0 Improvements – FF-ICE

- Full alignment with ATMRPP FF-ICE requirements
  - Stable release in support of FF-ICE/R1
  - Model updated to accommodate current FF-ICE Guidance
    - Removed Filed and Ranked route/trajectory groups
    - Added AIRAC reference
    - Added actual arrival/departure references
    - Updated FF-ICE exchange fields
    - Updated FF-ICE enumerations and definitions
    - Updated message templates
  - Changes balanced usability while minimizing disruption to schemas

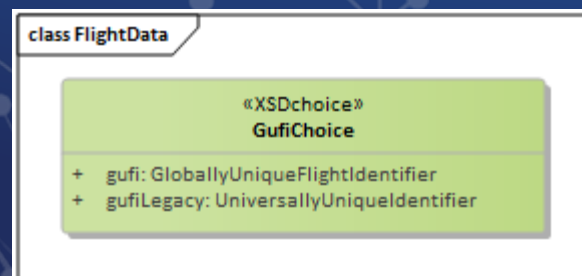


# FIXM 4.3.0 Improvements – GUFU

- Globally Unique Flight Identifier (GUFU) updated based on latest ATMRPP guidance
  - Now includes a UUID + namespace (domain & identifier) + timestamp to enhance uniqueness and provide traceability



- A legacy version of the GUFU (UUID only) is retained in the model for now to support backwards compatibility when translating older messages to 4.3.0



# FIXM 4.3.0 Improvements – General

- Incorporated latest non-FF-ICE ICAO requirements
  - Added new fields to support GADSS/LADR
  - Updated SELCAL range of values
- Improved support for non-aerodrome based departure points
- Improved modeling quality and data validation
  - Better pattern matching
  - Removed data integrity traps
  - Improved definitions
  - Cleaned up/removed outdated model sections

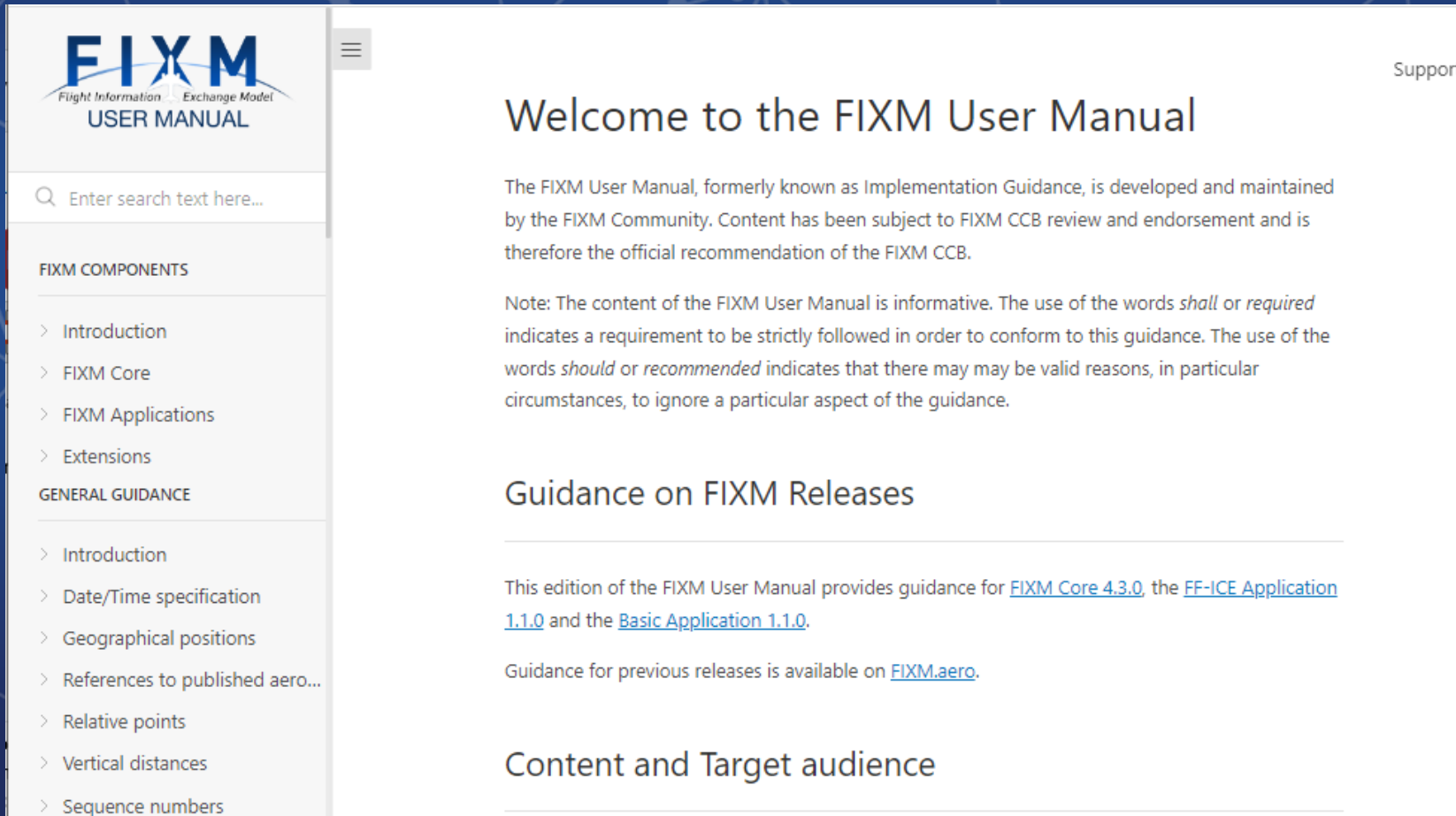


# FIXM 4.3.0 Improvements – User Support

- Enhanced end-user support
  - Performed software compatibility testing to evaluate FIXM Core and the FF-ICE Application against a variety of Java and C# development libraries using SOAP and REST APIs
    - Results will be published in the 4.3.0 update of the FIXM User Manual
  - FIXM.aero was refreshed
    - Improved cross-platform support
    - Cleaner organization
    - Modernized look & feel

# FIXM User Manual

- FIXM 4.3.0 User Manual updates are in work and will be released in Summer 2023



The screenshot shows the FIXM User Manual website. The left sidebar contains the FIXM logo (Flight Information Exchange Model USER MANUAL), a search bar, and a table of contents with sections: FIXM COMPONENTS (Introduction, FIXM Core, FIXM Applications, Extensions) and GENERAL GUIDANCE (Introduction, Date/Time specification, Geographical positions, References to published aero..., Relative points, Vertical distances, Sequence numbers). The main content area is titled 'Welcome to the FIXM User Manual' and includes a 'Support' link. It states that the manual is developed and maintained by the FIXM Community and is the official recommendation of the FIXM CCB. A note explains the use of words like 'shall' or 'required' for requirements and 'should' or 'recommended' for valid reasons. Below this is a section 'Guidance on FIXM Releases' which mentions the current edition provides guidance for [FIXM Core 4.3.0](#), the [FF-ICE Application 1.1.0](#), and the [Basic Application 1.1.0](#). It also notes that previous releases are available on [FIXM.aero](#). The final section is 'Content and Target audience'.

**FIXM**  
Flight Information Exchange Model  
USER MANUAL

Support

## Welcome to the FIXM User Manual

The FIXM User Manual, formerly known as Implementation Guidance, is developed and maintained by the FIXM Community. Content has been subject to FIXM CCB review and endorsement and is therefore the official recommendation of the FIXM CCB.

Note: The content of the FIXM User Manual is informative. The use of the words *shall* or *required* indicates a requirement to be strictly followed in order to conform to this guidance. The use of the words *should* or *recommended* indicates that there may may be valid reasons, in particular circumstances, to ignore a particular aspect of the guidance.

## Guidance on FIXM Releases

This edition of the FIXM User Manual provides guidance for [FIXM Core 4.3.0](#), the [FF-ICE Application 1.1.0](#) and the [Basic Application 1.1.0](#).

Guidance for previous releases is available on [FIXM.aero](#).

## Content and Target audience



# Learn More!

- Updated Website: <https://fixm.aero/>
- FIXM User Manual: <https://docs.fixm.aero>
- Planning for a 4.3 Overview TIM for September – Stay tuned!





**Questions?**





# Thank You!

# ATIEC 2023

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