

*Global Harmonization  
Through Collaboration*

# FIXM Technical Overview: General Philosophy

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**Federal Aviation  
Administration**

**AIR TRANSPORTATION INFORMATION  
EXCHANGE CONFERENCE - (FEATURING  
AIXM, WXXM AND FIXM)**

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# Stating the Obvious



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Exchange Conference - (featuring  
AIXM, WXXM and FIXM)

- Flight data is large, complex, long-lived
- Missing, late, mis-guided data is not tolerable
- Existing systems must be supported
- New systems must be enabled
- System performance, reliability is important.
- Decisions made now have a very long lifetime.

# Theme: Cooperation



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- Inter-operate with other aviation data standards:
  - AIXM (Airport, fixes, etc)
  - WXXM (Weather)
- Standardized data types:
  - ISO8601 (date, time, etc)
  - ISO6709 (location)
  - ISO19107 (geographic)
- Separation of concerns
  - Don't model information contained in other standards
  - (Except when it is necessary)

# Theme: Correctness



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- Traceable to Flight Object Data Dictionary
- New versions tested in standard applications
- Long, broad industry review of new versions

- Airservices Australia
- EUROCONTROL
- FAA
- JCAB
- NAV CANADA

- Lockheed-Martin
- Harris
- Volpe
- Booz Allen Hamilton

# Theme: Usability



- Modular models and schemas
- Restricted set of data types
- Descriptive type and attribute names
- Similar concepts modeled in similar ways
- Use enumerations for codes, units, flags, etc.
- Use of validation patterns when appropriate

# Theme: Extensibility



- Need for orderly expansion of FIXM content
- Need for situation-specific content
- Need for “mix-and-match” content
- “Extensions” invite add-on functionality
  - Example: NAS-specific data
  - Example: EUROCONTROL-specific data
- Extensions easily integrated with FIXM data

# Theme: Extension Process



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- Extensions can exist at several levels of acceptance.
- Some extensions will be accepted into FIXM core.
- There will be a repository of FIXM extensions, maintained by the FIXM authority.
- There will be an open-source process for registering, testing, evaluating, accepting extensions.

# Theme: Performance



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- XML messages are bulky by nature
- Compression helps, but isn't enough
- FIXM schemas minimize XML overhead
- FIXM schemas contain varying data payloads
- We test XML volume with every FIXM release



# Theme: Messaging



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- There is a single FIXM flight message type
- Messages contain variable amounts of data:
  - Flight identity (“GUF1”)
  - Aircraft information
  - Flight Plan
  - Flight Status
  - Arrival/departure/other flight events
- Messages contain identifying meta-data:
  - Message identifier (“GUM1”)
  - Creating system identity
  - Time and location of creation
  - Data validity time span

# Theme: Applications



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- Applications have to deal with FIXM messages:
  - Create new messages for broadcast
  - Parse arriving messages and extract data
  - Validate messages against FIXM schemas
- Schemas are crafted to ease application load
- FIXM does not presume any parsing technology
- FIXM does not presume transmission technology

# Theme: Documentation



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- Documents must be useful to be used
- Documents must have a specific audience
- Documents must convey ‘why’ as well as ‘how’
- FIXM multi-layered documentation:
  - Conceptual (FICM model, FIXM Primer)
  - Logical (FIXM model, FIXM Developer’s Guide)
  - Physical (Schema XSD internal comments)



# Questions

# Contact Information



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For more information, go to <http://www.FIXM.aero>