

Federal NOTAM System (FNS)

Technical Interchange

Presented to: AIXM/WXXM Conference 2010

By: FAA Aeronautical Information Management

Date: May 2010



Federal Aviation
Administration



Setting the Stage

You've Seen

- **Concept of Operations**
- **Approach**
- **Project Next Steps**
- **Demo**

You'll See

- **High Level Architecture**
- **AIXM in FNS**
- **Where Are We Now?**
- **Technical – Next steps**

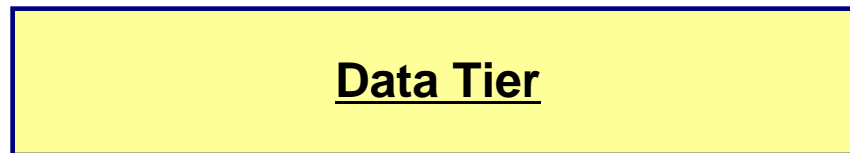
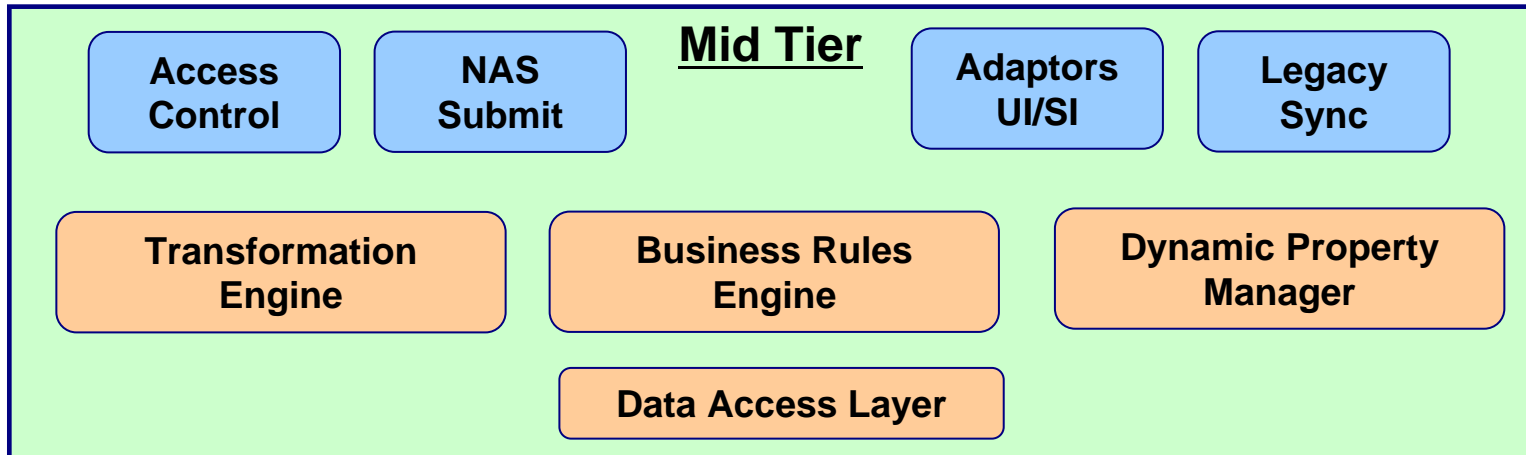
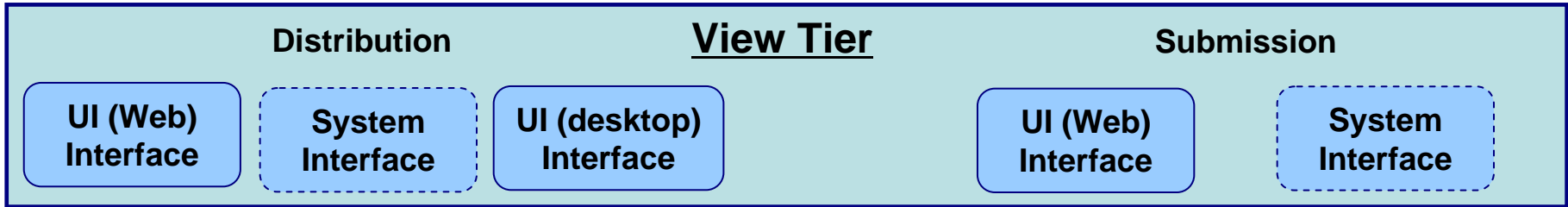


Underlying Principles

- Digitally capture data ONCE, and provide multiple views
- Encode NOTAMs into a data model
- Creation and Distribution through both User Interface & System Interface
- Standards Based



High Level Architecture



AIXM in FNS

- **Foundation of the System**
- **Scenarios defined in AIXM**
- **Database - Relational data model based on AIXM conceptual (UML) model**
 - Why?
 - AIXM provides the aviation features, attributes and the associations
 - Direct mapping between AIXM message elements and data storage
 - NOTAMs stored as temp delta and baseline as perm delta
- **System Interface – Payload contains AIXM message**

Need a common language to enable global distribution and that is AIXM

Technical Approach

- **Defined as scenarios (event specification)**
- **Scenarios provides a mechanism to capture temporary changes using a set of properties and business rules**
- **These properties are then used to provide various views – NOTAMs in different formats**
- **Scenarios are built by conducting analyses of historical NOTAMs, SME reviews and mapping them to AIXM**

NOTAM creation software needs to handle these evolving scenarios and their business rules



Dynamic Property Manager

- Scenario forms are dynamically generated
- Data for scenarios are dynamically persisted to the corresponding AIXM-based data model
- Business Rules Engine (BRE) is used to manage rules.
- Transformation is separate from data, allowing changes to views without affecting data

This allows us to manage the evolving nature of scenarios without changing the underlying code

FNS - Screenshot



Federal Aviation Administration

Test System

My Profile Preferences Feedback Help Logout

Digital - AIM | NOTAM - Manager

NOTAM Manager User Administration

Vinod Vallikat | MAY 5 2010 WED 0935 UTC

New Cancel NOTAM Replace Copy Discard Save as Draft Error Check Submit NOTAM All

Keyword Designator Condition Number Start Date UTC End Date UTC Status

NOTAM Template: RWY 04 Distance Available View Change Log

Properties Schedule Prior Permission Comments Contact Info

Property	Temporary Value	Permanent Value
Landing Distance Available (LDA):	11000 feet	
Take Off Distance Available (TODA):	11 feet	
Take Off Runway Available (TORA):	feet	
Accelerate Stop Distance Available (ASDA):	feet	

Time Duration

Start Date (UTC)

End Date (UTC)

Start Upon Activation

05/05/2010

09:35

05/14/2010

12:12

Recurring Schedule

Domestic ICAO Plain Language

IACY XX/XXX ACY RWY 04 TODA 11 LDA 11000 WEF 1005050935-1005141212

Confirmation

Errors:

LDA should be less than the Runway Length [6144.0 feet]

Warnings:

TODA is less than 2/3rd of the Runway Length [6144.0 feet]

OK



ATC Search

- **Customized search based on user preference**
- **Synchronizes data from both FNS and Legacy system**
- **Data pushed to the user**
- **Logs every action**
- **Notifier – assured delivery**

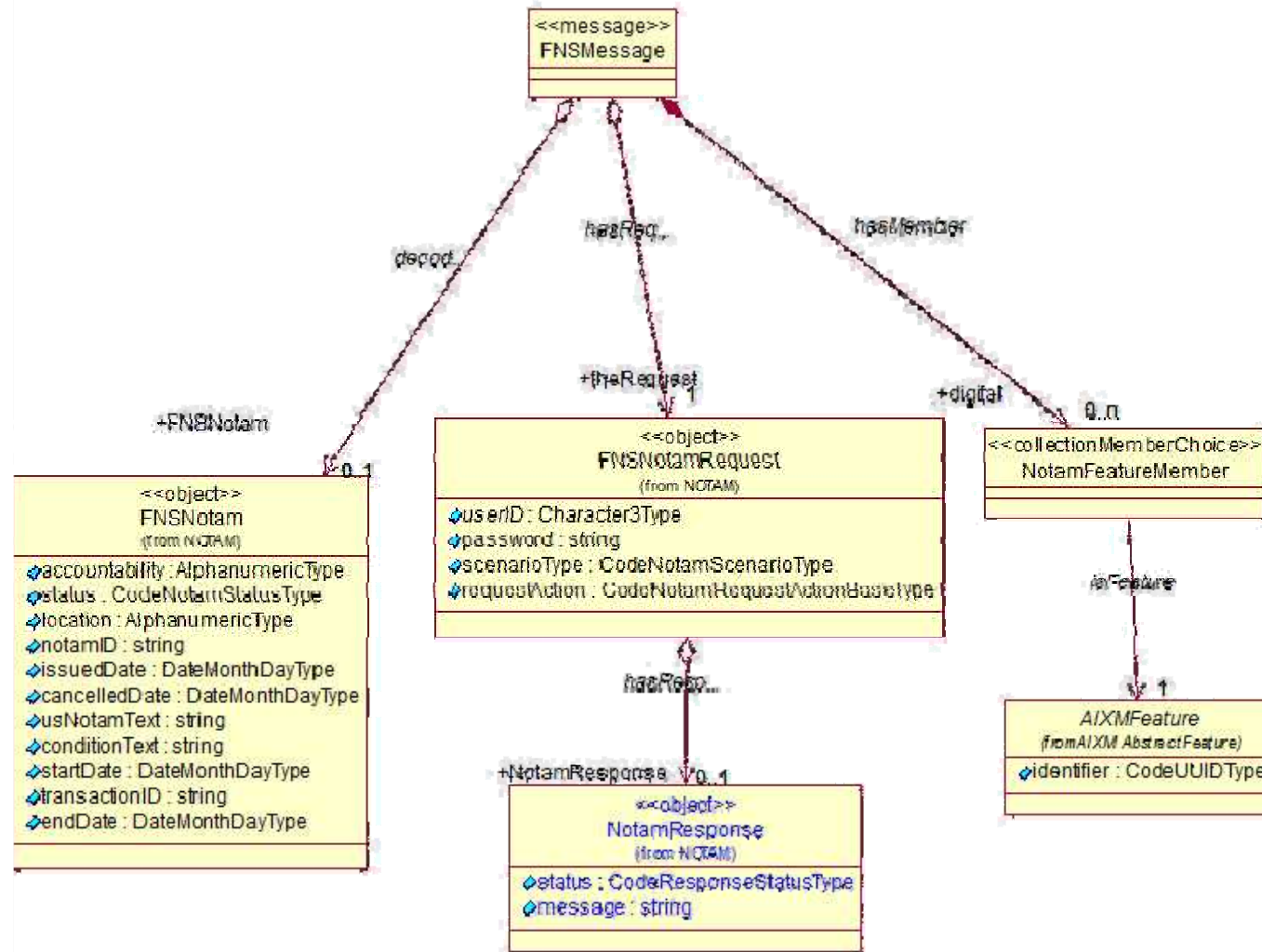


Next Steps – Near Future

- **Moving towards AIXM 5.1**
- **Developing extensions to support FNS**
- **Formalized schema for System Interface**
- **NOTAM submission and distribution through system interface**



FNS Message (draft)



Sample FNS Message (draft)

```
<fns:hasMember>
  <Taxiway gml:id="TWY02">
    <timeSlice>
      <TaxiwayTimeSlice gml:id="TWY02_TS01">
        <gml:validTime>
          <gml:TimePeriod gml:id="TWY02_TS01_TP01">
            <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
            <gml:endPosition>2010-04-09T09:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>15</sequenceNumber>
        <availability>
          <ManoeuvringAreaAvailability gml:id="MAA01">
            <operationalStatus>CLOSED</operationalStatus>
          </ManoeuvringAreaAvailability>
        </availability>
        <extension>
          <fns:TaxiwayExtension gml:id="ID_3">
            <fns:Intersections_intersectedByRunway xlink:href="#Runway01" />
            <fns:Intersections_intersectedByRunway xlink:href="#Runway02" />
          </fns:TaxiwayExtension>
        </extension>
      </TaxiwayTimeSlice>
    </timeSlice>
  </Taxiway>
</fns:hasMember>
```

Thoughts on System Interface





FNS Website and Email

<http://notams.aim.faa.gov>

fns@faa.gov