Delivering

NextGen

Next Generation Air Transportation System

Weather Systems Implementation

NextGen Network Enabled Weather (NNEW)
NextGen Weather Processor (NWP)

Presented to: FPAW

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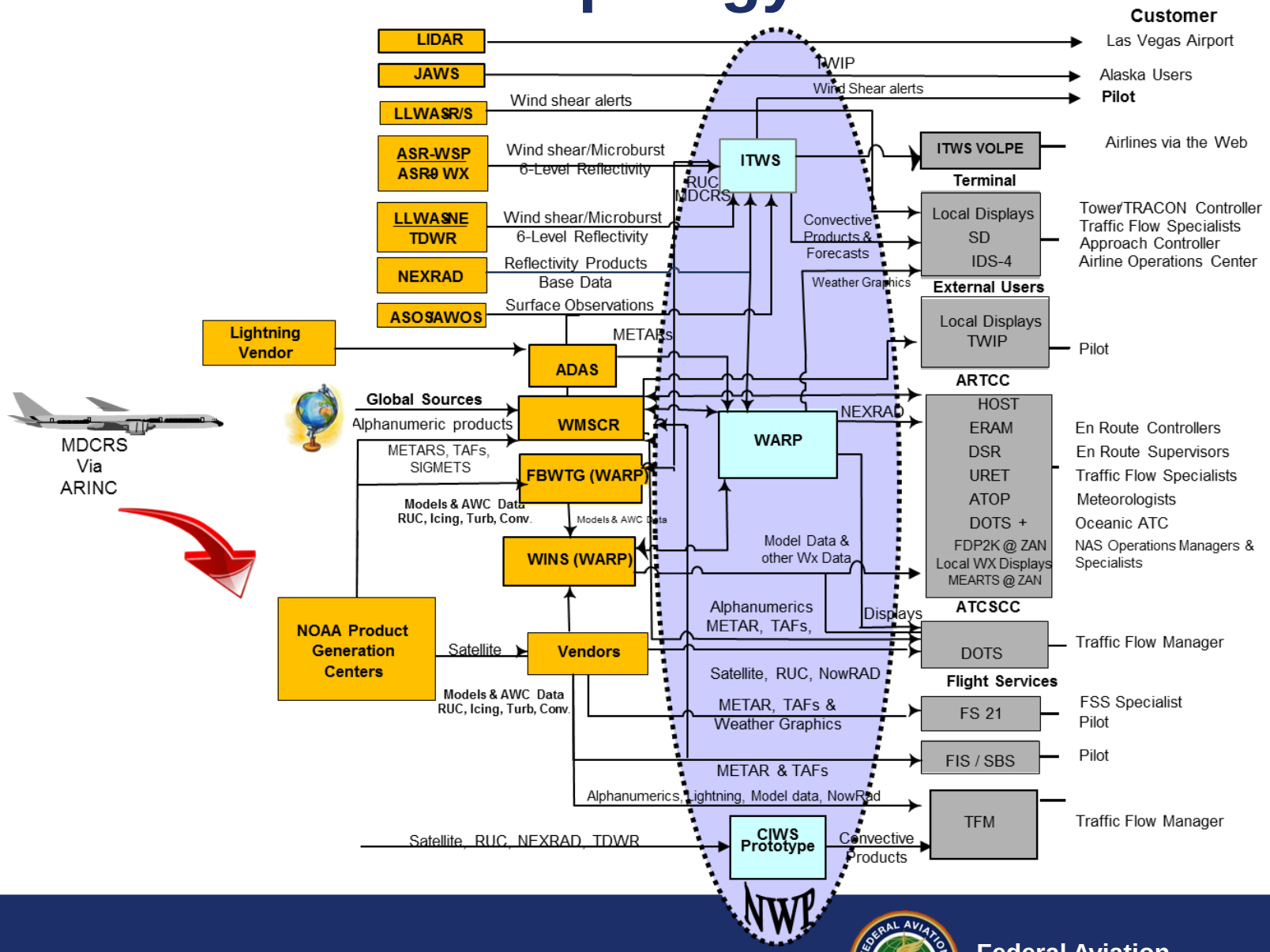
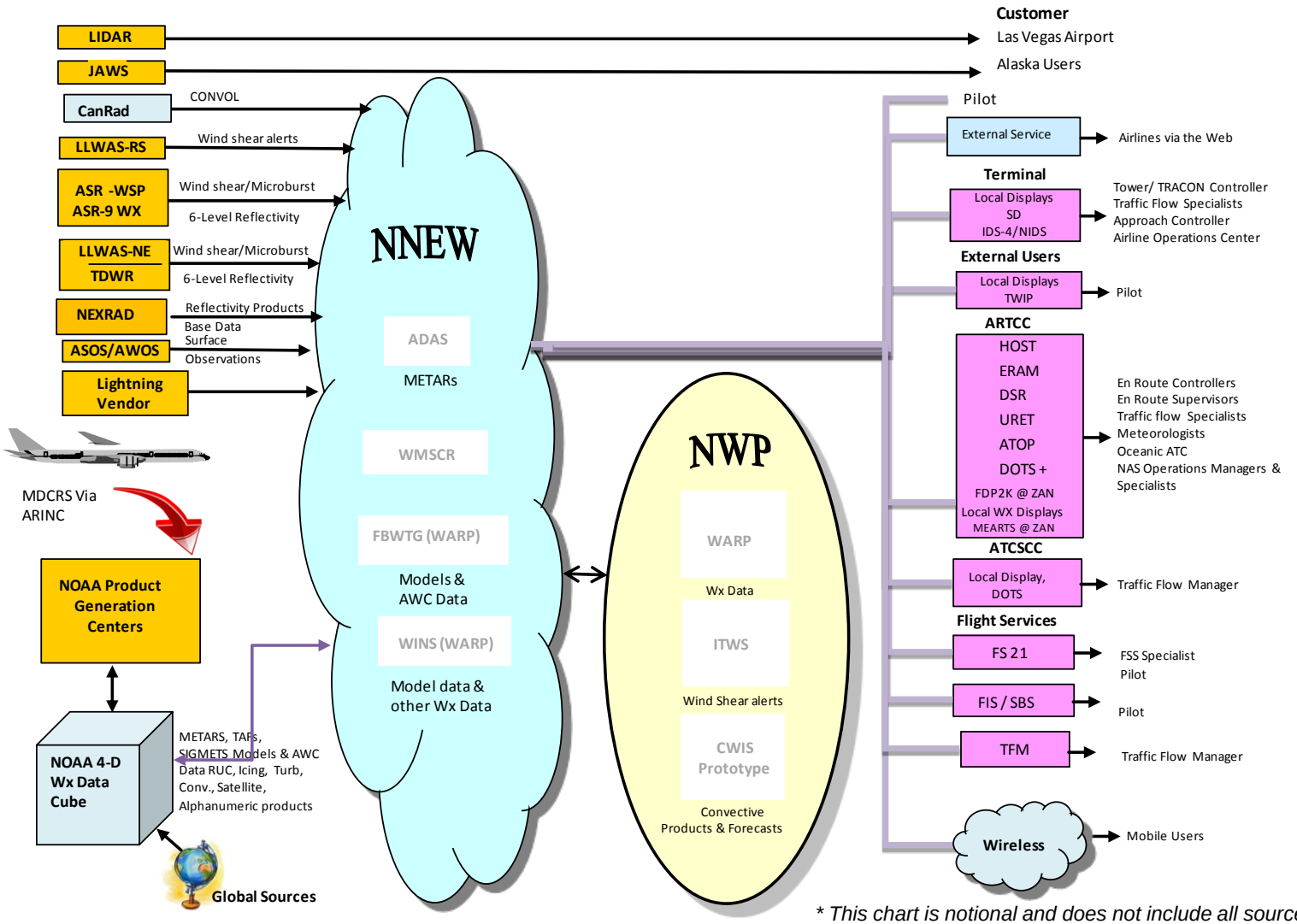
Background

- **Weather is responsible for 70% of delays over 15 minutes and contributes to 24% of accidents**
  - Up to 2/3 of weather delays are potentially avoidable, based on NAS Operations Subcommittee REDAC study
- **Traffic managers and users must mentally interpret weather conditions, future traffic, and airspace information and their potential impact on decisions**
- **Inconsistencies exist in the presentation of weather data among the various weather systems**
- **A single source of weather information often feeds several different systems the same information through different communication feeds. This point-to-point approach requires high telecommunication costs.**
  - The present network would not be able to accommodate the increase in bandwidth requirements without new construction.
- **Weather information is presently provided in many different and specialized formats which limits its reuse by multiple systems.**
- **Automation tools will require more dynamically filtered weather information to support Trajectory Based Operations and airborne weather information.**

Current Weather Topology



Notional To-Be-Weather Architecture

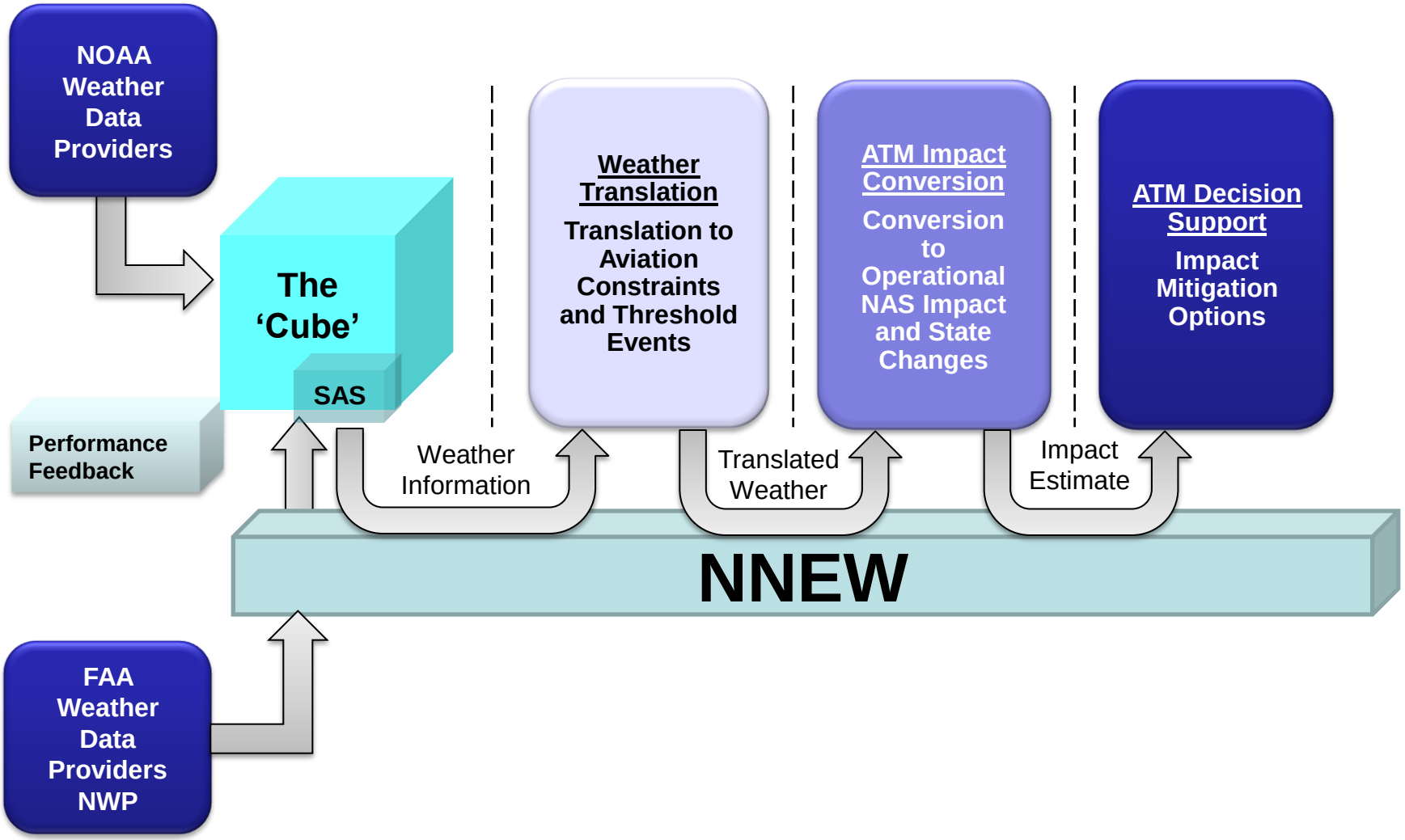


** This chart is notional and does not include all sources or products*

Keys to Achieving NextGen

- **Current capability must be sustained while implementing operational improvements**
  - Transition/consolidate legacy weather processing capability
- **Provide standardized weather data access for integration into decision-support systems**
- **Weather must be approached from a portfolio standpoint**
  - Avoid exploding weather budget
  - Leverage interagency capability
- **NextGen Weather for Segment 1 IOC will consist of portfolio elements from both NNEW and RWI forecast**

Weather Data Integration

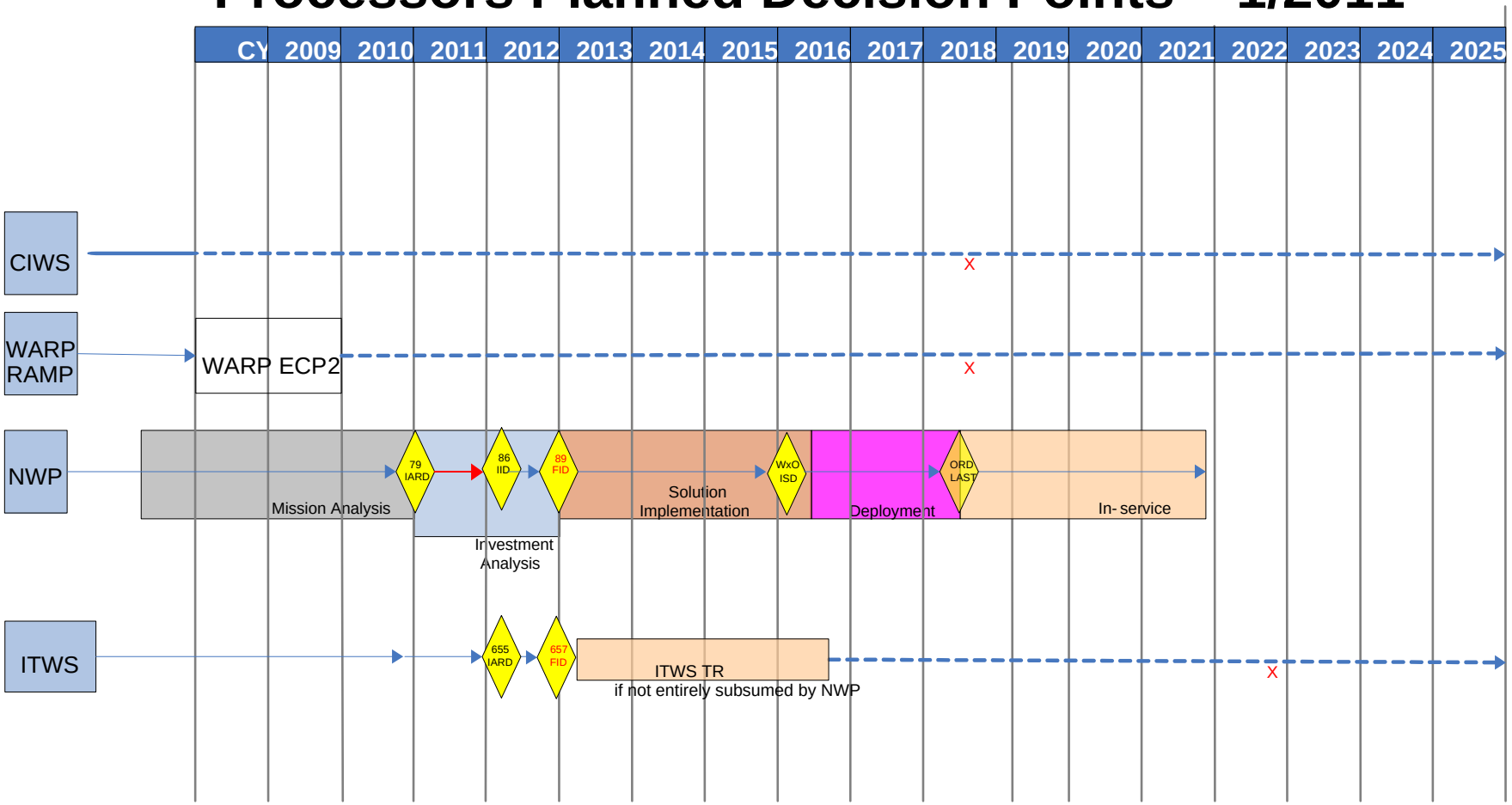


NWP Program Overview

- **NextGen Weather Processor (NWP) establishes a common weather processing platform that will functionally replace the legacy FAA weather processor systems and host new capabilities:**
  - NWP will consolidate weather product generation by weather processor systems such as:
    - Weather and Radar Processor (WARP)
    - Corridor Integrated Weather System (CIWS)
    - Integrated Terminal Weather System (ITWS)
  - NWP will provide advanced aviation specific weather information through the **assimilation** of extended National Weather Service (NWS) forecast models with real time radar extrapolation
  - NWP will perform **Weather Translation** which will enable the use of weather information by automated decision support tools (DSTs)
  - NWP will address consolidation solutions for weather displays

Weather Processor Segment 1 Roadmap

Processors Planned Decision Points – 1/2011



NNEW Program Overview

- **NNEW is an IT infrastructure program that will facilitate integration of weather information into ATM decisions using data from NOAA's 4-Dimensional (4-D) Weather (Wx) Data Cube and internal and external FAA sources**
- **NNEW Key Elements:**
  - Open Standards Utilization/Development
    - Software that provides capabilities for:
      - Locating data
      - Retrieving data
      - Subsetting of data
    - Data Format Standards
      - GML, XML, and NetCDF-4
      - Working with EUROCONTROL to develop a common data model
    - Metadata Standards

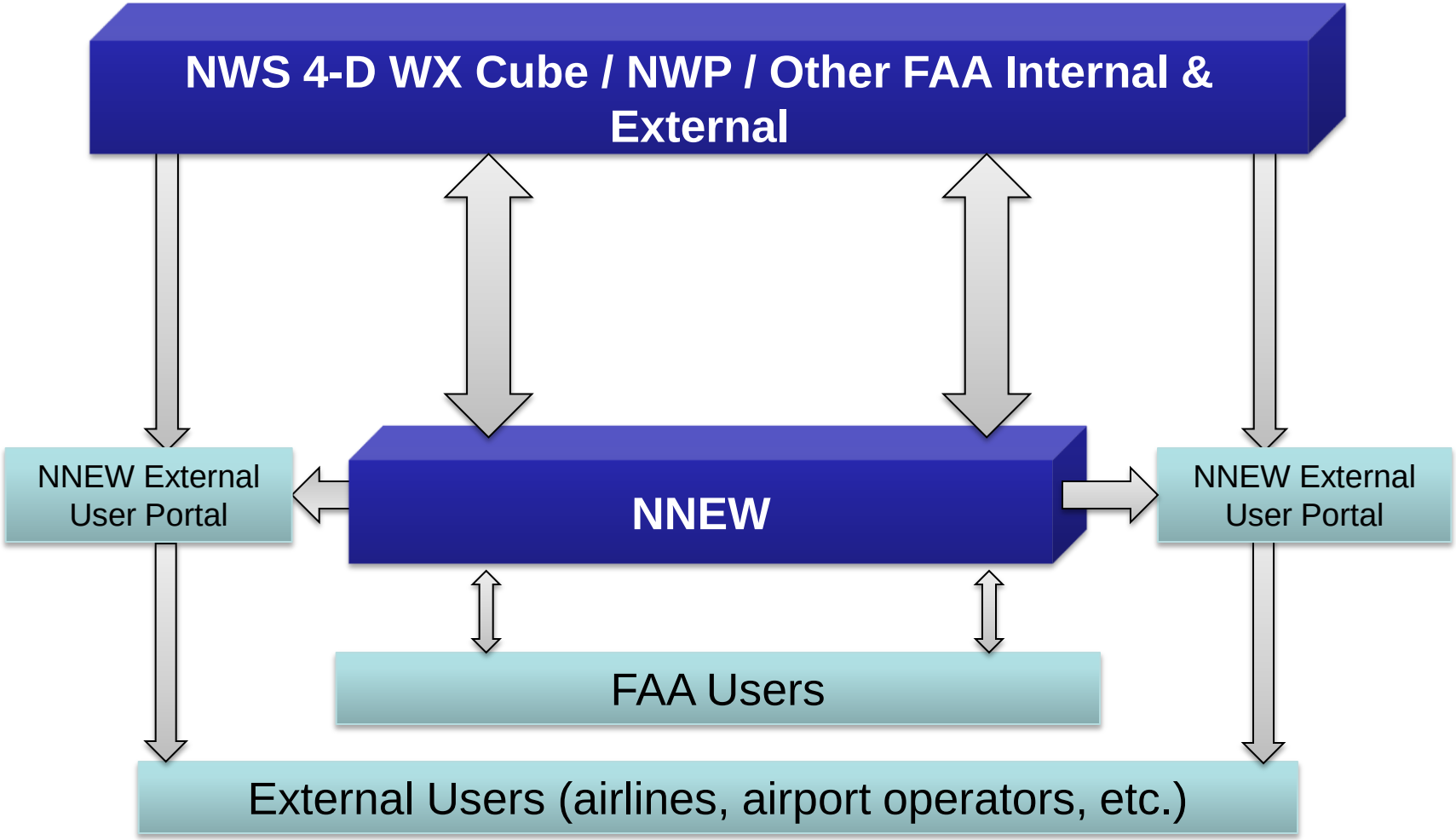
NNEW Key Elements (cont.)

- **Software Development**
  - Registry/Repository
    - ebXML-compliant registry/repository obtained from a commercial source
  - Reference Implementations of OGC data access standards
    - Software that implements the Web Coverage Service (WCS) and Web Feature Service (WFS) standards
    - Provides the mechanism to connect consumers with providers and return the data that are requested
  - Ontology
    - Enables searching for datasets registered in the Registry/Repository in a vocabulary-independent manner
  - Service adaptors
    - Enables legacy systems to provide data to, or use data from NNEW without rewriting the legacy system software

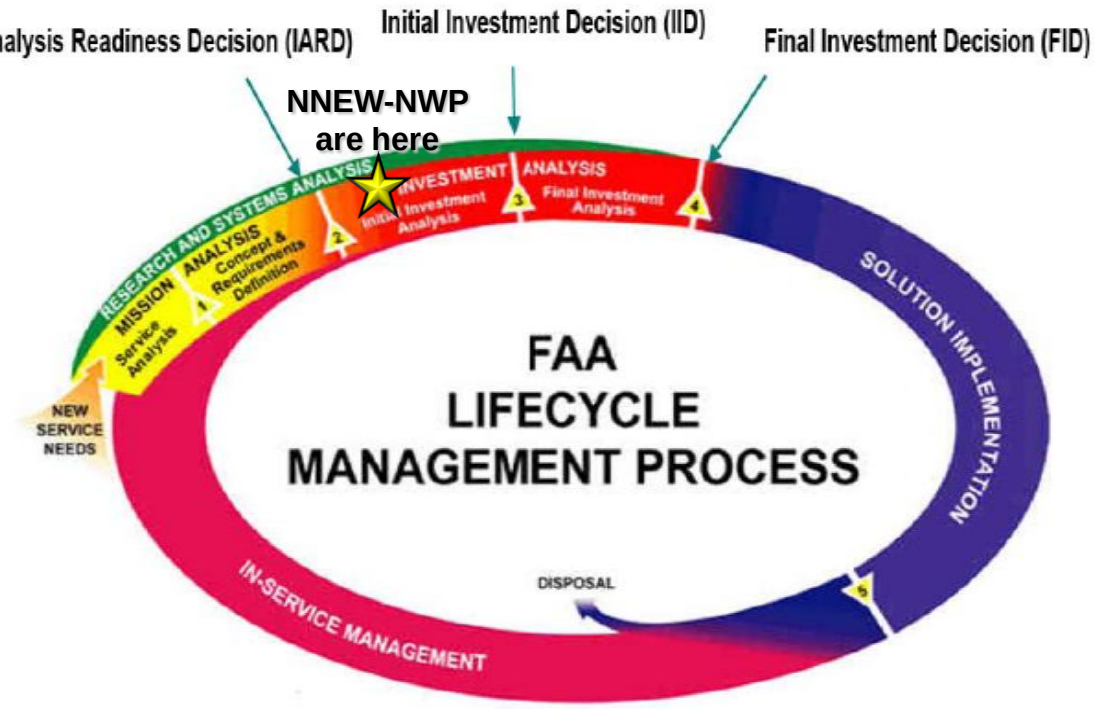
NNEW Goals

- **NNEW will:**
  - Aid in reducing weather impact in the NAS by facilitating the integration of weather information into ATM decisions
  - Define, develop, and provide capabilities for universal access to weather information from multiple government and industry sources in a SWIM-compatible network
  - Provide the capability to automatically locate and retrieve data for DSTs using global and open standards
  - Provide the capability to retrieve weather information along flight trajectory-specific airspace volumes
  - Provide cost savings in the reduction of future interface development costs and a reduction in the usage of bandwidth in communicating weather data

Notional Architecture



NNEW-NWP Acquisition Time Lines



- **Investment Analysis Readiness Decision (IARD) – December 2010**
- **Initial Investment Decision (IID) – Planned for March 2012**
- **Final Investment Decision (FID) – Planned for December 2012**

NNEW-NWP Acquisition Activities

- **A Market Analysis is being performed this year with Industry and it is comprised of a Market Survey and a Request for Information (RFI)**
  - **Market Survey** (Qualification Information)
    - It was released in May and responses were received in June
    - Purpose was to announce solicitation and determine vendor capabilities
  - **Request for Information (RFI)** – Screening Information
    - Released in August -September
    - Purpose is to identify the appropriate acquisition strategy to use and satisfy the proposed technical solution/scheduling information objectives
- **A Draft Screening Information Request is going to be released to industry in the form of a Request for Comment (RFC)**
- **A SIR will be conducted in the form of a Request for Offer (RFO) in 2012**

Summary

- **NNEW Program will:**
  - Be an IT infrastructure program that will facilitate integration of weather information into ATM decisions
  - Release its RFP in 2012
  - Receive a Final Investment Decision in December 2012
  - Award contract in 2013
  - Implement the system from 2013 through 2015
- **NWP Program will:**
  - Consolidate weather product generation by weather processor systems and provide advanced aviation specific weather information
  - Release its RFP in 2012
  - Receive a Final Investment Decision in December 2012
  - Award contract in 2013
  - Implement the system from 2013 through 2015

Backup Slides

Current Weather Displays at Air Traffic Facilities

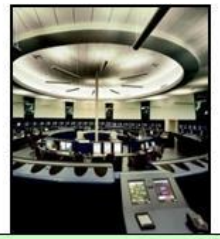
ATCT

Supervisor

ITWS SD

WARP via IDS-4

93 Weather Displays at 75 Towers!*



TRACON

TMU

ITWS SD | CIWS SD | WARP via IDS-4

AT Supervisor

ITWS SD | WARP via IDS-4

134 Weather Displays at 49 TRACONs!*

ATCSCC

System Operations

ITWS SD | CIWS SD | WARP

Weather Unit

ITWS SD | CIWS SD | WARP | WARP

32 Weather Displays at the Command Center!*

ARTCC

TMU

ITWS SD | CIWS SD | WARP

CWSU

ITWS SD | CIWS SD | WARP | WARP MWS

AT Supervisor

CIWS SD | WARP

SOC

WARP

ATC

WARP (via DSR, ERAM, URET, ATOP)

325 Weather Displays at 21 ARTCCs!*

ITWS Web

External Users: Airlines, Airports, Government, etc..

CIWS Web

*Estimate only