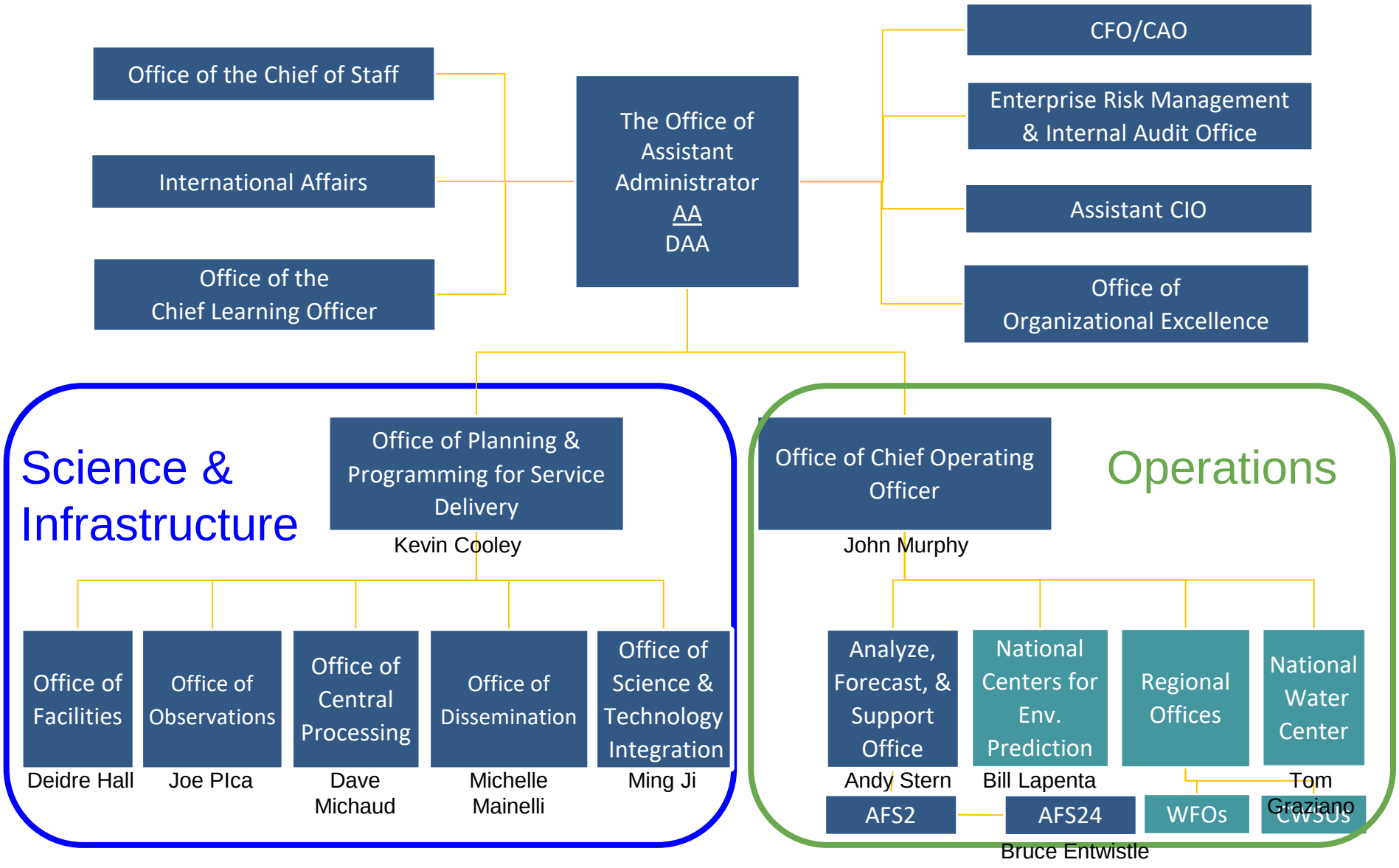
NWS Organization

HQ Office | Field Office



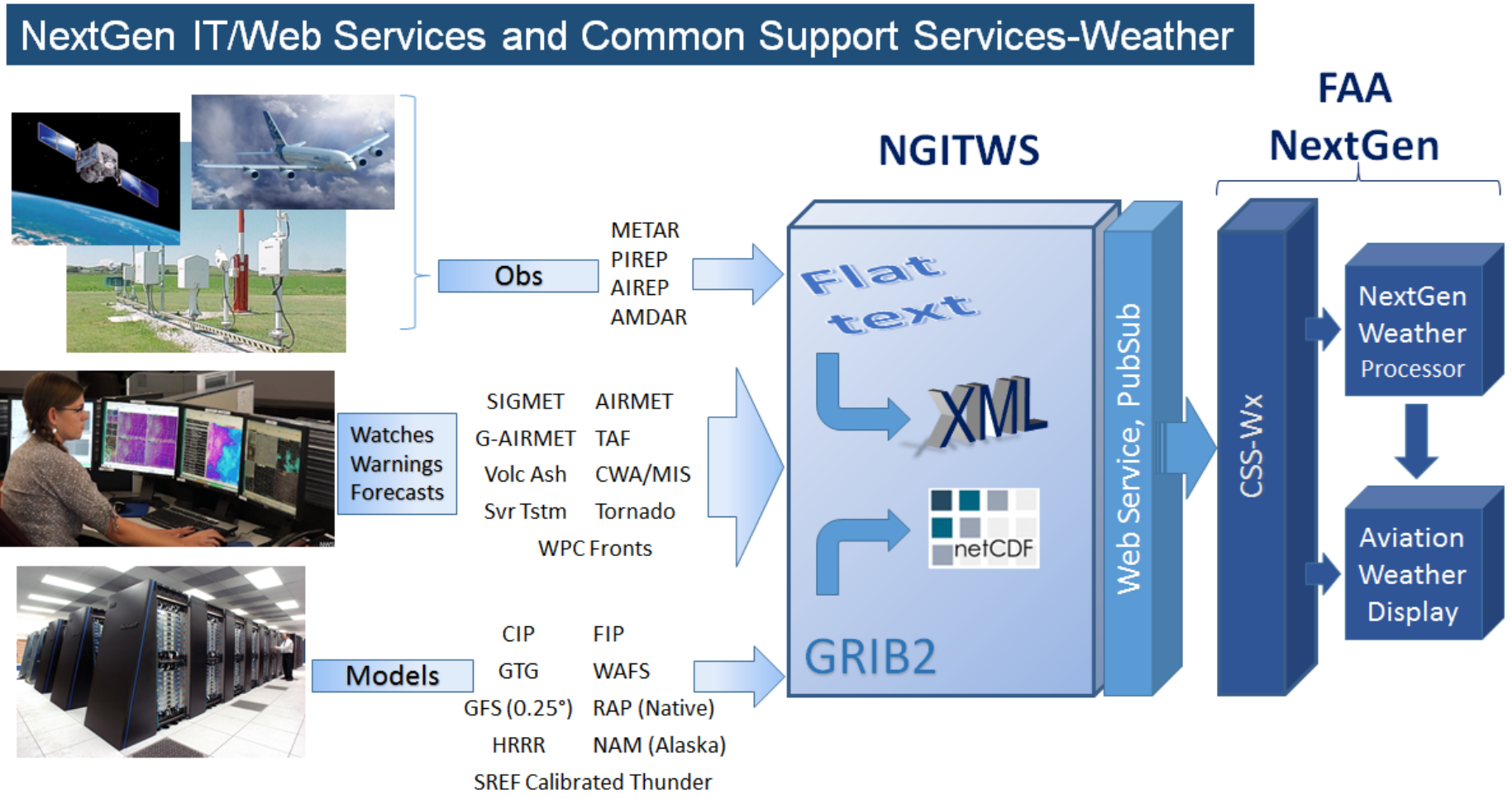
ICAO Meteorological Information Exchange Model (IWXXM)

- Requirement source
  - Amd 76 to ICAO Annex 3 (November 2013) allows States to transmit METAR, TAF, SPECI, and SIGMET in ICAO Wx Information Exchange Model format by November 2016; proposed mandatory by November 2020
  - IWXXM v2 (2017) added Vol Ash, TC, and AIRMET advisories
  - IWXXM v3 adds space wx, streamlines terrestrial wx schema
- Development and implementation
  - International: CBS TT-AvXML, WMO, and ICAO
  - OFCM facilitating interagency implementation planning
  - FAA: sponsors NCAR IWXXM efforts while Harris Corp builds
  - NWS: ODISS leads cross-portfolio team to implement XML

NextGen IT Web Services

- 5-portfolio IWXXM Charter, ODISS lead
- NGITWS provides centralized TAC encoding/decoding
  - v1.1: METAR/SPECI, TAF but building v2.1 capability
  - v2.1: SIGMET, AIRMET, Vol Ash
- ...but XML is best generated from the source. Central Processing SOWs with GSD for TAF IWXXM (v2.1 from AWIPS 18.1.1) and SIGMET
- Challenges: TAC parsing; state of issue (routine, COR, CANX, AMD); short and long term domestic and international dissemination

NGITWS/CSS-Wx Data Flow



College Park and Boulder / Atlanta, Salt Lake City & Atlantic City

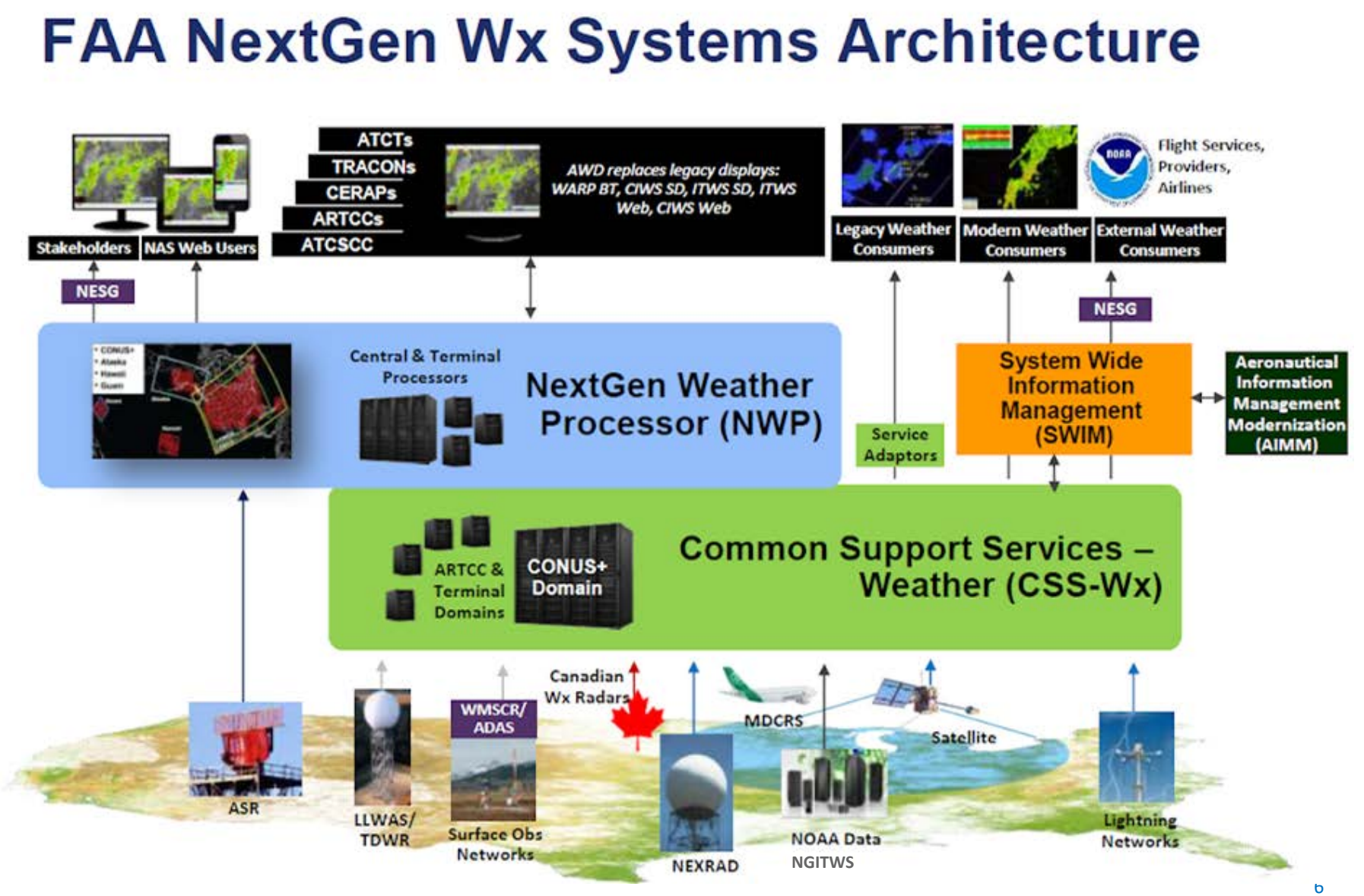
CSS-Wx Data Access Services

- Ingests weather sensor, NWP data and NOAA data (e.g. Satellite, models)
- Makes weather data available through Web Services
- Adheres to international standards for handling and representing geospatial data

OGC®
Open Geospatial Consortium

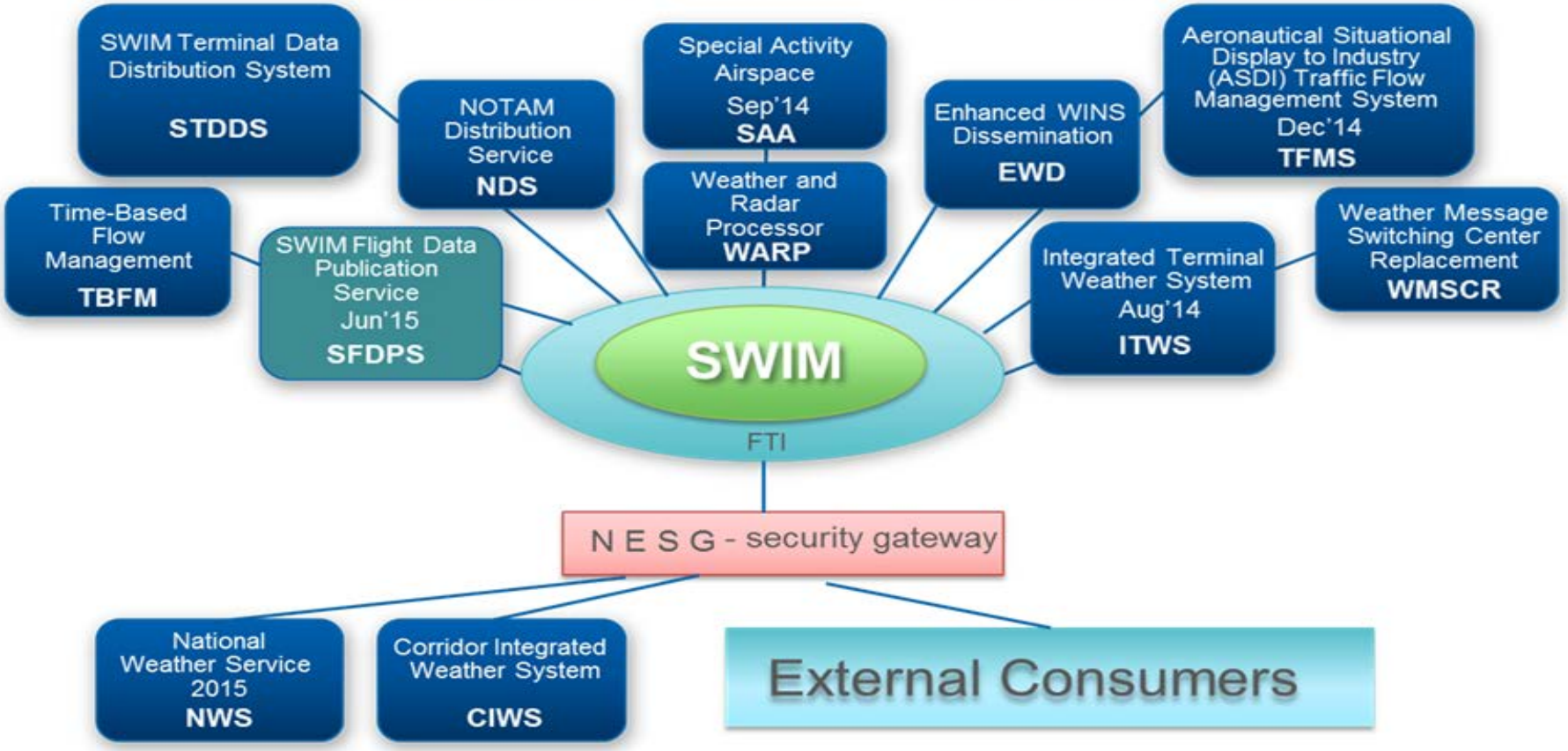
Web Coverage Service	Web Feature Service	Web Map Service
• Filters and transforms large gridded dataset • NetCDF format	• Filters and transforms non-gridded data sets • WXXM 2.0 XML format	• Renders weather data as single large image or sets of tiled images for display • JPEG, PNG, GIF, KML format

CSS-Wx Info Distribution

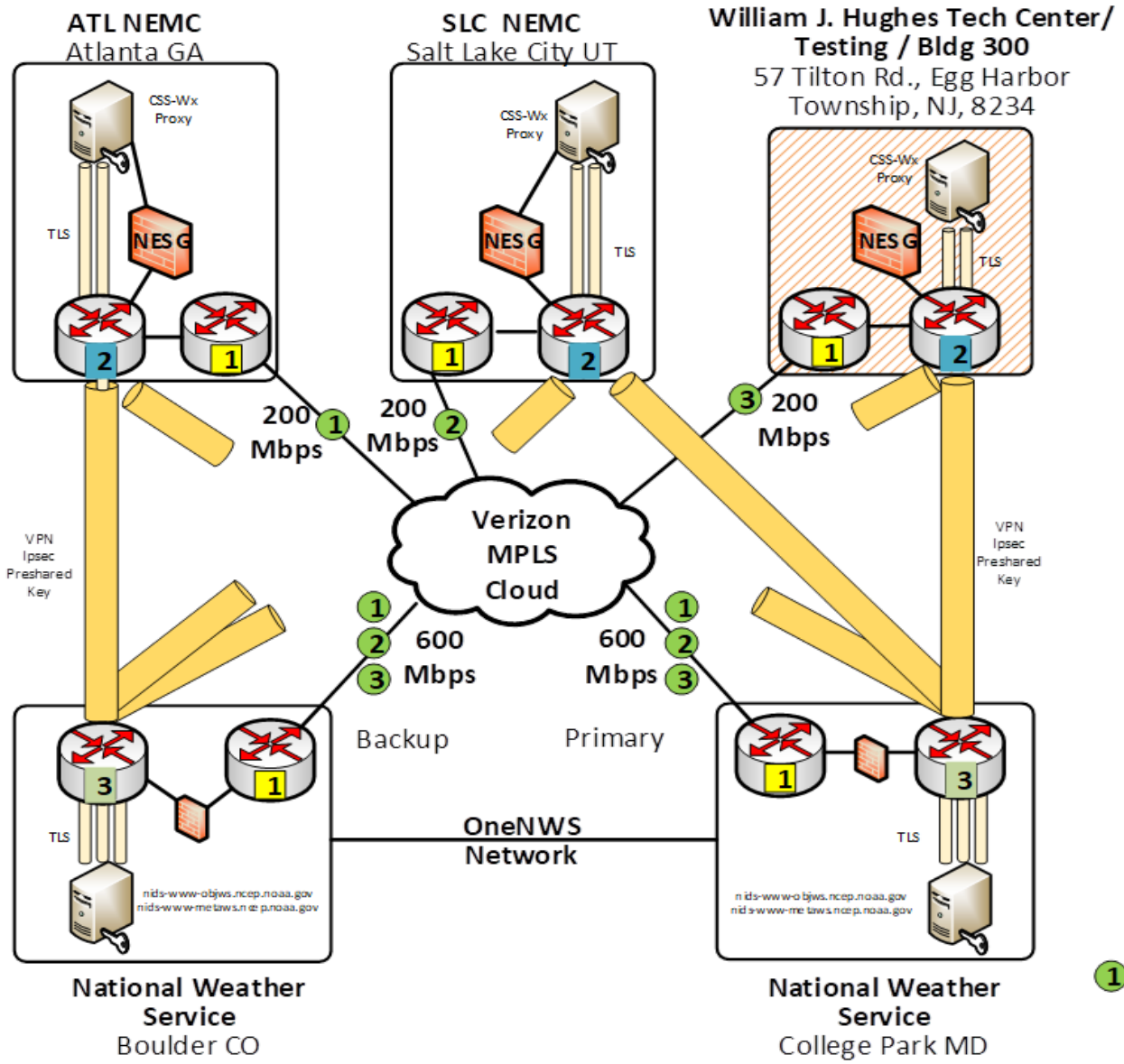


SWIM: A Standard Connection

SWIM consists of standards, infrastructure and governance making available a wide range of capabilities through a common infrastructure of reusable and shared services



NWS/FAA MPLS Architecture



NESG =
NAS Enterprise Security Gateway

MPSL =
Multi-Protocol Label Switching

LEGEND:

1 Verizon Router
2 FAA Router
3 NWS Router
1 2 3 NWS to CSS-Wx data flows estimated at 125-150Mbps each

- IWXXM

```
<iwxxm:METAR xmlns:iwxxm="http://icao.int/iwxxm/1.0" mlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:om="http://www.opengis.net/om/2.0"
  xmlns:metce="http://def.wmo.int/metce/2013"
  xmlns:sams="http://www.opengis.net/samplingSpatial/2.0"
  xmlns:sf="http://www.opengis.net/sampling/2.0"
  xmlns:saf="http://icao.int/saf/1.0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://icao.int/iwxxm/1.0 http://schemas.wmo.int/iwxxm/1.0/iwxxm.xsd
  http://def.wmo.int/metce/2013 http://schemas.wmo.int/metce/1.0/metce.xsd"
  gml:id="metar-YUDO-20120822163000Z"
  status="NORMAL"
  automatedStation="false">
  <iwxxm:observation>
    <om:OM_Observation gml:id="obs-03839-20120824T12Z">
      <om:type xlink:href="http://codes.wmo.int/49-2/observation-type/IWXXM/1.0/MeteorologicalAerodromeObservation" xlink:title="Aerodrome
Observation"/>
      <!-- time at which the observation actually occured -->
      <om:phenomenonTime>
        <gml:TimeInstant gml:id="ti-201208221630Z">
          <gml:timePosition>2012-08-22T16:30:00Z</gml:timePosition>
        </gml:TimeInstant>
      </om:phenomenonTime>
      <!-- time at which the results of the observation were made available (10-minutes later) -->
      <om:resultTime>
        <gml:TimeInstant gml:id="ti-201208221640Z">
          <gml:timePosition>2012-08-22T16:40:00Z</gml:timePosition>
        </gml:TimeInstant>
      </om:resultTime>
      <om:procedure>
        <metce:Process gml:id="p-49-2-metar">
          <gml:description>WMO No. 49 Volume 2 Meteorological Service for International Air Navigation APPENDIX 3 TECHNICAL SPECIFICATIONS
RELATED TO METEOROLOGICAL OBSERVATIONS AND REPORTS</gml:description>
```

Questions?