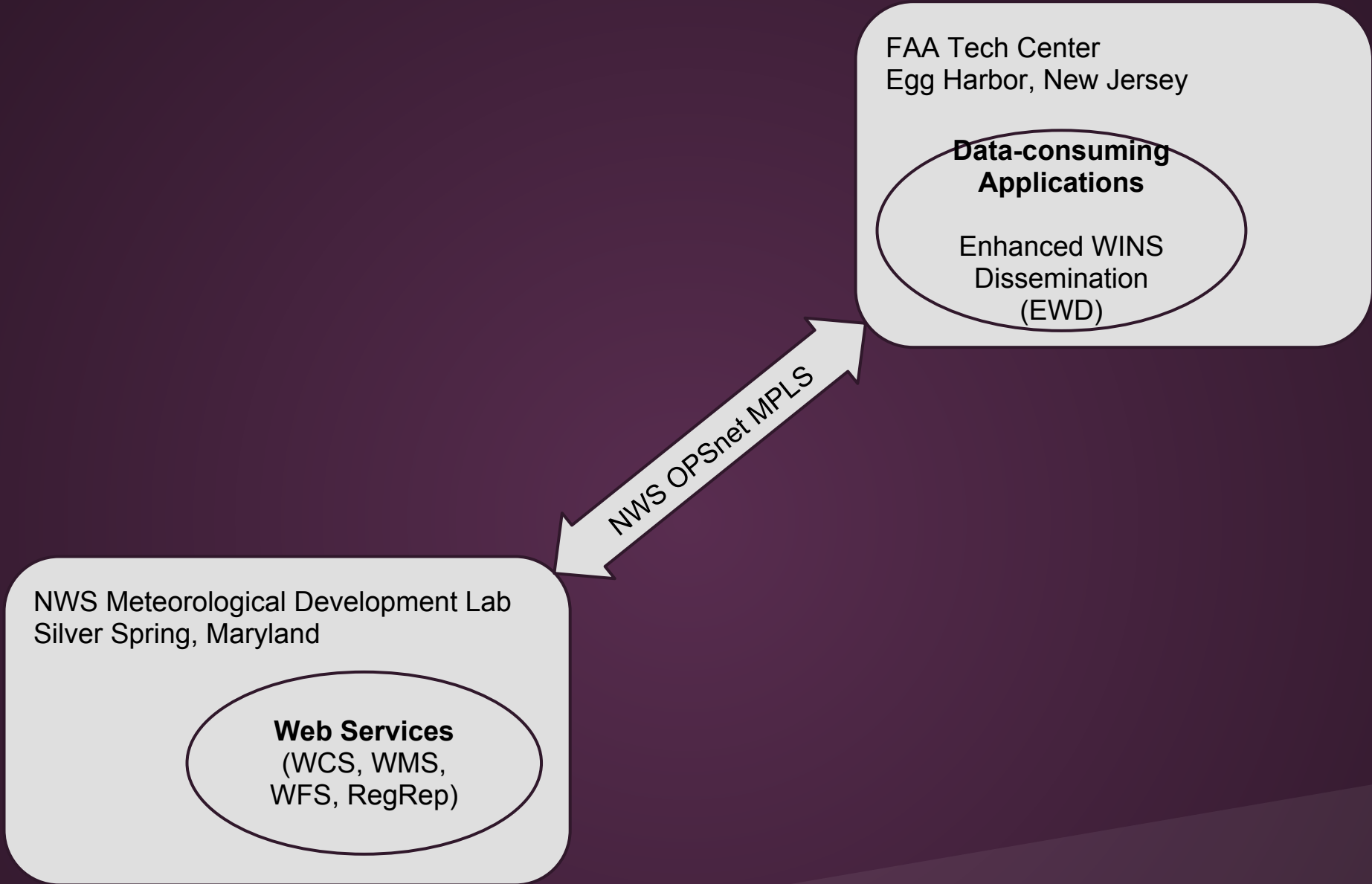


Beyond METAR, SPECI, TAF, and SIGMET--data models and schemas for US products

*Air Transportation Information
Exchange Conference
August 2013
Steve Olson NOAA/NWS*

Background: Web Services for NextGen

- 4+ years of collaboration between NWS and FAA to make NextGen a reality
- Many partners, including NCAR, MIT/LL, NOAA/ESRL, MDL, AWC, AFWA, and FAA Hughes Tech. Ctr.
- Current effort has a clear path to operations between NWS and FAA



Stage One: Prototypes

FAA National Testbed
ARTCCs ZTL and ZLC

**Data-consuming
Applications
(pub/sub)**

FAA Tech Center
Egg Harbor, New Jersey

**Data-consuming
Applications**

Enhanced WINS
Dissemination
(EWD)

NWS Meteorological
Development Lab
Silver Spring, Maryland

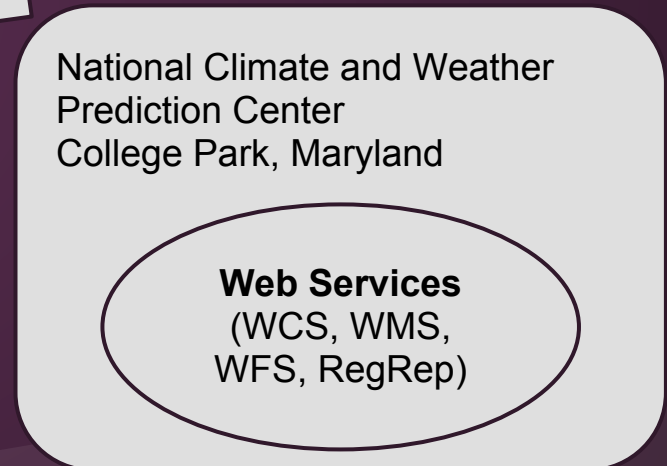
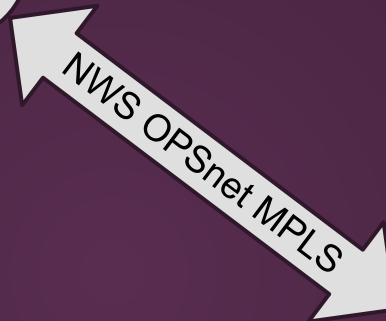
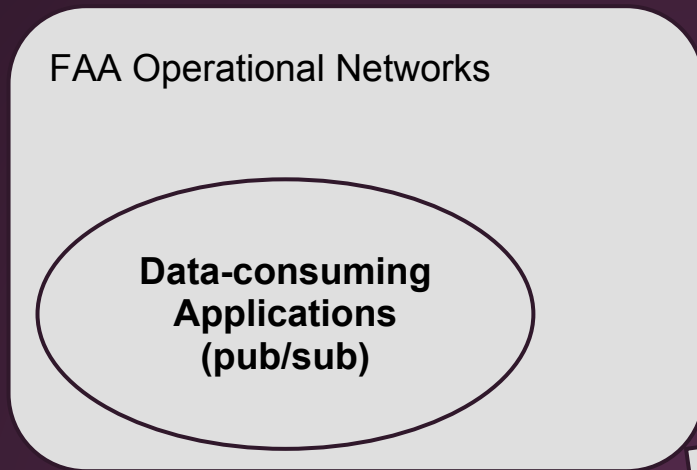
**Web Services
(WCS, WMS,
WFS, RegRep)**

National Climate and Weather
Prediction Center
College Park, Maryland

**Web Services
(WCS, WMS,
WFS, RegRep)**

NWS OPSnet MPLS

Stage Two: Migration towards operations



Stage Three: Operations

Web Services, Old and New

- **WCS, WMS Reference Implementation by NCAR**
 - Implemented at FAA Tech Center, NCAR, LL/MIT, NOAA/ESRL, AWC and MDL
- **WFS Reference Implementation by MIT/LL**
 - Implemented at FAA Tech Center, NCAR, LL/MIT, NOAA/ESRL, AWC and MDL
- **EbXML Registry/Repository by Wellfleet**
 - Implemented at FAA Tech Center, LL/MIT, GSD, and MDL
- **WCS, WMS, WFS prototype by ITT/Excellis**
 - Implemented and being evaluated at MDL

Migrating Legacy Products

Input for FAA's Common Support Services-- Weather (CSS-Wx)

- ~1000 grids (model, satellite)
- ~130 images
- METAR, SPECI, TAF, SIGMET
- Other Traditional Alphanumeric Codes (TAC). A small number, but many headaches
 - Requires considerable xml schema extension and development

Goals for TAC Schemas

- Logical organization of schemas on <http://www.weather.gov/schemas>
- Logical connections to METCE and IWXXM
 - Use of common constructs
 - Use of quantity attribute with references to repository at codes.wmo.int
 - Use of vocabulary attribute with references to code lists at WMO and NWS sites

Select Products and Notes

Center Weather Advisory (CWA)

- Contents similar to NWS Convective SIGMETs. Different criteria.

Meteorological Impact Statement (MIS)

- Valid times
- Generally valid for entire airspace
- Free text with only general guidelines

ZMA CWA 201 VALID UNTIL 211815
FROM 40WNW PBI-30SSE MIA-70SW MIA-20NW RSW-40WNW PBI
DVLPG AREA OF TS WITH HVY-EXTRM PCPN MOV FM 11015KT. MAX TOPS
ABV FL450. EXP INCRG COVG AND INTST THRU 1815Z.

ZDC MIS 01 VALID 211125-212000
...FOR ATC PLANNING PURPOSES ONLY...
AREAS LIFR/IFR CIGS/ LCL VIS FG MAINLY W/S ZDC...LCL ELSWHR...
IMPRVG 12-15Z. SCT SHRA ISOLD TSRA W ZDC, ALNG NC/VA BORDER AND
NC COASTAL WATERS. TSRA INCSG IN COVERAGE AFT 16Z TO NMRS BY 19Z
SPCLY W ZDC. TOPS FL300-400 THIS MRNG...THEN ABV FL400. OTRWS
VFR.

*Sample Center Weather Advisory (CWA) and
Meteorological Impact Statement (MIS)*

Select Products and Notes

Area Forecast Discussion

- Coded, Traditional Alphanumeric Product
- Valid times
- Generally valid for entire WFO County Warning Area
- Sections of text (e.g., synopsis, near term, marine, aviation)
- Watch/Warning/Advisory summary

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE TAUNTON MA
330 PM EDT WED JUN 9 2006

.SYNOPSIS...
LOW PRESSURE WILL OFF THE MAINE COAST THIS AFTERNOON...BEFORE EXITING THE
REGION THROUGH NEW BRUNSWICK TONIGHT.
&&
.NEAR TERM /UNTIL 7 PM THIS EVENING/...
A SEVERE THUNDERSTORM WATCH CONTINUES FOR CHESHIRE AND HILLSBOROUGH
COUNTIES NH UNTIL 7 PM.
&&
.SHORT TERM /7 PM THIS EVENING THROUGH THURSDAY NIGHT/...
BEYOND THE NEAR TERM...EXPECTING THE TRIGGER OF THIS CONVECTION...
THE COLD FRONT...TO PUSH THROUGH THE REGION OVERNIGHT.
&&
.LONG TERM /FRIDAY THROUGH WEDNESDAY/...
FOLLOWED HPC TEMP GUIDANCE IN THE DAY 3-7 PERIOD. SPREAD IN ENSM
MOS IS NOT VERY LARGE.
&&
.AVIATION /03Z WEDNESDAY THROUGH SUNDAY/...
MAINLY VFR EXCEPT FOR MVFR VISIBILITIES ON CAPE COD AND THE ISLANDS
WITH HAZE.
&&
.MARINE...
IN THE SHORT TERM...WILL HANG ON TO A SMALL CRAFT FOR SEAS TONIGHT ON
THE OUTER WATERS ON THE INCREASING SOUTHWEST FLOW.
&&
.HYDROLOGY...
BASIN AVERAGE RAINFALL OF 0.25 TO 0.75 INCH IS EXPECTED FROM LATER
TODAY INTO THU...WHICH SHOULD HAVE MINIMAL EFFECT ON RIVER AND STREAM
LEVELS.
&&
.BOX WATCHES/WARNINGS/ADVISORIES...
CT...NONE.
MA...NONE.
NH...NONE.
RI...NONE.
MARINE...SMALL CRAFT ADVISORY FOR SEAS THROUGH 8 PM FOR ANZ254-255.
\$\$

Sample Area Forecast Discussion

Select Products and Notes

Area Forecast (FA)

- Coded, Traditional Alphanumeric Product
- Valid times
- Valid for large portions of airspace, divided by state, state fractions, and major bodies of water
- Sections of text, generally focusing on clouds, visibility, and weather

FAUS41 KPCI 210845
CLDS/WX VALID UNTIL 212100...OTLK VALID 212100-220300
ME NH VT MA RI CT NY LO NJ PA OH LE WV MD DC DE VA AND CSTL WTRS
.
SYNOPSIS...LRG RDG HI PRES WL REMAIN OVR THE ERN US..CNTRD OFF
THE NC/SC CSTLN.
.
ME NH VT MA RI CT
SKC. TIL 13Z OCNL VIS 3SM BR IN VLYS. OTLK...VFR.
.
NY LO
SKC. OTLK...VFR.
.
PA NJ
SKC OR SCT CI. OTLK...VFR.
.
OH LE
SCT120 SCT CI. OTLK...VFR.
.
WV
SCT-BKN040-050 BKN100 TOPS 140. OTLK...VFR.
.
MD DC DE VA
SCT-BKN040-050 TOPS 070 BKN CI. OTLK...VFR.
.
CSTL WTRS
BKN CI. 18Z SCT-BKN100 TOPS 140 BKN CI. OTLK...VFR.

Sample Area Forecast

Implementation Strategy

- Create schemas, most important first, for aviation-based Traditional Alphanumeric Code (TAC) products
- If needed, develop software that can decode TAC and encode XML
- Upgrade product generation software to create TAC and XML simultaneously