



TOWR-G

Test for Operational Weather Readiness with GOES-R

Joe Zajic

NWS Office of Science & Technology – Science Plans Branch

Integrity Applications Incorporated

Satellite Proving Ground Meeting
2 June 2014





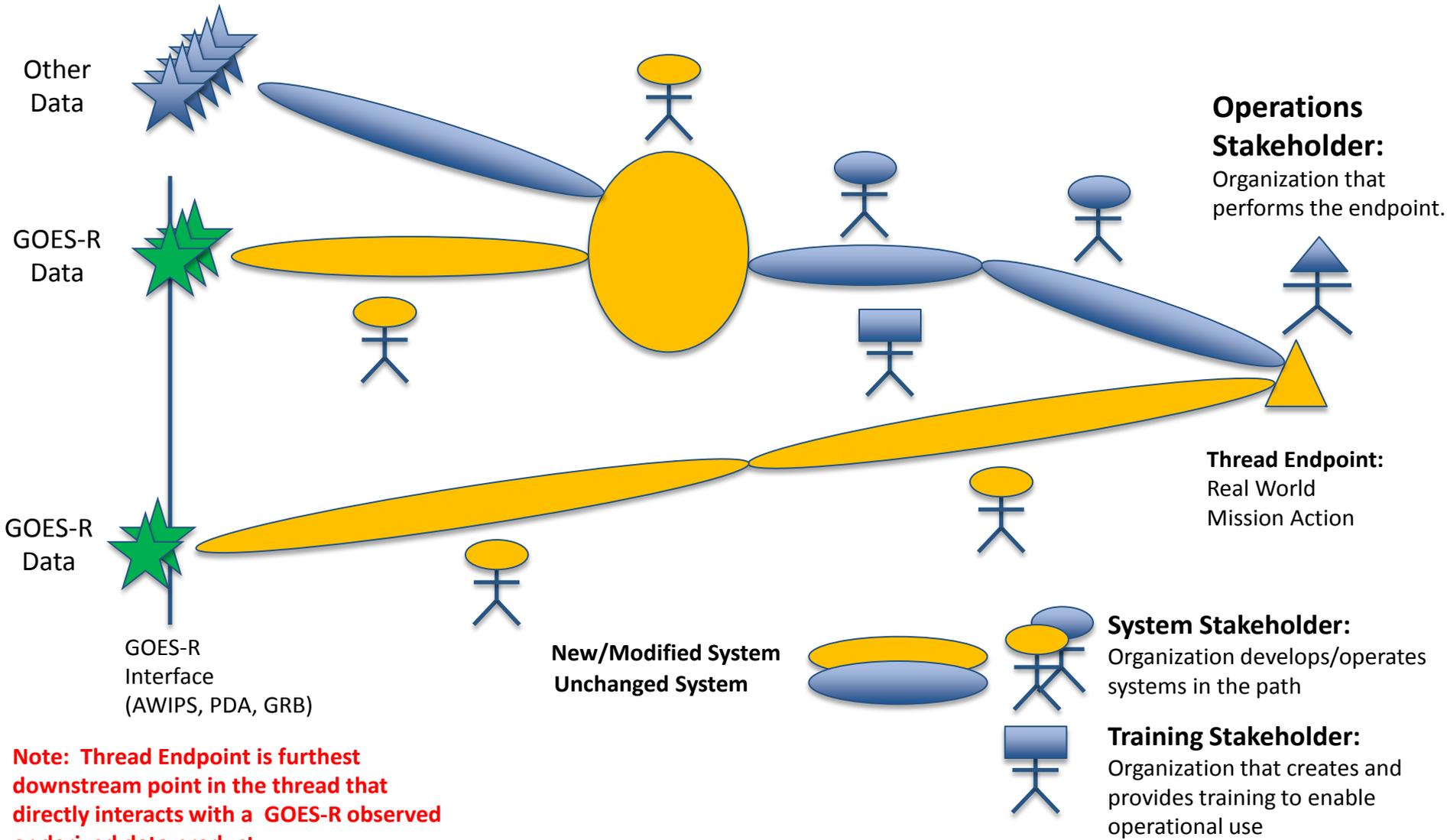
What is TOWR-G?



- **Test and Readiness Project for NWS Operational Use of GOES-R data**
- **Focus is on AWIPS-II usage context**
- **Project Comprised of:**
 - **Development of representative “Mission Threads”**
 - **Derivation of Validation Objectives**
 - **Planning and execution of pre-launch End-to-End Test and Evaluation Activities**
- **Provides supporting information for:**
 - **Training Activities**
 - **Dataflow decision-making**
 - **Component system capability decision-making**



"A Mission thread describes a specific real-world mission action, and characterizes the journey that the supporting data take from their use in the mission action all the way back to their observation."



Note: Thread Endpoint is furthest downstream point in the thread that directly interacts with a GOES-R observed or derived data product.



Mission Threads



Initial Threads identified from the NWS Directives (categorized via NOSIA Mission Service Areas)

267 source documents reviewed, 498 Thread Endpoints, 196 GOES-R Thread Candidates (Candidate/Total Endpoints)

Severe Weather: 49/81

Routine Weather: 39/150

Aviation Weather and Volcanic Ash: 36/53

Space Weather: 23/23

Hurricanes and Tropical Storms: 22/26

Marine Weather and Coastal Events: 11/27

Hydrology and Water Resources: 10/54

Fire Weather: 3/9

Climate Monitoring and Assessment 3/13

Climate Prediction: 0/33

Tsunami: 0/7

Misc/Non-Weather: 0/22

The following five threads comprise Batch One:

Thread Endpoint	Trace Doc	Area	Performing Org
Severe Thunderstorm Warning	NWSI 10-511	Severe Weather	Weather Forecast Offices
Red Flag Warning	NWSI 10-401	Fire Weather	Weather Forecast Offices
Hurricane and Tropical Storm Watch /Warning	NWSI 10-601	Hurricanes and Tropical Storms	National Hurricane Center Central Pacific Hurricane Center WFO Guam
Volcanic Ash Advisory	NWSI 10-1501	Aviation Weather and Volcanic Ash	AAWU/Alaska VAAC
Main Stem River Flood Forecast	NWSI 10-922	Hydrology and Water Resources	River Forecast Centers/Weather Forecast Offices



Thread Development



Approach:

1. Create representative operations scenario

1. Identify data products to be used and their interaction
2. AWIPS-2 reference procedure
3. User “stories” to describe intended use of system from ops perspective
4. Time phased

2. “Pull” the threads

1. How does the data get from the source to the ops facility and into AWIPS
2. What “value” needs to be added along the path, and how.
3. What functionality is required in AWIPS to enable the envisioned analysis and exploitation

3. Identify Validation Objectives for evaluation during testing

1. Evaluate suitability for mission use



Thread Pathways/Mechanisms

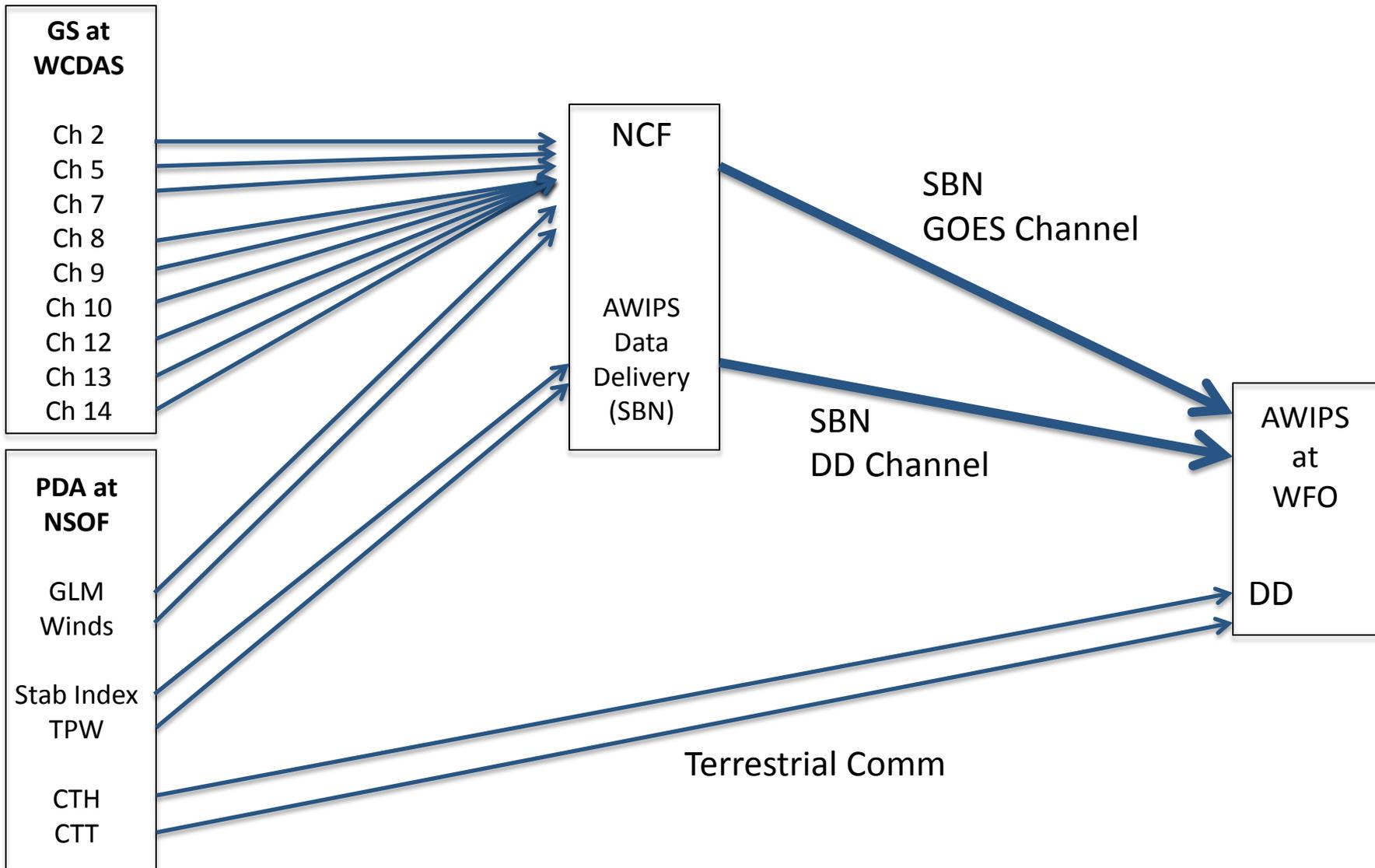


Data Path Options

- **SBN**
 - Standing Product Flows – used by most places most of the time
 - Total shared bandwidth of 60+mbit/s by end of 2014
 - GOES-R SCMI and standing PDA subscriptions
- **AWIPS Data Delivery over SBN**
 - Uses a portion of SBN bandwidth
 - Special Case Product Flows – “enough places some of the time”
 - Advantageous when time-complementary product groupings exist
- **AWIPS Data Delivery over Terrestrial Networks**
 - Ad-hoc and single facility product flows
 - Utility limited by to-WFO Network bandwidth
- **GRB**
 - Direct access GOES-R data for National Centers and OCONUS
 - Downstream distribution and added value



Illustrative SVR Thread Flows





Pre-Launch Activity Schedule

2014

2015

Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct

Steering Group



5/28



7/9



Threads
Validation Objectives
Stakeholders



DOST Scenario Recommendations
POSST Product Emphasis Recommendations

8/20

AWIPS-II
GOES-R
Roll Tests

2km
Sectorized Imagery

1

All
Imagery

2

GLM
Derived Products

3

Full Thread
Scenarios

4

NMT Testbed Scenario Development (Ops Proving Ground Collaboration Opportunity)

Data Operations Tests

Data Operations Exercises

pre

1

2

1

3

2

4

NWS
Thread
Validation