NOAA Program Review Recommendation #32

NOAA Observing Systems Architecture (NOSA)

Status Briefing for NOAA CIOs

January 22, 2003

Initial Tasking—PRT #32

- **Develop an observation system architecture**
  - Baseline ("state today")
  - Target architecture ("future state"—10-20 years)
- **Base prospective observing systems on validated requirements**
- **Investigate system consolidation and ownership transition (e.g., buoys)**
- **Conduct a systemic review of all* observing systems considering the following factors**
  - Required system characteristics
  - Number of and types of system users
  - Capital asset value and recurring maintenance costs

Initial Scope

- **Focus first on baseline observing system architecture**
  - Begin with systemic review of all NOAA observing systems
  - Work closely with NOAA team developing the requirements-based management process
  - Timeline for future observing system architecture development TBD
- **Address only NOAA owned and/or operated systems, but…….**
- **Include operational and research systems**

NOSA Senior Steering Group

- NESDIS Rob Mairs (lead)
- NMFS Bill Fox
- NOS Steve Gill
- NWS Greg Mandt (lead), Paul Moersdorf
- OAR Mike Johnson
- OMAO Beth White
- CIO Carl Staton

NOSA Action Group

- NESDIS Rob Mairs, Lisa Botluk
- NMFS Ned Cyr, David Detlor
- NOS Steve Gill
- NWS Rainer Dombrowsky, Eric Meindl, Tim Ross
- OAR Dr. Sid Thurston
- OMAO Beth White
- OCIO Ira Grossman
- DUS Muriel Cole
- IA Michael Hales
- Contractor Support – Tom Adang, James Martin, Joe Zajic

Why?

To provide a baseline from which future observing system business decisions could be made.

Purpose of Architecture - Business Queries

- **Display all observing systems owned by a particular line office.**
- **Display all Climate requirements that are not being met by current observing systems.**
- **What observing systems are supporting our ability to measure the heat content of the ocean (or other scientific query)?**
  - What additional observing systems do we need to answer this particular question?
- **Display all organizations that own buoys.**
- **What observing systems are associated with each NOAA strategic goal?**

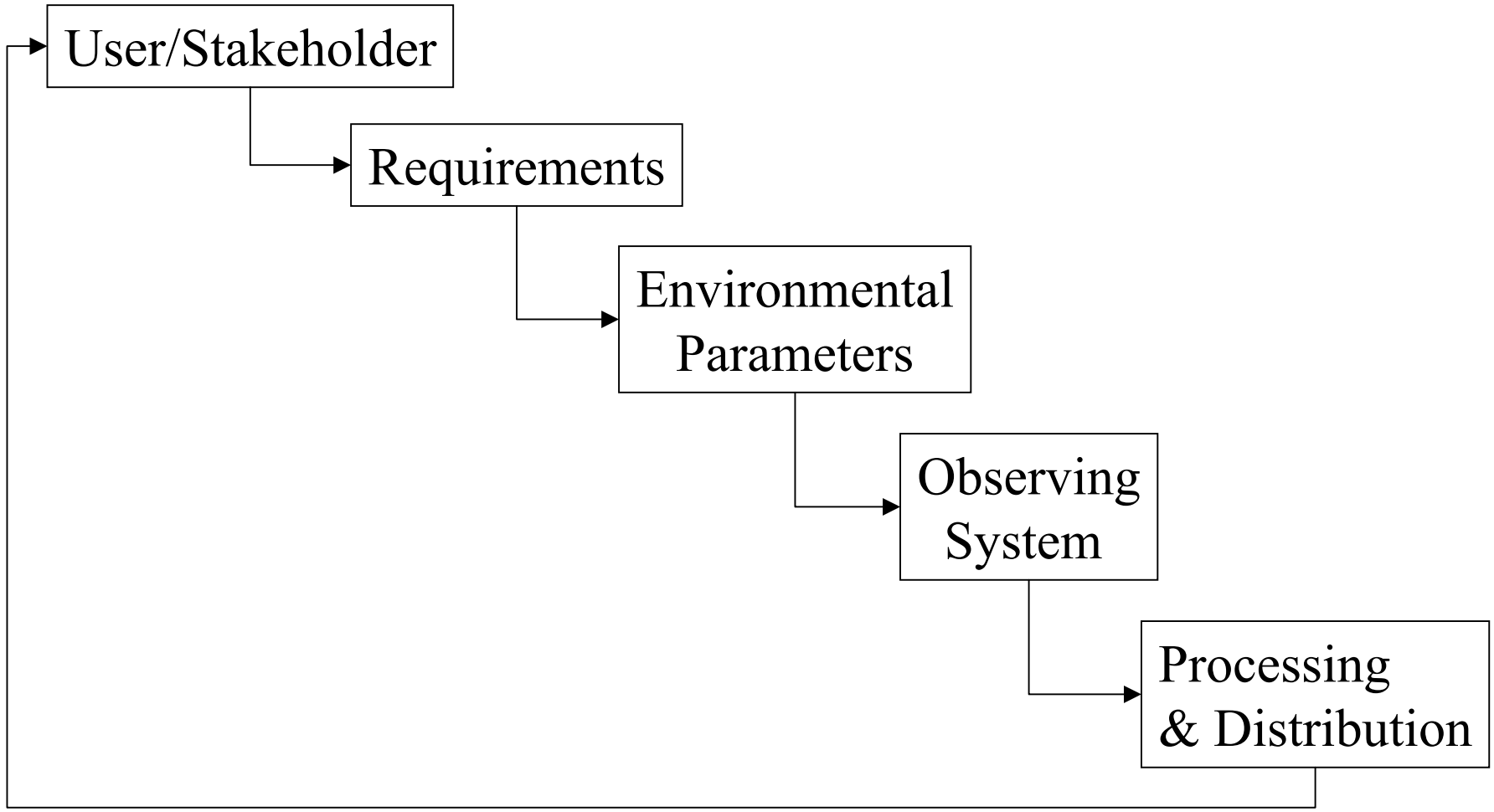
Business Queries (continued)

- **Display all observing systems that a certain stakeholder deems important.**
- **Display all observing systems that measure a particular environmental parameter.**
- **Display the acquisition costs of all observing systems associated with a certain strategic goal.**
- **Display the geographic coverage of a particular observing system.**
  - How does this coverage compare with stated requirements?

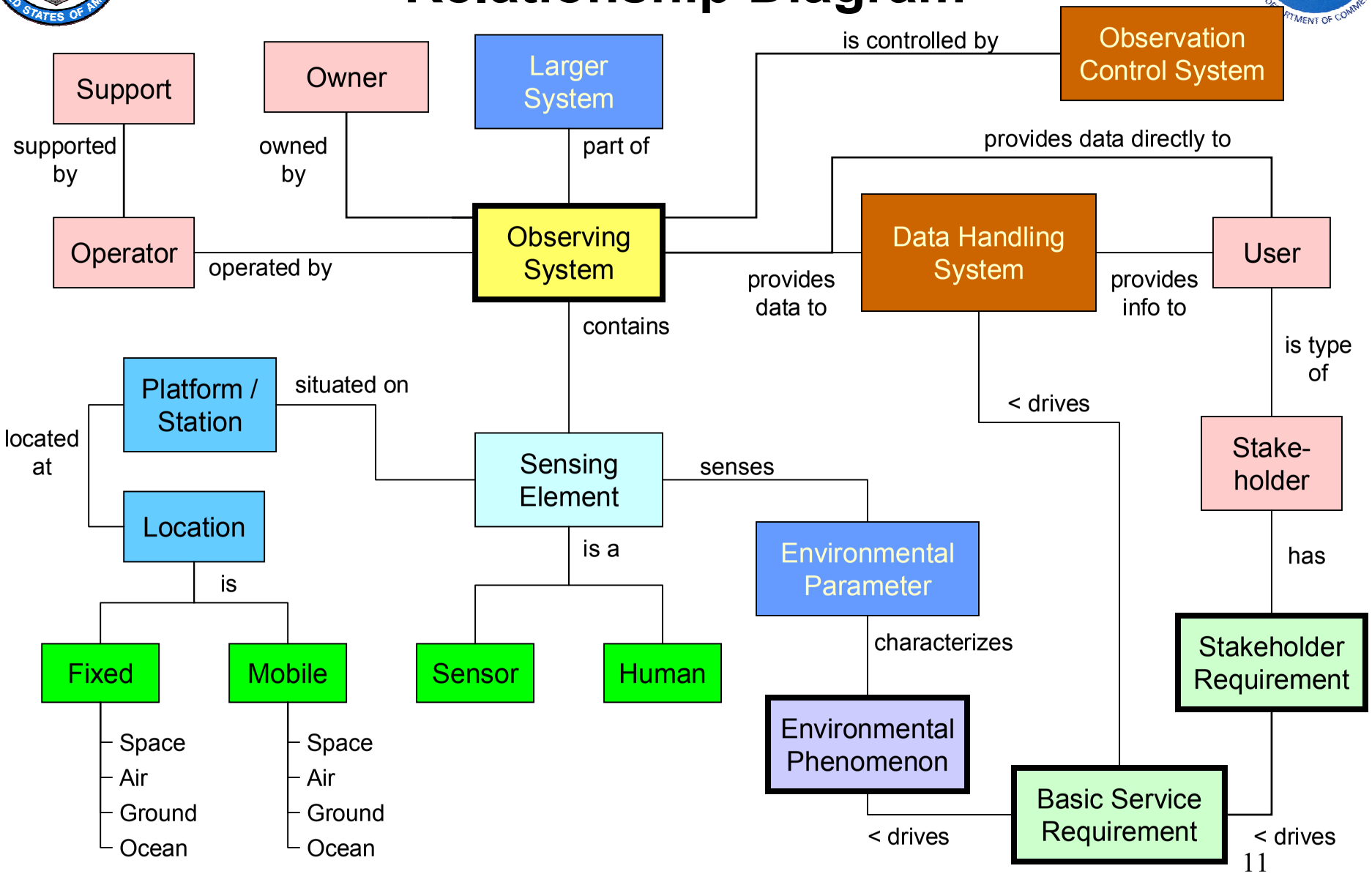
Business Queries (continued)

- **Display the NOAA network locations that observe a particular environmental parameter?**
  - How does this NOAA observing system fit within the global system for this parameter (e.g., GCOS, GOOS, World Weather Watch, etc.)?
- **How much does NOAA pay to acquire data from non-NOAA sources?**

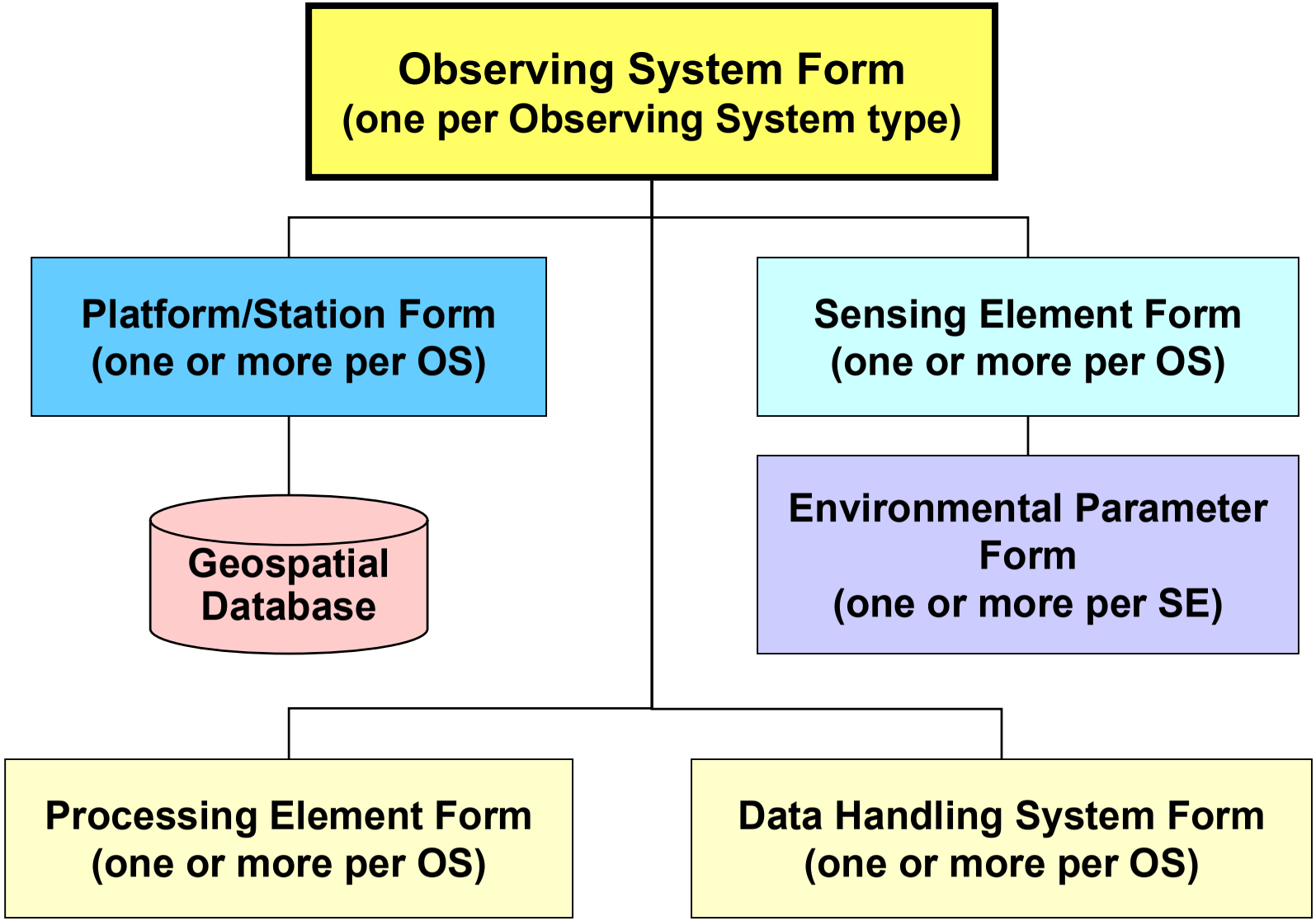
Basic Observing System Relationship



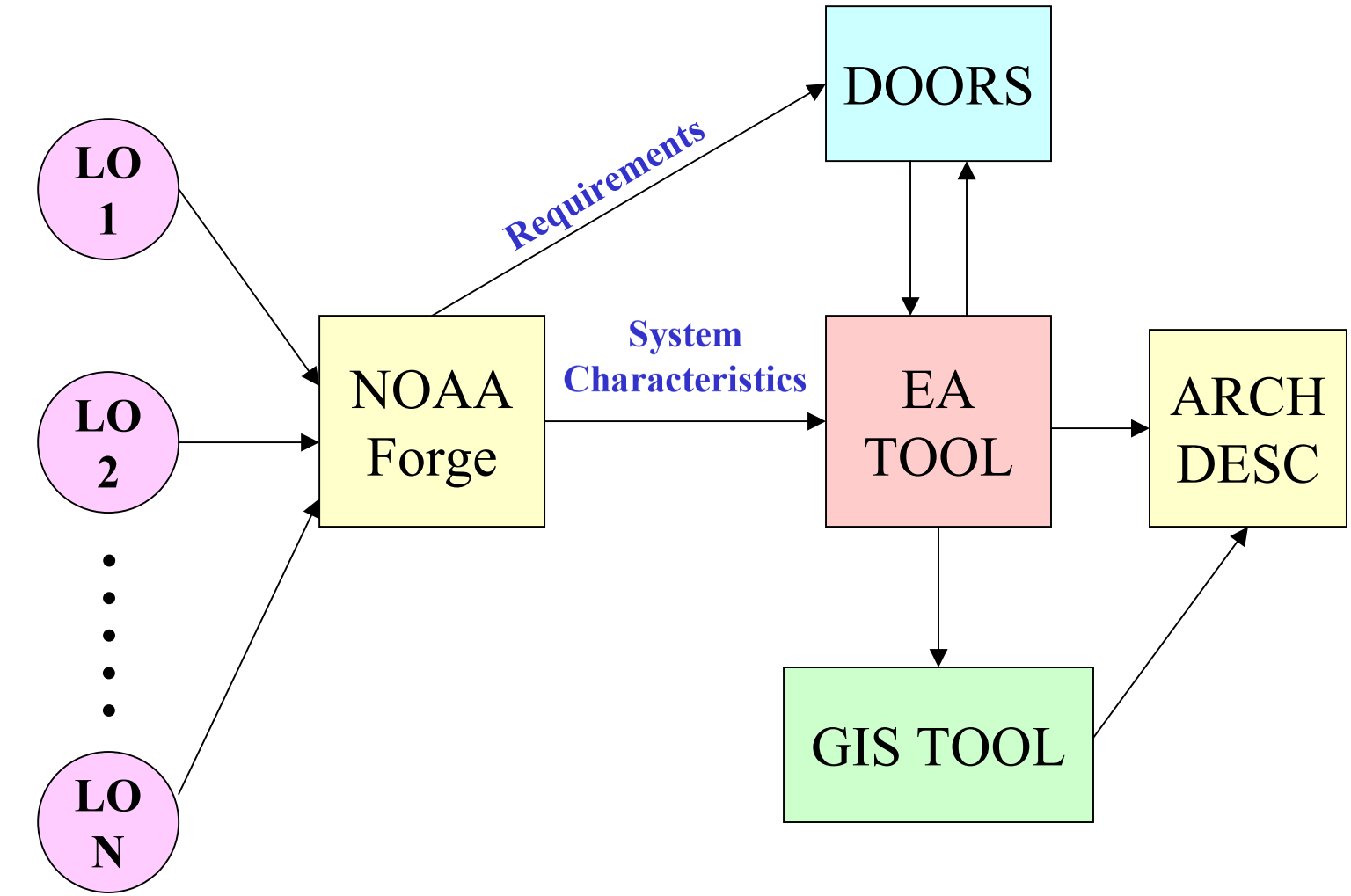
Observing System Architecture Relationship Diagram



Survey Forms in NOAA Forge

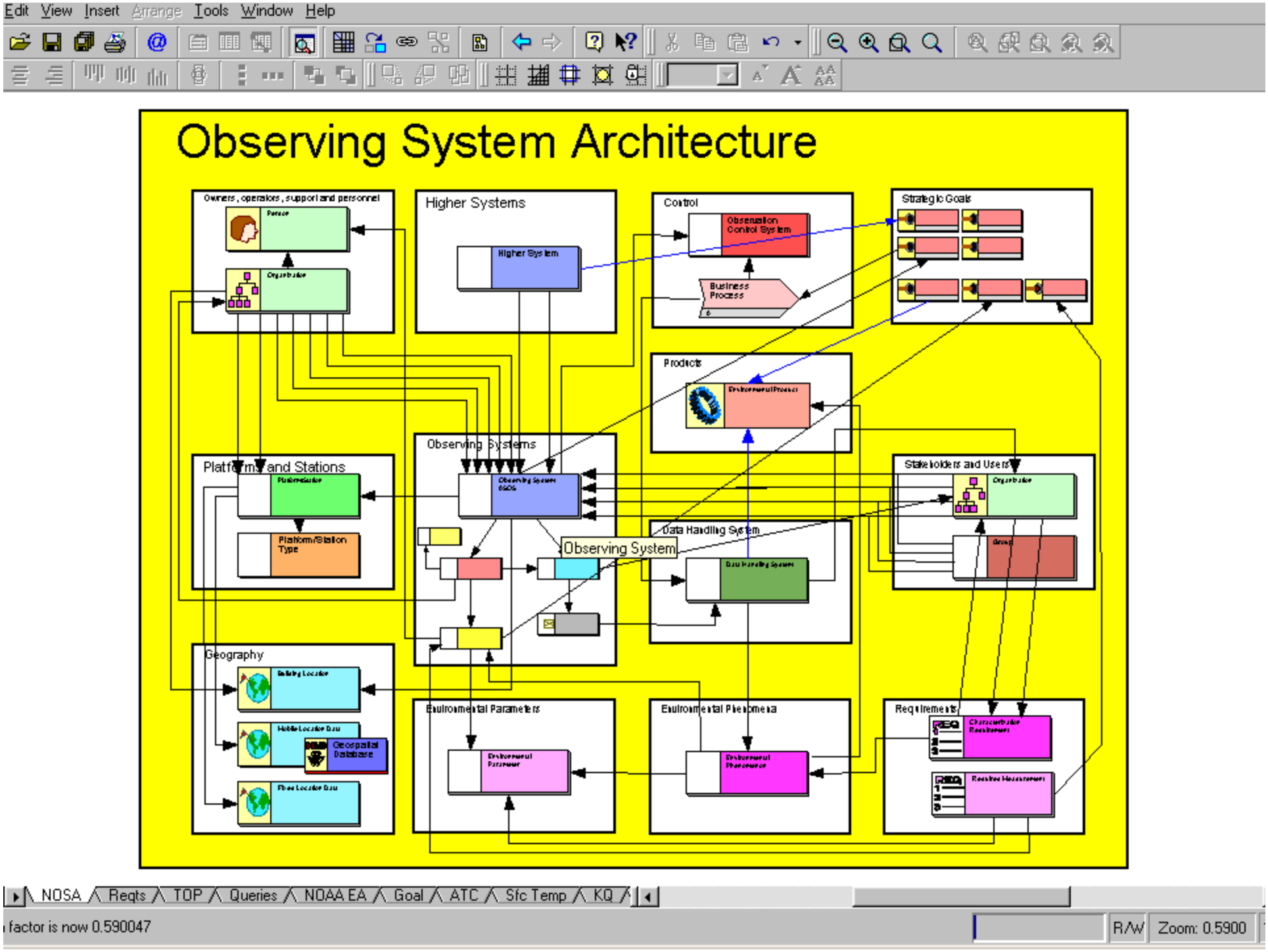


NOSA Data Flow



SURVEYS

DOORS	Dynamic Object Oriented Requirements System
EA	Enterprise Architecture
GIS	Geospatial Information System


Edit View Insert Arrange Tools Window Help
Observing System Architecture
Owners, operators, support and personnel
Higher Systems
Higher System
Control
Observation Control System
Business Process
Strategic Goals
Products
Observing Systems
Observing System
Platforms and Stations
Platform/Station Type
Stakeholders and Users
Data Handling System
Geography
Geospatial Database
Environmental Parameters
Environmental Phenomena
Requirements
NOSA
Reqts
TOP
Queries
NOAA EA
Goal
ATC
Sfc Temp
KQ
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R/W
Zoom: 0.5900

Metis 3.2.3 Model Designer - noaa-bus-model.kmv

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NOAA Enterprise Architecture (draft 12/16/02)

Change

Business Strategy

Business Operation

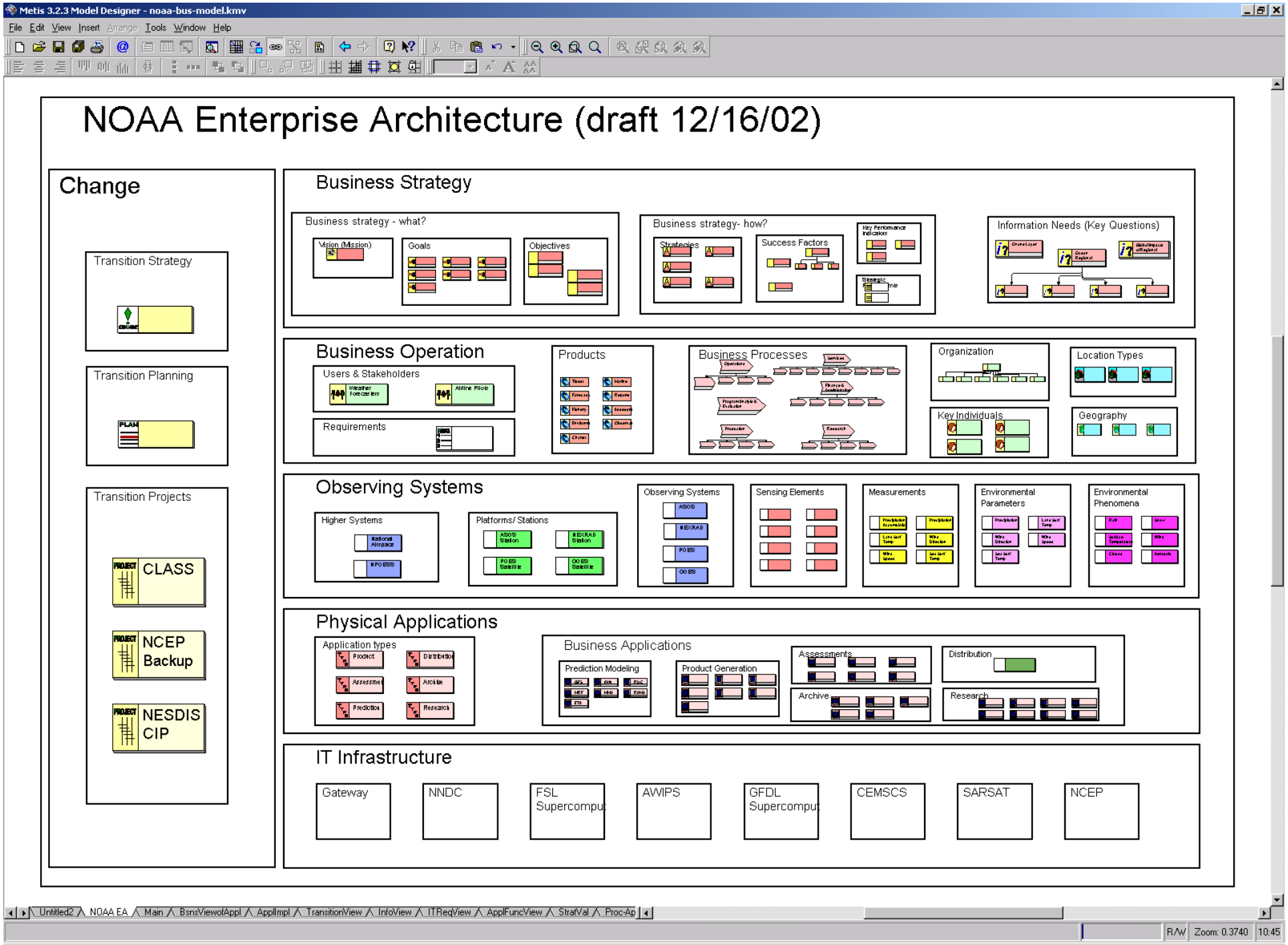
Observing Systems

Physical Applications

IT Infrastructure

NOAA EA / Main / BsnsViewofAppl / ApplImpl / TransitionView / InfoView / ITReqView / ApplFuncView / StratVal / Proc-Appl / ArchEr

R/W Zoom: 0.3740 17:32


Metis 3.2.3 Model Designer - noaa-bus-model.kmv
File Edit View Insert Arrange Tools Window Help
NOAA Enterprise Architecture (draft 12/16/02)
Change
Transition Strategy
Transition Planning
Transition Projects
CLASS
NCEP Backup
NESDIS CIP
Business Strategy
Business strategy - what?
Vision (Mission)
Goals
Objectives
Business strategy- how?
Strategies
Success Factors
Key Performance Indicators
Information Needs (Key Questions)
Business Operation
Users & Stakeholders
Weather Forecasters
Airline Pilots
Requirements
Products
Business Processes
Organization
Key Individuals
Location Types
Geography
Observing Systems
Higher Systems
Platforms/ Stations
Observing Systems
ASOS
NEXRAD
POES
GOES
Sensing Elements
Measurements
Environmental Parameters
Environmental Phenomena
Physical Applications
Application types
Product
Distribution
Assessment
Archive
Prediction
Research
Business Applications
Prediction Modeling
Product Generation
Assessments
Distribution
Archive
Research
IT Infrastructure
Gateway
NNDC
FSL Supercomput
AWIPS
GFDL Supercomput
CEMSCS
SARSAT
NCEP
Untitled2 NOAA EA Main BsnsViewofAppl ApplImpl TransitionView InfoView ITReqView ApplFuncView StratVal Proc-Ap
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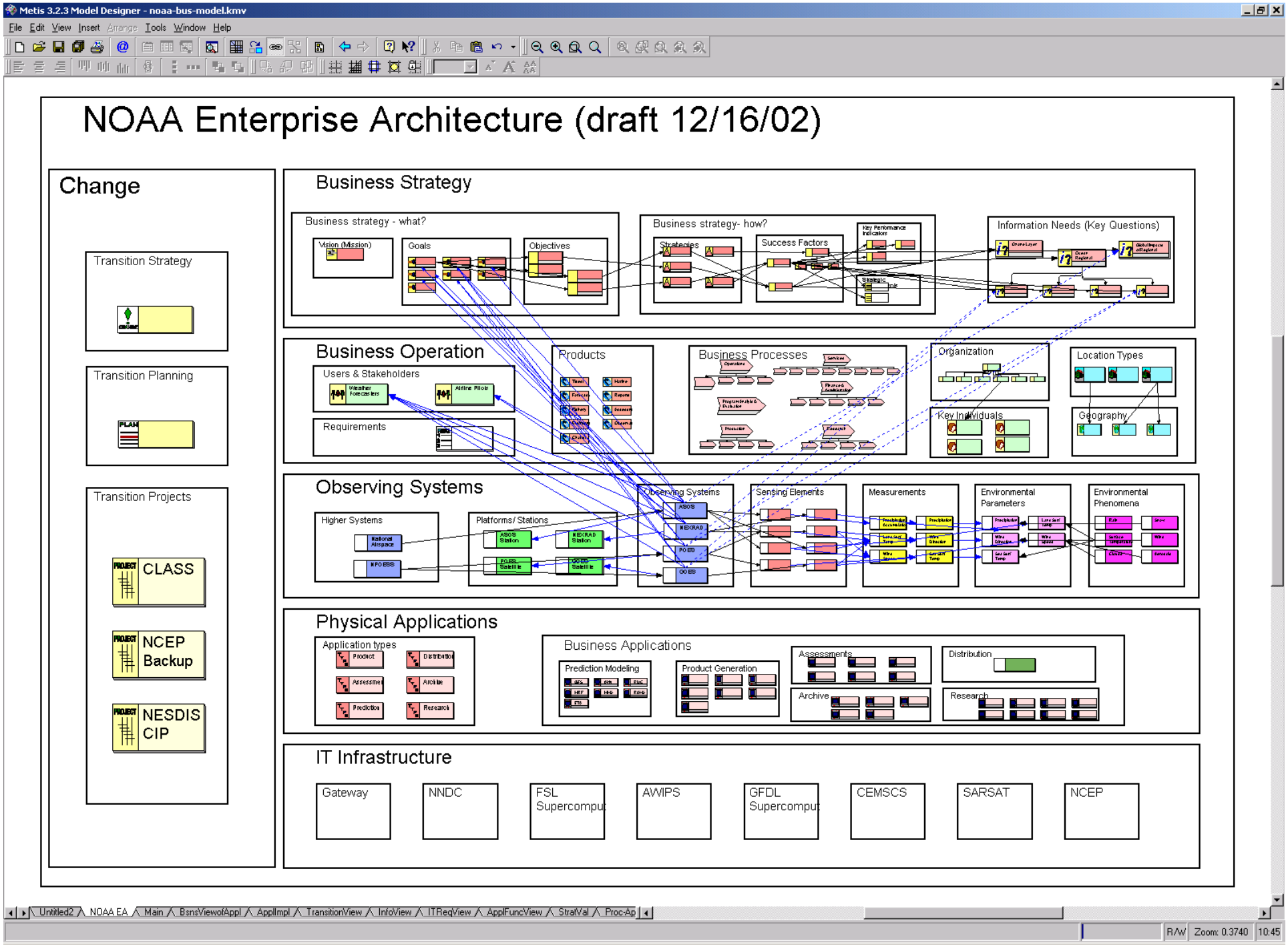
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NOAA Enterprise Architecture (draft 12/16/02)
Change
Transition Strategy
Transition Planning
Transition Projects
CLASS
NCEP Backup
NESDIS CIP
Business Strategy
Business strategy - what?
Vision (Mission)
Goals
Objectives
Business strategy- how?
Strategies
Success Factors
Key Performance Indicators
Information Needs (Key Questions)
Business Operation
Users & Stakeholders
Weather Forecasters
Airline Pilots
Requirements
Products
Business Processes
Organization
Key Individuals
Location Types
Geography
Observing Systems
Higher Systems
Platforms/ Stations
Observing Systems
Sensing Elements
Measurements
Environmental Parameters
Environmental Phenomena
Physical Applications
Application types
Product
Distribution
Assessment
Archive
Prediction
Research
Business Applications
Prediction Modeling
Product Generation
Assessments
Distribution
Archive
Research
IT Infrastructure
Gateway
NNDC
FSL Supercomput
AWIPS
GFDL Supercomput
CEMSCS
SARSAT
NCEP
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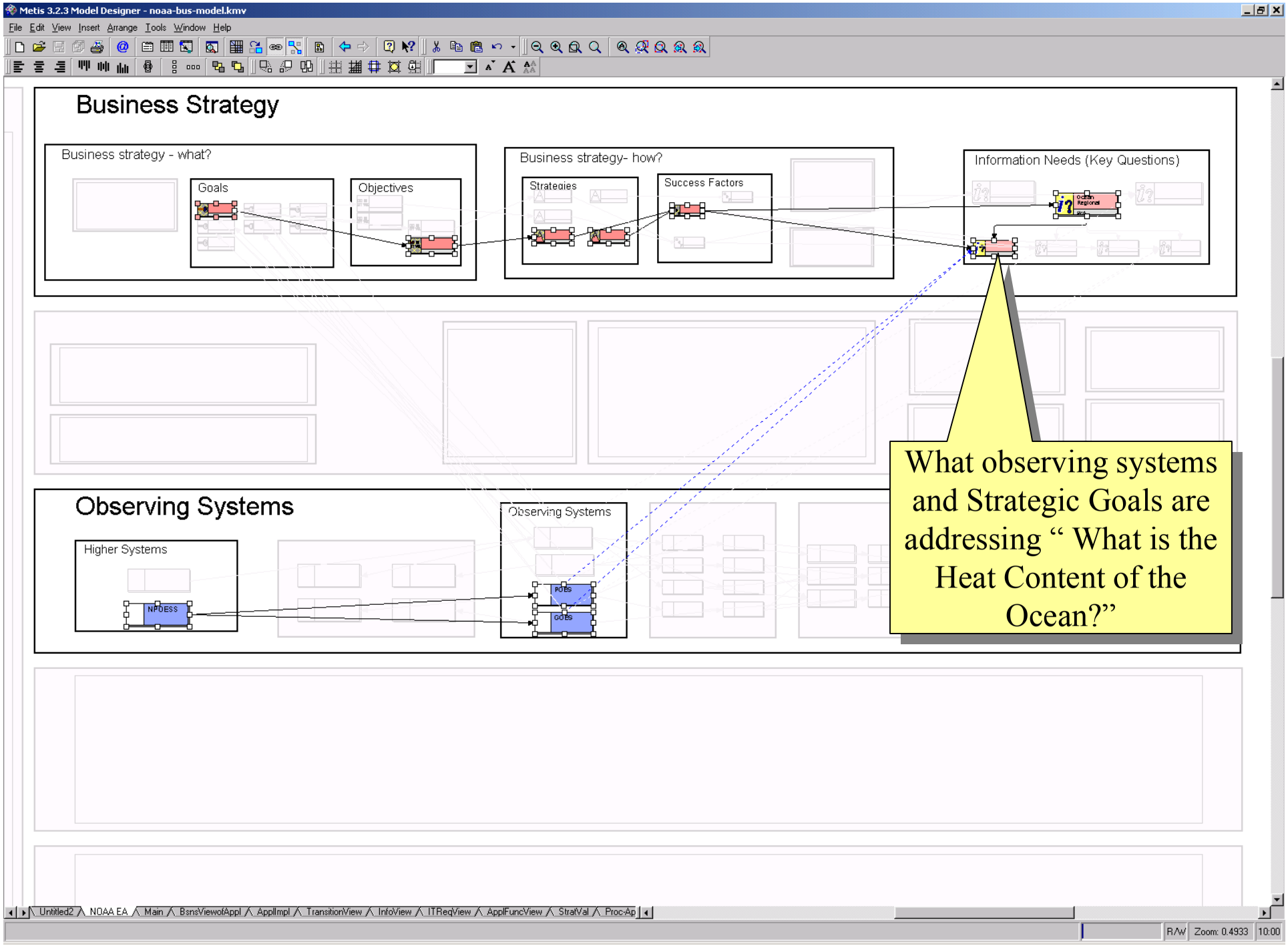
Metis 3.2.3 Model Designer - noaa-bus-model.kmv
File Edit View Insert Arrange Tools Window Help
Business Strategy
Business strategy - what?
Goals
Objectives
Business strategy- how?
Strategies
Success Factors
Information Needs (Key Questions)
Observing Systems
Higher Systems
NPOESS
Observing Systems
POES
GOES
What observing systems and Strategic Goals are addressing " What is the Heat Content of the Ocean?"
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NOAA Observing System Architecture - Netscape

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Bookmarks Location: http://mapdevel.ngdc.noaa.gov/website/naa/nosa/viewer.htm?layers=0100000000000000001&ActiveLayer=1

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NOAA Satellites and Information

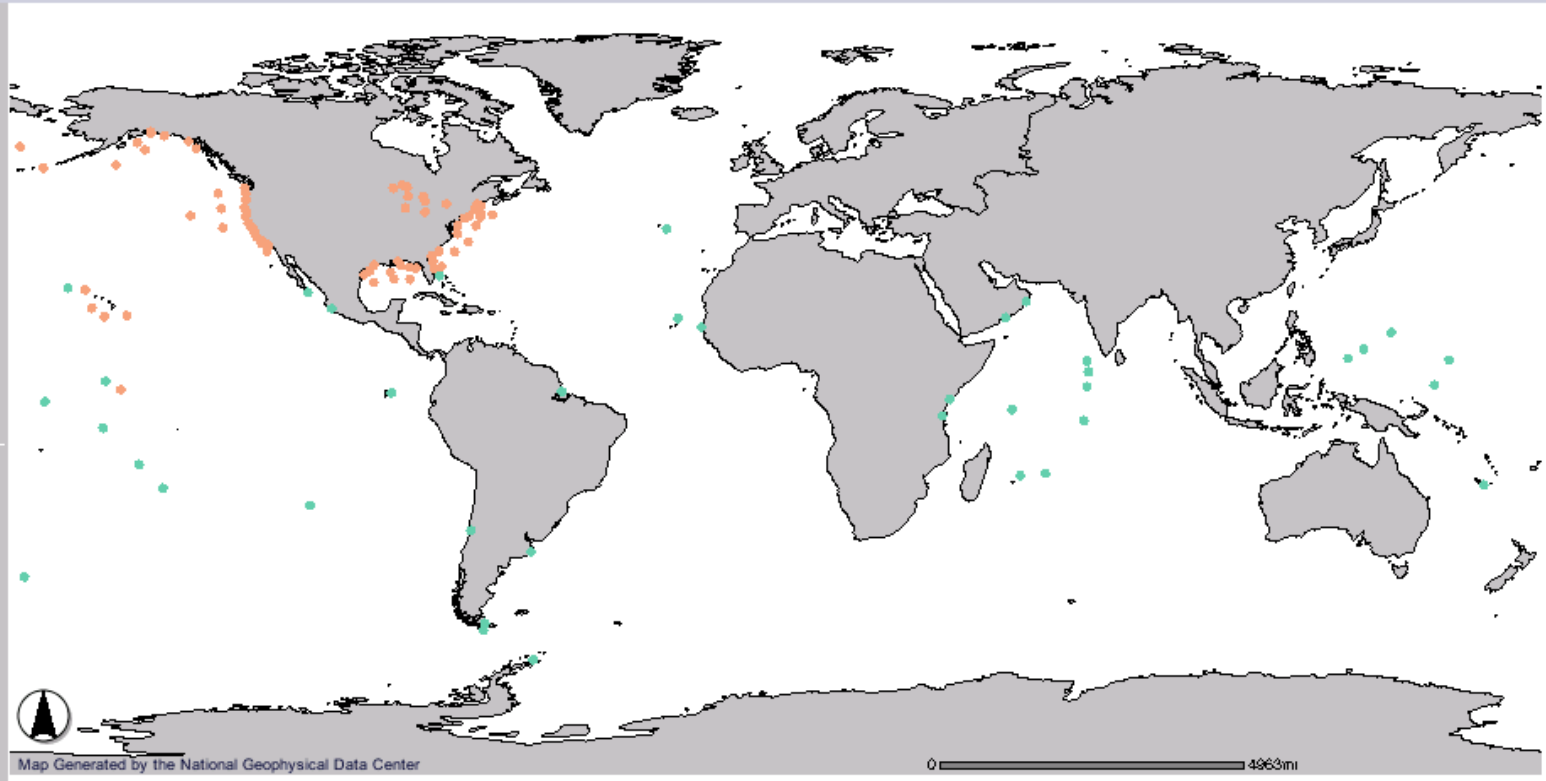
NOAA's National Environmental, Satellite, Data, & Information Service

NOAA Observing System Architecture

(NOSA)

NOAA

privacy statement



legend layers

Legend

NWS BOY

OAR GSLN

toolbar help

Refresh Map Now

Zoom Out

About the Database

help

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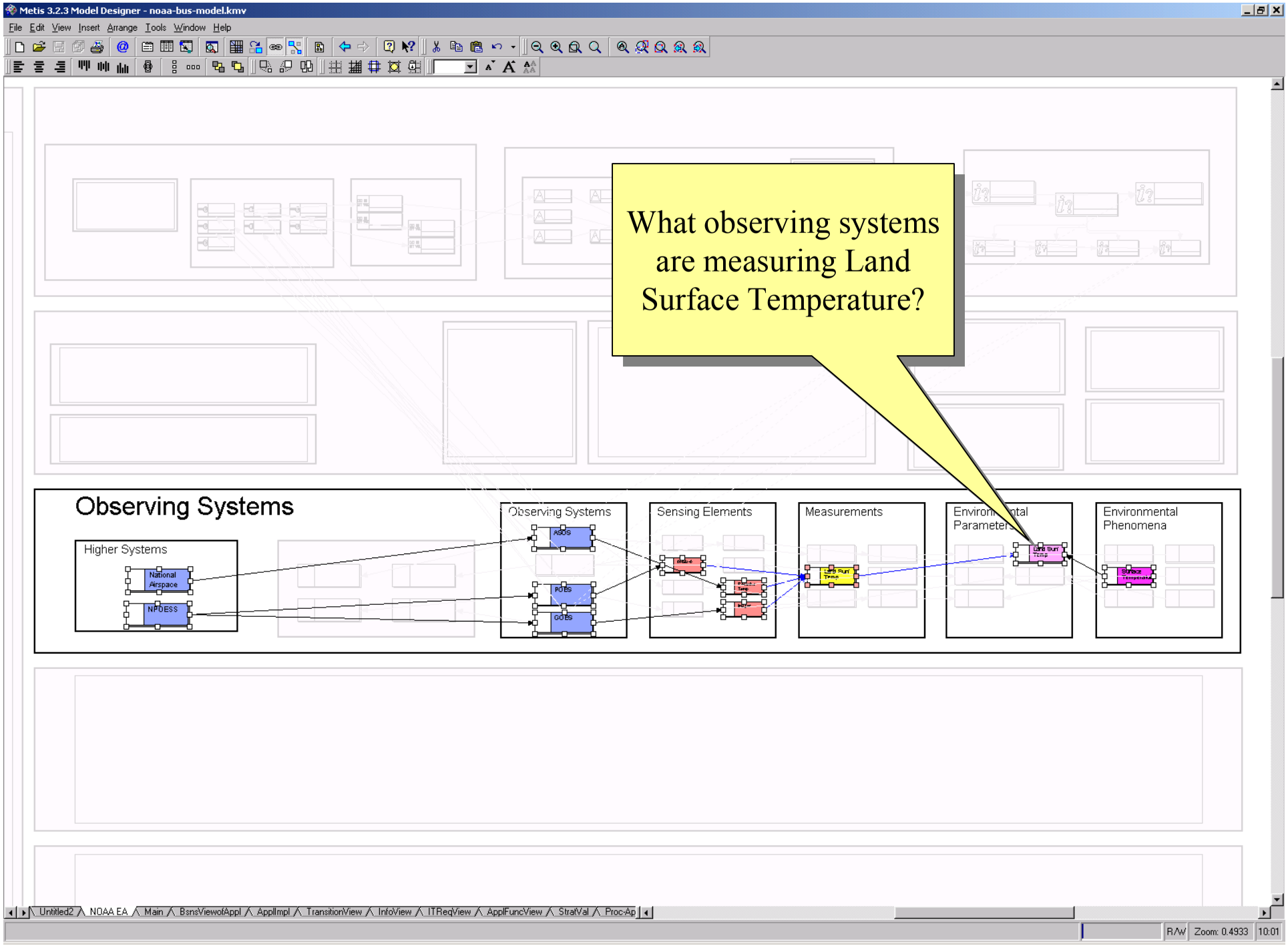
Metis 3.2.3 Model Designer - noaa-bus-model.kmv
File Edit View Insert Arrange Tools Window Help
What observing systems are measuring Land Surface Temperature?
Observing Systems
Higher Systems
National Airspace
NPOESS
Observing Systems
ASOS
POES
GOES
Sensing Elements
Measurements
Environmental Parameters
Environmental Phenomena
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NOAA EA
Main
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ApplImpl
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InfoView
ITReqView
ApplFuncView
StratVal
Proc-Ap
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10:01

NOAA Observing System Architecture - Netscape

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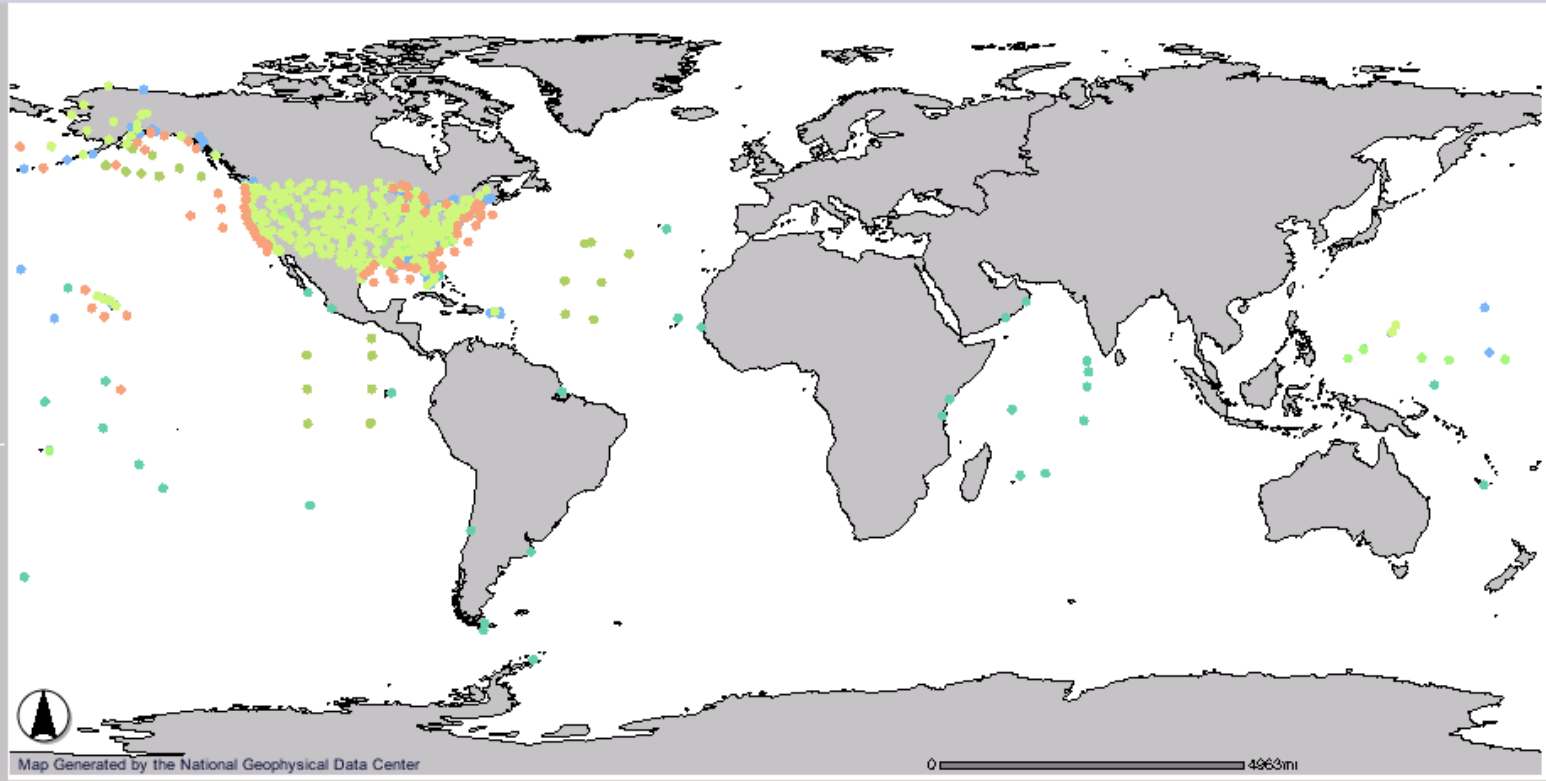
NOAA Observing System Architecture

(NOSA)

NOAA

privacy statement

toolbar help



legend layers

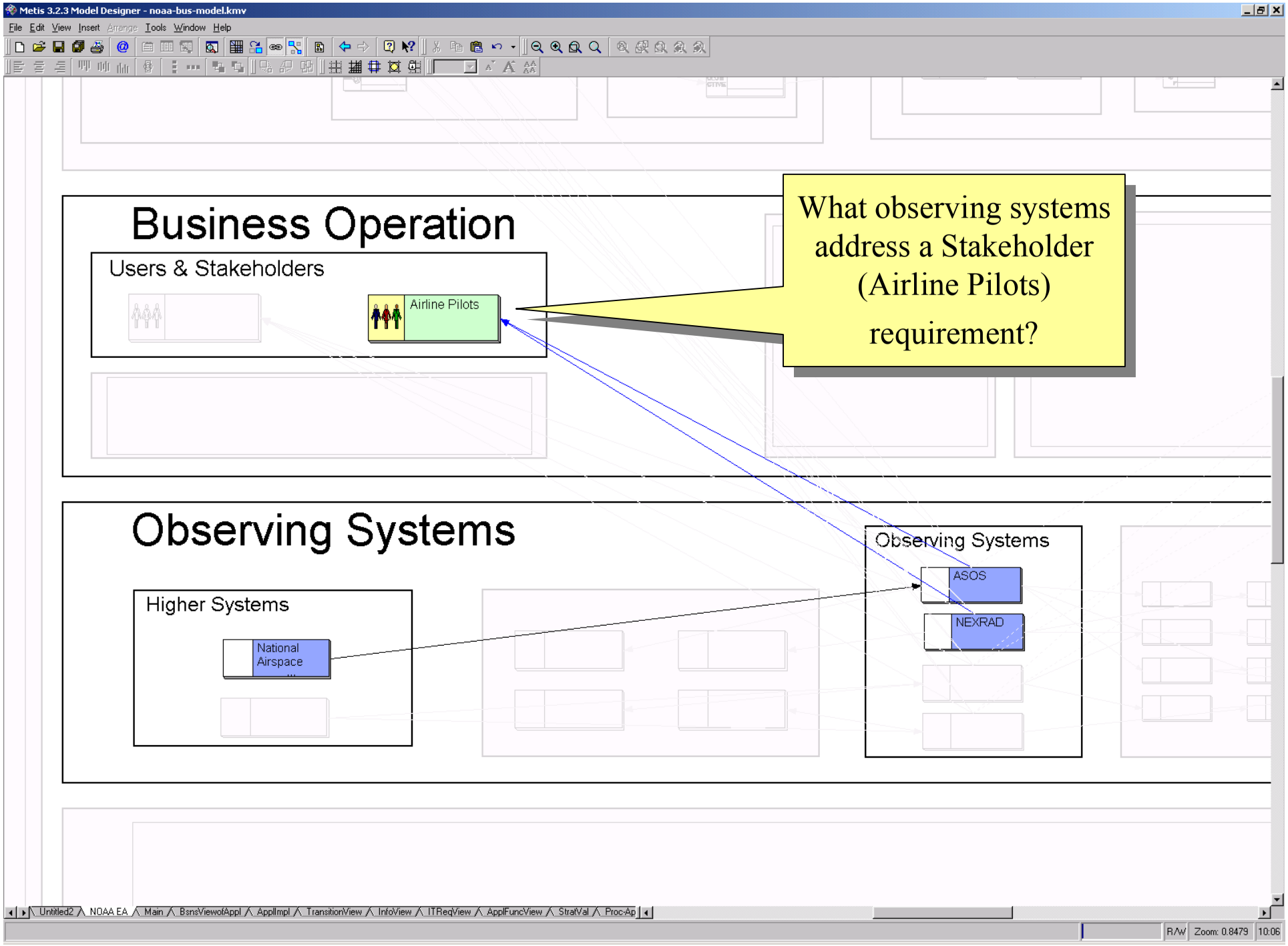
Legend

- NWS BOY
- NWS ASOS
- NWS RAWINSONDE
- NOS NWLON
- OAR HYDROPHONE
- OAR GSLN

Refresh Map Now

Zoom In About the Database help

Document: Done


Metis 3.2.3 Model Designer - noaa-bus-model.kmv
File Edit View Insert Arrange Tools Window Help
Business Operation
Users & Stakeholders
Airline Pilots
What observing systems address a Stakeholder (Airline Pilots) requirement?
Observing Systems
Higher Systems
National Airspace
Observing Systems
ASOS
NEXRAD
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NOAA's National Environmental, Satellite, Data, & Information Service

NOAA Observing System Architecture

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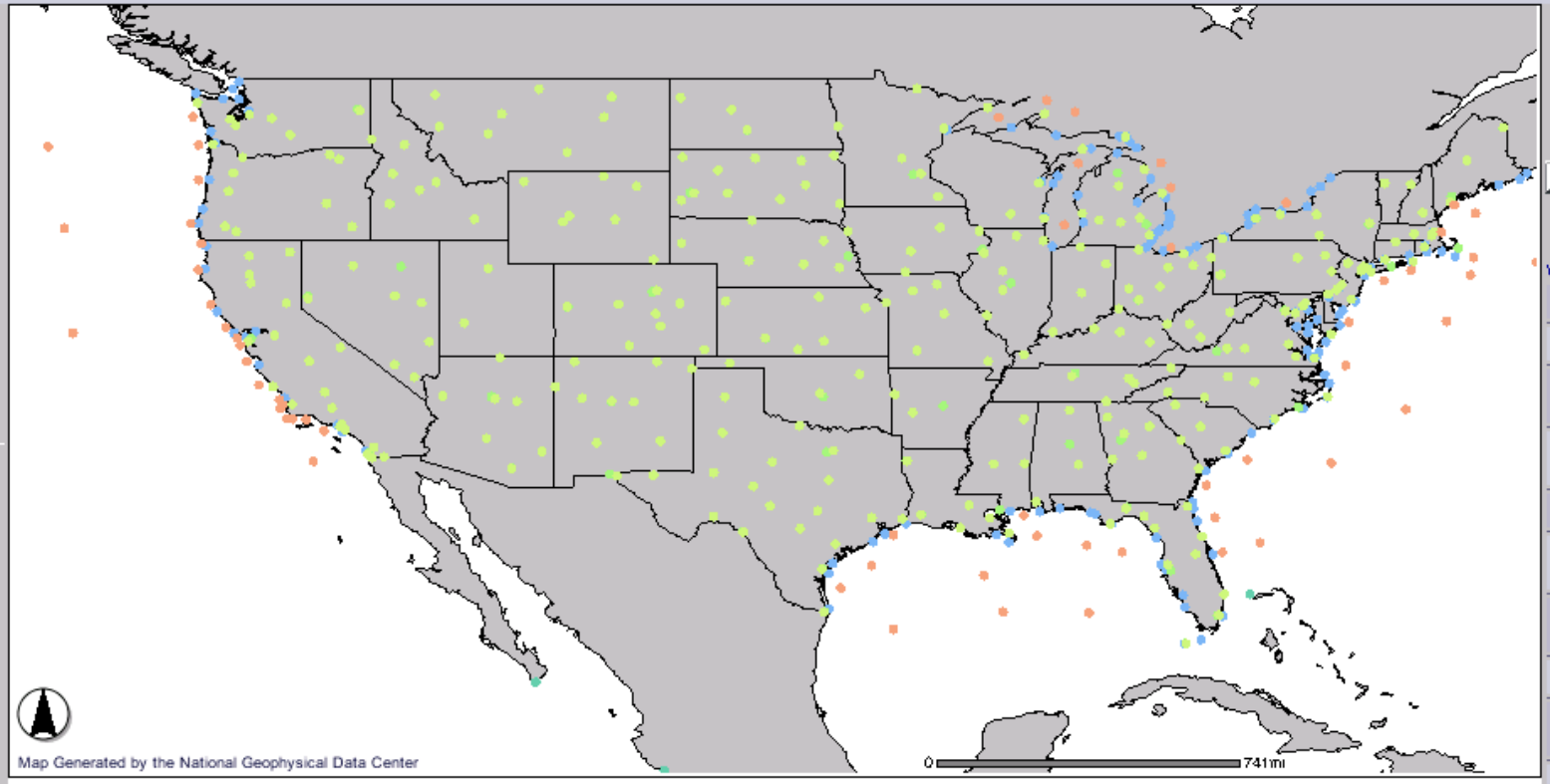
toolbar help



legend layers

Layers

Visible	Active	Name
☐	○	NFS 109 Surface
☑	◉	NWS BOY
☐	○	NWS LARC Stations
☐	○	NWS MAN ALSN6
☑	○	NWS ASOS
☑	○	NWS RAWINSONDE
☐	○	OAR ETL LIDAR GB MOBILE
☑	○	NOS NWLON
☐	○	NWS ARC Stations
☐	○	NWS FNP Stations
☐	○	NWS HMISC Stations

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Zoom In About the Database help

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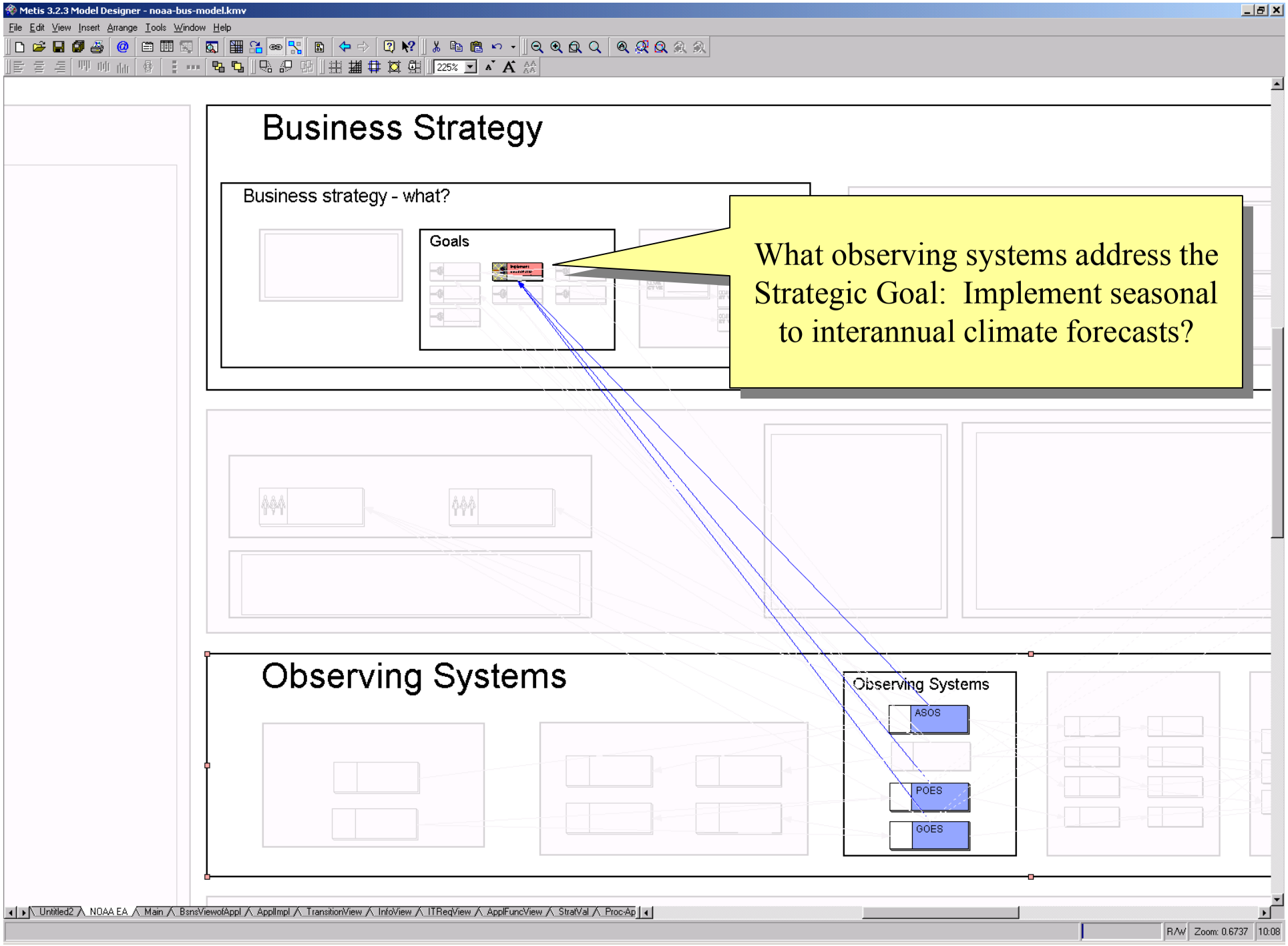
Metis 3.2.3 Model Designer - noaa-bus-model.kmv
File Edit View Insert Arrange Tools Window Help
Business Strategy
Business strategy - what?
Goals
What observing systems address the Strategic Goal: Implement seasonal to interannual climate forecasts?
Observing Systems
Observing Systems
ASOS
POES
GOES
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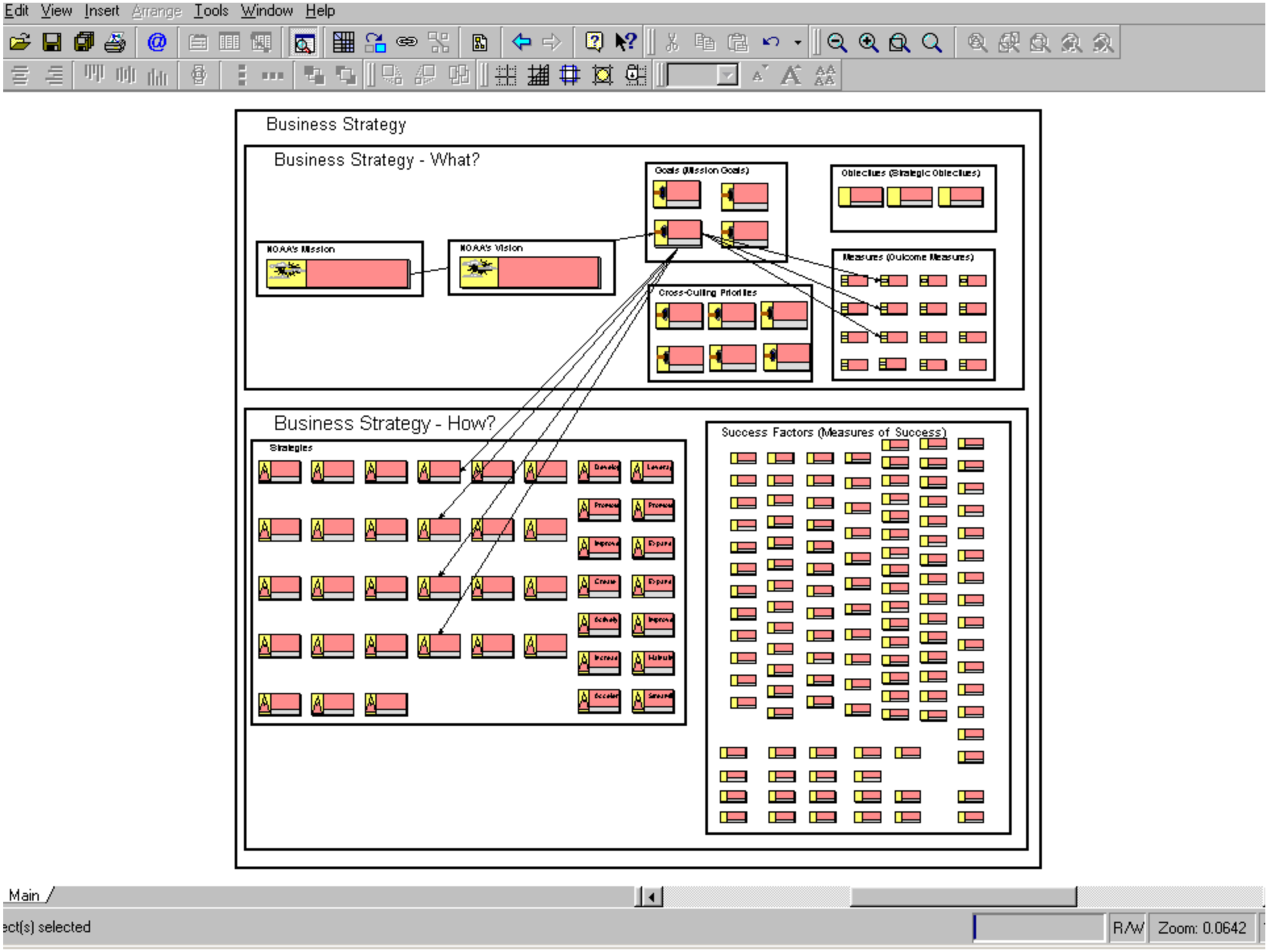
Edit View Insert Arrange Tools Window Help
Business Strategy
Business Strategy - What?
Goals (Mission Goals)
Objectives (Strategic Objectives)
NOAA's Mission
NOAA's Vision
Measures (Outcome Measures)
Cross-Cutting Priorities
Business Strategy - How?
Strategies
Success Factors (Measures of Success)
Main
ect(s) selected
R/W
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Immediate Next Steps

- **NOSA data call ended**
- **Roughly 75% complete**
  - More data still coming in
- **Must now review data input and capture in model for visualization and analysis**
- **Developing architecture description document**
  - Second draft of extended outline complete
  - Final product due by end of January 2003
- **Target architecture effort begins early next year**
  - Scheduled to be complete by December 2003

Strategic Next Steps

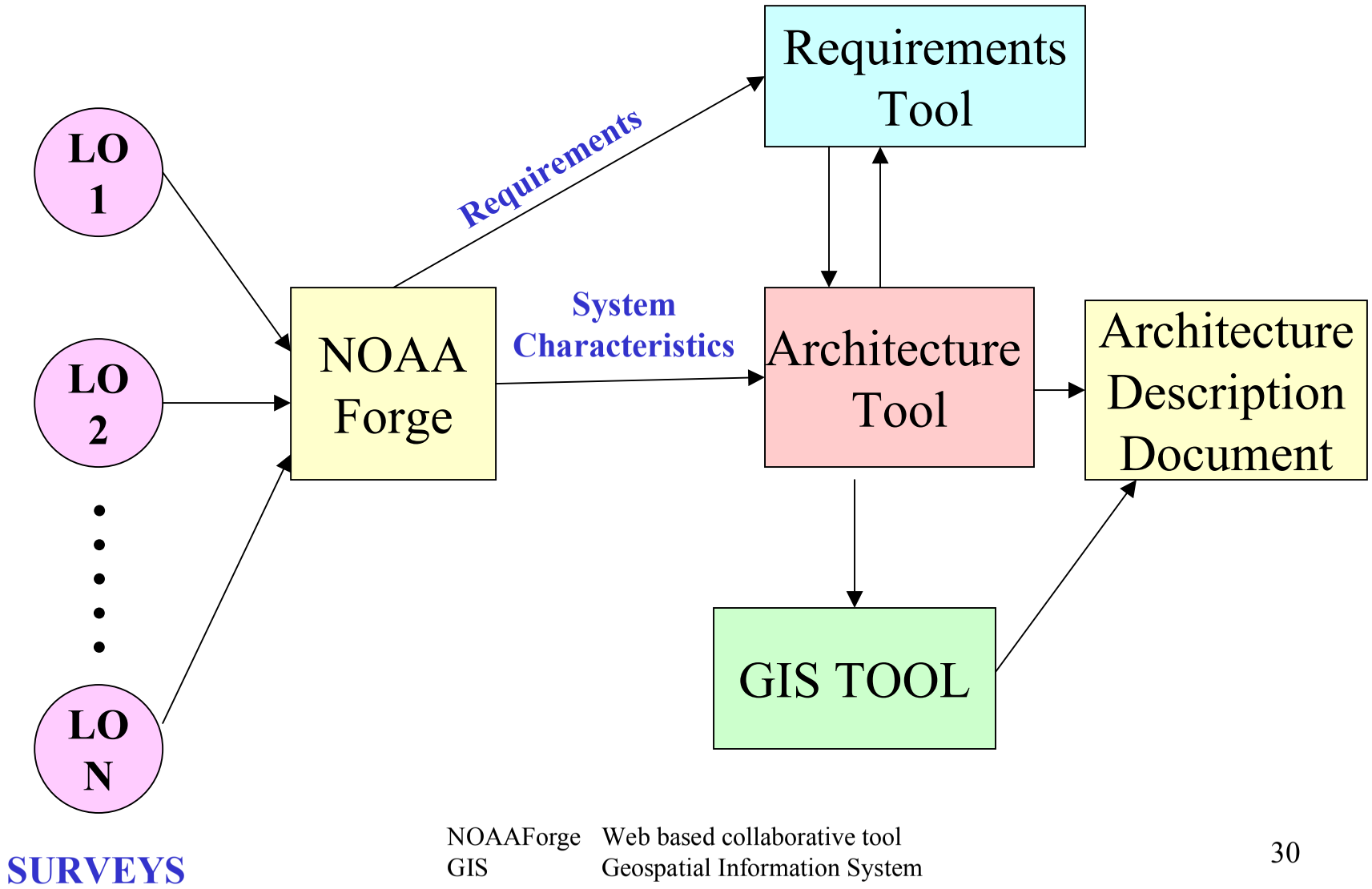
- **Develop a plan for how the NOAA Enterprise Architecture be managed and maintained?**
- **Develop a plan for the objective analysis of climate, ocean, weather, ecosystems observing system requirements**
  - Use GCOS, GOOS, or GTOS vetted requirements to compare with the NOAA baseline architecture?
- **Develop a national observing system strategy**
- **Develop an international observing system strategy**
- **Develop prioritized list of observation needs based on key science questions such as:**

Overarching Science Questions

1) How is the global Earth-Climate system changing? (Variability)
2) What are the primary forcings of the Earth-Climate system? (Forcing)
3) How does the Earth-Climate system respond to natural and human-induced changes? (Response)
4) What are the consequences of change in the Earth-Climate system for human civilization? (Consequence)
5) How well can we predict future changes to the Earth-Climate system? (Prediction)

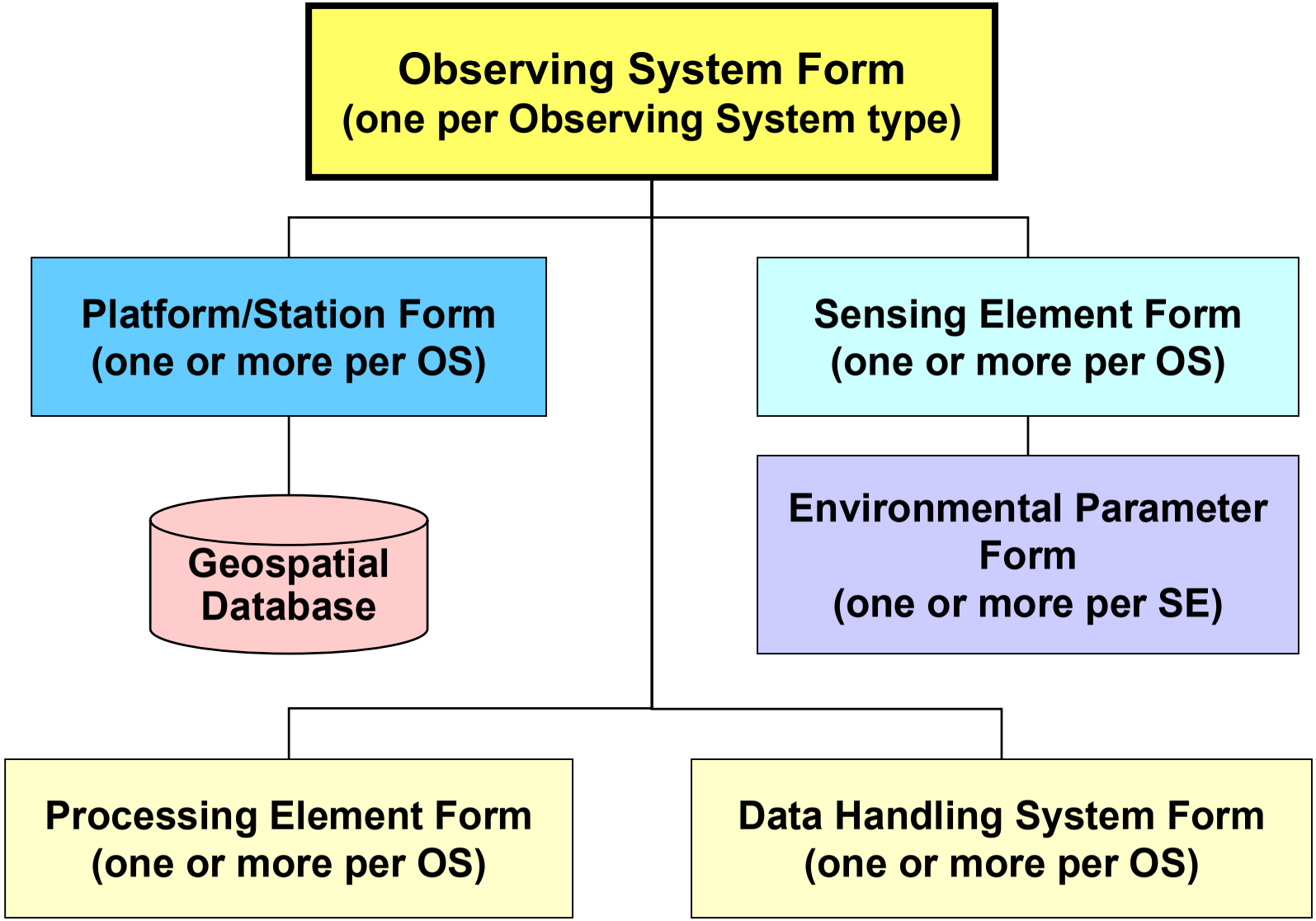
Back up slides

NOSA Data Flow



NOAAForge Web based collaborative tool
GIS Geospatial Information System

Survey Forms in NOAA Forge



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NOAAForge

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Logout
Register New Project
Account Maintenance

Change My Theme
My Personal Page

Bookmark this Page

Project: NOSA
Project Summary

Project Admin

Projects
Project Map
New Releases
Code Snippet Library

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NOSA - Surveys

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Summary of Survey Document - NWS-ASOS

Survey Type: **Observing System Template**
Creation Date: **2002-10-17**

Last Update: **2002-12-09 by ross**

Page 1. Identifying Information

1. System Name	Automated Surface O...	2002-Oct-17 14:28/ross
2. Acronym	ASOS	2002-Oct-17 14:28/ross
3. Identifier	N/A	2002-Oct-17 14:28/ross
4. Description	The ASOS is a fully ...	2002-Nov-07 10:17/ross
5. Mission Need Statement (Primary)	The primary mssion o...	2002-Nov-07 10:17/ross
6. Mission Need Statement (Secondary)	ASOS provides valua...	2002-Nov-07 10:17/ross
7. System Purpose	The purpose of ASOS ...	2002-Nov-07 10:18/ross
8. Intended Use	Operational	2002-Nov-04 09:00/ross
9. Life Cycle Phase	Operations	2002-Oct-17 14:52/ross
10. Environmental Assessment and Prediction Mission	Advance short-term warning and forecast services	2002-Oct-17 14:52/ross
11. Environmental Stewardship Mission		

Page 2. System Overview

1. Key Characteristics	The standard ASOS is...	2002-Dec-09 09:02/ross
2. System Functions	The major function o...	2002-Nov-07 10:26/ross
3. Major Modes of Operation	The ASOS operates as...	2002-Oct-18 09:58/ross
4. System Picture	NFS_17_asos.jpg	2002-Dec-02 14:28/jkzajic
5. Block Diagram	NFS_18_asosmap.gif	2002-Dec-02 14:28/jkzajic
6. Schedule	NFS_20_9-30asos_schedules.ppt	2002-Dec-02 14:28/jkzajic
7. System Webpage	http://205.156.54.2...	2002-Dec-02 14:28/jkzajic
8. Reference Documents Upload		2002-Dec-02 14:28/jkzajic
9. System Documentation Webpage	http://205.156.54.2...	2002-Dec-02 14:28/jkzajic
10. System Owner (NOAA)	NOAA-NWS	2002-Nov-04 09:01/ross
11. Non-NOAA Owners	US Air Force...	2002-Nov-07 10:26/ross
12. System Operator (NOAA)	NOAA-NWS	2002-Nov-04 09:01/ross
13. Non-NOAA Operators	US Air Force...	2002-Nov-07 10:26/ross
14. System Support	NOAA-NWS	2002-Nov-04 09:01/ross

Document: Done

NOAAForge: Survey Document Questionnaire Page - Netscape

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Bookmarks Location: http://class1.nesdis-hq.noaa.gov/survey/page.php?group_id=47&instance_id=82&page_id=1

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NOAAForge

Logged In: martin
Logout
Register New Project
Account Maintenance

Change My Theme
My Personal Page

Bookmark this Page

Project: NOSA
Project Summary

Project Admin

Projects
Project Map
New Releases
Code Snippet Library

NOAAForge
Site Documentation
Discussion Forums
Phone List
Dictionary
Acronyms

Contact Us

Search
Project
Require All Words
Search

NOSA - Surveys

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Summary

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Identifying Information - NWS-ASOS

This page covers summary identifying information for the observing system. This survey should be filled out for each "type" of Observing System, not for each "instance". There might be hundreds of instances for a given type. The instances will be identified on the Platform/Station survey form by either loading in a file with location data, or pointing to a database that contains the location data.

1. System Name (Clarification[0]/ Comment[0]/ Footnotes[0])

Enter the name of this observing system. Automated Surface Observing System

2. Acronym (Clarification[0]/ Comment[0]/ Footnotes[0])

Enter the acronym that this system is known by. ASOS

3. Identifier (Clarification[1]/ Comment[0]/ Footnotes[0])

Enter the system's identifier, if any. For example, WSR-88D is the identifier for NEXRAD. N/A

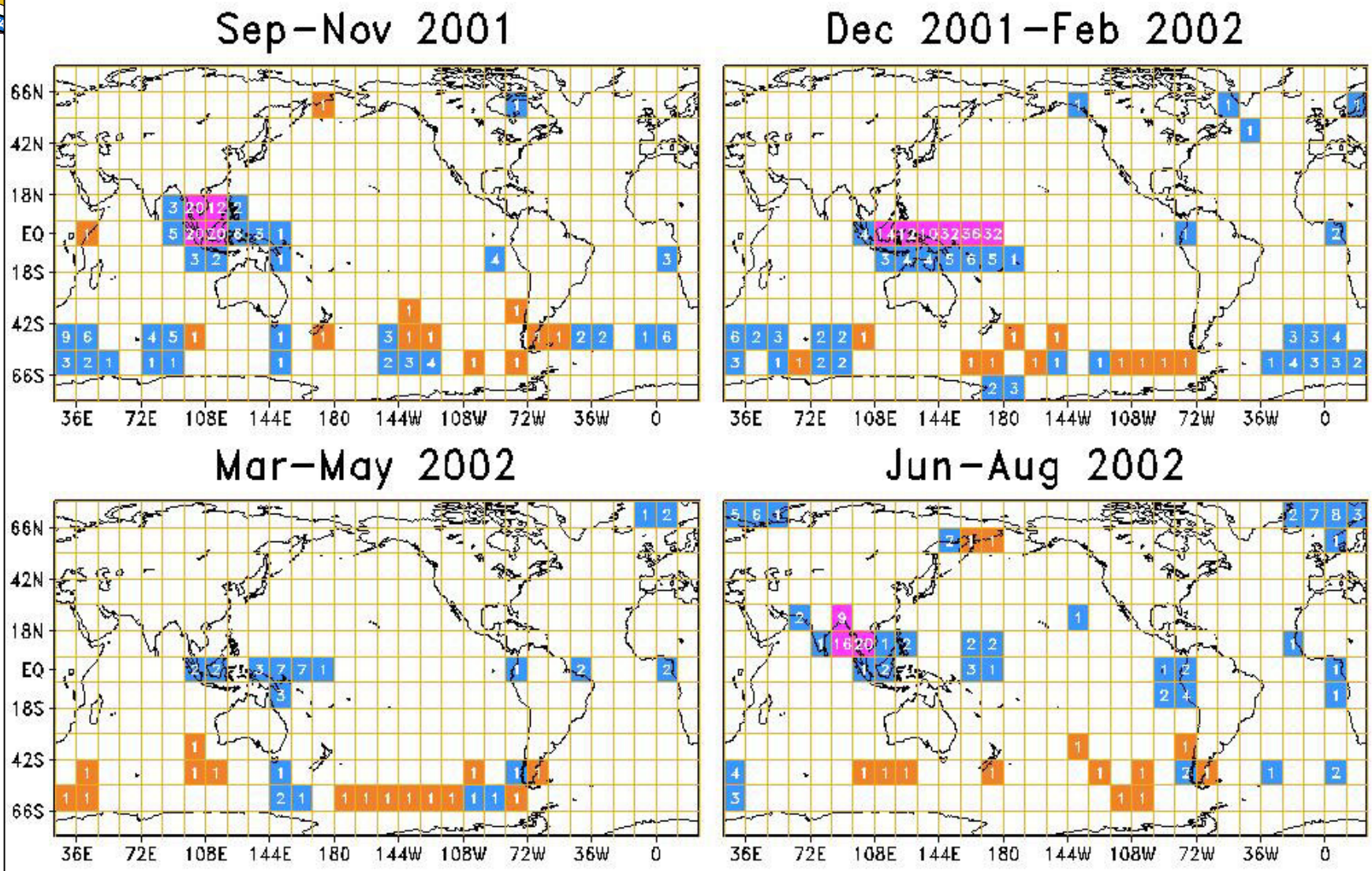
4. Description (Clarification[2]/ Comment[0]/ Footnotes[0])

Enter a high-level description of this Observing System. (Details will be provided on subsequent survey pages.)

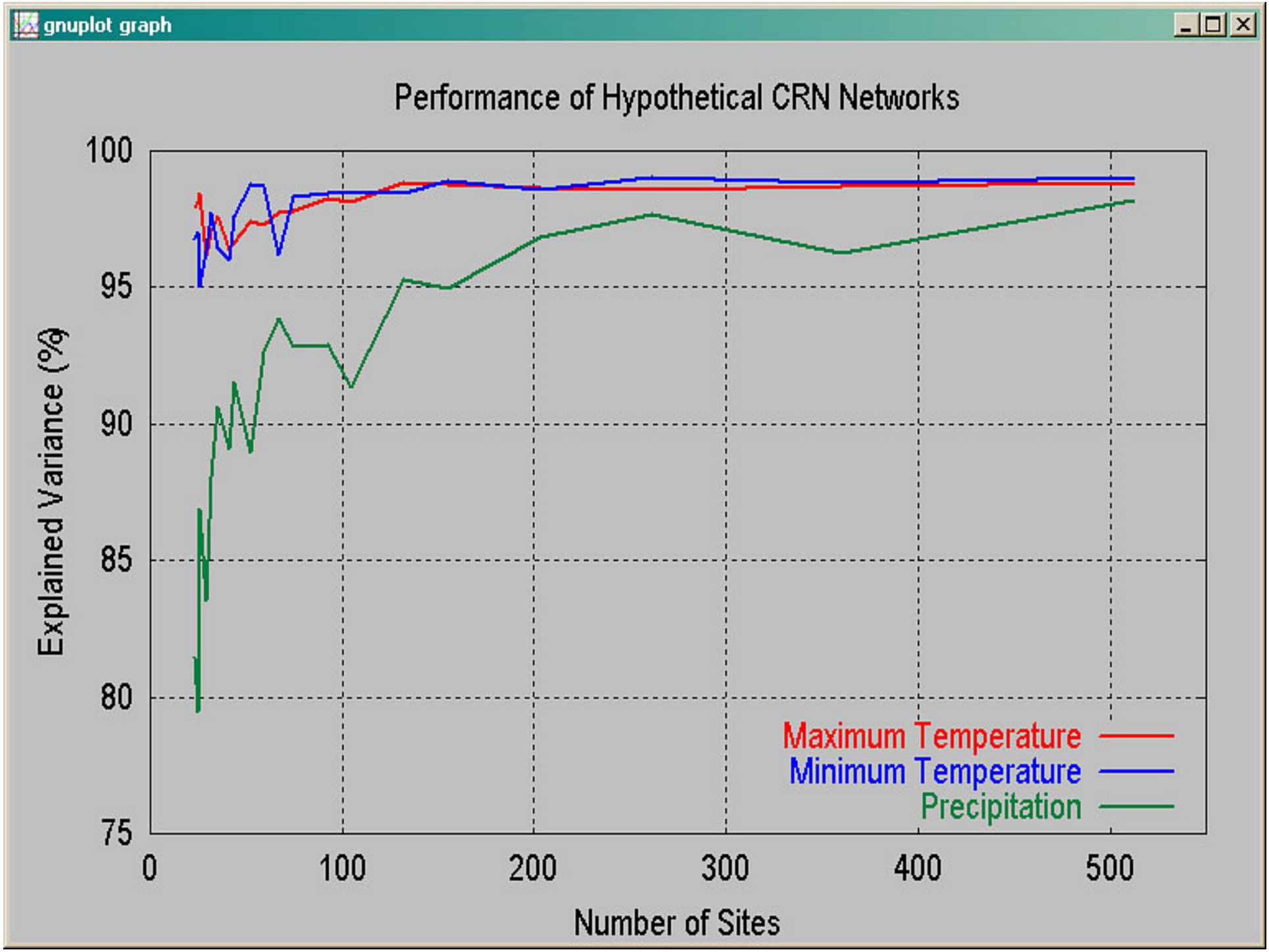
The ASOS is a fully automated weather observing system. The system provides meteorological information to a wide variety of users.

Document: Done

Buoy Need for OI + Bias: 4 Seasons



Buoy Need is Maximum of OI or Bias Need


gnuplot graph
Performance of Hypothetical CRN Networks
Explained Variance (%)
100
95
90
85
80
75
0
100
200
300
400
500
Number of Sites
Maximum Temperature
Minimum Temperature
Precipitation

Briefing Purpose

- Status report
- Do we need to make mid-point corrections?
- Direction on Next steps