Lessons Learned from Suomi NPP

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Environmental Data Management Meeting

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Agenda

- Overview of CLASS Support for Suomi NPP
- Program-Level Lessons Learned
- Internal Lessons Learned

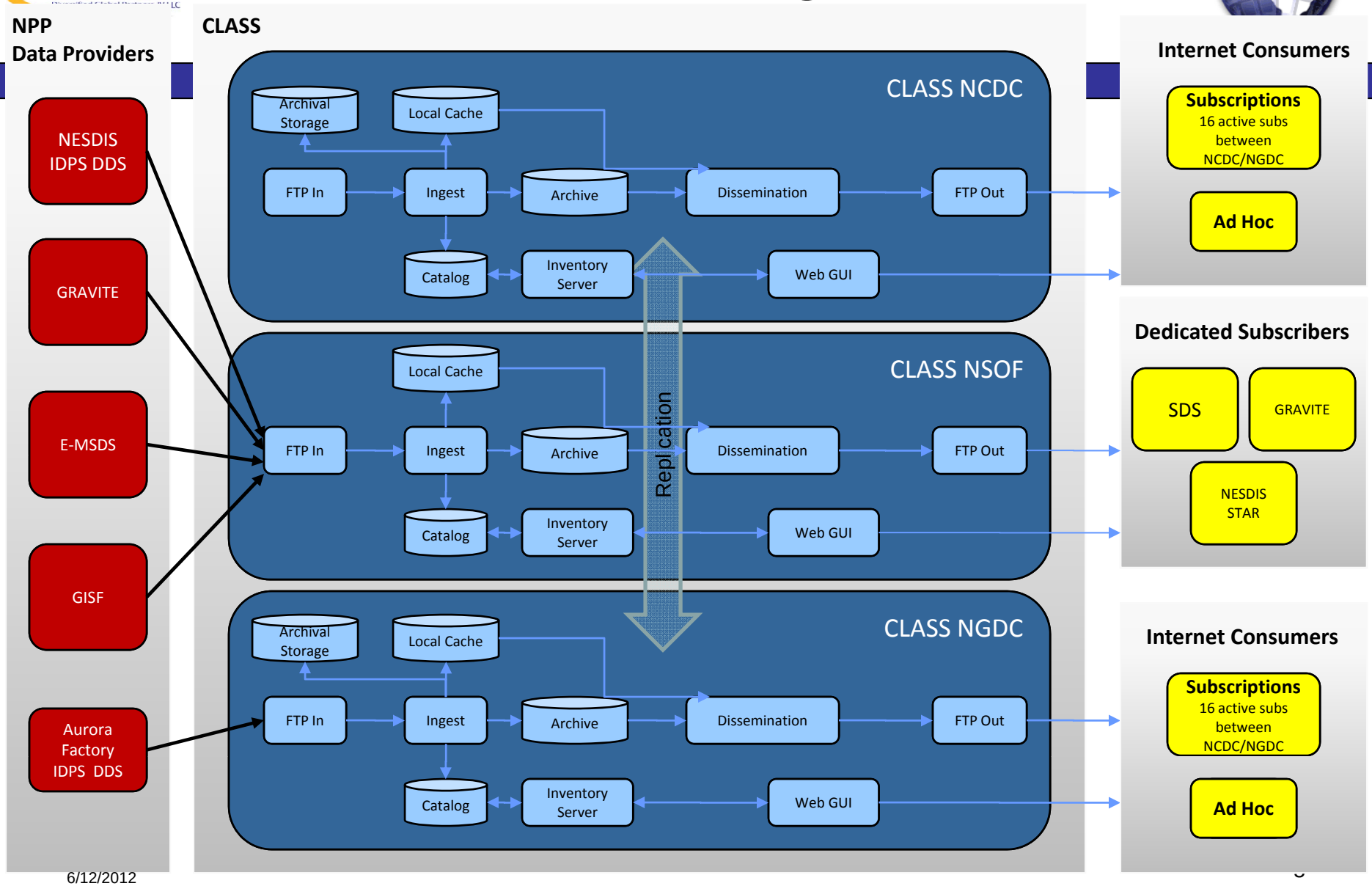
CLASS Receipt of NPP Data

- 5 Data Providers (3.5 – 5 TB/day)
  - NESDIS IDPS (~3.7 TB/day)
    - 25 Standing Requests with NESDIS IDPS DDS
    - 146 Data Types: 119 Data Products; 27 Auxiliary Mission Support Data
  - GRAVITE (~1.3 TB/day)
    - Non-gridded and gridded RIPs
      - 34 of 35 data types have been ingested
        - » VIIRS Snow/Ice Cover Gridded RIP Format
    - Investigator Study Findings
  - E-MSDS
    - Mission Notices
  - GISF
    - Software Release Package (Mx5.1, Mx5.2, Mx5.3)
    - Supporting Data Release Package (Mx5.1, Mx5.2, Mx5.3)
    - Documentation Release Package (Mx5.2)
  - Aurora Factory IDPS DDS (Temporary)

CLASS Subscriptions of NPP Data

- 3 Subscribers with Dedicated Interfaces
  - SDS
  - GRAVITE
  - NESDIS STAR
- 16 Active Data Center Subscriptions
- Ad Hoc Subscriptions

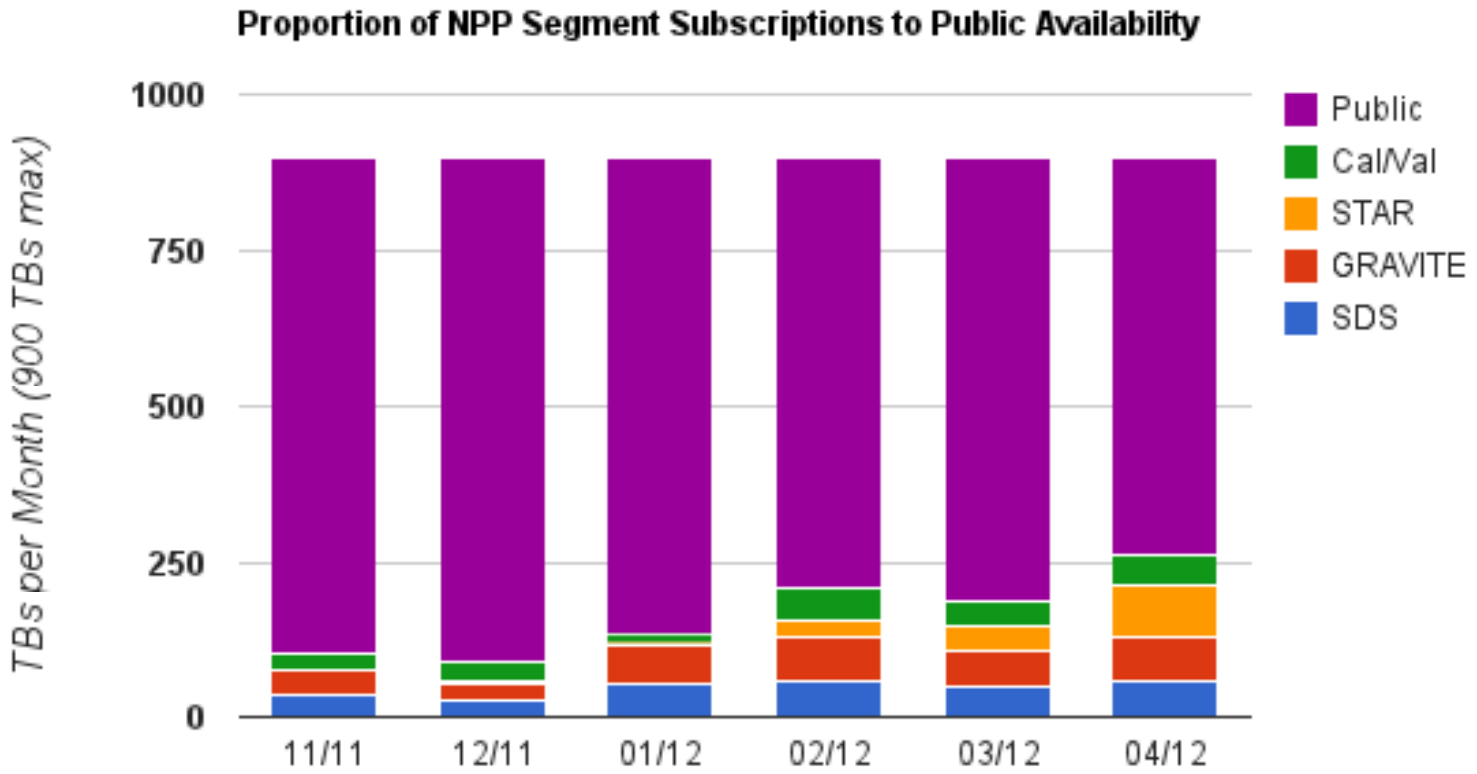
CLASS-NPP Big Picture



NPP Ingest By the Numbers

- CLASS has ingested over **11 million** files between October 28, 2011 (Launch) and March 31, 2012

Month	IDPS Data Products	IDPS Aux/Anc	GRAVITE non-gridded RIPs	GRAVITE gridded RIPs	Mission Notices
October 2011	51	366	0	6,760	0
November 2011	684,775	2,875	732,949	0	8
December 2011	671,699	2,975	1,127,112	8	15
January 2012	1,231,578	2,998	1,494,674	4	31
February 2012	1,288,479	2,875	1,295,079	13	33
March 2012	1,006,040	2,915	1,577,294	17	47
Totals	**4,882,622**	**15,004**	**6,227,108**	**6,802**	**134**


Proportion of NPP Segment Subscriptions to Public Availability
TBs per Month (900 TBs max)
1000
750
500
250
0
11/11
12/11
01/12
02/12
03/12
04/12
Public
Cal/Val
STAR
GRAVITE
SDS

Lessons Learned

- CLASS NPP Team met on January 20, 2012, to gather lessons learned.
- This presentation focuses on the program-level lessons learned, but includes a high level summary of the internal lessons learned.

Lessons Learned: Program-Level (1)

Some of the biggest challenges were related to scope management

Challenges Encountered	Lessons Learned
Encountered significant 'scope creep'	Baseline all documents, have CLASS as signatories on all applicable documents; publish the change control, Review Boards, and change request procedures.
There was data-specific development work outside the scope of CLASS. Also had to develop home-grown data subsetting tool that did not work as well as a provider-developed one would have.	The program and data center should identify data-specific requirements, define an approach for developing tools for data-specific requirements, and provide those tools to CLASS. Need to coordinate with CLASS to gather requirements for these tools to be able to be integrated into CLASS.
Late decision about 24x7 support made hiring and training difficult. 24x7 support was not value-added.	If 24/7 support is required, nine months' advance notice is needed to ensure staff availability.

Lessons Learned: Program-Level (2)

Stakeholder communication also presented challenges

Challenges Encountered	Lessons Learned
Not all stakeholders involved early on in the process	Establish a user forum that meets frequently and have CLASS actively involved.
Not everyone had access to NASA support documentation - documents published on external servers not available to all CLASS staff. Document repository changed during the program execution; this added to the confusion.	Work with CLASS SPOC to distribute official documents. Develop reasonable procedure to acquire the support documents. Provide clear guidance on NDAs, ITAR, and other regulations.

Lessons Learned: Program-Level (3)

There were also challenges with test planning

Challenges Encountered	Lessons Learned
Didn't have defined test schedule early on; NPP support became too reactionary and accommodating beyond the planned scope of our test efforts. No clear definition of test validation methods and evidence of pass/fail success criteria and list of artifacts that need to be submitted to NASA. Lack of communication with external test teams re: how CLASS works (e.g., initialization).	There should be detailed integration and test planning early in the cycle. This detailed schedule must be defined prior to CDR. Test planning should include approach, methodology, verification methods, artifacts, expected results, and detailed test cases. Test plan should take into account CLASS initialization procedures and characteristics. Test Planning should include required documentation needed for TRR.
There was a lack of test data that was high fidelity and matched the provided documentation.	Sample test data should be provided very early in the project and should match the latest version of the documentation Need high-fidelity test data at least 6 months before any test event. Data should include non-nominal cases and expected results.

Lessons Learned: Program-Level (4)

There were also test execution challenges

Challenges Encountered	Lessons Learned
Needed a better process for tracking defects during external testing.	Implement tool for external testing tracking. Need better documentation of expected and actual results. Need documentation of problem analysis and escalation process. Have an anomaly reporting tool that can be accessed by CLASS. Define discrepancy process (from discovery to resolution).
Testing in operations was beneficial – but test environment should also mimic operations	Plan for testing in PaL and operations environments. PaL needs to be enhanced as the operational environment is enhanced. Budget will be required for PaL enhancements.
The definition and implications of system freeze were not fully understood. Did not update OS during testing period; needed coordination with patching schedule.	Clearly define the implications of system freeze before starting any formal tests and before operations. Provide clear direction and expectations.

Lessons Learned: Internal

- Based on our internal lessons learned session, we've identified several improvements that we're now working on for future campaigns, e.g.:
  - Making sure there is a dedicated campaign team from the start, including POCs for each functional area
  - Improving our Work Request and Change Request process.
  - Defining better incident escalation procedures
  - Ensuring that we do not plan any other integration and test events in parallel with that of a major program such as GOES-R or NPP
  - Investigating methods for automated unit testing and integration testing

Open Discussion

Questions?