



# Building a prototype and testing system for processing GIFTS data

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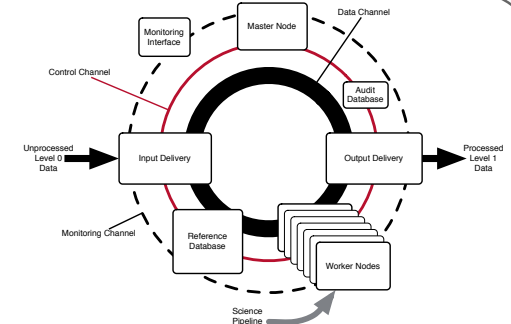


## GIFTS data processing: Background, Requirements, Architecture

The **Geosynchronous Imaging Fourier Transform Spectrometer** (GIFTS) instrument will combine high spectral resolution soundings associated with Fourier Transform Spectrometers (FTS) with high spatial and temporal resolution, creating three-dimensional near-real time views of atmospheric radiance, temperature, water vapor, and winds.

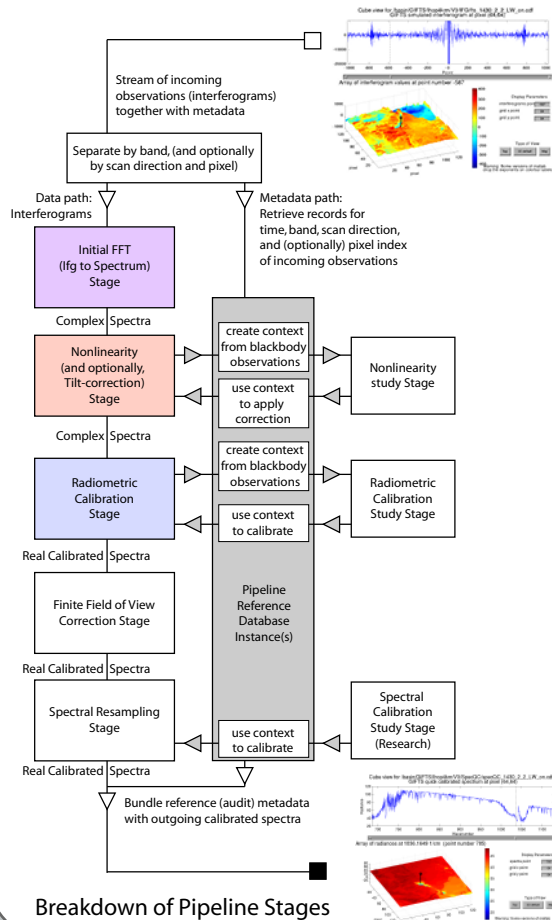
### Requirements for data processing software

- \* **High Throughput:** process 1.5 Terabytes of data per day.
- \* **Low Latency:** generate critical products within 5 minutes of gathering observation.
- \* **Flexibility:** Allow for easy development, testing and staging of new processing algorithms.
- \* **Longevity:** Software will evolve over a period of years to decades.
- \* **Reproducibility:** Record detailed processing history of data.
- \* **Low Cost:** Use off-the-shelf cluster hardware and leverage existing software technologies where possible.



Target Architecture Diagram

## The Data Processing Pipeline



Breakdown of Pipeline Stages

## The Cluster Environment

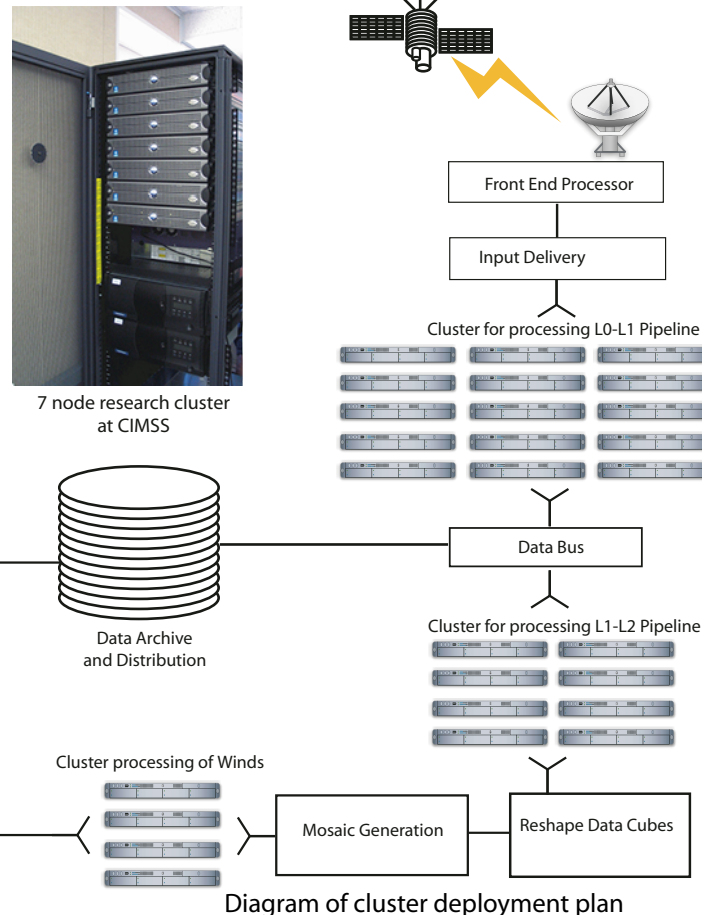
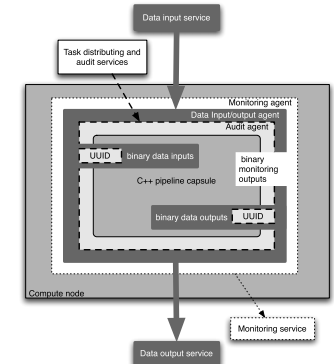
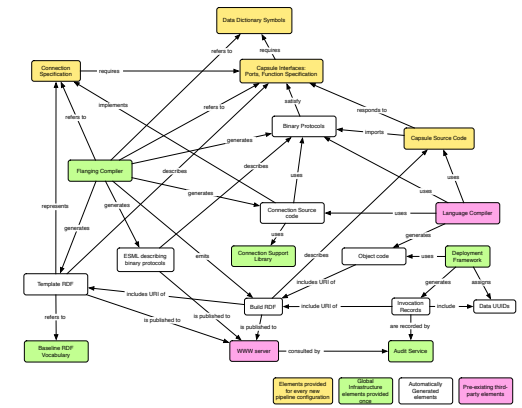


Diagram of cluster deployment plan

## System Design Snapshot



Design of software layout at a single compute node of the cluster



Graph of logical dependencies between all software components of system