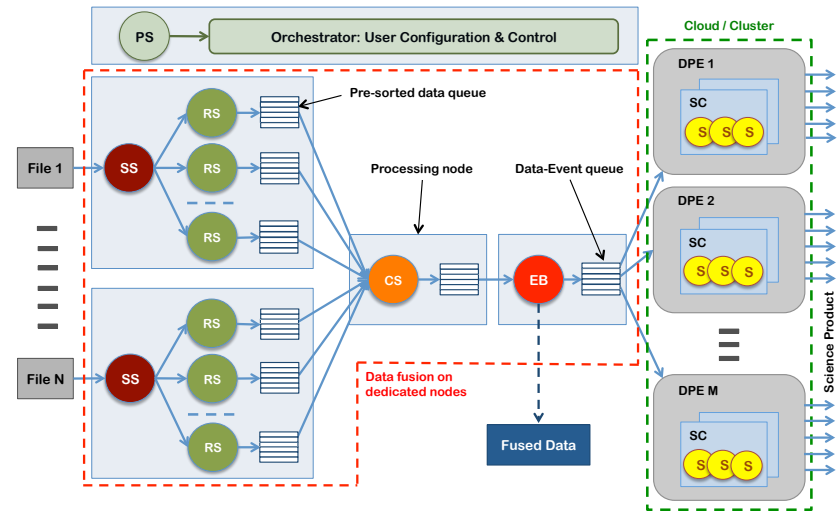


# NASA Information and Data System (NAIADS)

PI: Constantine Lukashin, NASA LaRC

## Objective

- Develop prototype framework for Earth Science processing and data fusion with maximum information content
- Develop middleware with characteristics:
  - Optimized I/O and data workflow
  - Standard I/O and transit data format
  - Event Builder in offline software
  - Massive process scaling by data-Events (streaming) in Cloud environment
  - In-memory science applications
  - Operations with large and distributed data sets



NAIADS: Architecture and Workflow

## Accomplishments

- Implemented Zero-MQ-based data streaming and data processing framework software design in Python, Java, and C++
- Implemented data fusion science case code and workflow
- Created data read and streaming standards: NetCDF and HDF reading services, data streaming in NetCDF (support Python, Java, C++)
- Created data analytics service including four statistical data objects/types (1 and 2 dimensional histograms and profiles);
- Implemented a real-time system monitoring web service created with Web Dashboard (based on Grafana and Influx DB);
- Tested the software integration in the AWS Cloud environment;
- Performance assessment and benchmarking for all functions of the NAIADS framework completed.

**Co-I's/Partners:** A. Bartle, Mechdyne; V.Gvurivan, DoE Jefferson Lab;  
C. Roithmay, NASA LaRC; A. Vakhnin, SSAI

TRL<sub>in</sub> = 3    TRL<sub>out</sub> = 6