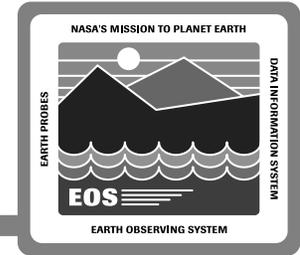


Data Server Subsystem Overview

Mark Huber

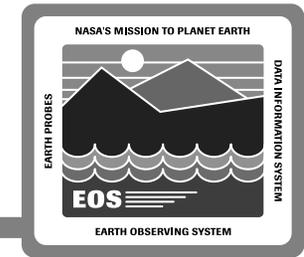
14 February 1995

Data Server Subsystem Agenda



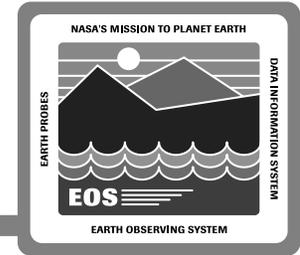
- **Overview and Context**
- **Design Drivers**
- **System/Hardware Analysis and Design**
- **Software Analysis and Design**
- **Phasing of Capabilities and Sizing**
- **Future Plans**

Data Server Subsystem Overall Analysis to Date



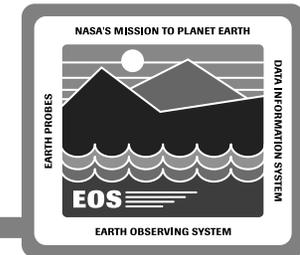
- **Requirements Analysis**
 - L3s -> L4s (DID 304)
 - Coordinated via the Requirements Workshop and Telecons
 - Product/Data Analysis (DID 304, Product Matrix)
- **Software Analysis (OOA) and Software Design (OOD)**
 - Objects, Attributes, Services, Scenarios, and Event Traces Defined and Generated (DID 305)
- **Vendor Interaction**
 - RFIs and RFPs
- **Prototypes**
- **System Analyses**

Data Server Subsystem and Data Servers



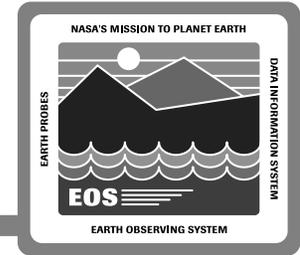
- **Data Servers**
 - **Data (and their services) logically related to each other**
 - **A combination of software and hardware within ECS**
- **Multiple Logical Data Servers used in SDPS**
 - **Mostly used in the Data Server Subsystem (DSS)**
 - **L0 Data Server used in Ingest Subsystem**
- **Logical Data Servers outside of ECS**
 - **A Data Server is instantiated and viewed via its services**
 - **Any system conforming to Data Server services and conventions can participate in ECS as a Data Server**

Data Server Subsystem Common Scenario Review



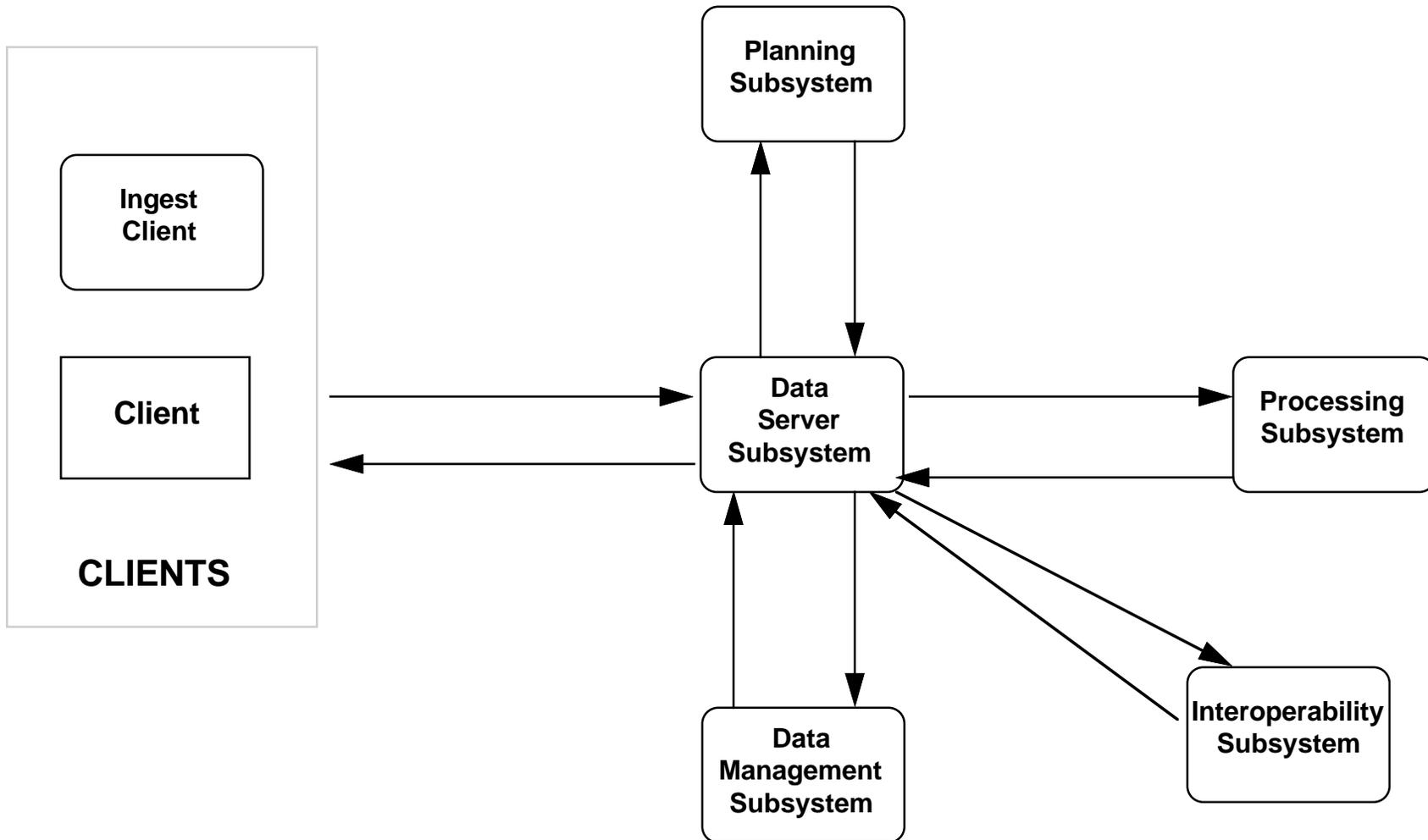
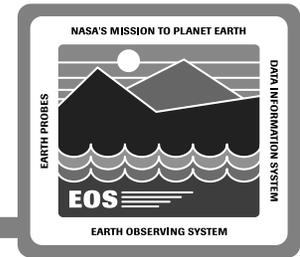
- **Typical User Session**
 - Access
 - Search
 - Browse
 - Electronic Acquire (Pull)
- **Data Insert Operation**
 - Data Arrival
 - Data Check
 - File Storage
 - Inventory/Metadata Update
- **Physical Media Distribution**
 - Same as Typical User Session
 - Media Generation Differs

Data Server Subsystem Overview

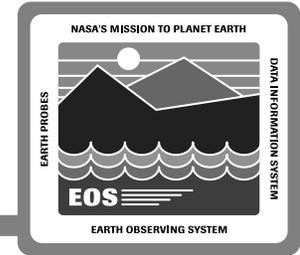


- Stores and maintains earth science and related data types
- Advertises data types and services it provides against this data
- Ⓐ • May issue production requests for on-demand production
 - Some data products may be stored “virtually” and generated only when requested
 - DARs are coordinated and statused, with data provided to requester
- Provides data results via electronic transfer or physical media
 - Electronic method offers “push” or “pull” over network
 - Variety of physical media supported

Data Server Subsystem Context



Data Server Subsystem Context



Data Server Interfaces with....

- **Planning Subsystem**

- **Input to Data Server**

candidate and active plans, data query request, on-demand production response

- **Output from Data Server**

data availability schedule, subscription notice, data query response, subscription confirmation, on-demand production request

- **Processing Subsystem**

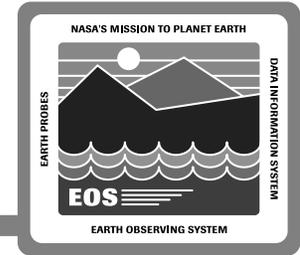
- **Input to Data Server**

access requests, standard products, metadata, science algorithms, QA data

- **Output from Data Server**

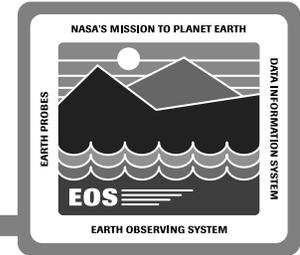
standard products, metadata, L0 data, ancillary data, calibration data, orbit/attitude data, algorithms

Data Server Subsystem Context



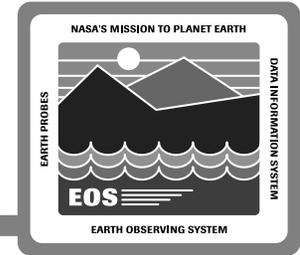
- **Data Management Subsystem**
 - **Input to Data Server**
search and access requests, session management requests
 - **Output from Data Server**
search results, schema and data dictionary information
- **Clients**
 - **Input to Data Server**
search requests, access requests, session mgmt requests, subscriptions, standard products, metadata, ancillary data, correlative data, data availability schedules, algorithms, special products, L0 data, QA data
 - **Output from Data Server**
results set, session mgmt responses, notifications, standard products, metadata, ancillary data, correlative data, documents, orbit/attitude data, data availability schedules, algorithms, special products, QA data, browse products, product request status

Data Server Subsystem Context (cont.)



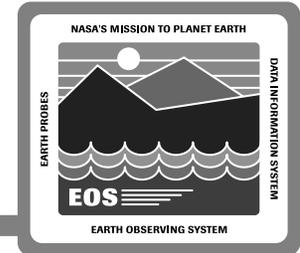
- **Interoperability Subsystem**
 - **Input to Data Server**
status response
 - **Output from Data Server**
advertisements

Data Server Subsystem Design Drivers



- **Data-R-Data-R-Services**
 - Access to data and services without regard to storage method
- **System Must be Maintainable and Useful Over Time**
 - Evolvability
 - Scalability
 - Extensibility
- **Policy Neutral**
 - Tunable
 - Reconfigurable
- **Support of Heterogeneous Data Types**
 - Issue -> Specific Data Formats, Types, and Content for Release A Needed Under Configuration Control
- **Support of Massive I/O and Storage**

Data Server Subsystem Implementation Concepts



- **System Level Concepts**
 - Logical Data Server Concept
 - Store Data According to Type/Access
 - Insert and Acquire Flows Separate
 - Architecture of Subsystem Cleaves along API Lines
- **Hardware Concepts**
 - Exploring Use of Network Attached Storage (NAS)
 - ⓐ - Use of Heterogeneous Storage Components
 - Horizontal Scaling
- **System Software Concepts**
 - Consistent Data Access and View
 - Storage Methods Hidden/Abstracted From User
 - Encapsulation of OTS
 - ⓐ - Separation of Volume and File Servers
 - ⓐ - Support for Multiple/Different File Management Products