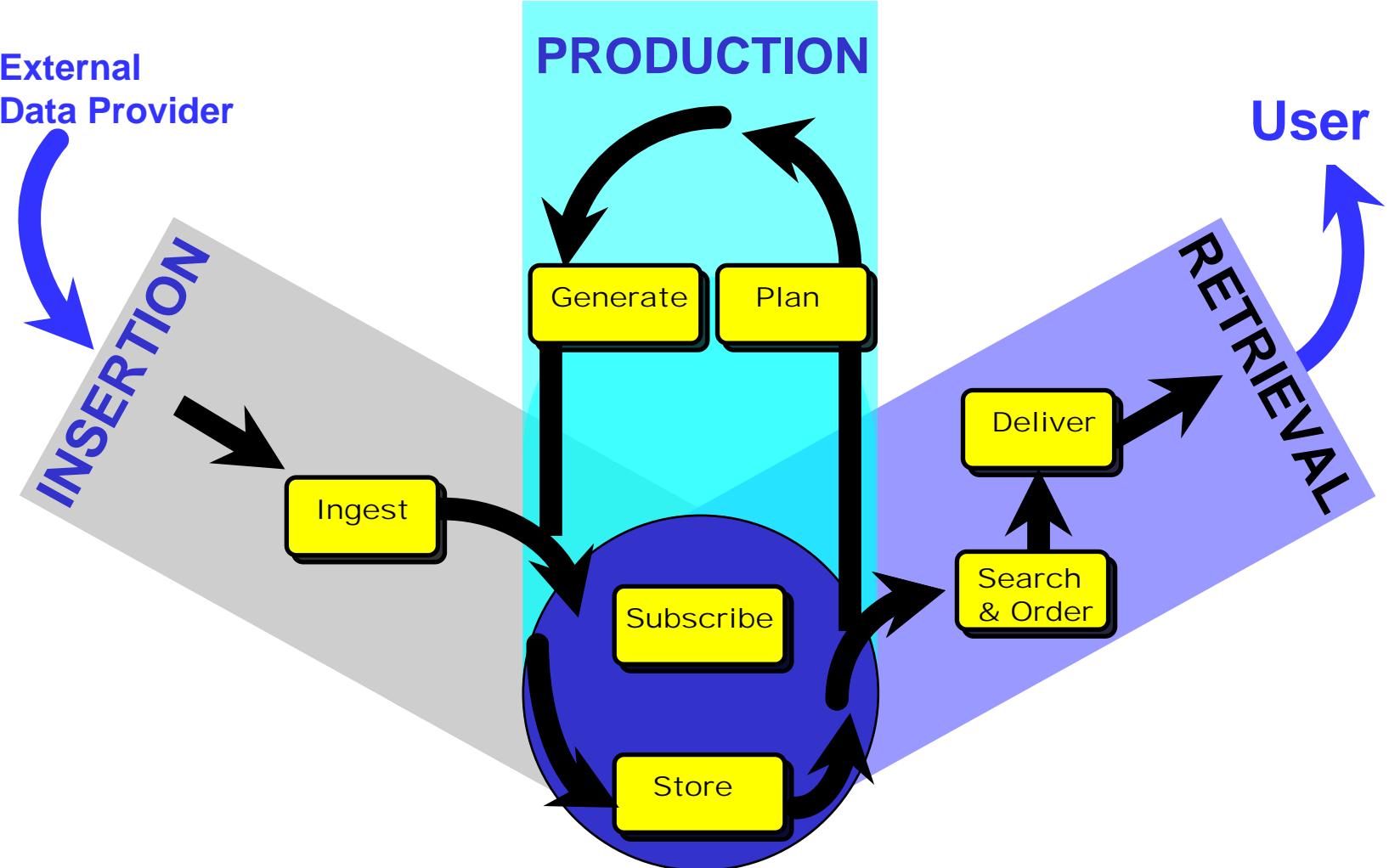




Introduction and Detailed System Overview: Science Data Processing Internal Training

July 2006



EMD SDP Internal Training



Objectives

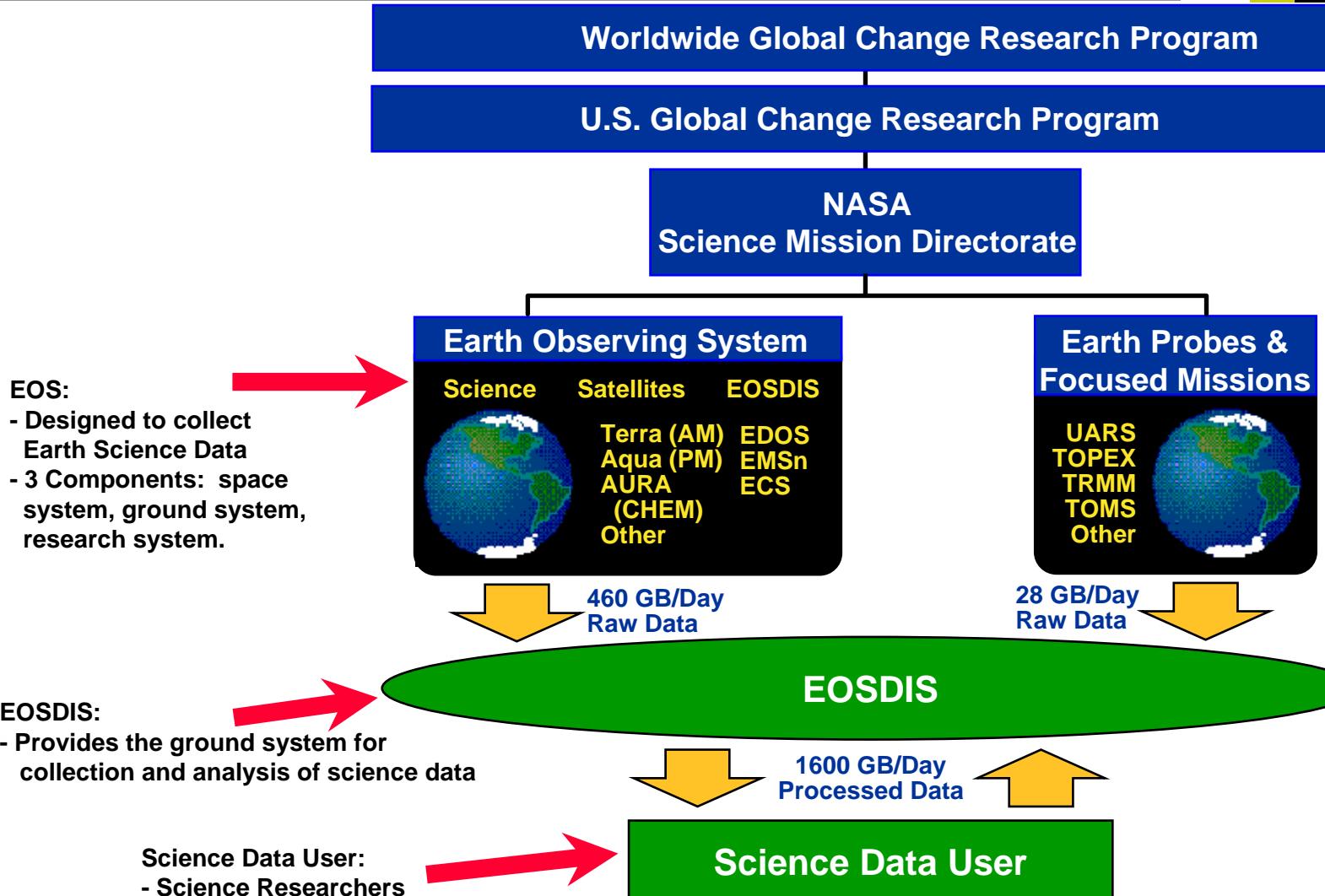
- Overall objective: Describe ECS structure and function for Science Data Processing (SDP)
 - Identify subsystems and Computer Software Configuration Items (CSCIs)
 - Specify major components and functions/processes of CSCIs
 - Describe role of CSCIs/functions/processes in the context of ECS operational scenarios
 - ASTER-specific functions (e.g., DAR, expedited data support)
 - Producing and distributing data products (including media)
 - Updating QA metadata
 - On-demand processing
 - User registration
 - MODIS data access



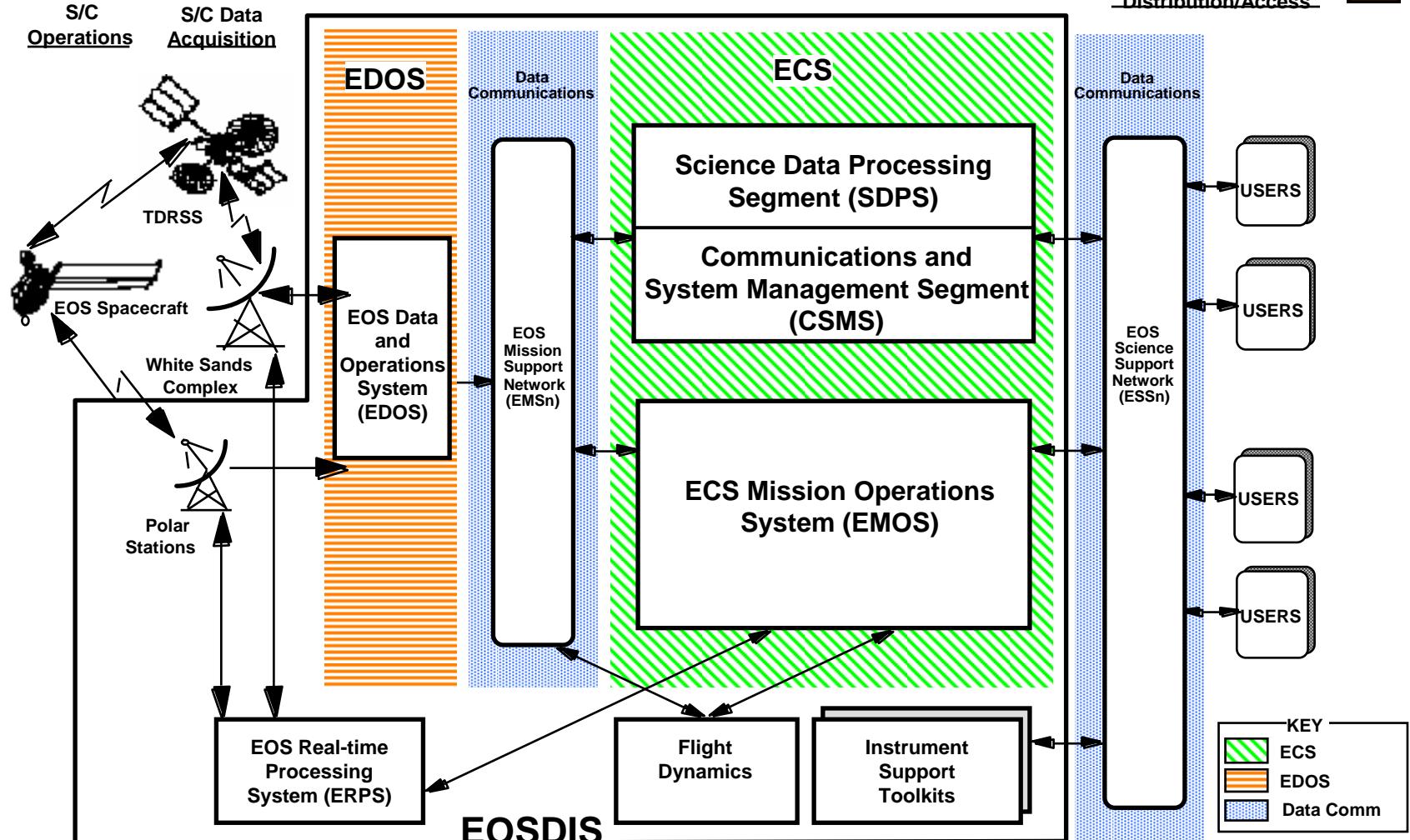
What This Lesson Is (and Is Not)

- **Is**
 - Brief illustration of ECS high-level structure
 - Introduction to subsystems that make up ECS at a site
 - Examination of each subsystem and its Computer Software Configuration Items (CSCIs), with components
 - Introduction of all system elements and brief description of functions
 - Background for subsequent scenario-based presentation of system functional flows
 - Detailed look at system functioning in the context of operational scenarios
- **Is Not**
 - Full description of overall ECS structure and function
 - Description of specific individual ECS entities (e.g., SMC)
 - Software development lesson
 - Complete description of interfaces and event sequences
 - Operations training

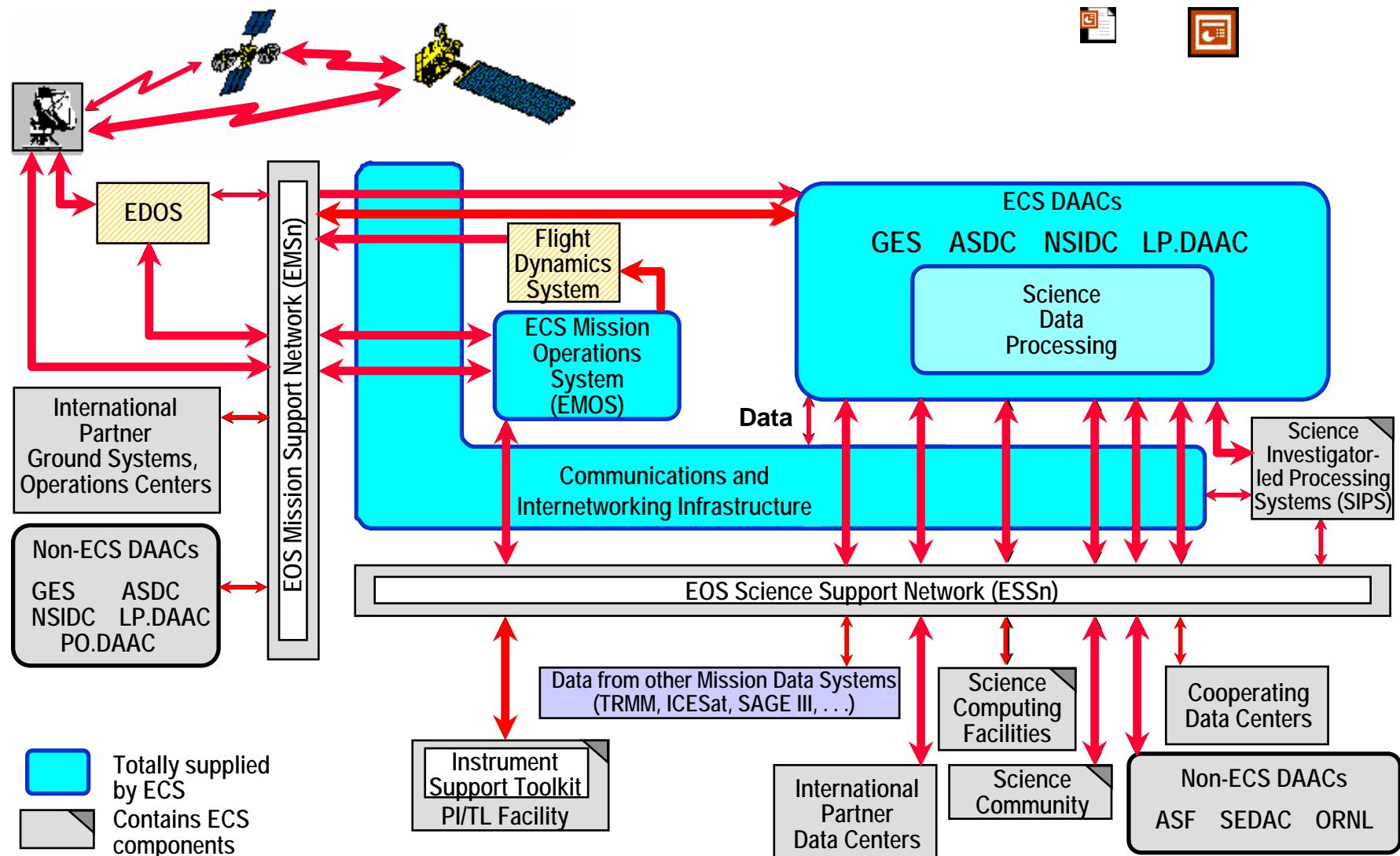
Program Overview



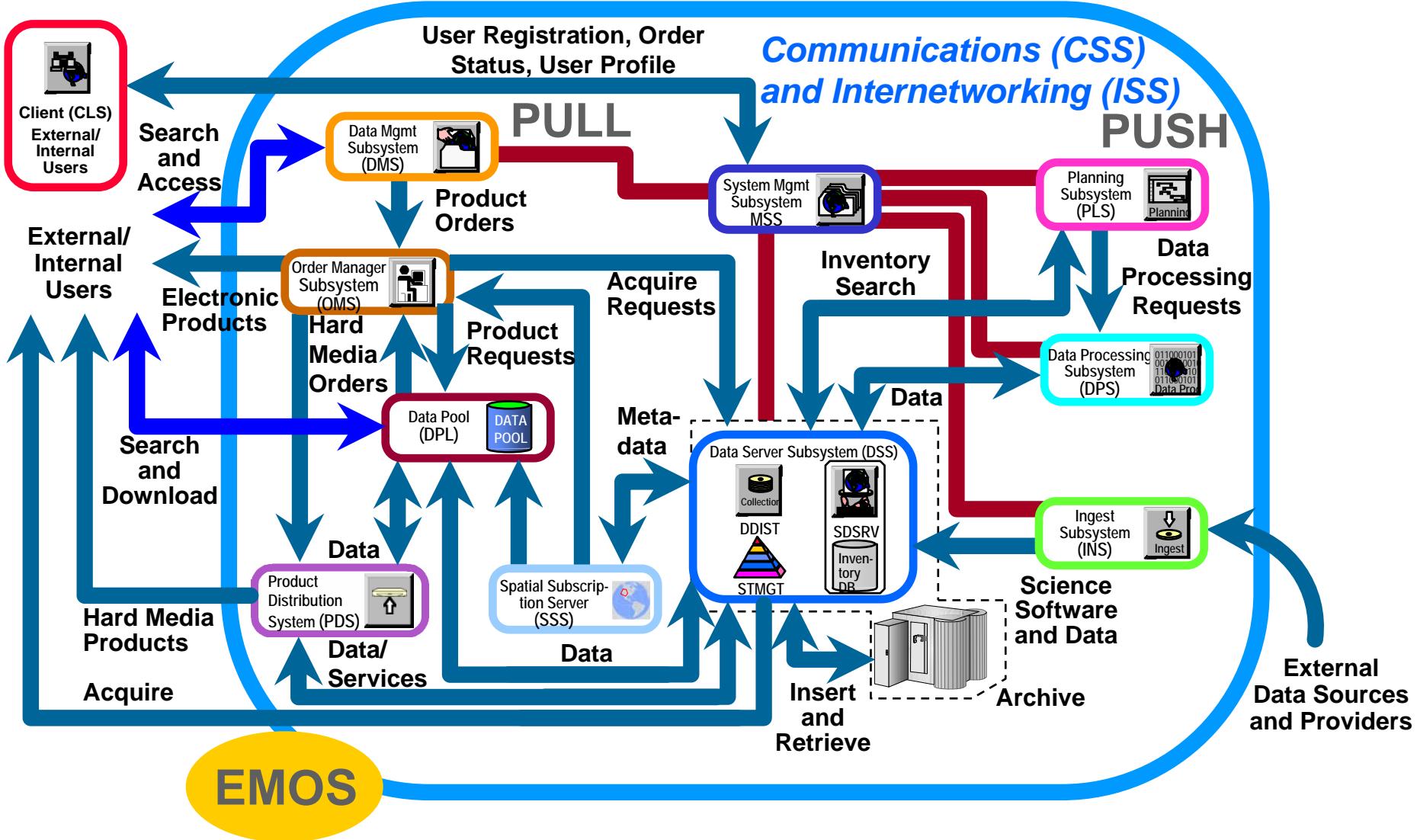
EOSDIS Principal Components



EOSDIS Data Flow



ECS SDP Context





Subsystems and Functions

Science Data Processing Segment (SDPS)

- **Data Server Subsystem (DSS)**
 - Data storage and management: archive science data (with related insert, search and retrieve functions), archive management, data resource staging
- **Product Distribution System (PDS)**
 - Service for hard media orders, in conjunction with DSS and Order Manager Server (OMS)
- **Ingest Subsystem (INS)**
 - Interface with external data providers and transfer data into ECS (with related staging functions and operator interfaces)
- **Spatial Subscription Server (SSS)**
 - Creation and management of subscriptions for data distribution/notification and for Data Pool insert



Subsystems and Functions (Cont.)

SDPS (Cont.)

- **Data Pool (DPL)**
 - Provides on-line access for browsing and FTP download of selected granules, metadata, and browse data
- **Client Subsystem (CLS)**
 - Provides interfaces and access for external users
- **Data Management Subsystem (DMS)**
 - Enables cross-site data search and retrieval; gateway for interface of ECS with EOS Data Gateway Web Client (Version 0 IMS) protocol
- **Order Manager Subsystem (OMS)**
 - Manages orders from EDG and other sources, distributing them to appropriate ECS services (SDSRV, PDS)

Subsystems and Functions (Cont.)



SDPS (Cont.)

- **Planning Subsystem (PLS)**
 - Long- and short-term planning of science data processing, and management of production resources
- **Data Processing Subsystem (DPS)**
 - Dispatches and monitors execution of science software



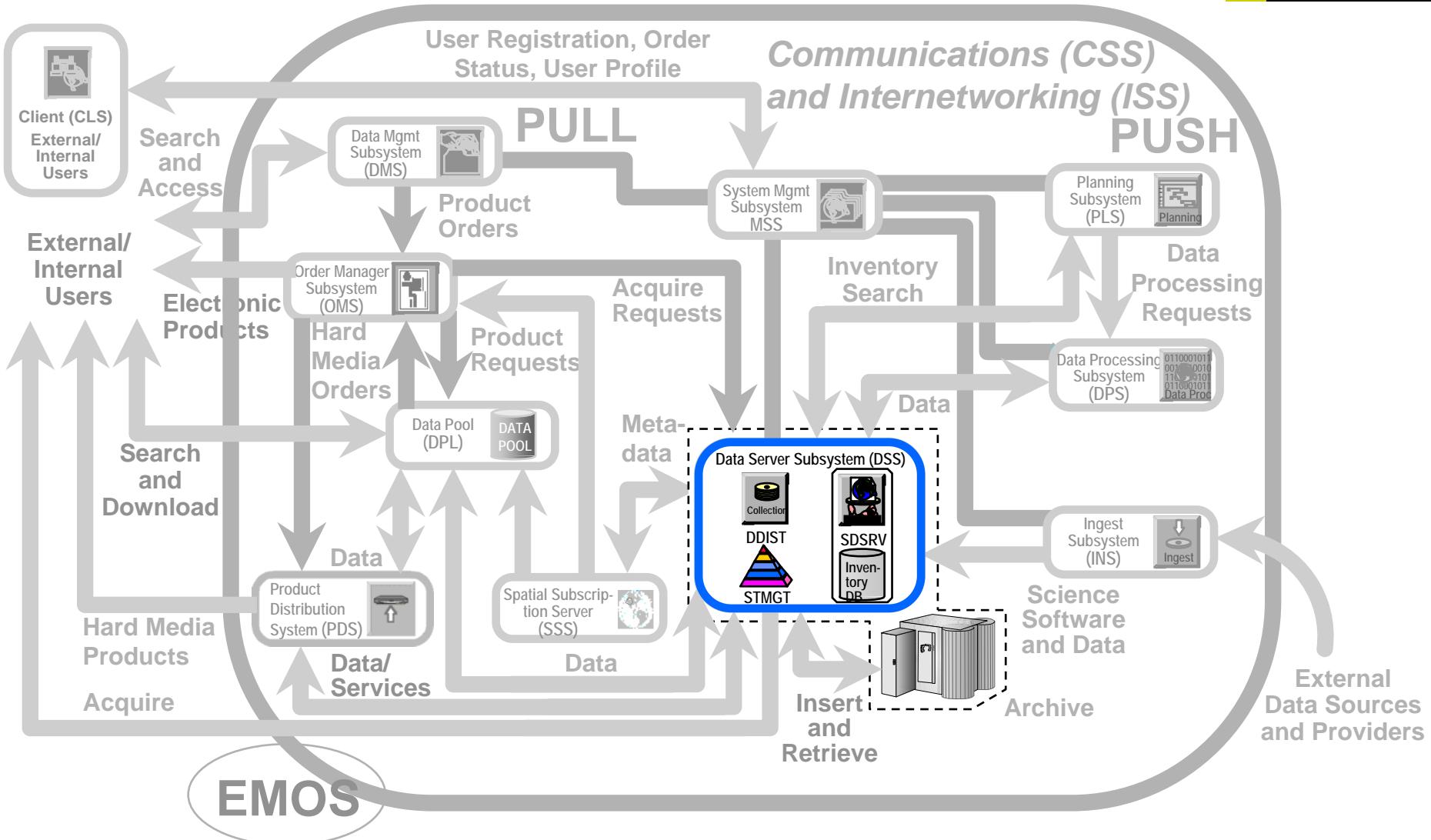
Subsystems and Functions (Cont.)

Communications and System Management Segment (CSMS)

- **System Management Subsystem (MSS)**
 - System maintenance, management, and administration (includes trouble ticketing, baseline and configuration management, fault and performance monitoring, and user account management and order management)
- **Communications Subsystem (CSS)**
 - General system infrastructure functions (includes network communications, libraries to standardize software mechanisms, application error handling, subscription service, interfaces to e-mail, file transfer and file copy)
- **Internetworking Subsystem (ISS)**
 - Networking hardware devices and embedded software

NOTE: The ISS is part of the ECS infrastructure and is not addressed in detail in this course.

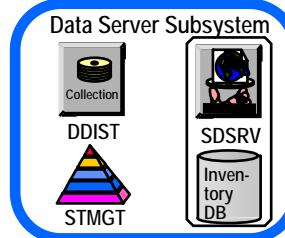
Subsystems and CSCIs: DSS



Subsystems and CSCIs: DSS (Cont.)



- **Data Server Subsystem (DSS)**
 - Provides capabilities to store, search, retrieve, and distribute earth science and related data
 - Client-server information transfer is by commands and requests
 - Generates Universal References to identify ECS entities
 - Granule UR: represents a granule in the data server (e.g., as follows)



A granule is the smallest piece of data that is independently managed by the system, i.e., represented by a record in the inventory.

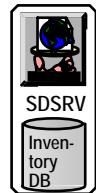
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:16:SC:MOD10_L2:1411

- Server UR: represents a specific running data server application (e.g., [DsShSciServerUR](#))
- Interfaces with virtually all ECS subsystems and components
- Uses several COTS tools: RogueWave tools and libraries, Sybase relational database, Spatial Query Server

Subsystems and CSCIs: DSS (Cont.)



- **Science Data Server (SDSRV) CSCI**
 - Provides the ECS with a catalog of Earth Science Data holdings, and the Earth Science Data Type (ESDT) services that operate on the data
 - Manages and provides user access to data collections through its catalog of metadata and mechanisms to acquire data from the archive
 - Seven major components
 - **Science Data Server** - services requests for storage, search, retrieval, and manipulation of science data
 - **HDF EOS Server** - provides science data subsetting
 - **Science Data Server GUI** - provides operator interface
 - **Granule Deletion Tool** - provides a command-line interface for deleting granules
 - **Science Data Server Command Line Interface (SCLI)** - provides interface to the S4PM processing system and the Product Distribution System (PDS)

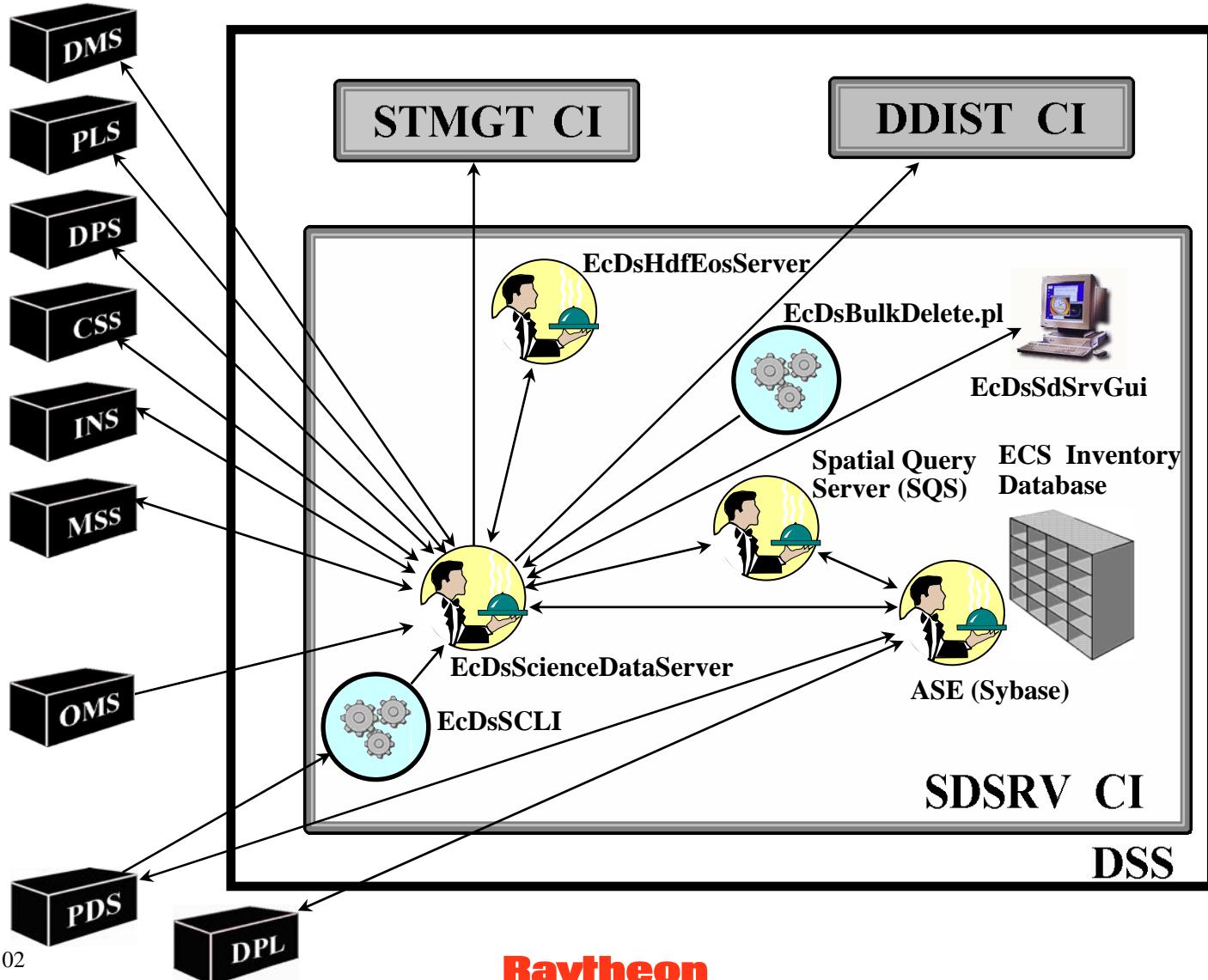


Subsystems and CSCIs: DSS (Cont.)

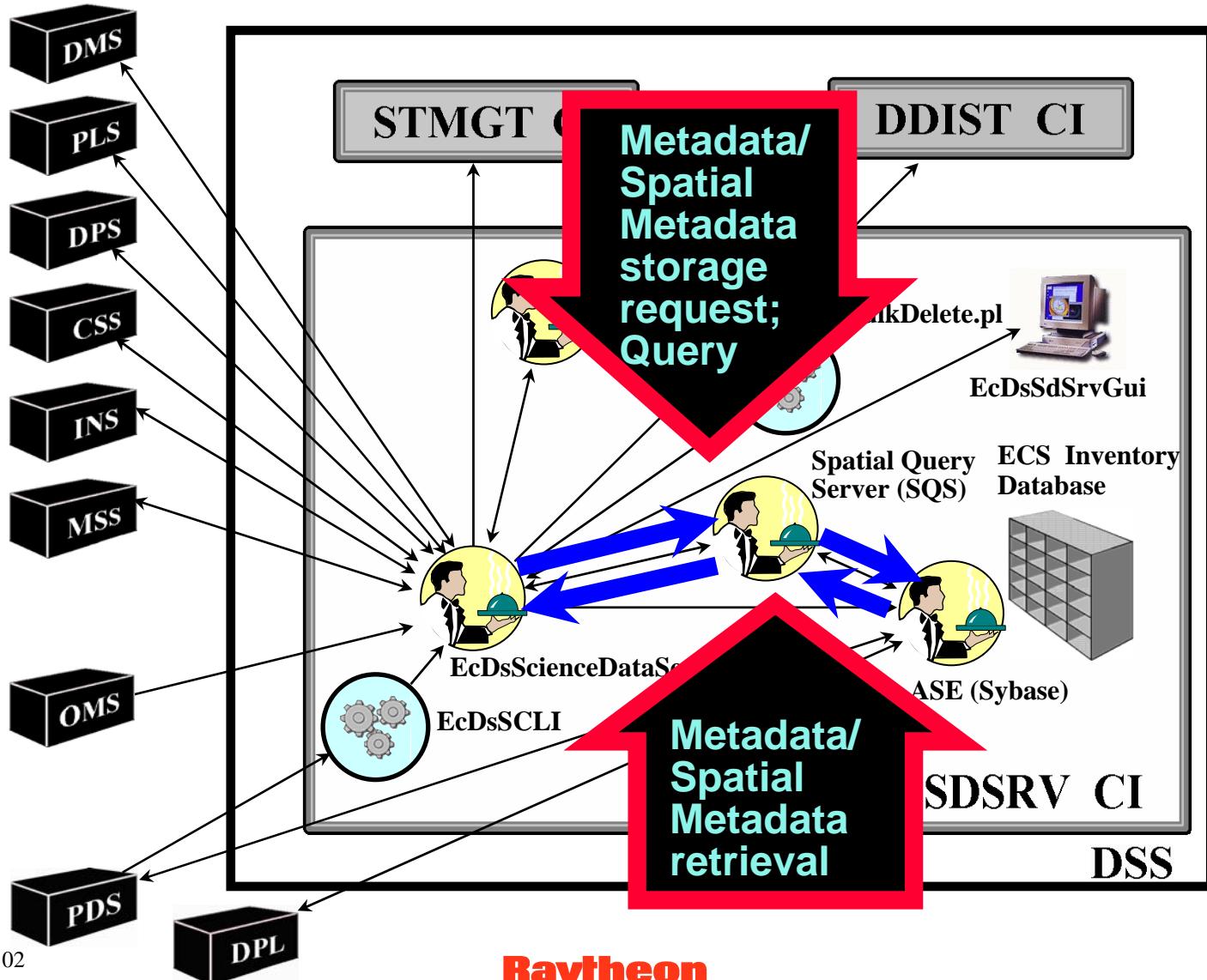


- **Science Data Server (SDSRV) CSCI (Cont.)**
 - **Seven major components (Cont.)**
 - **Sybase ASE Server** - manages catalog (metadata)
 - **SQS Server** - manages catalog (specialized spatial searches)

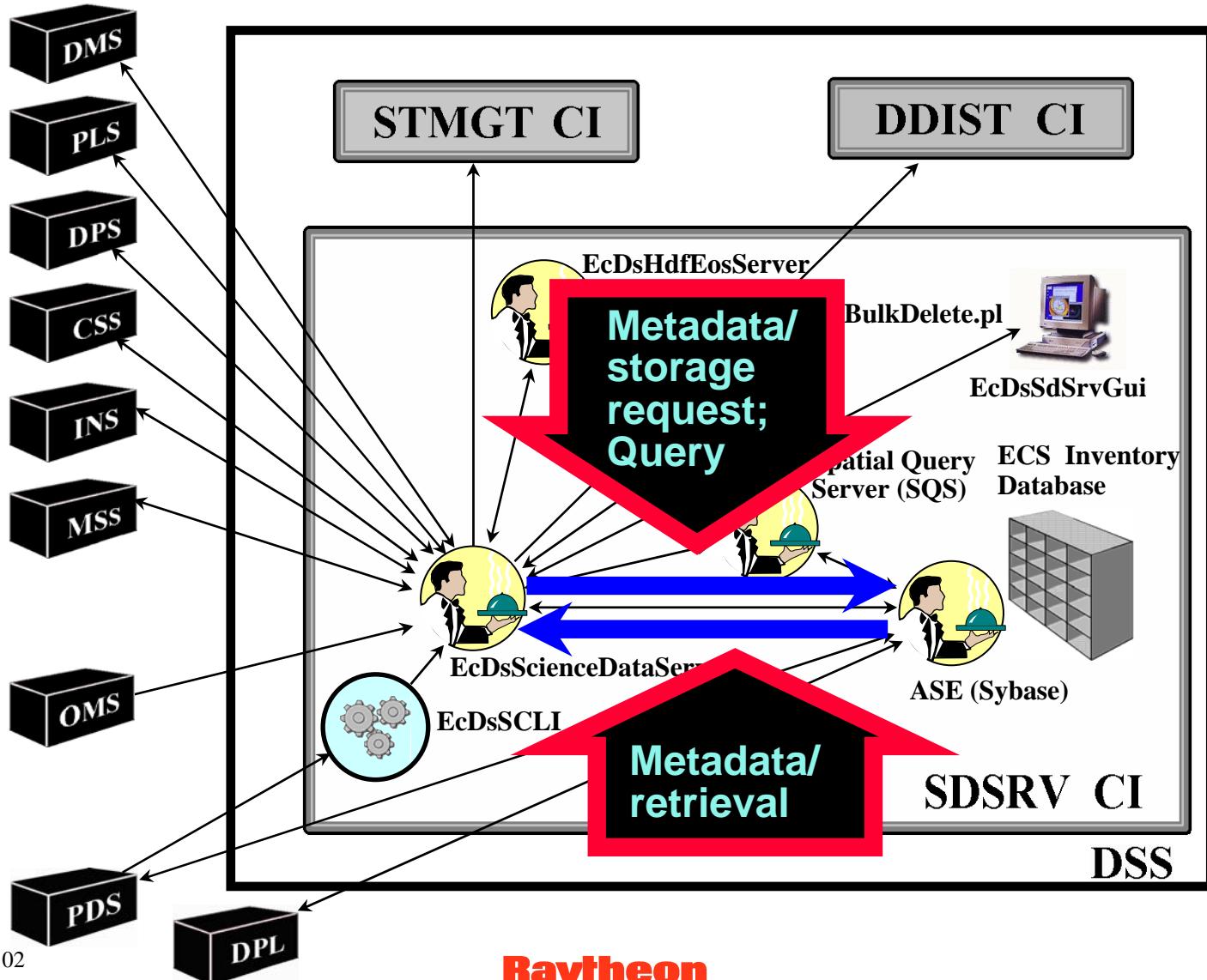
Subsystems and CSCIs: DSS SDSRV Architecture and Interfaces



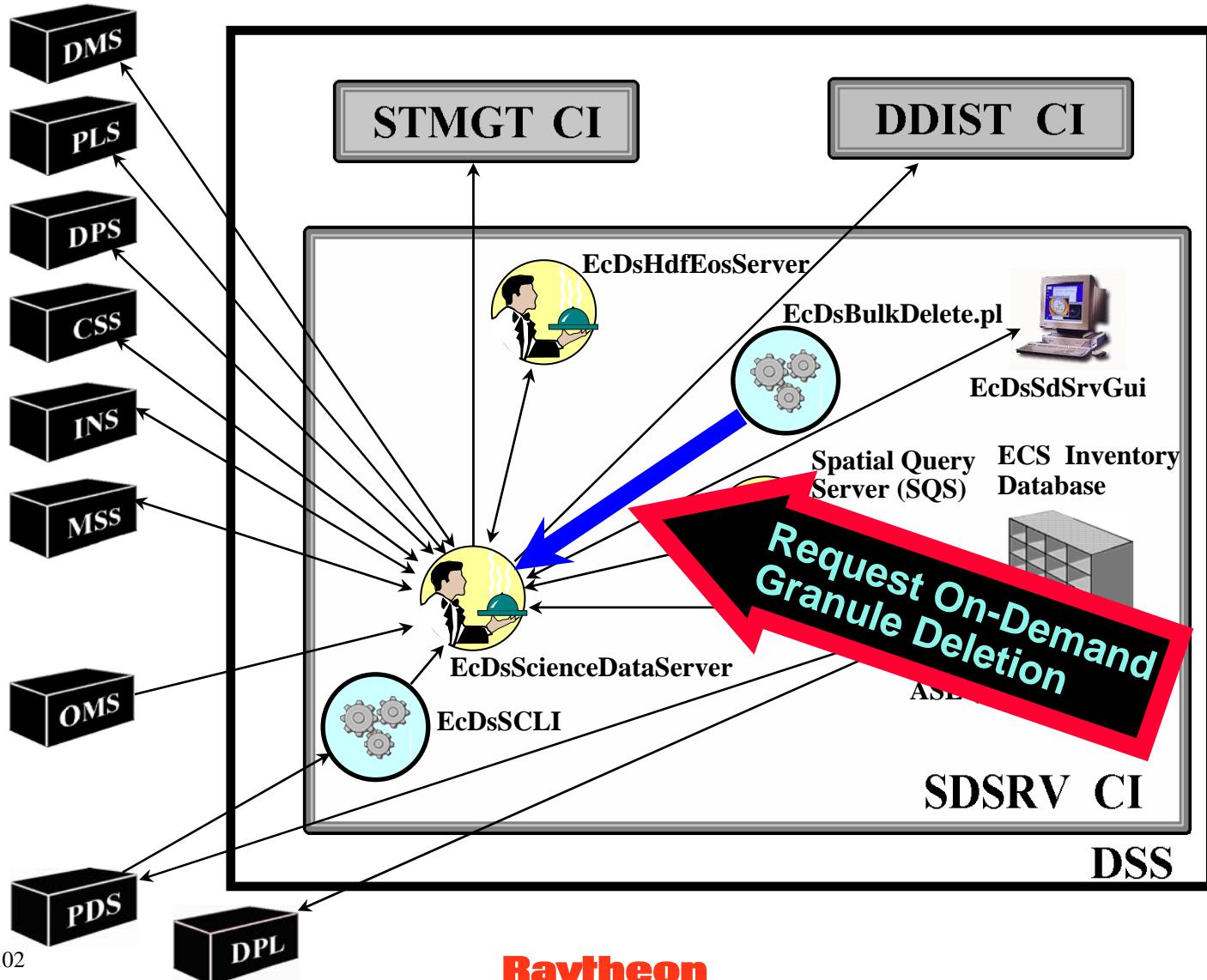
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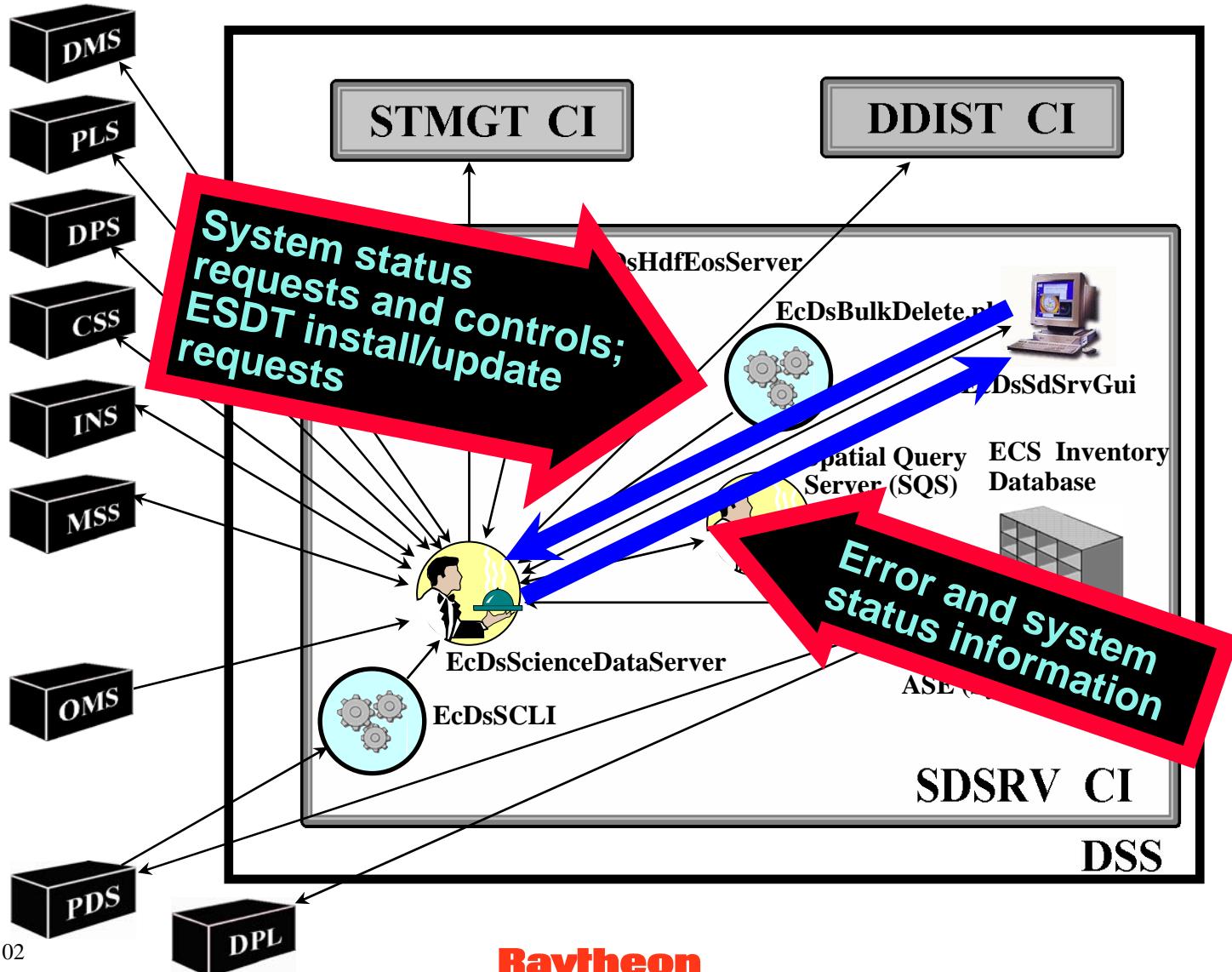
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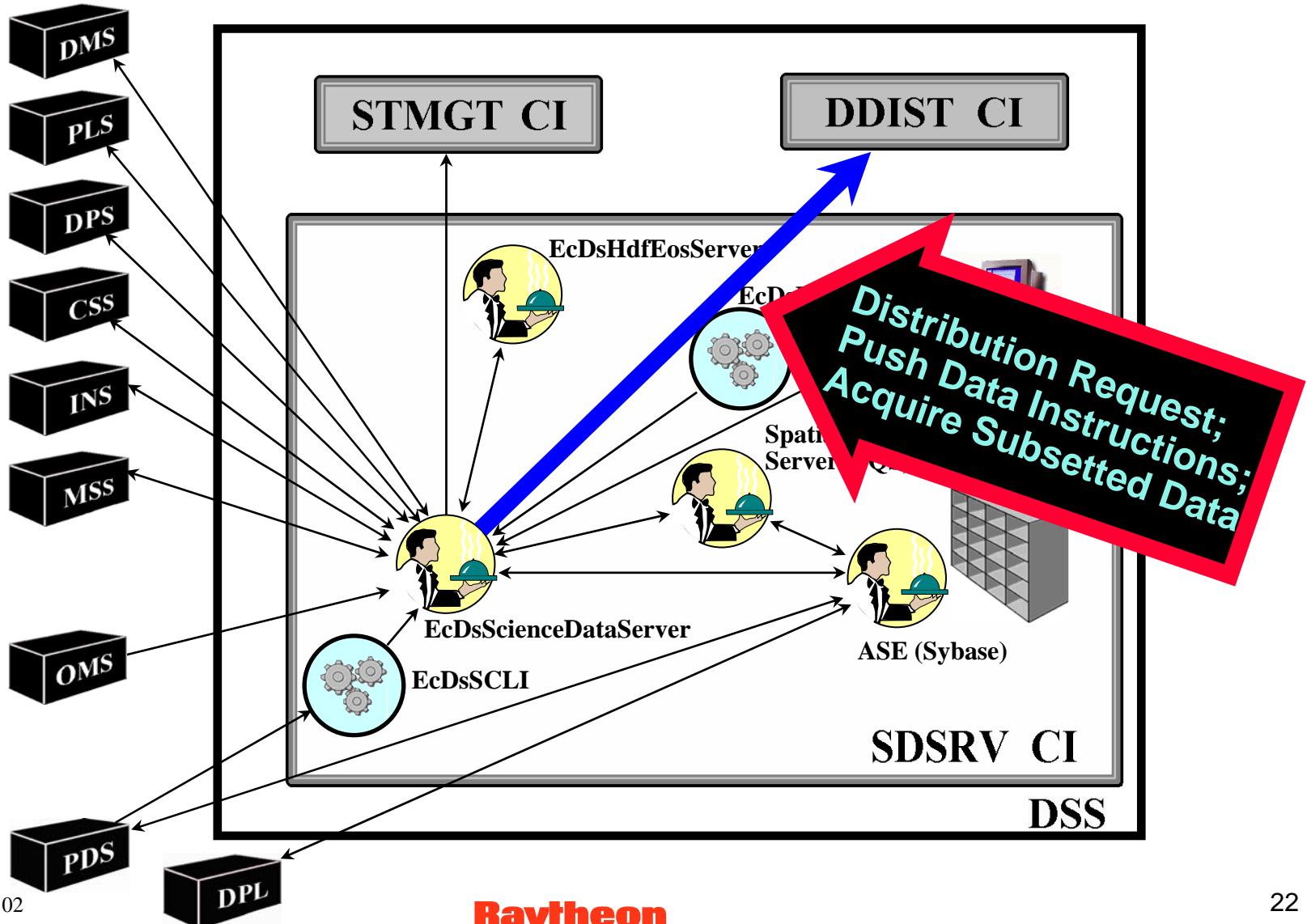
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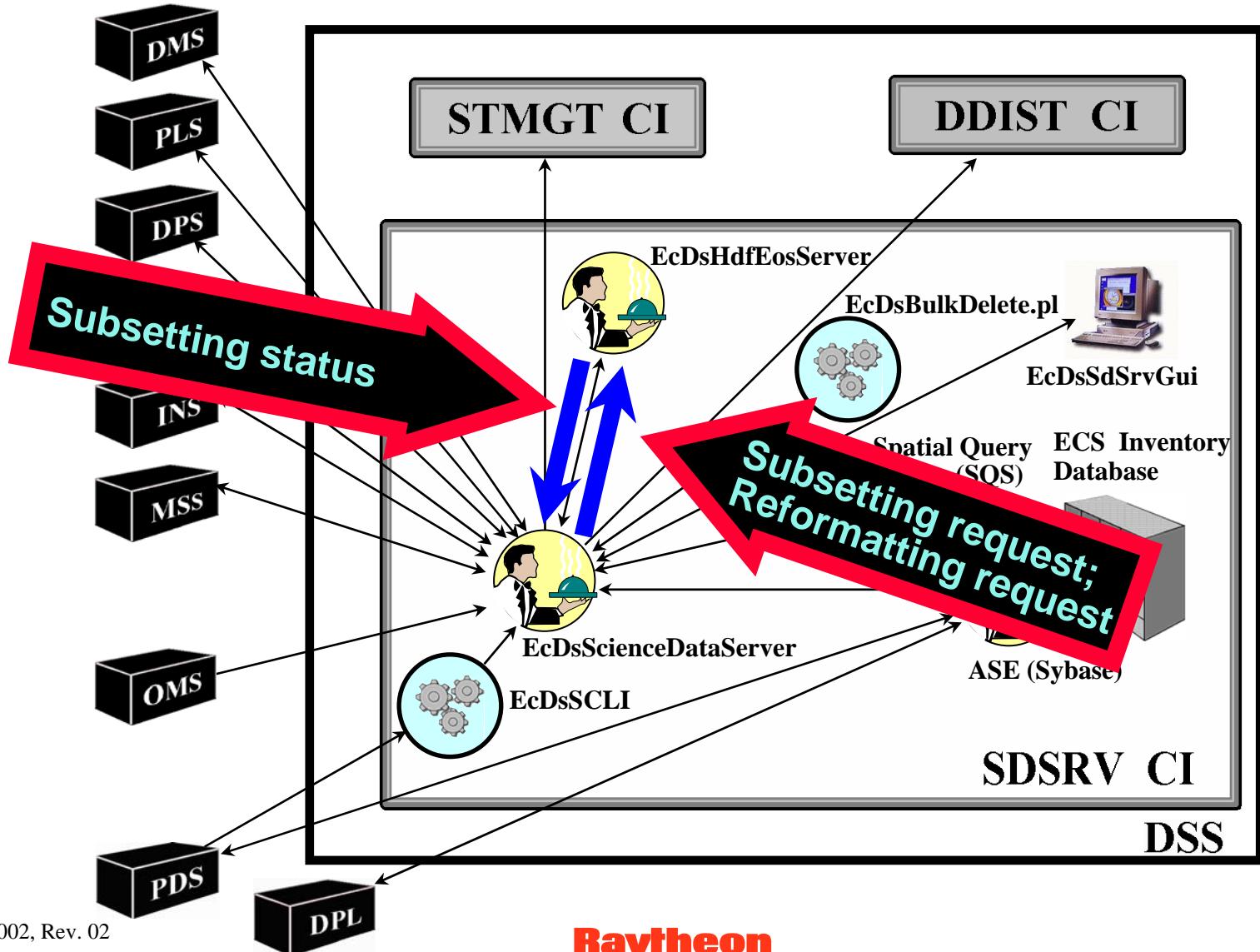
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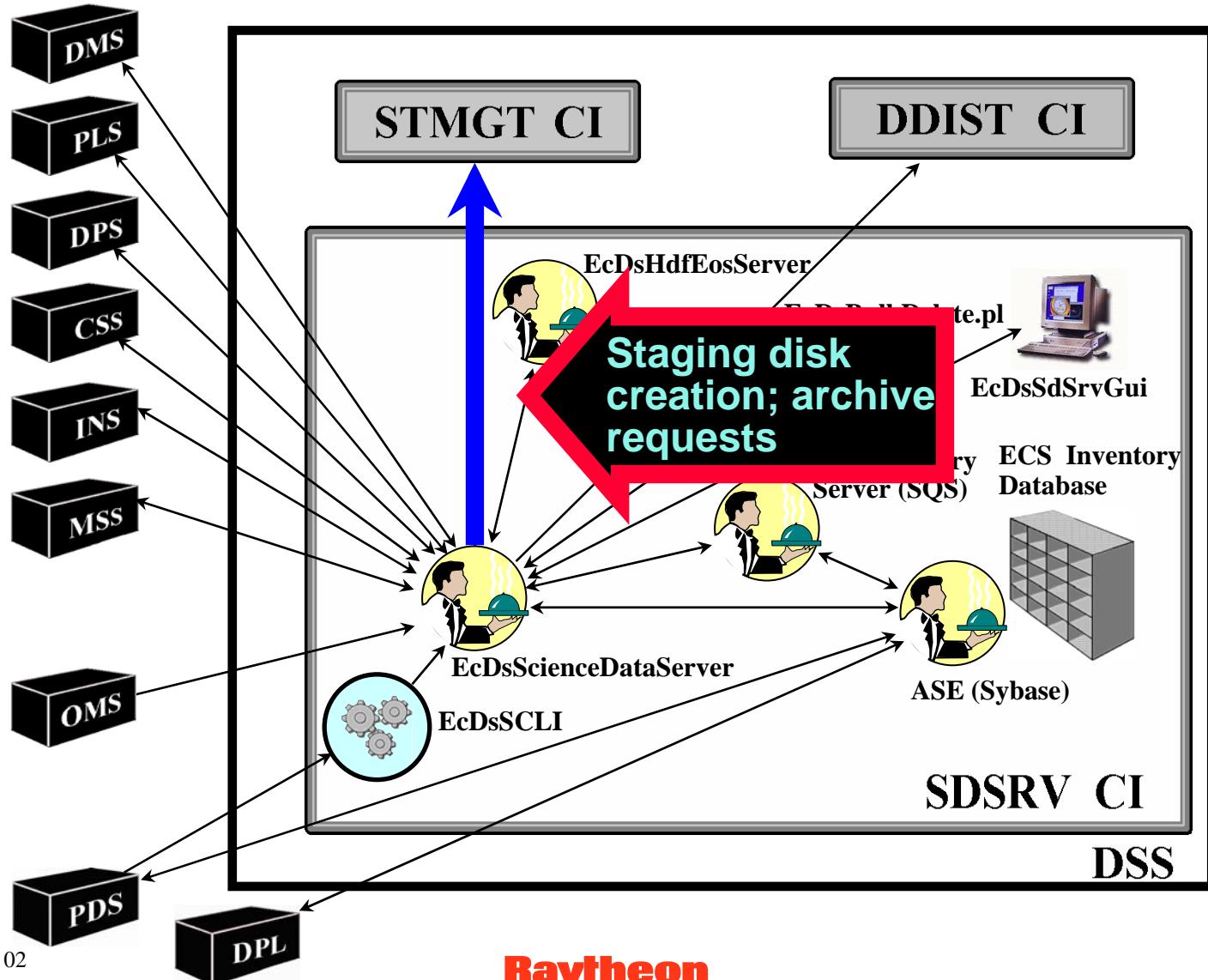
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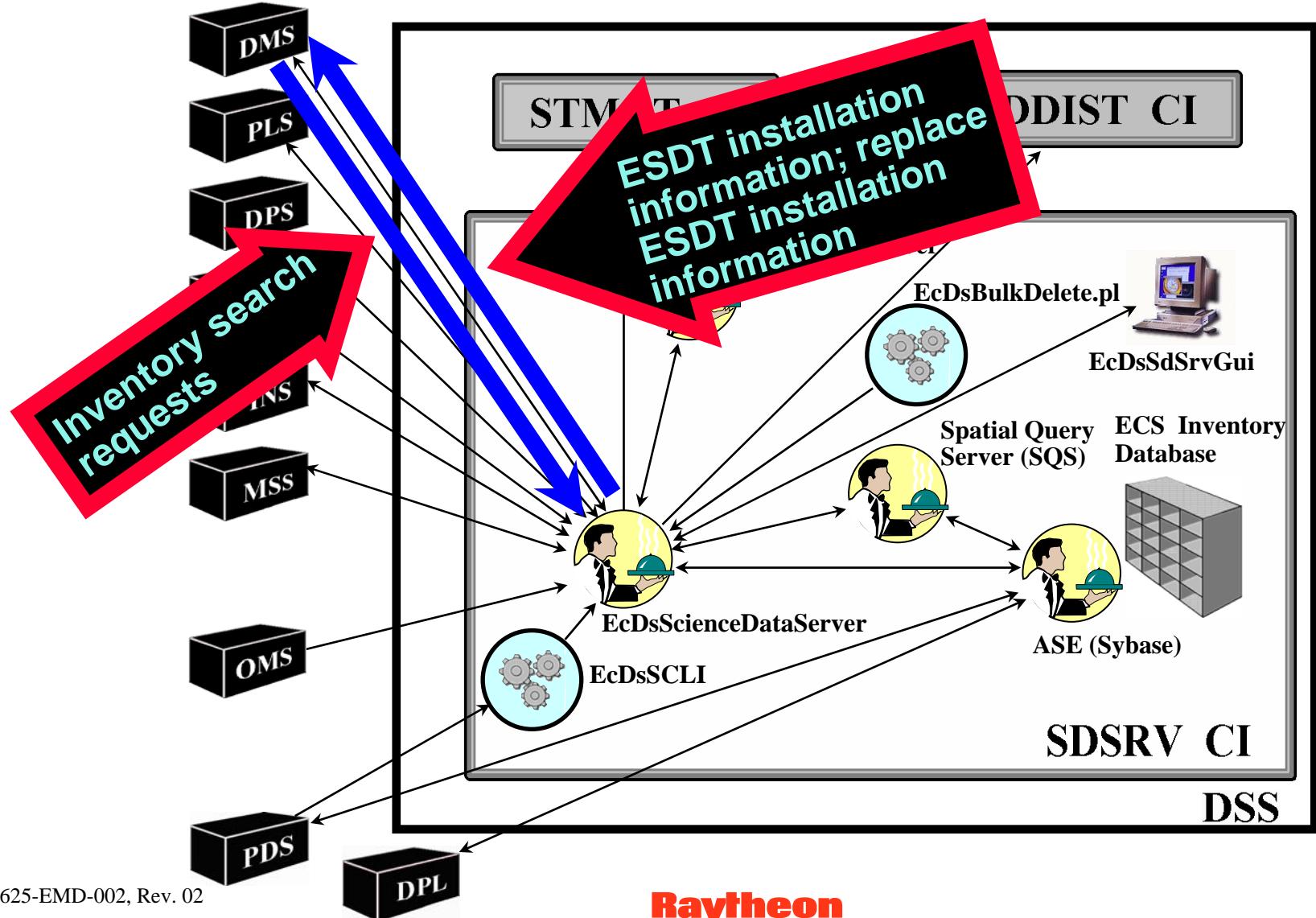
Subsystems and CSCIs: DSS SDSRV Architecture and Interfaces



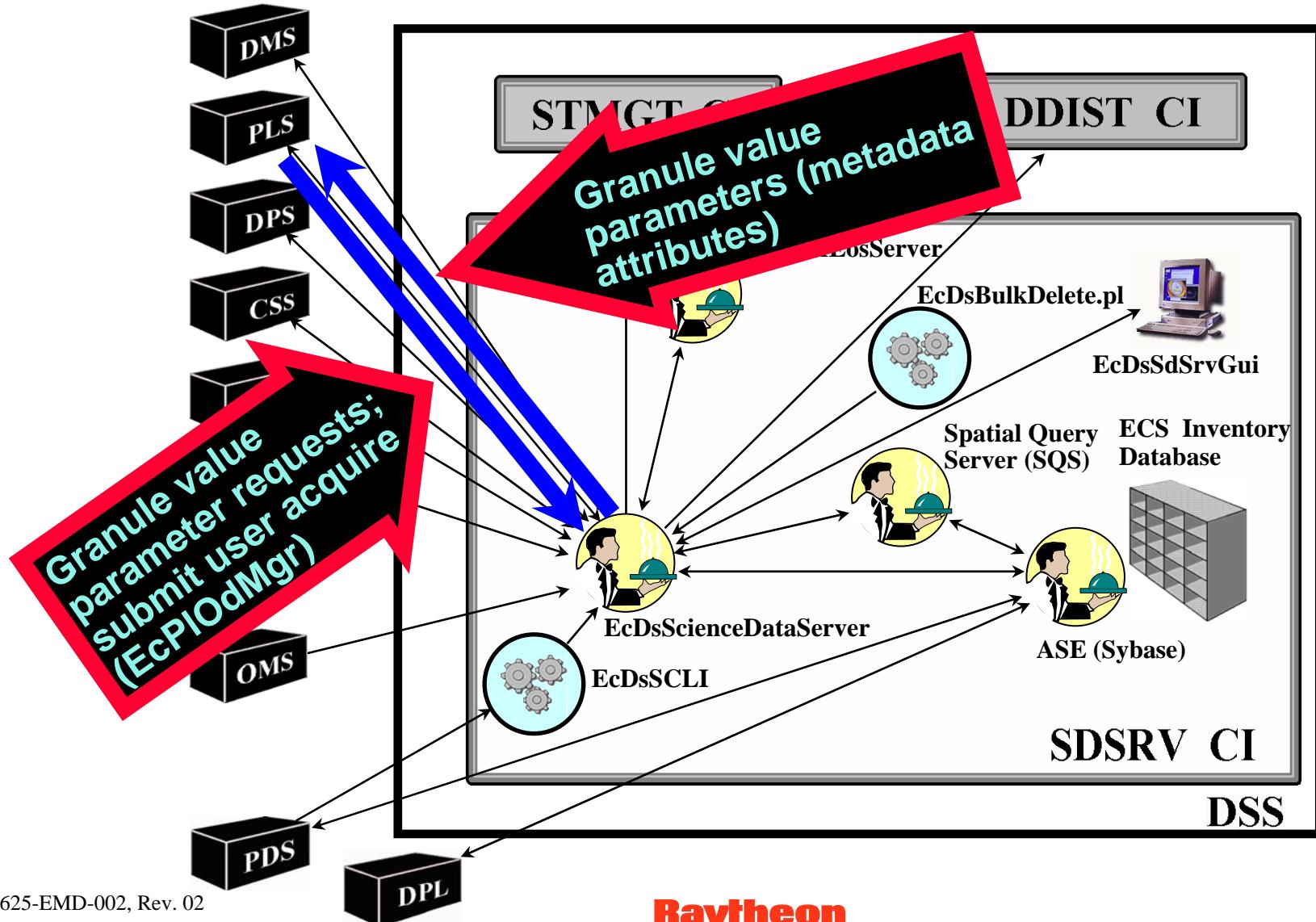
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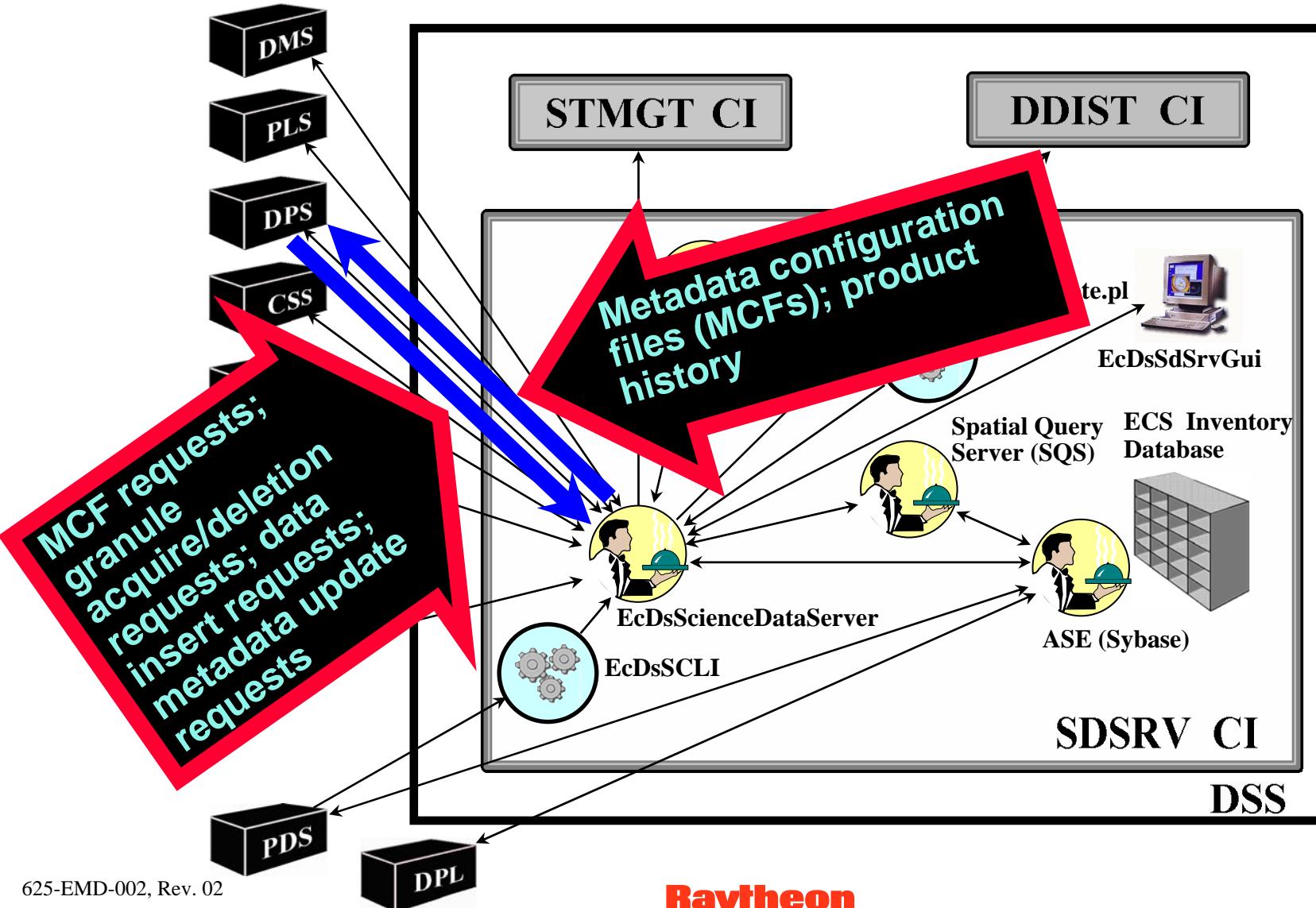
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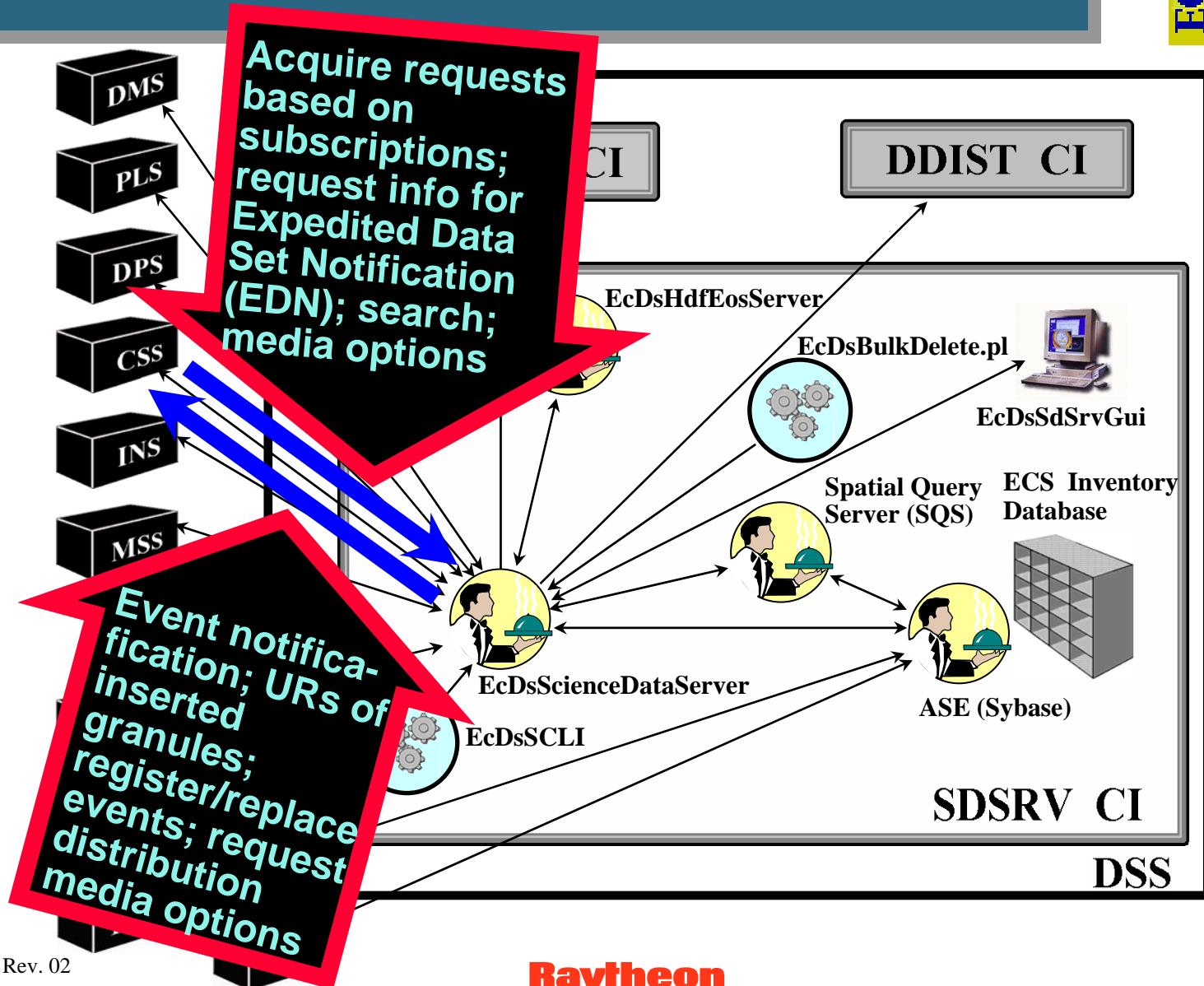
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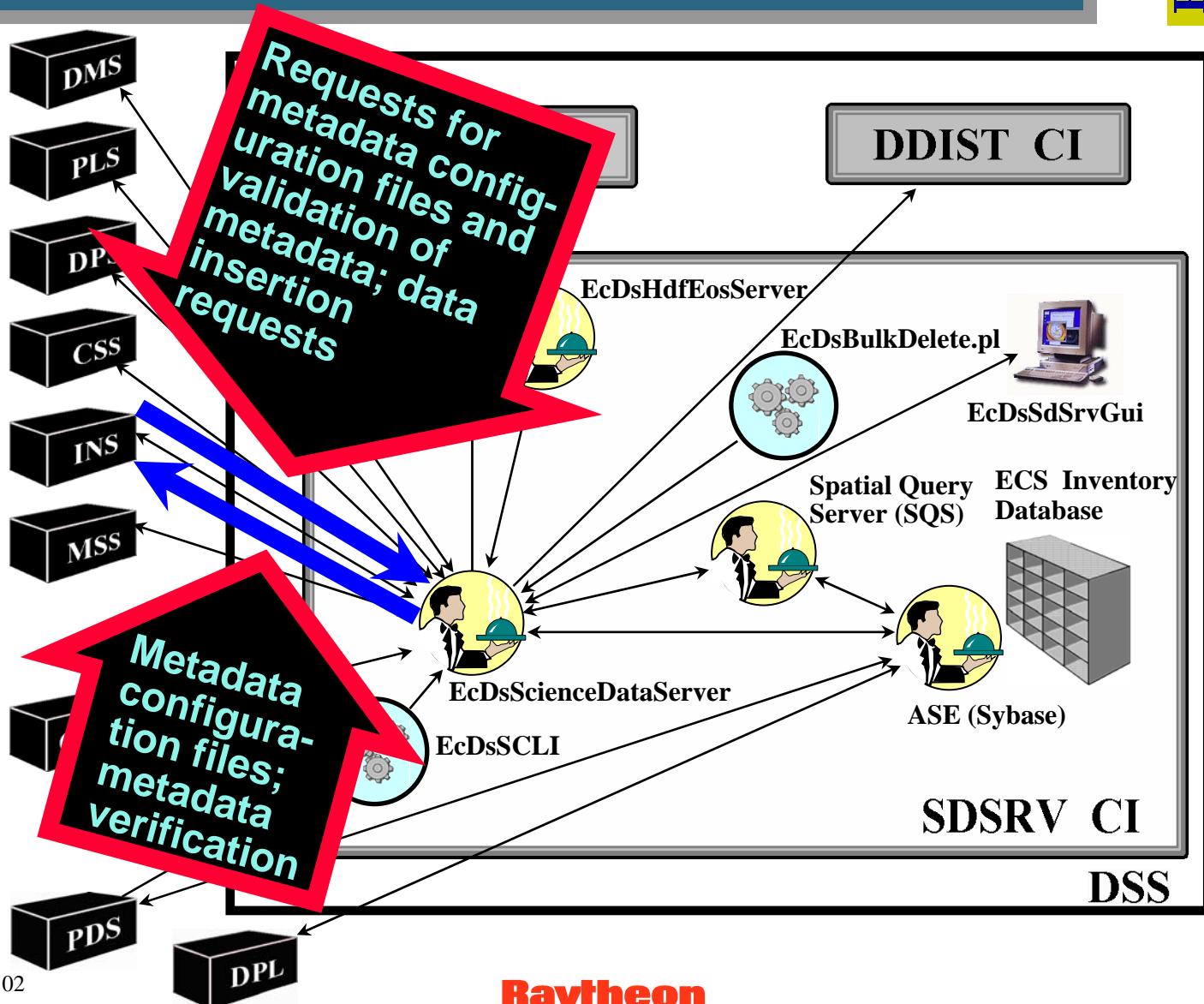
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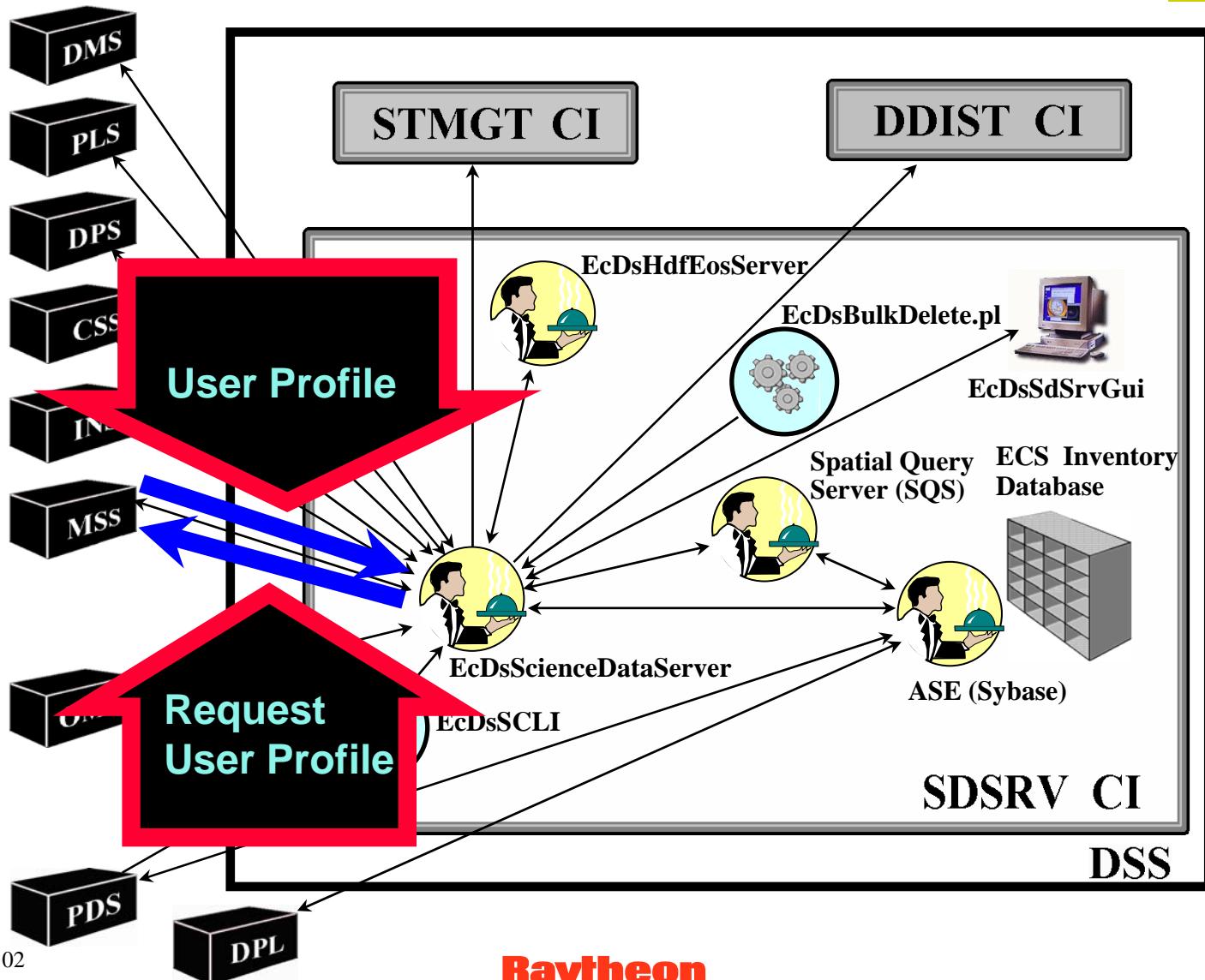
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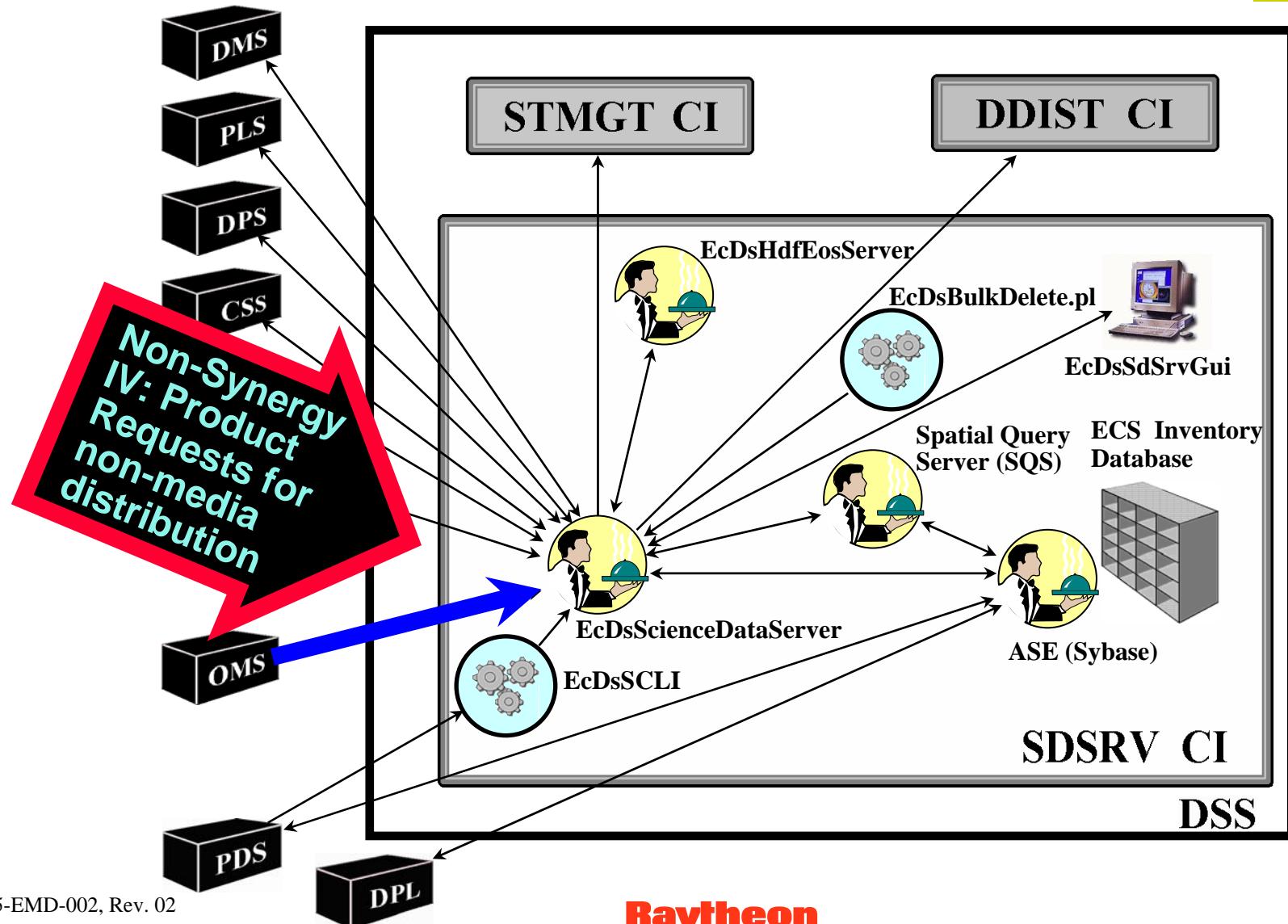
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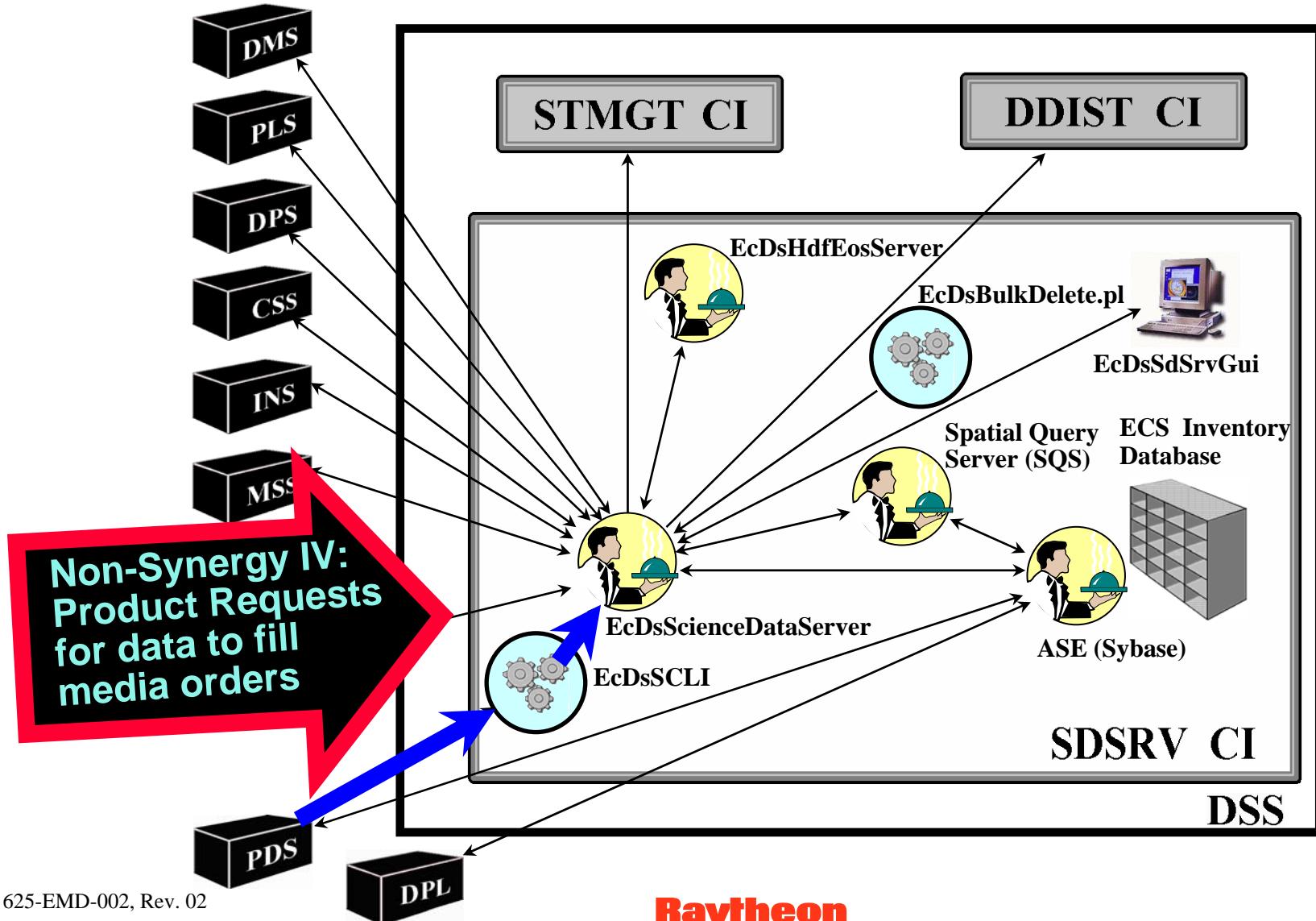
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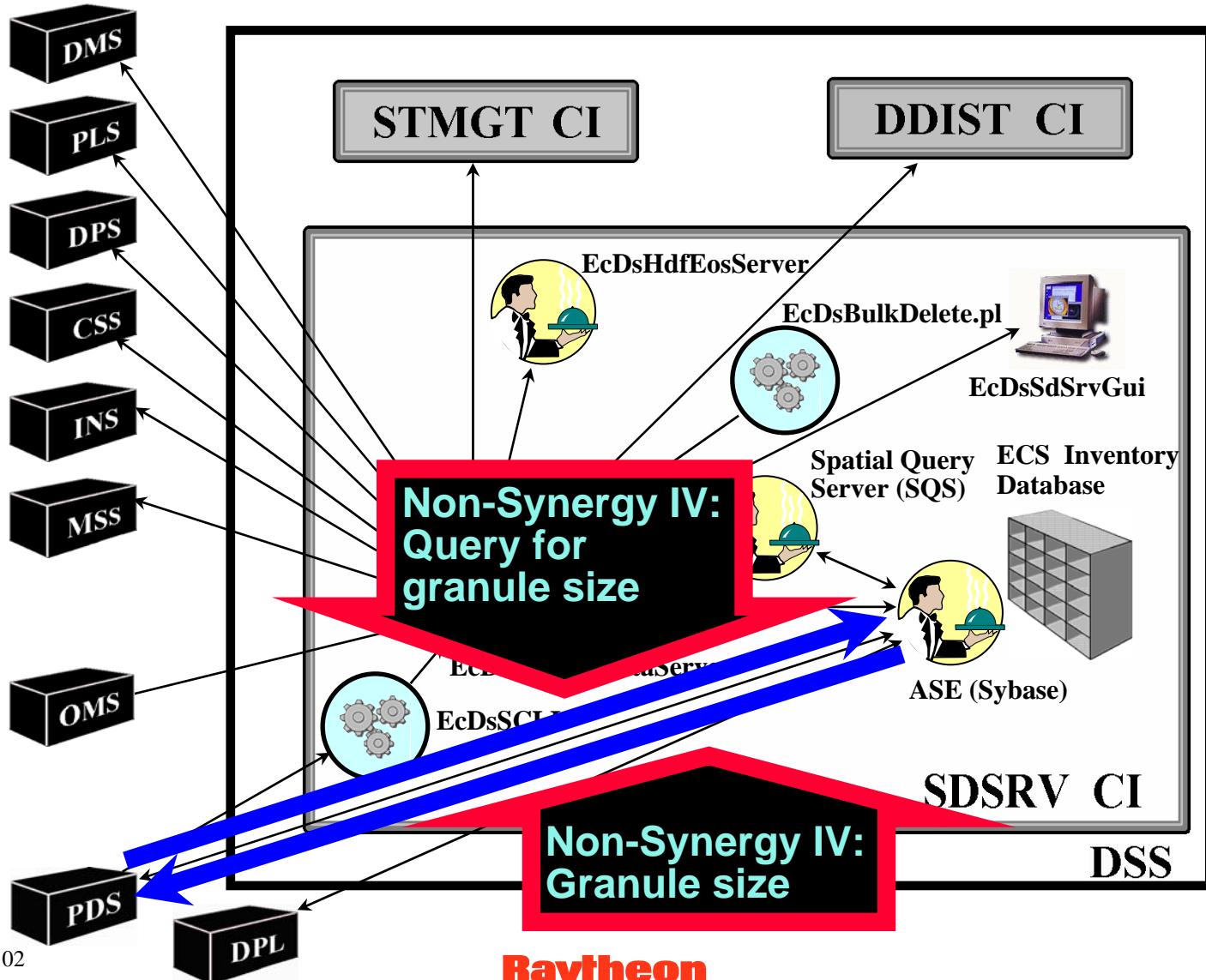
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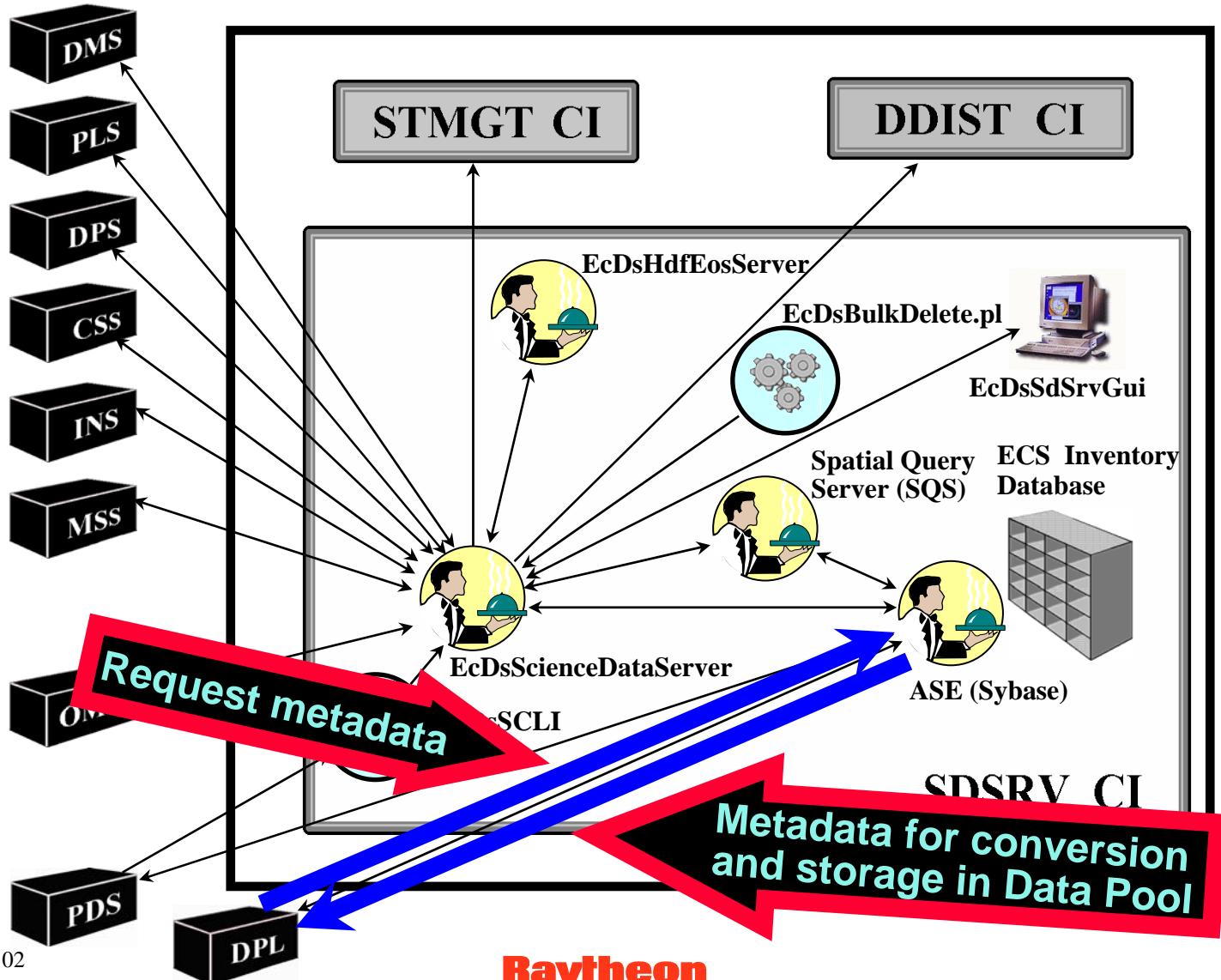
Subsystems and CSCIs: DSS SDSRV Architecture and Interfaces



Subsystems and CSCIs: DSS SDSRV Architecture and Interfaces



Subsystems and CSCIs: DSS SDSRV Architecture and Interfaces



Subsystems and CSCIs: DSS (Cont.)

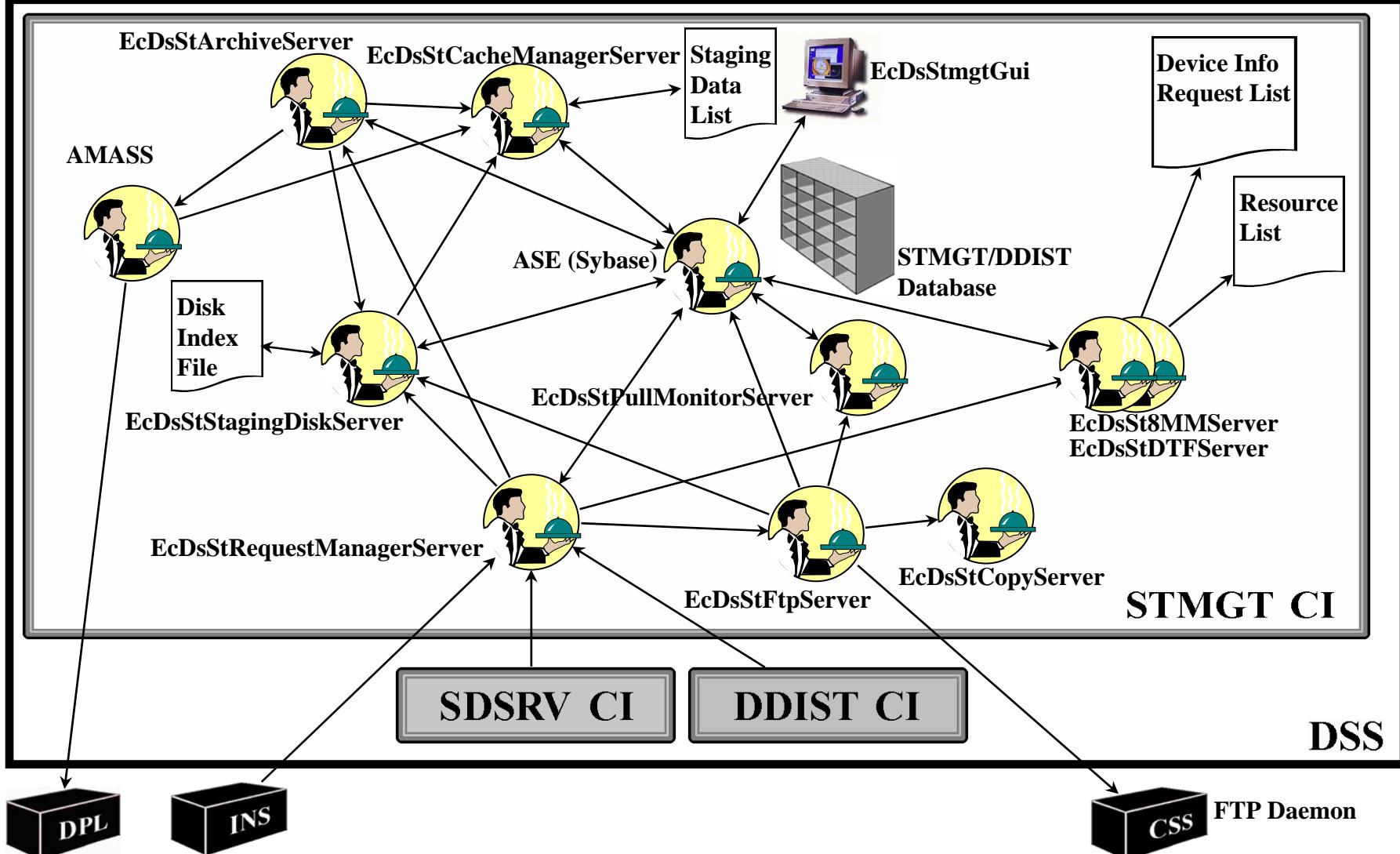


- **Storage Management (STMGT) CSCI**

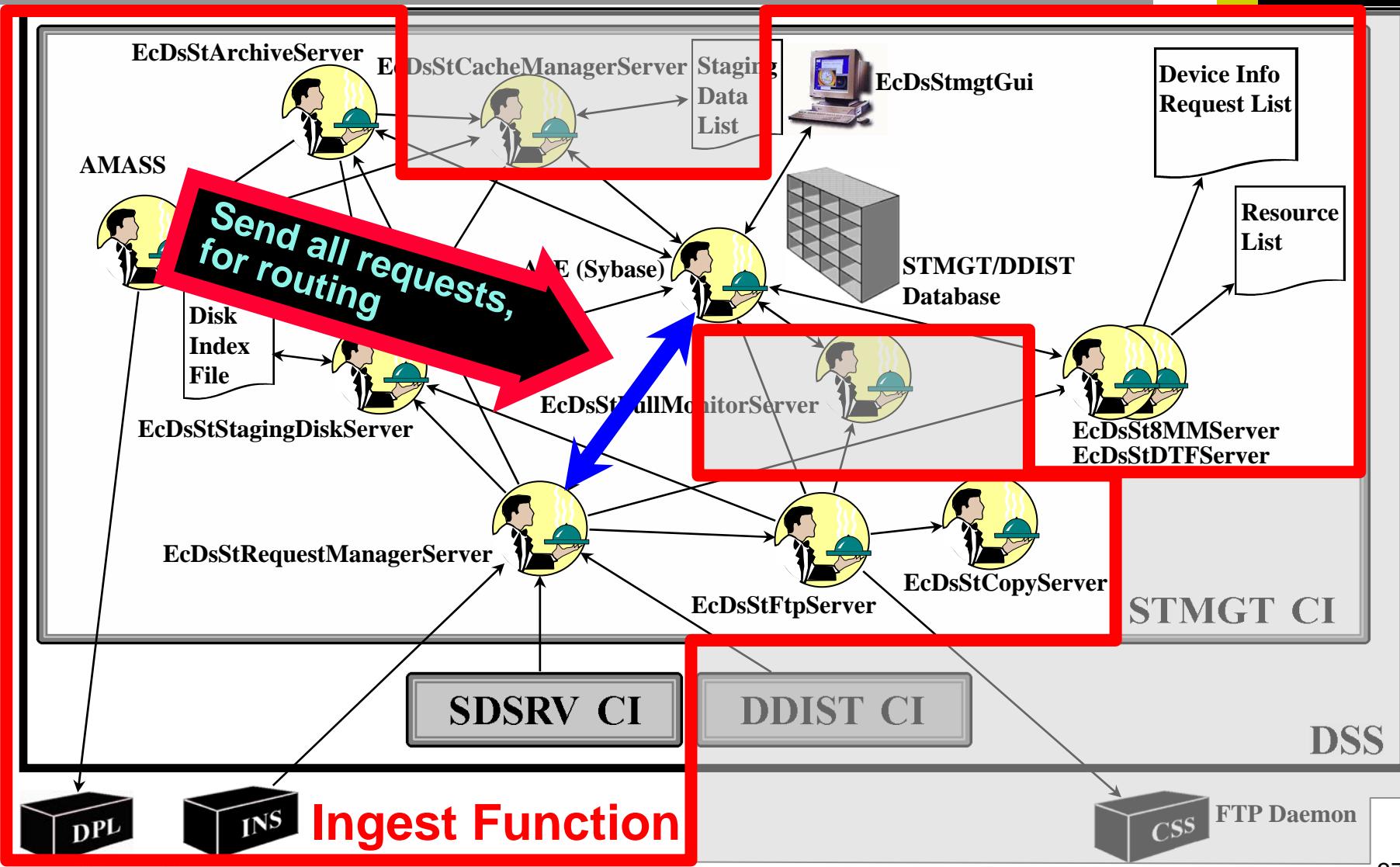


- Stores, manages, and retrieves data files on behalf of other science data processing components
- Six major components
 - **Archive Server** - provides GUI and access to stored data
 - **Cache/Staging Manager** - Cache Manager server and Staging Disk server manage data files that have been retrieved from the archive and placed into a cache area on staging disk
 - **Media Server Process** - schedules access to shared peripheral resources (FTP, secure copy) and devices for Ingest (8mm, DTF-2)
 - **Pull Monitor** - links to Cache Manager to manage files in the user pull area, making them eligible for deletion as they are retrieved by users or as their time-out periods expire
 - **Request Manager** - routes requests from clients to servers
 - **Data Base** - contains data tables for STMGT devices, cache management, event and log management, requests, and related functions

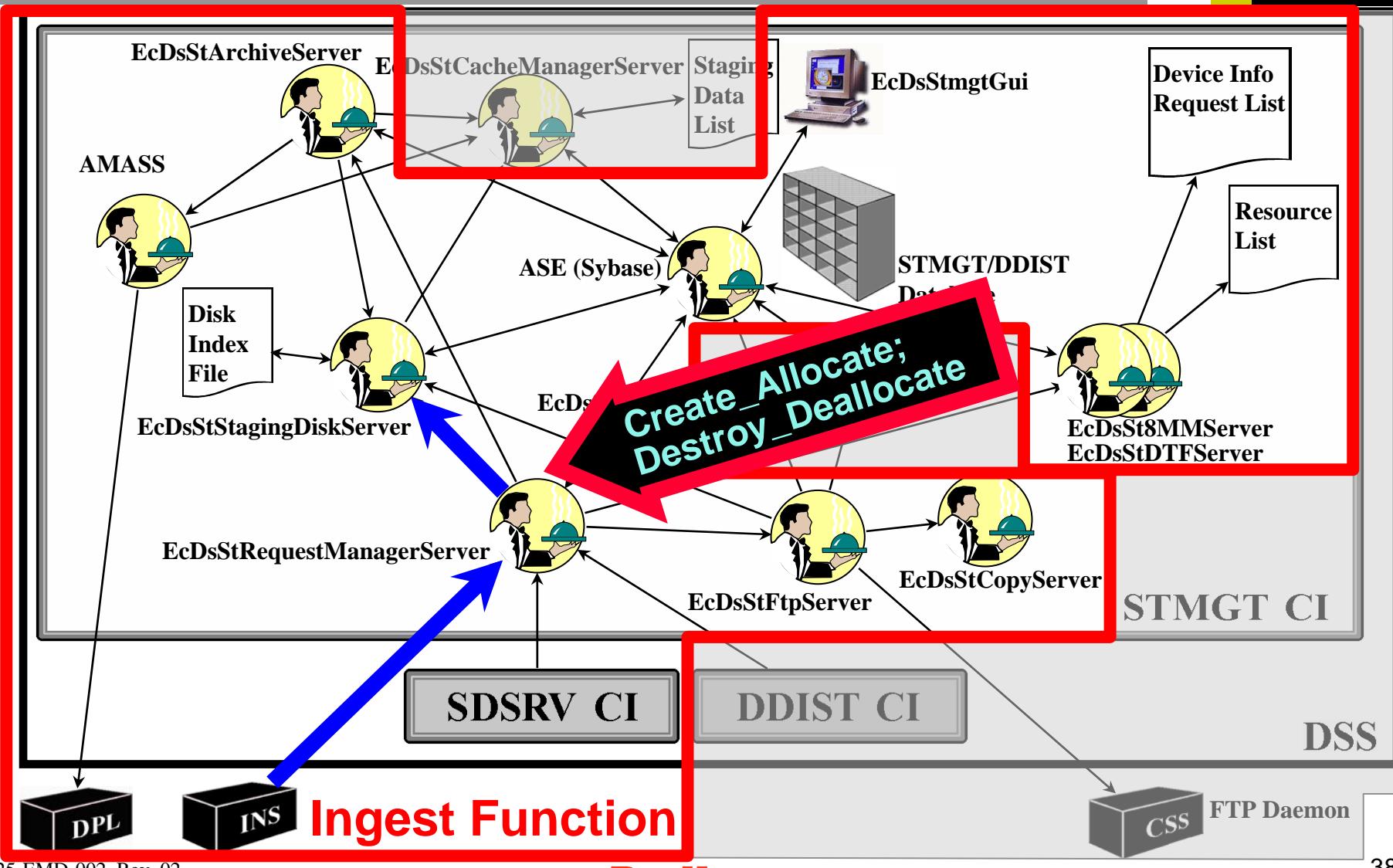
Subsystems and CSCLs: DSS STMGT Architecture and Interfaces



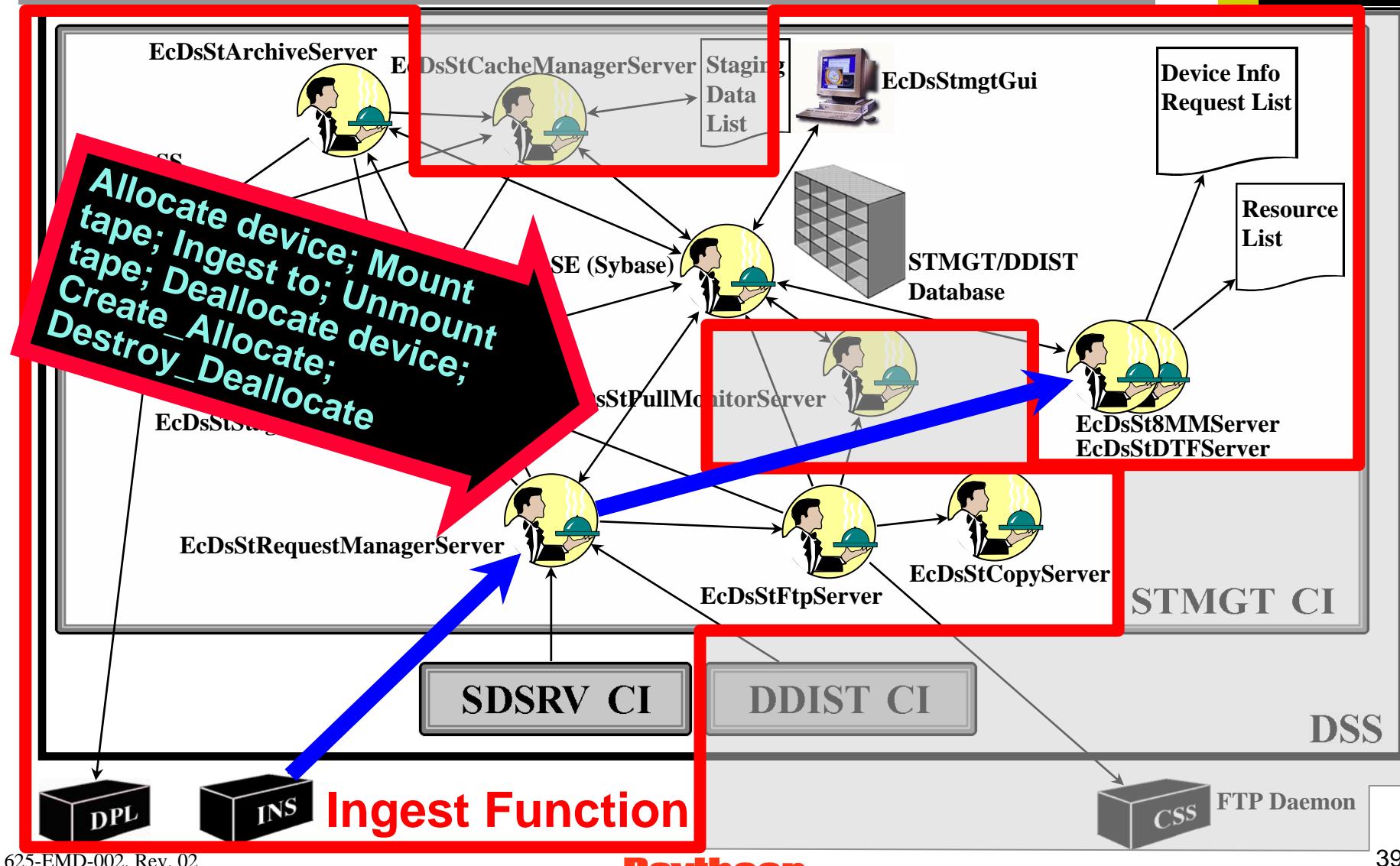
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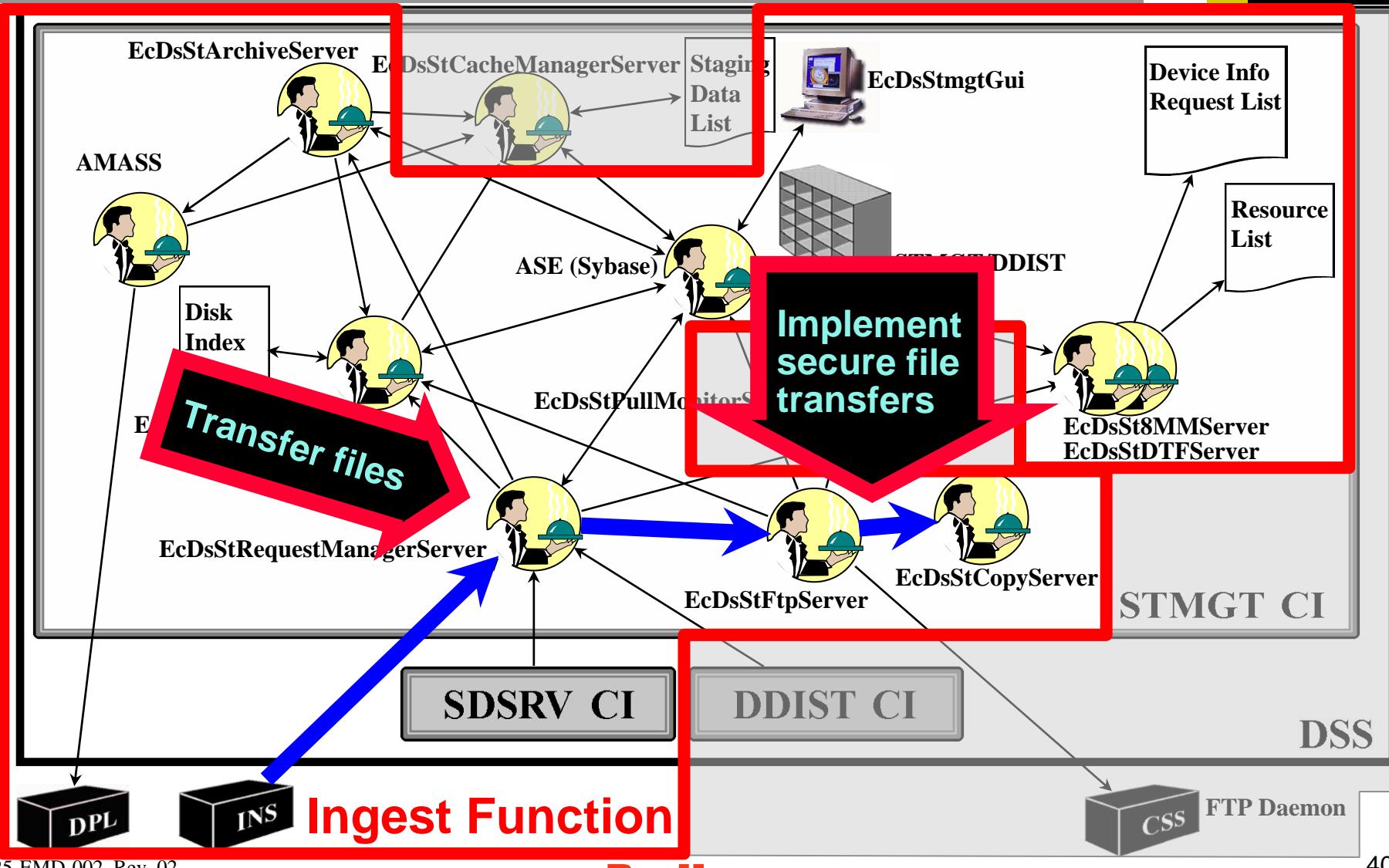
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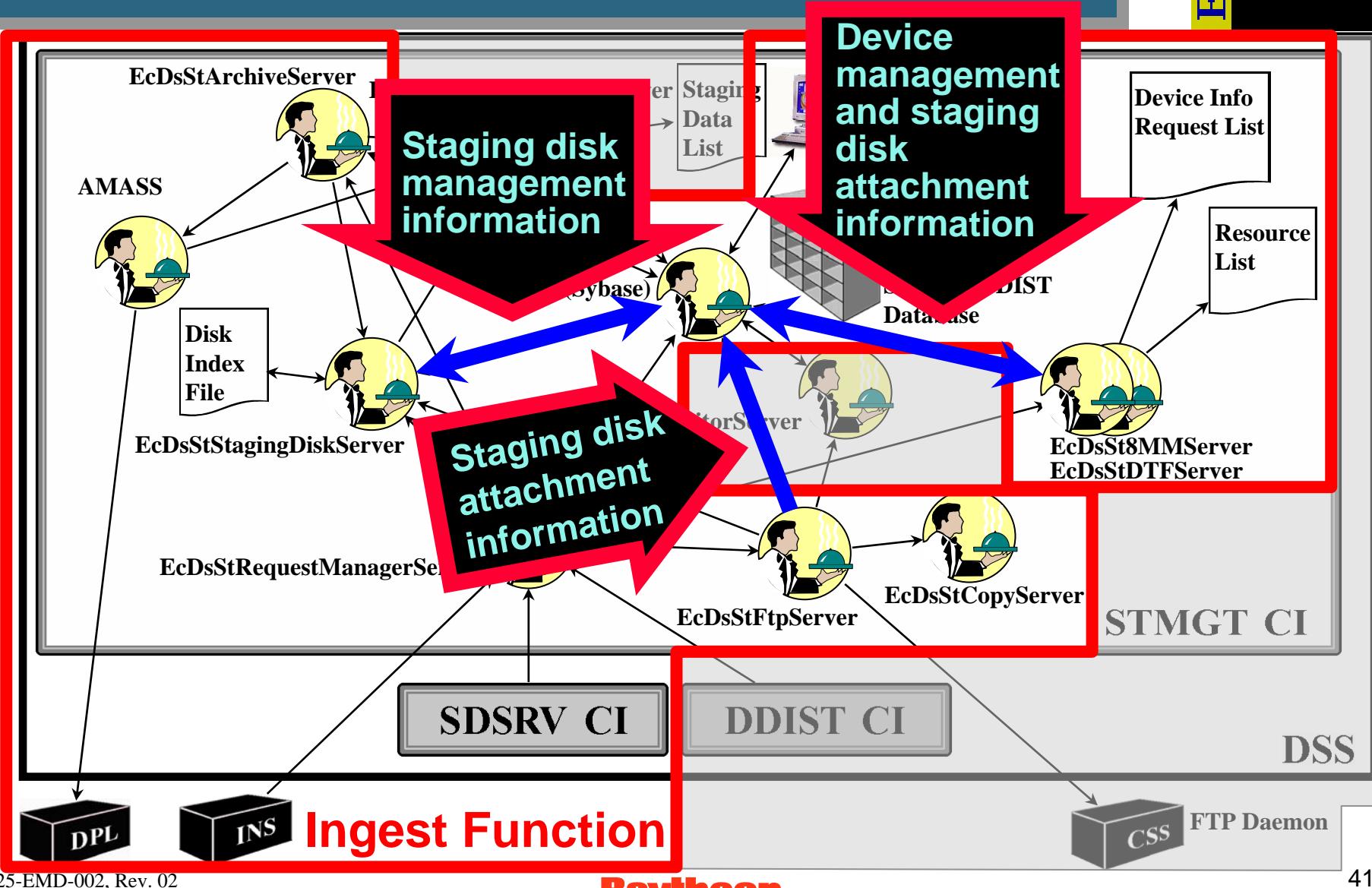
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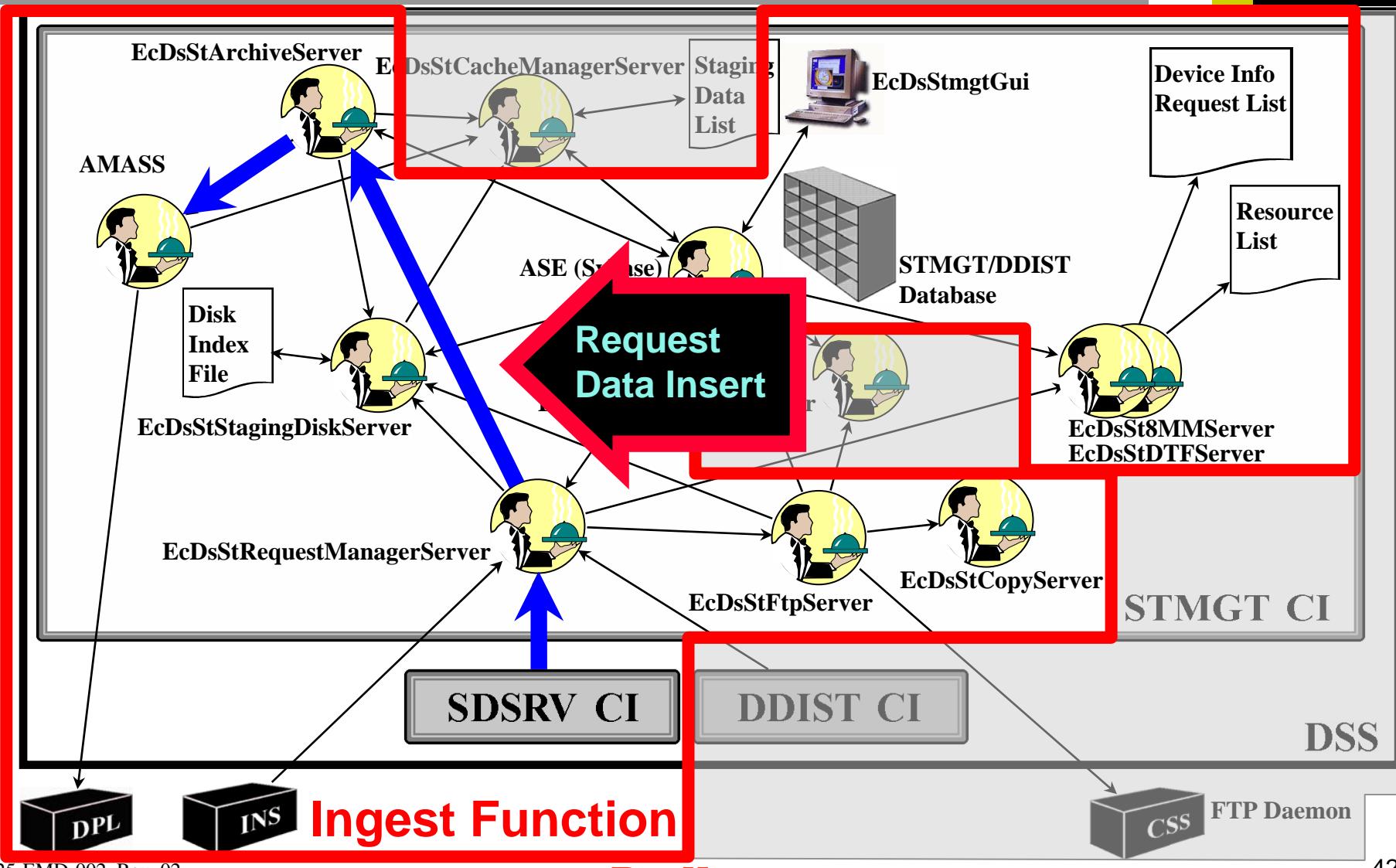
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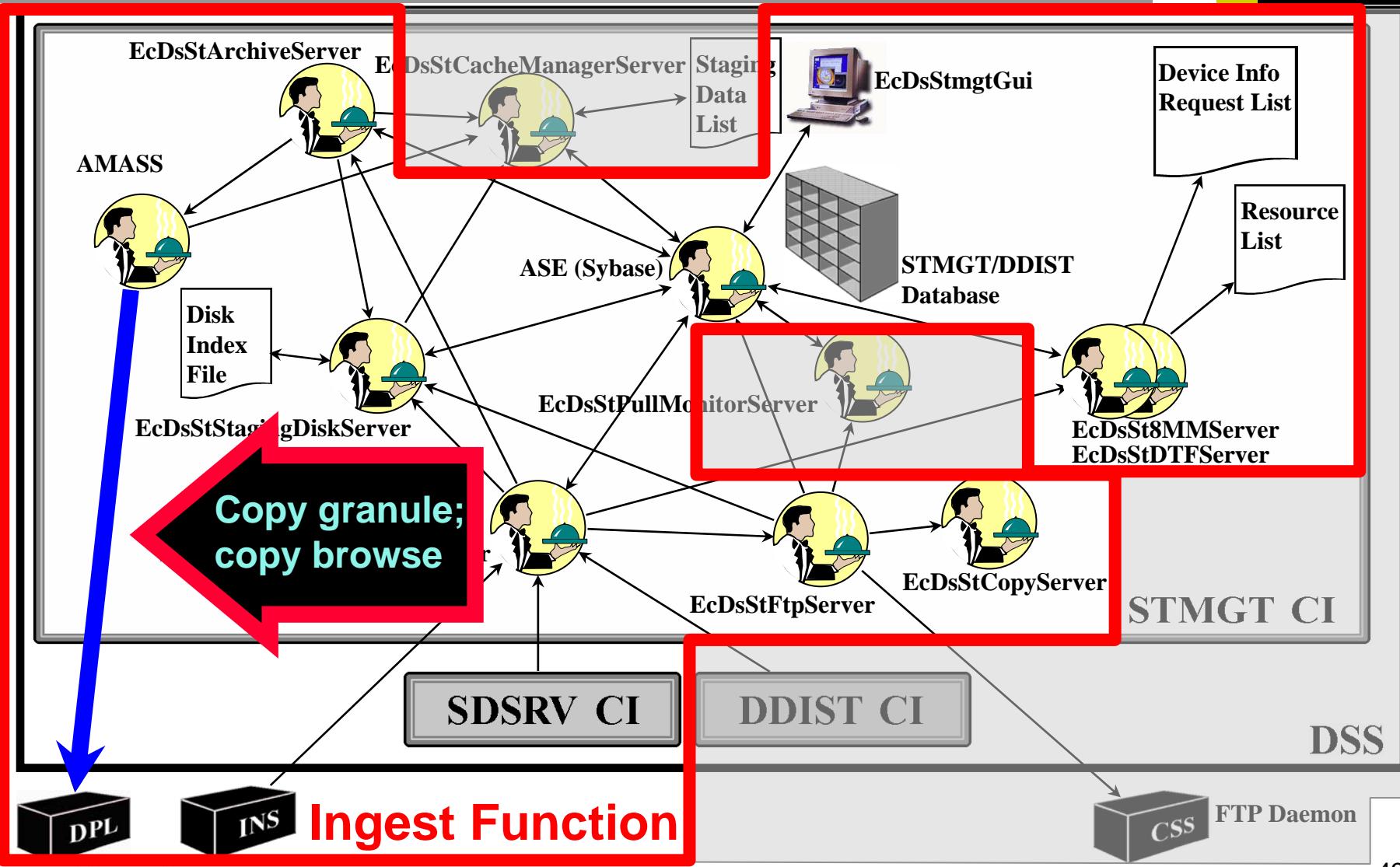
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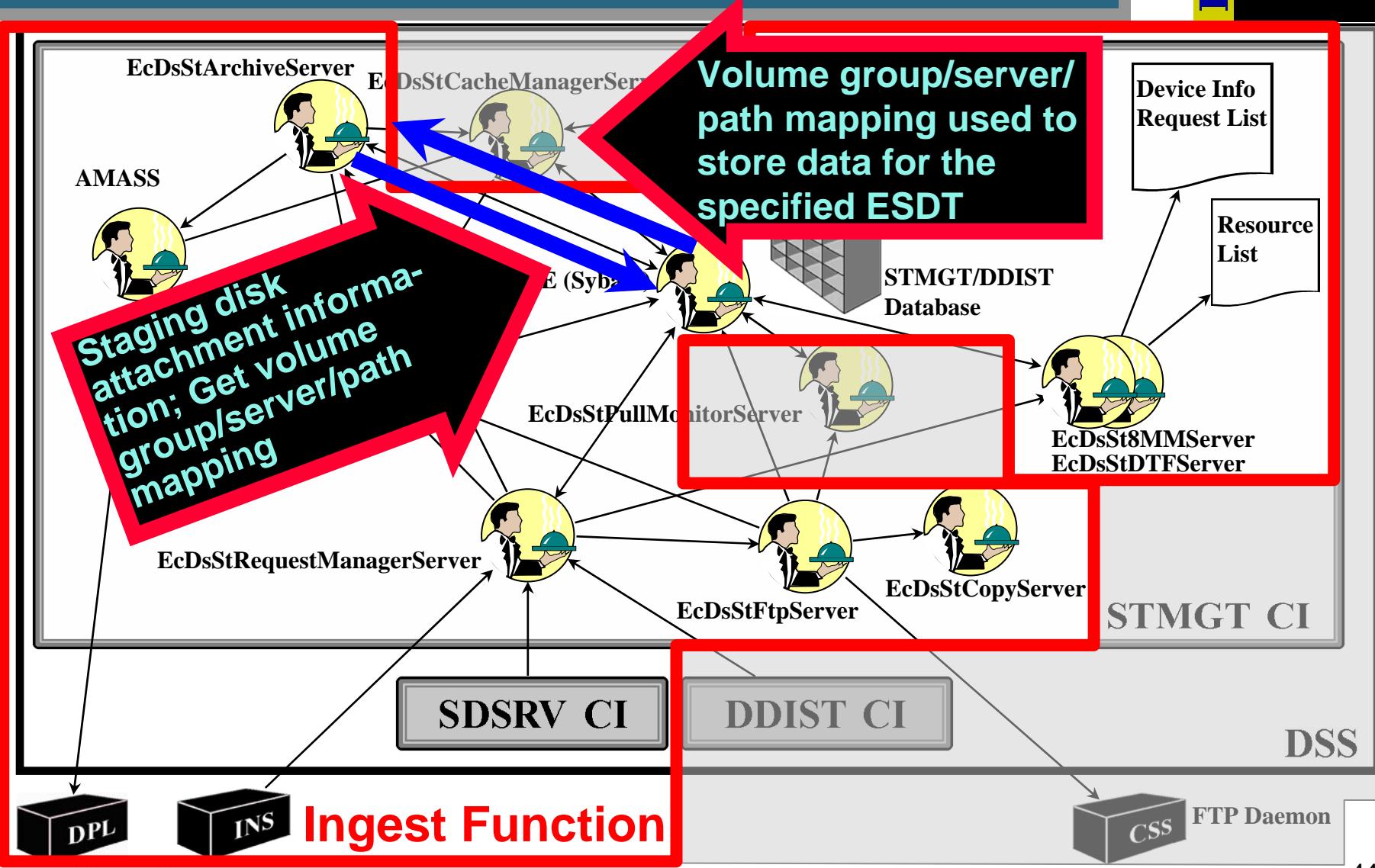
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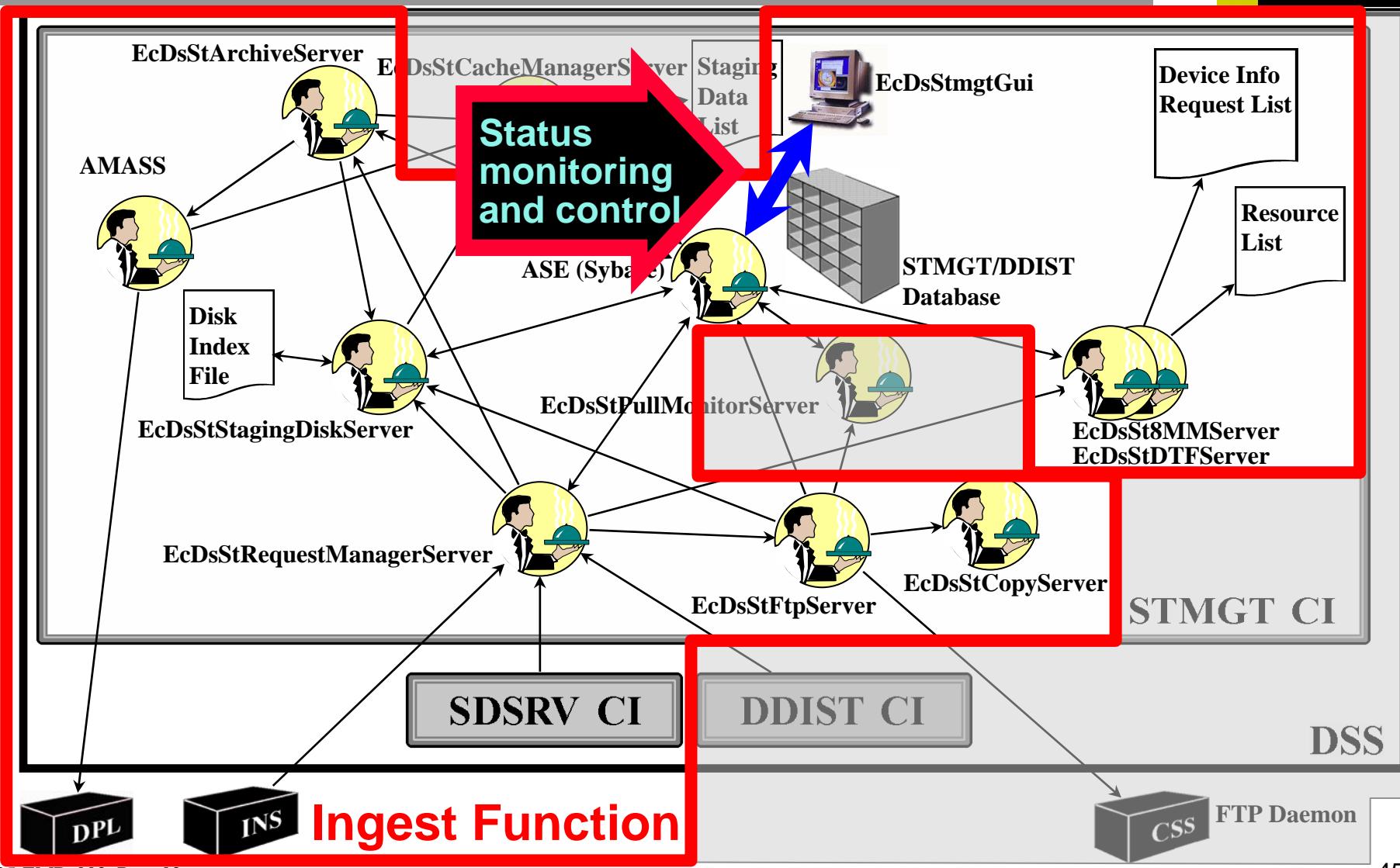
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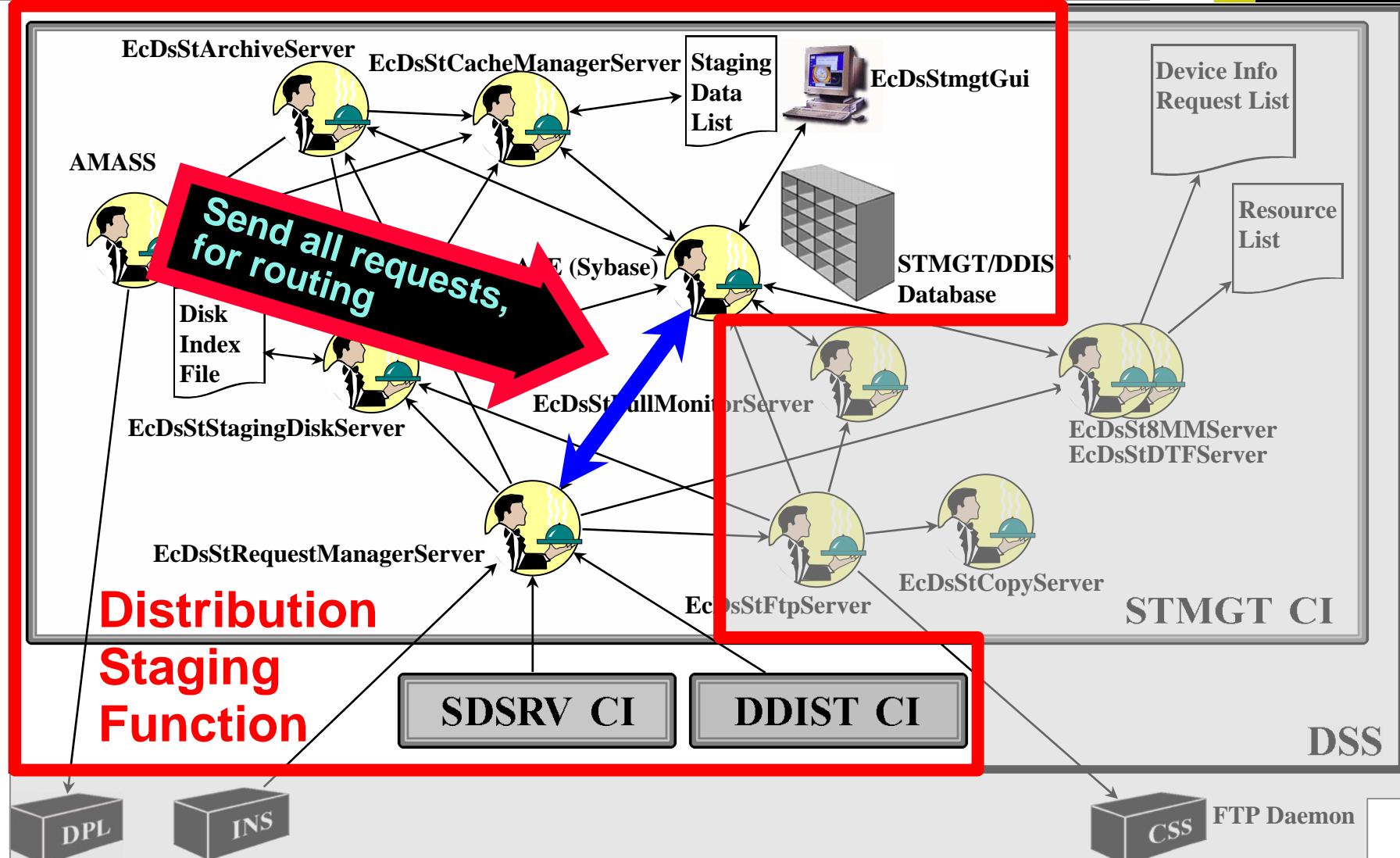
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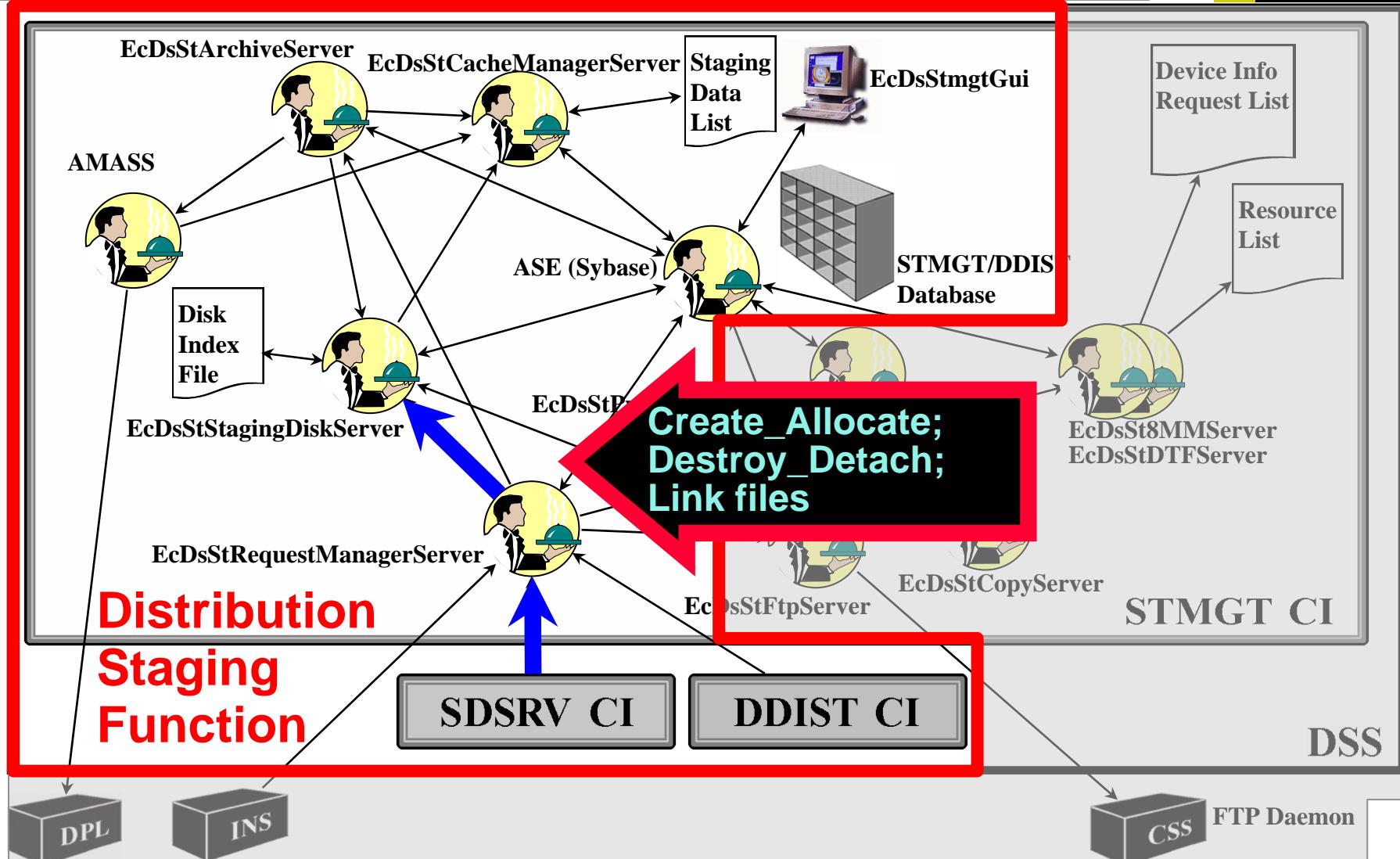
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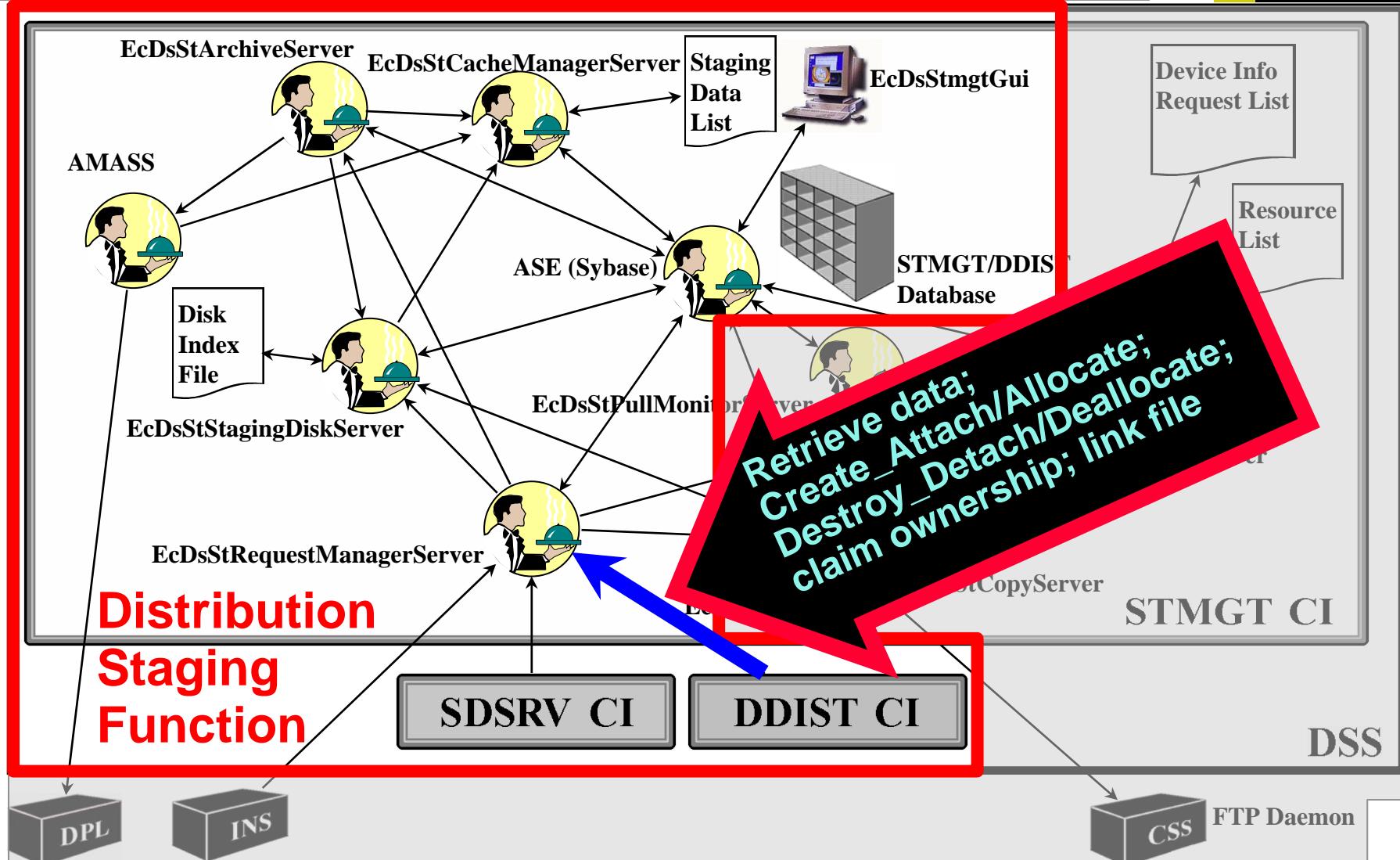
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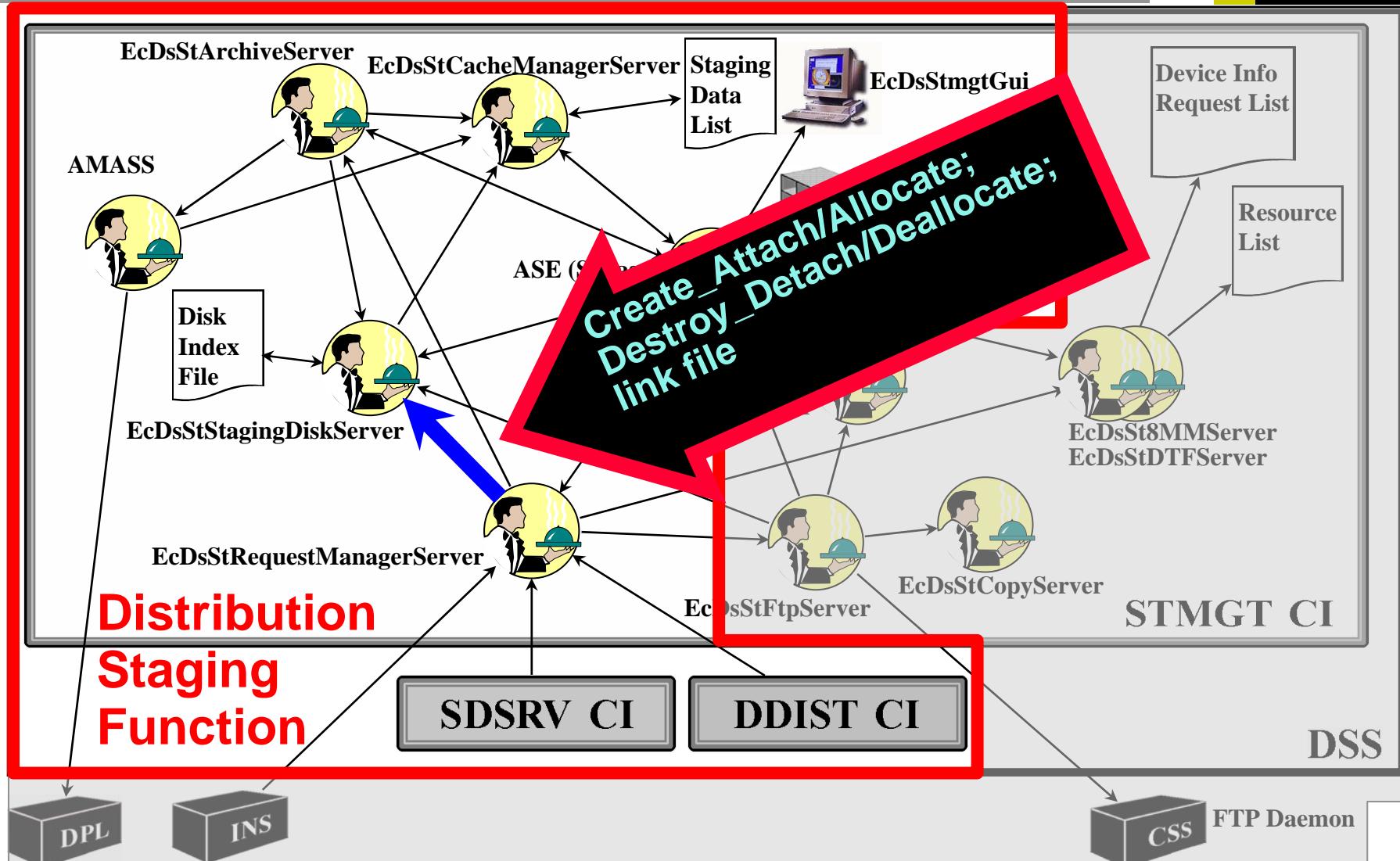
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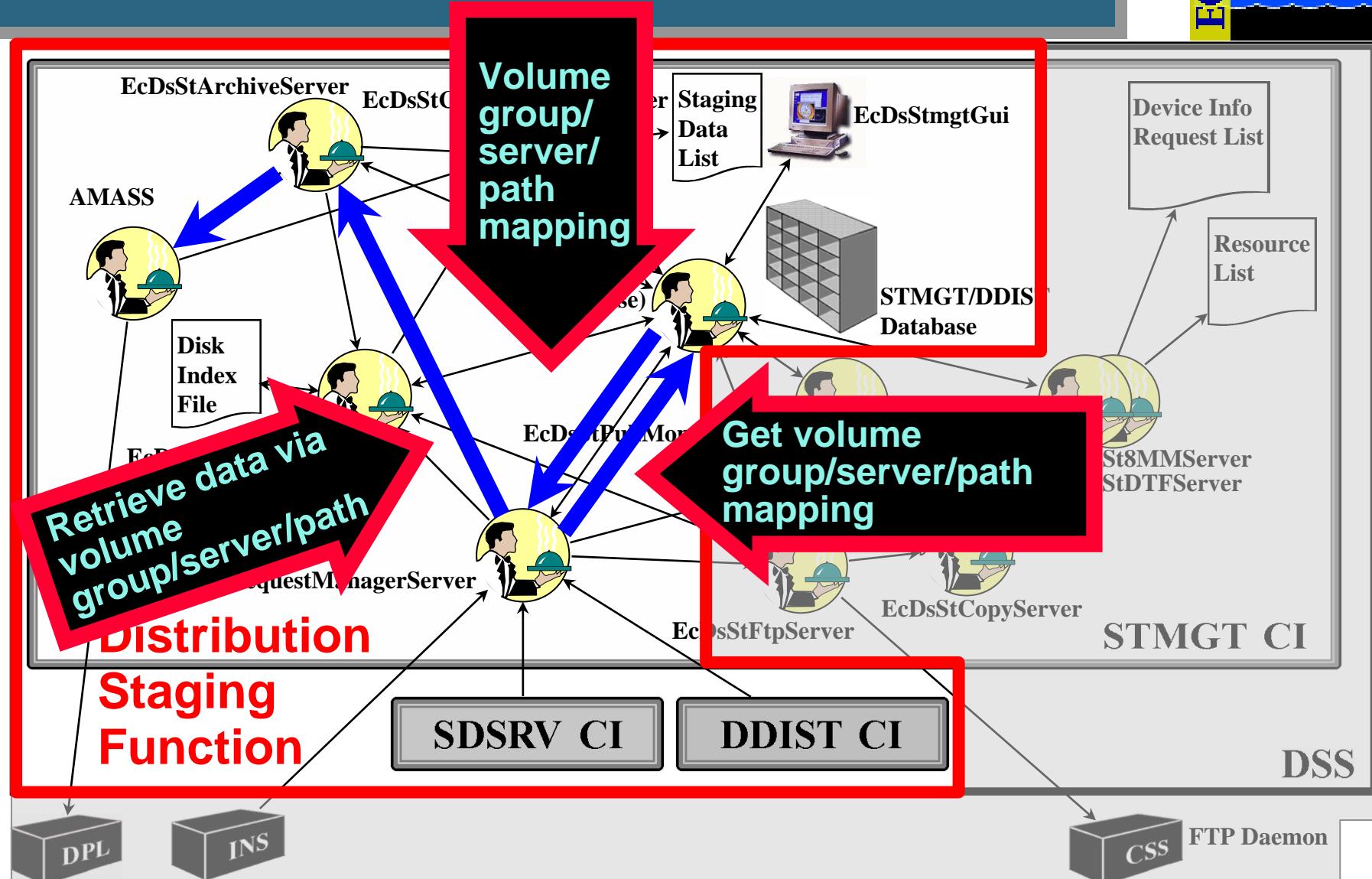
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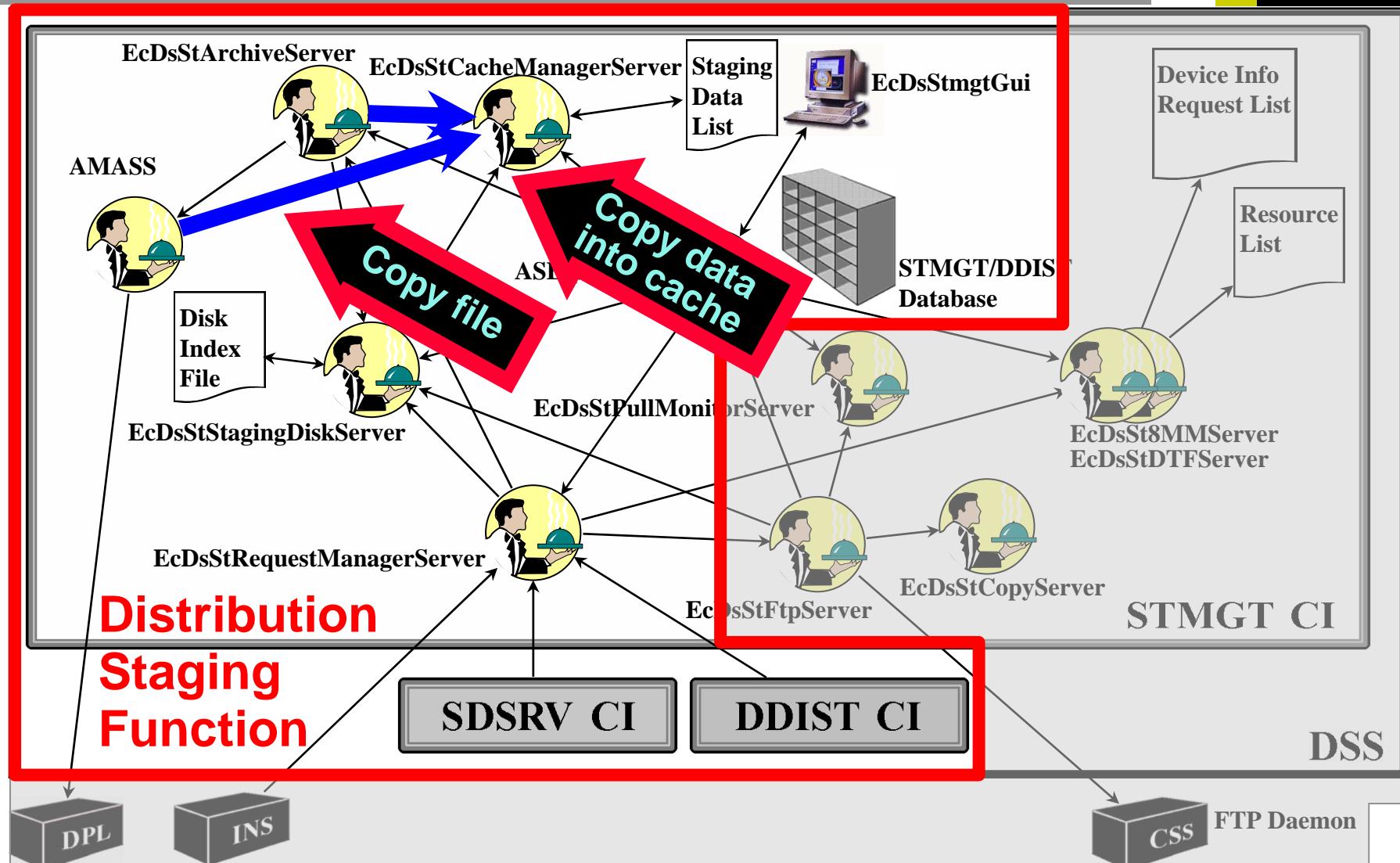
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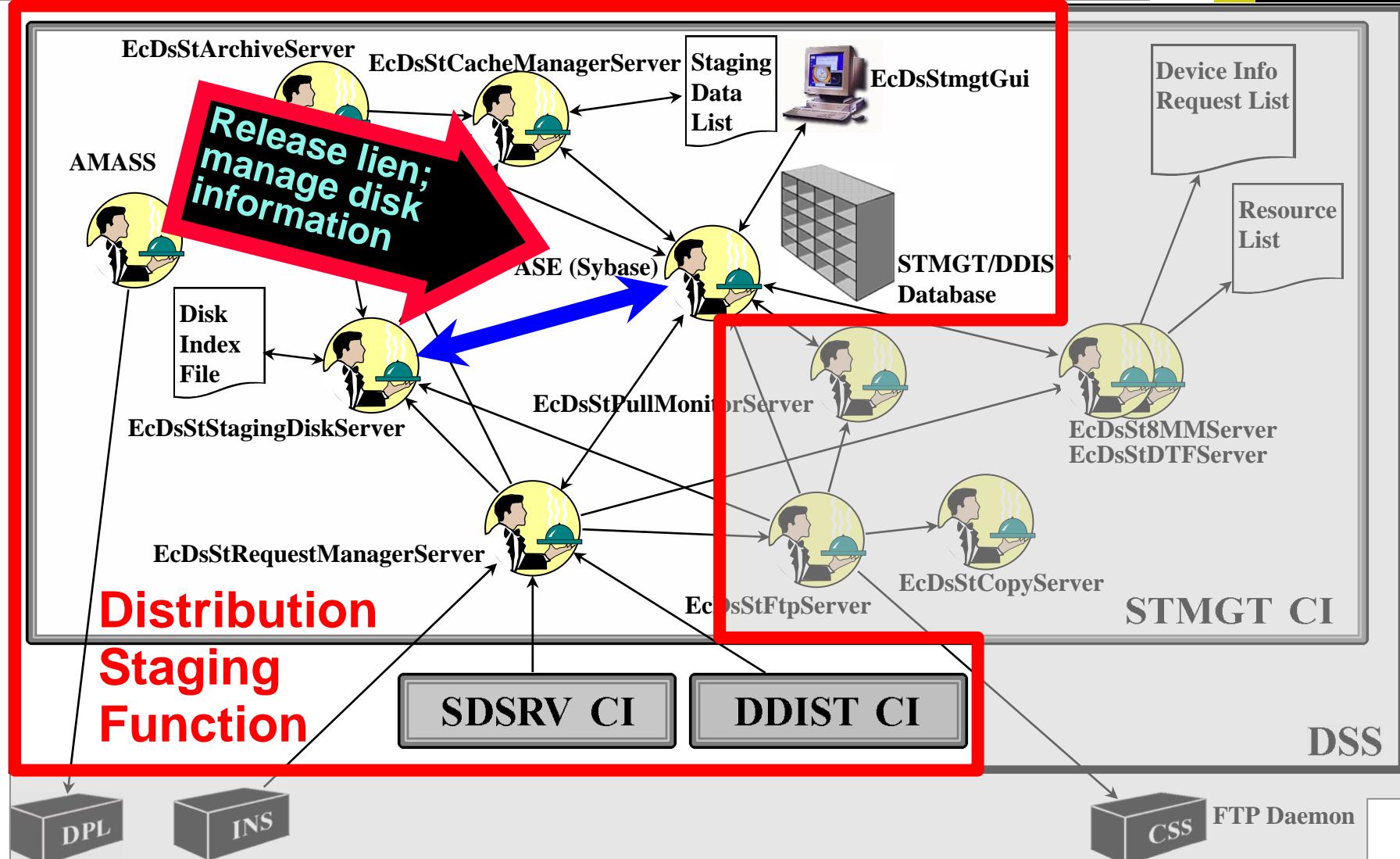
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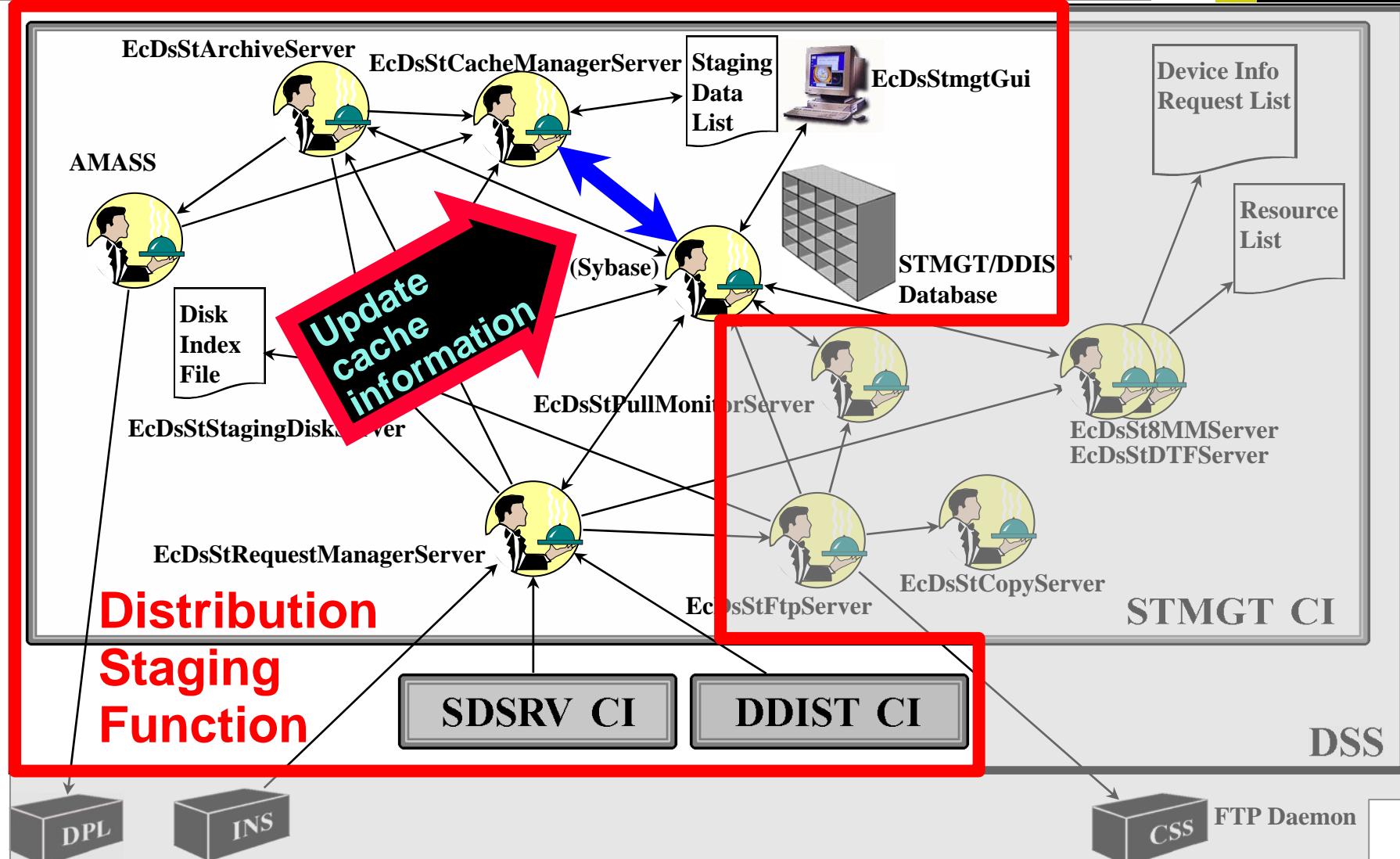
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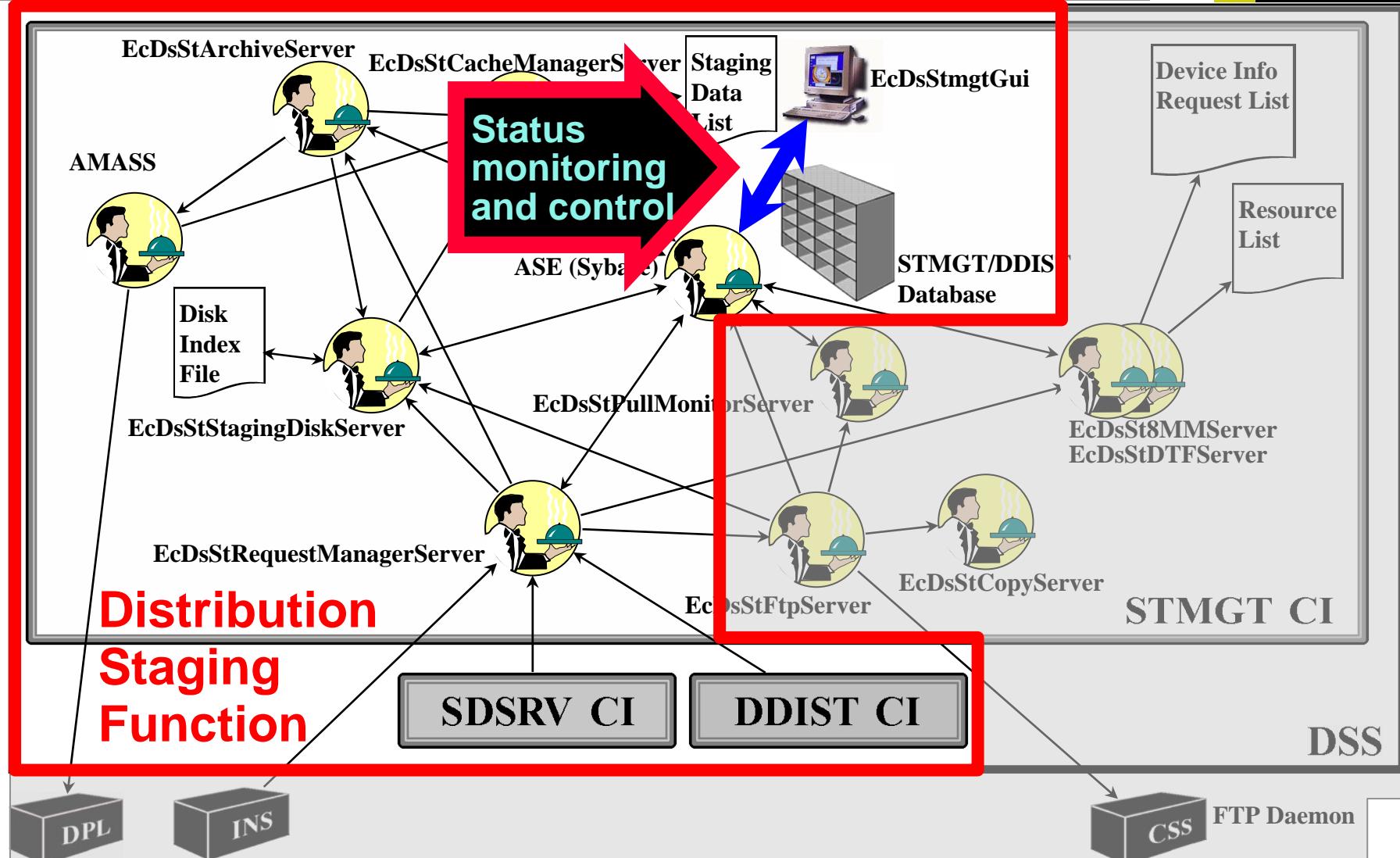
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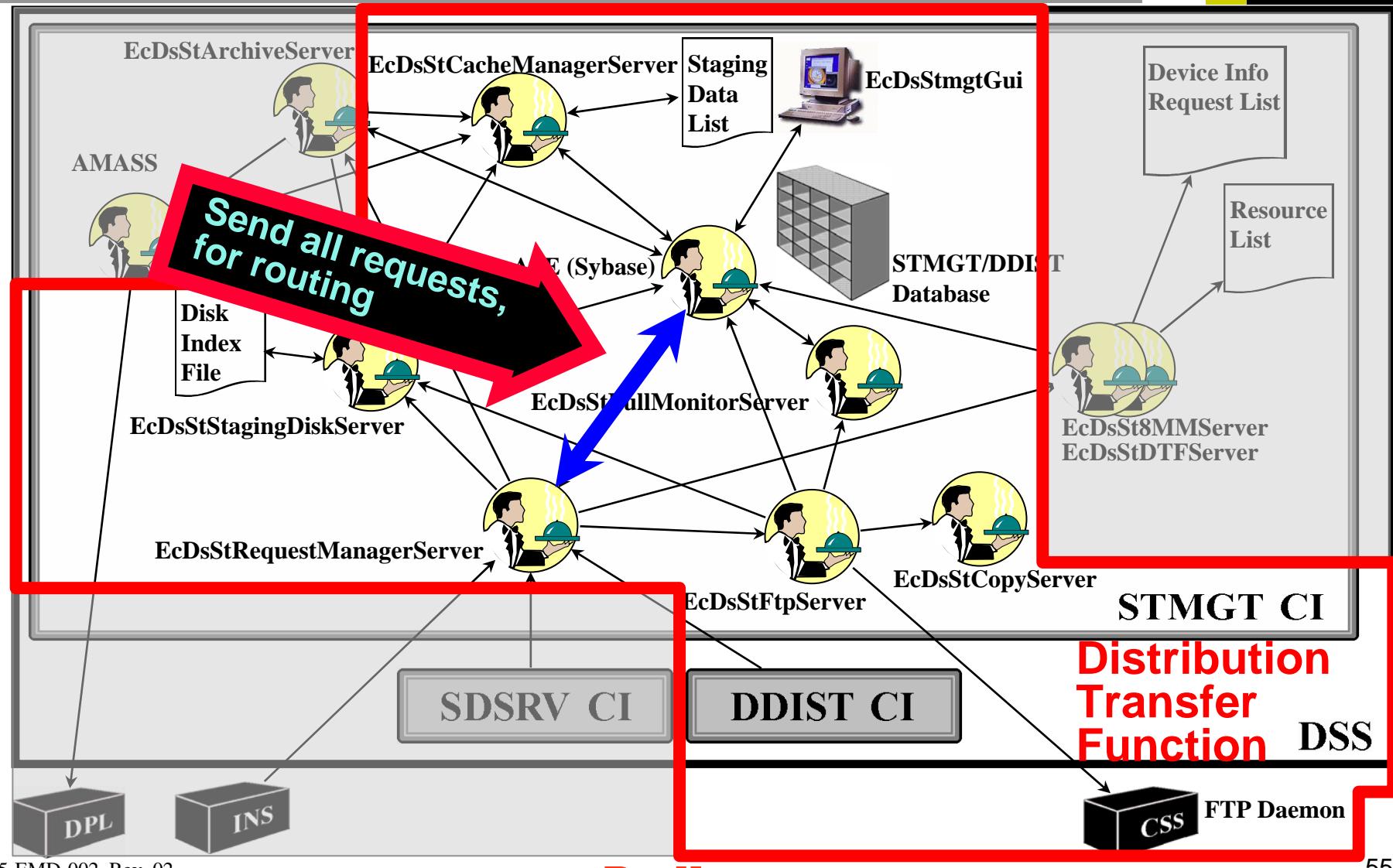
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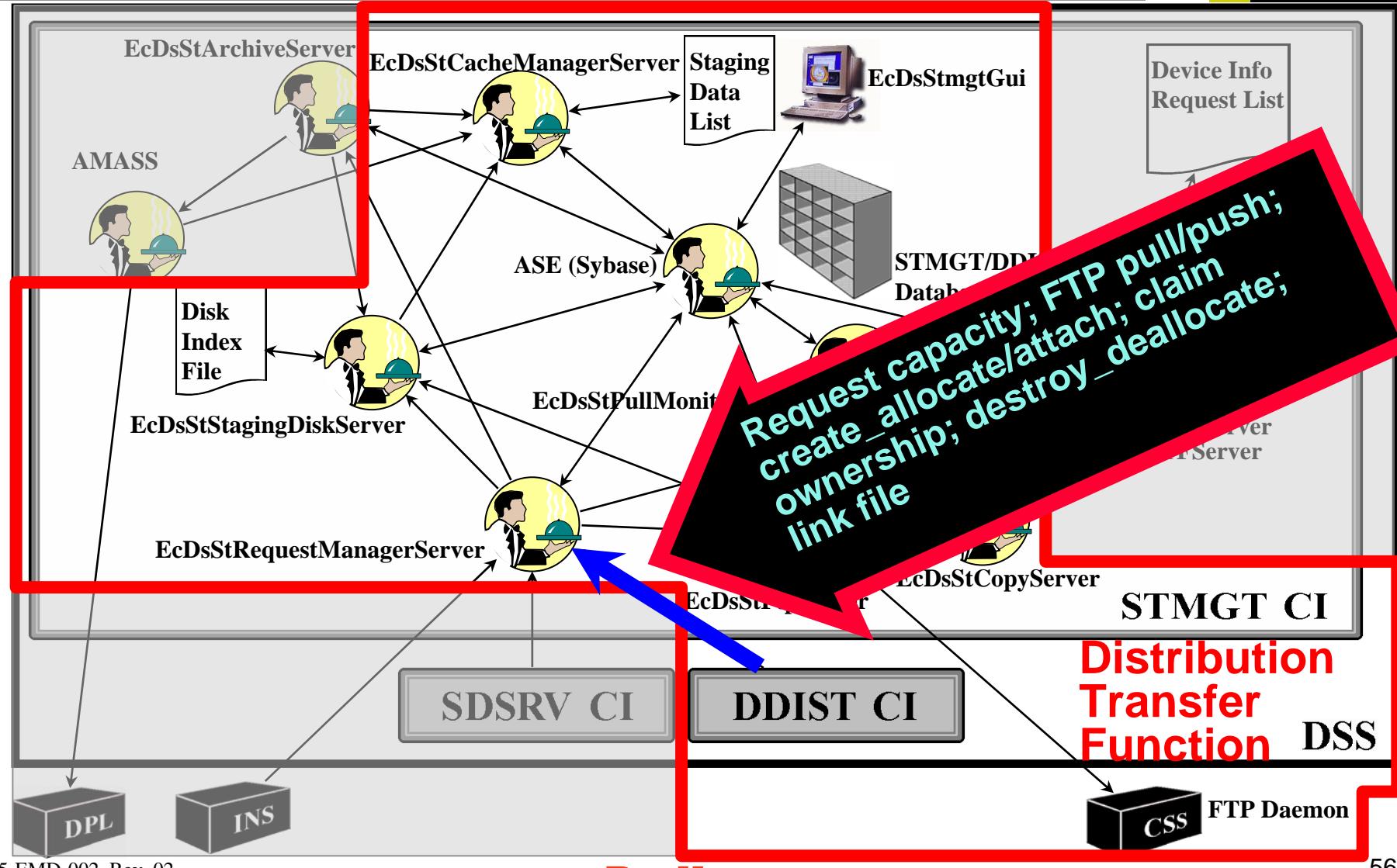
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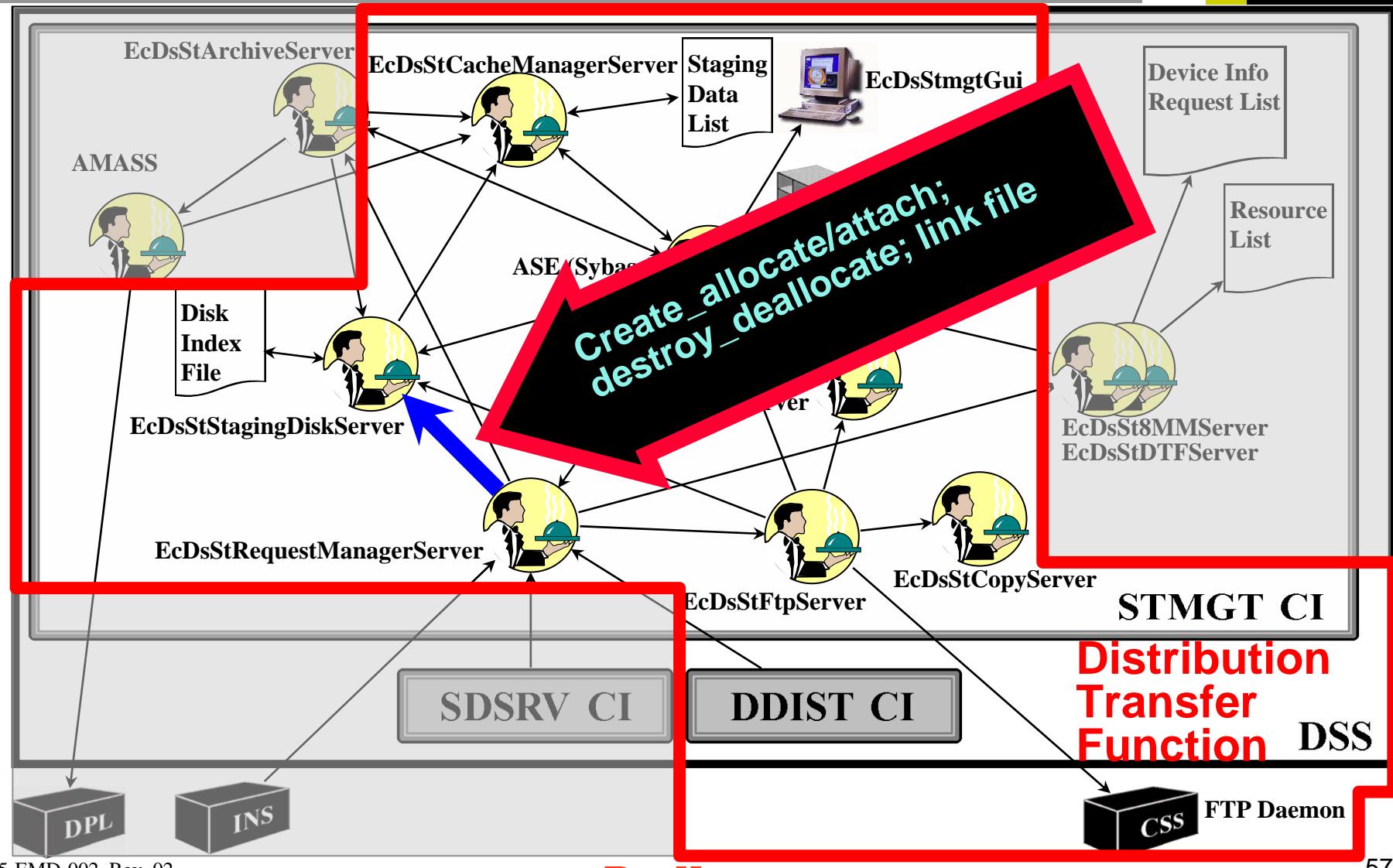
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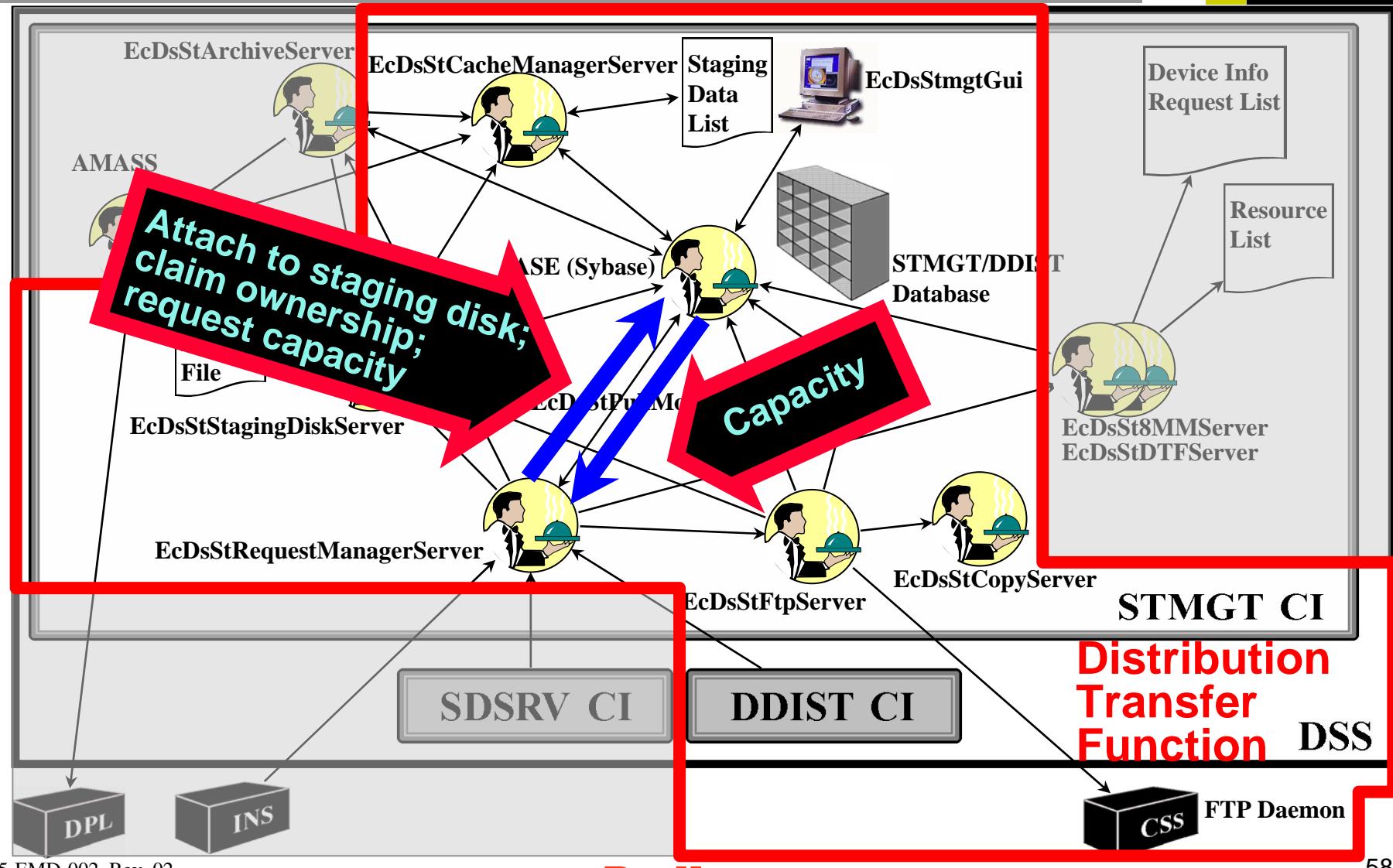
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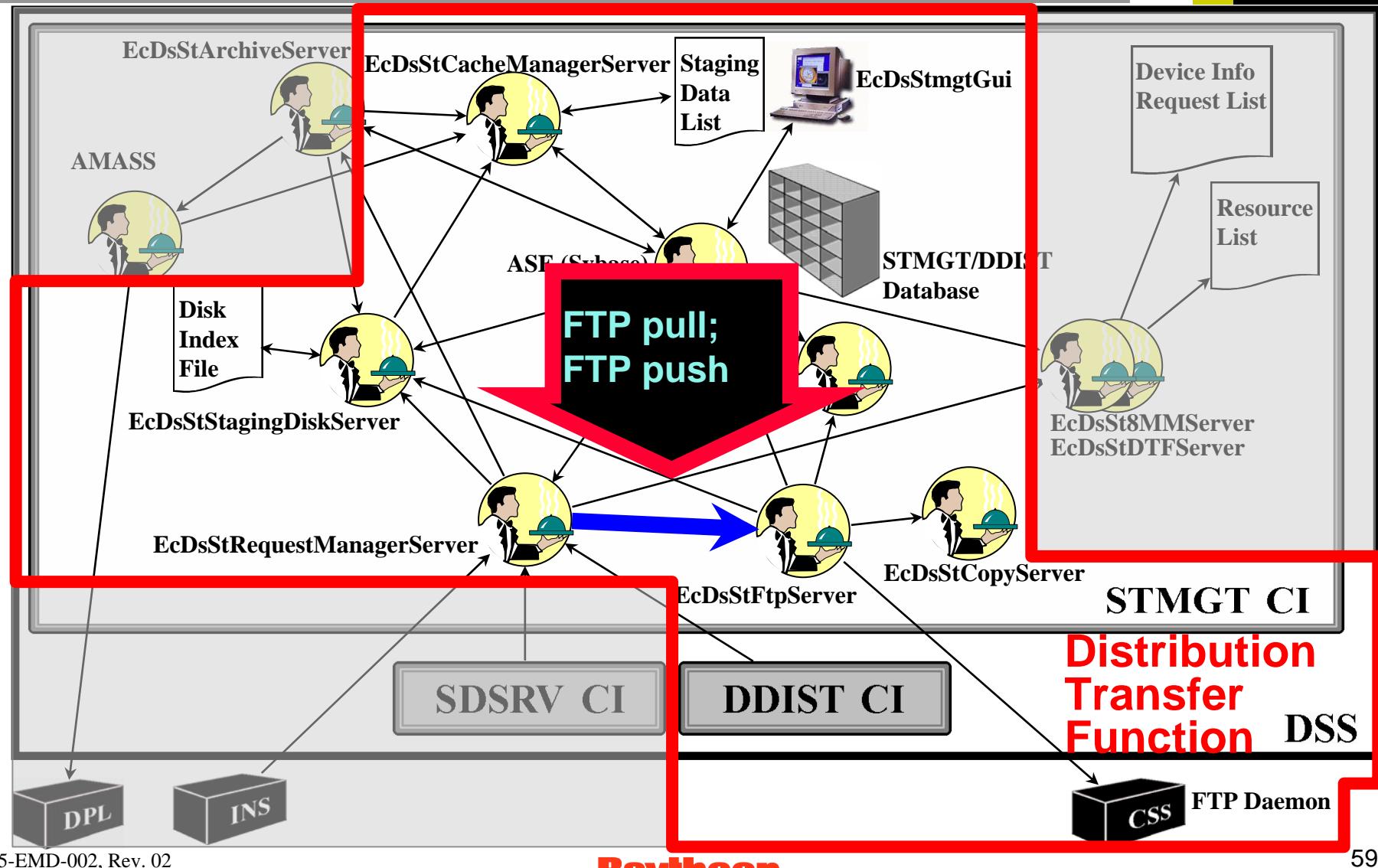
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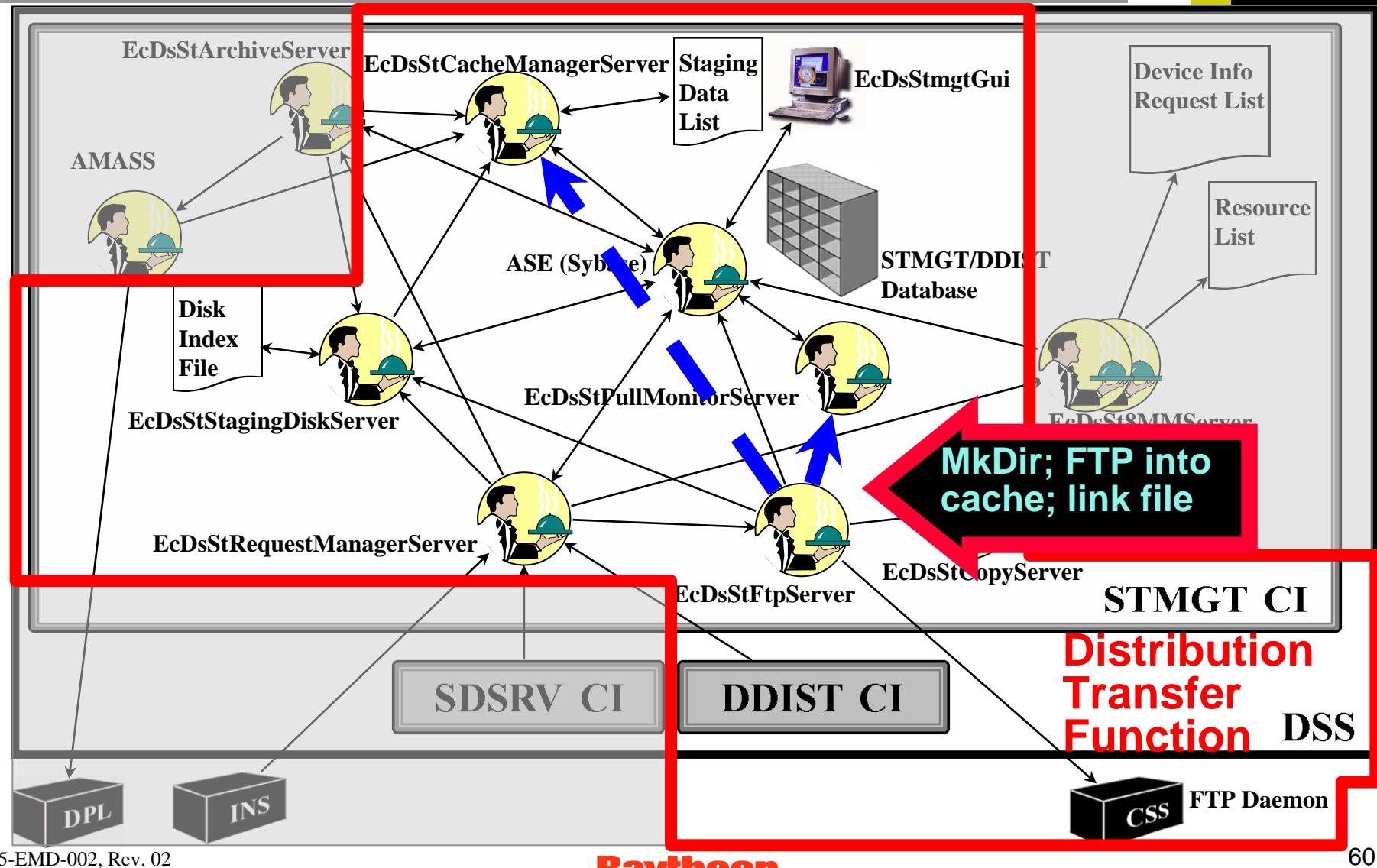
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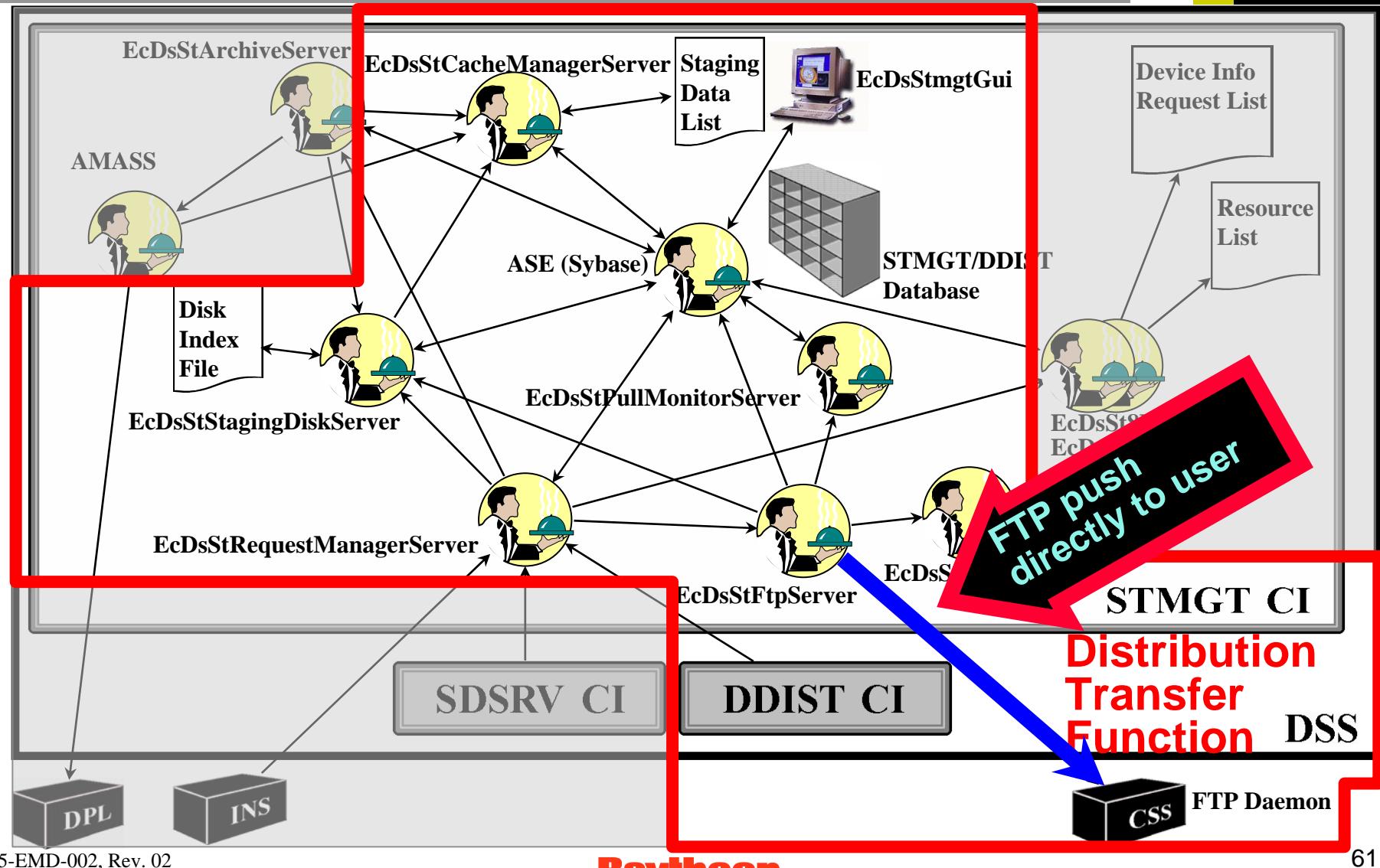
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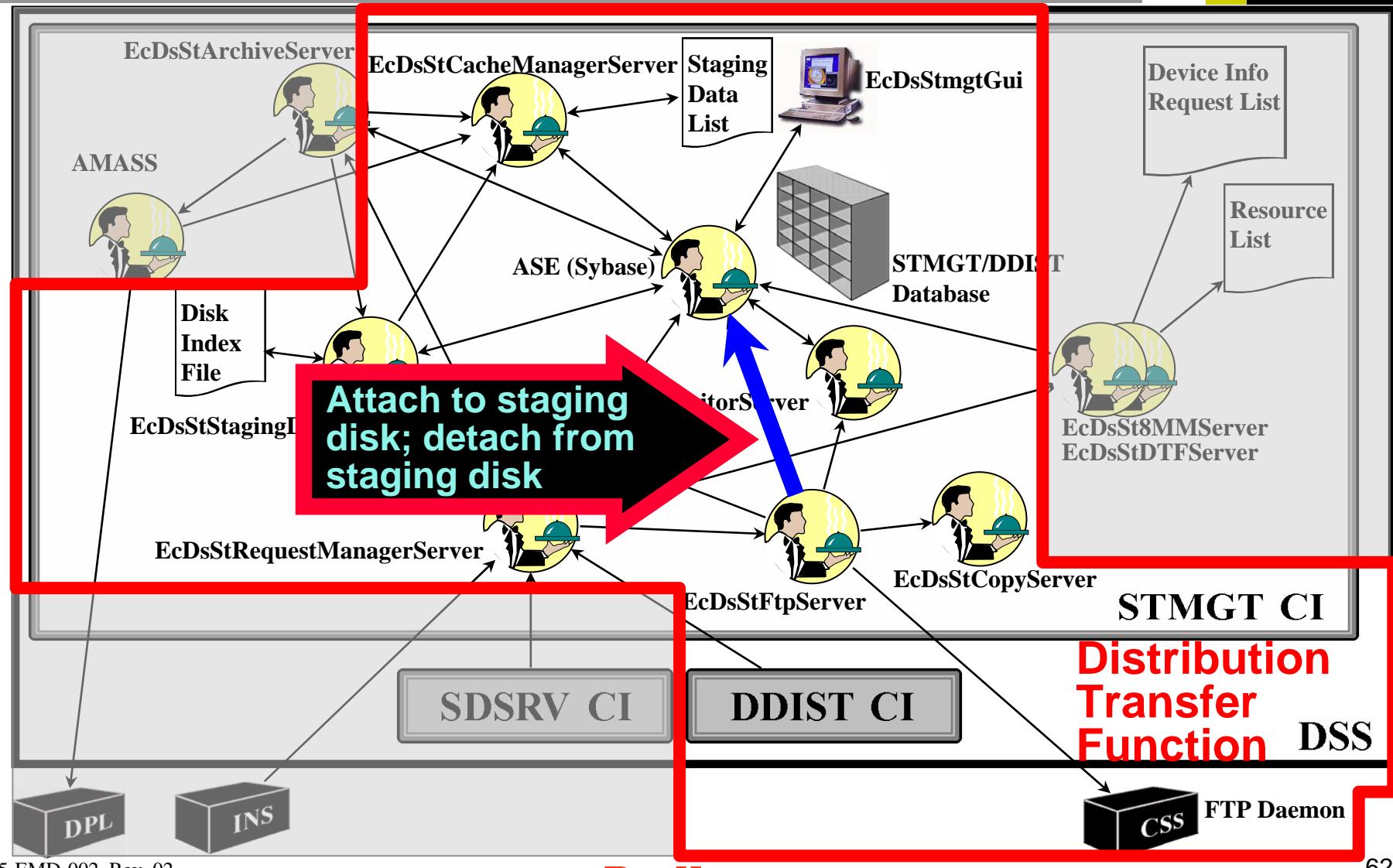
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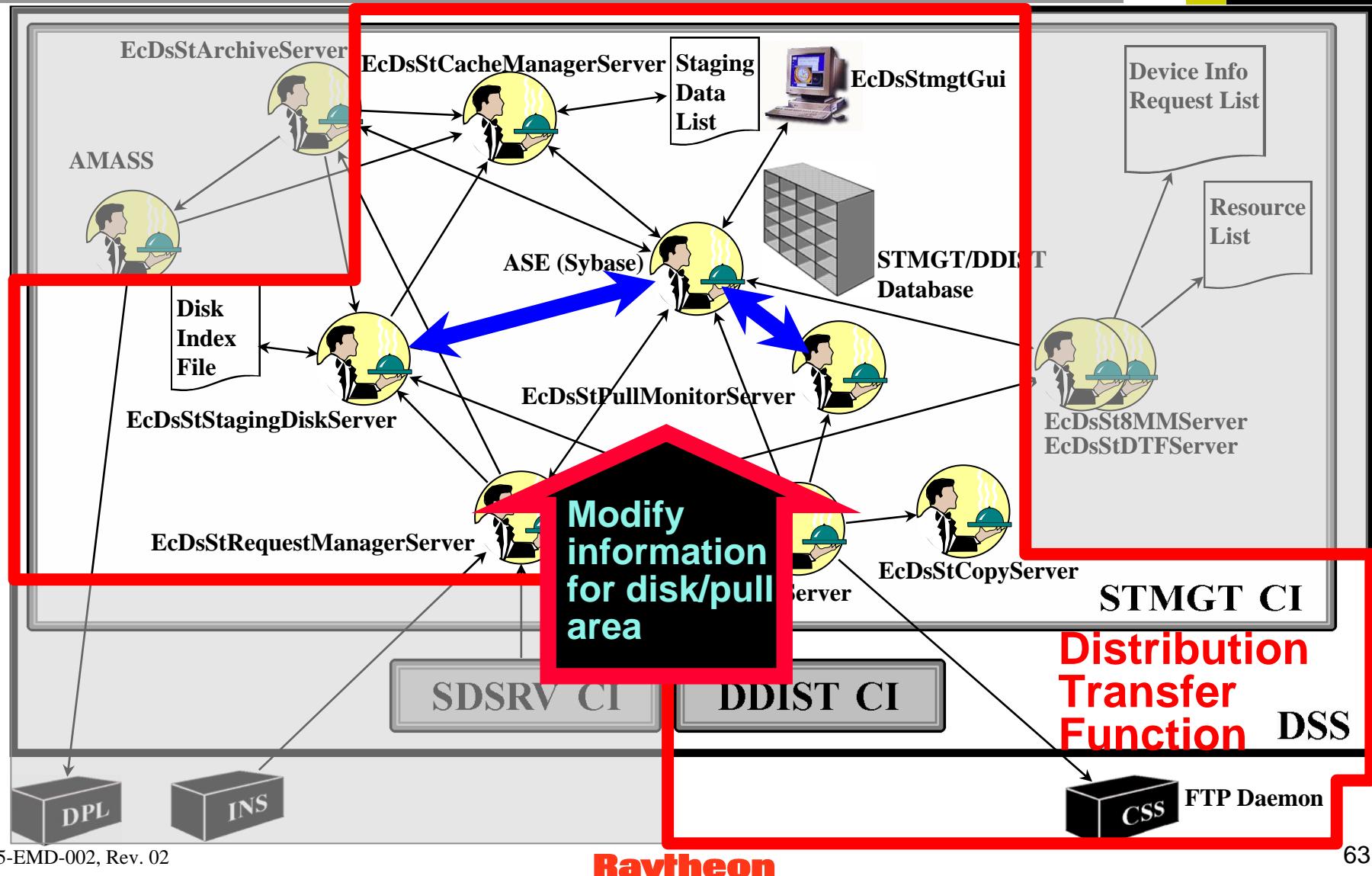
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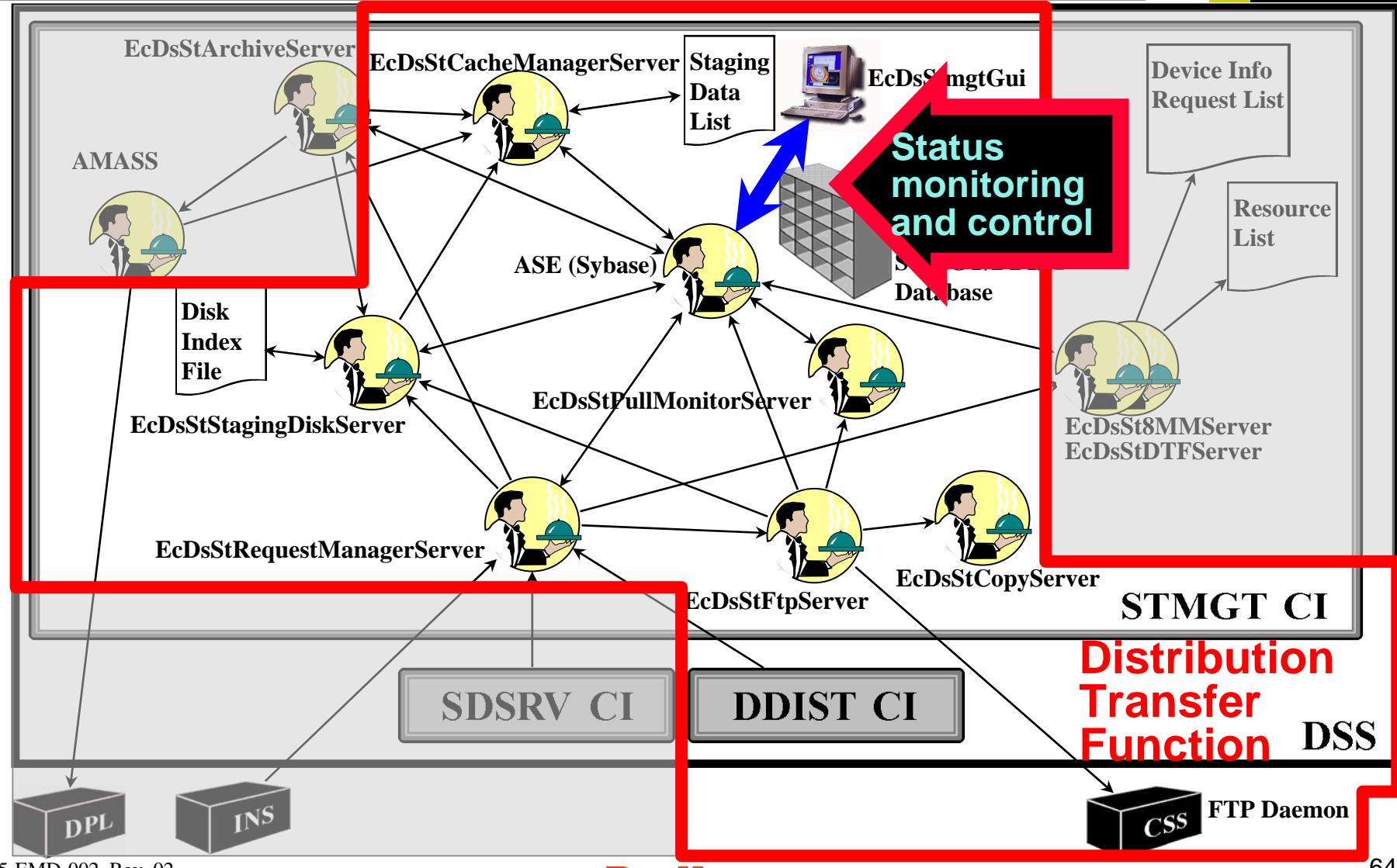
Subsystems and CSCIs: DSS STMGT Architecture and Interfaces



Subsystems and CSCIs: DSS STMGT Architecture and Interfaces



Subsystems and CSCIs: DSS STMGT Architecture and Interfaces



Subsystems and CSCIs: DSS (Cont.)



- **Data Distribution (DDIST) CSCI**



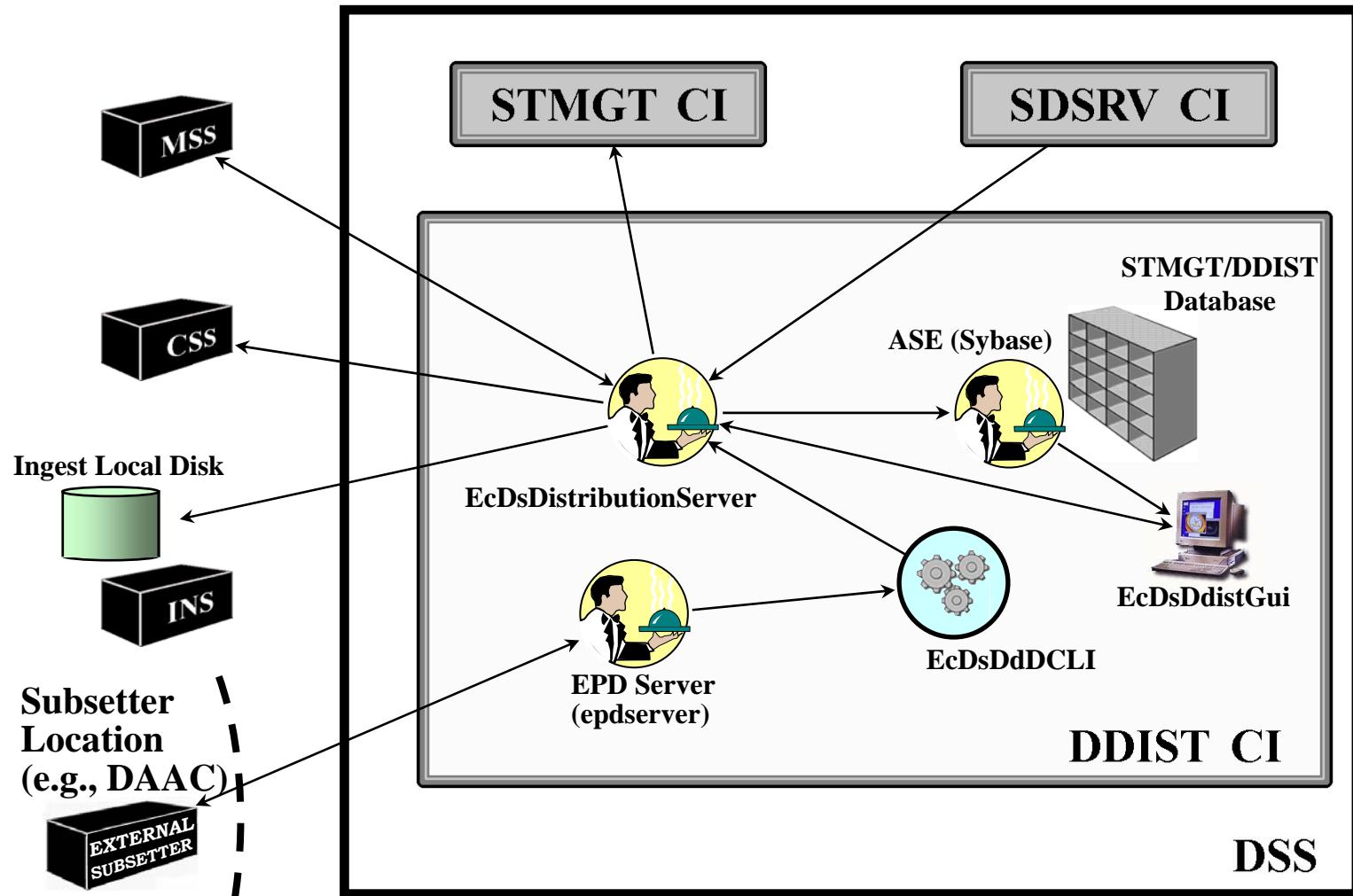
- Monitors and controls processing of requests for internal and external electronic distributions; distributions on physical media (8mm tape, CD-ROM, DVD, Digital Linear Tape) are handled as Product Distribution System (PDS) requests via FTPPush onto a PDS working directory, from which PDS reads the data for copy to hard media
- Sends e-mail notifications
- Supports distribution of externally subsetted products
- Five major components
 - **Data Distribution Server** - provides control and coordination for data distribution through request processing
 - **Data Distribution GUI** - allows operations staff to initiate, track, and manipulate distribution requests
 - **Data Base** - contains the request list; updates and provides the request configuration

Subsystems and CSCIs: DSS (Cont.)

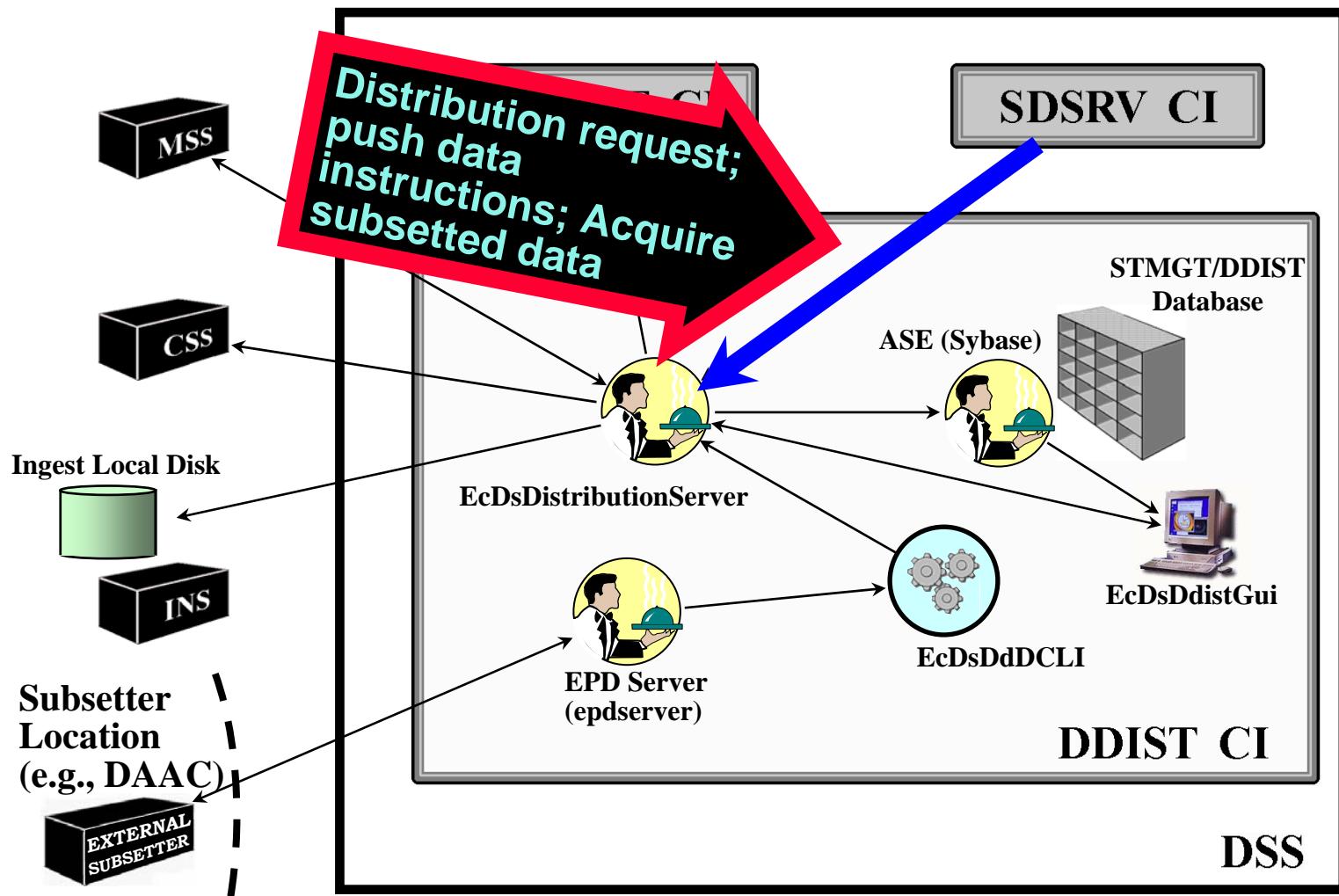


- **Data Distribution (DDIST) CSCI**
 - Five major components (Cont.)
 - **External Product Dispatcher (EPD)** - receives products from external subsetter and transfers them via DCLI to DDIST
 - **DDIST Command Line Interface (DCLI)** - submits distribution requests for distribution of externally subsetted products

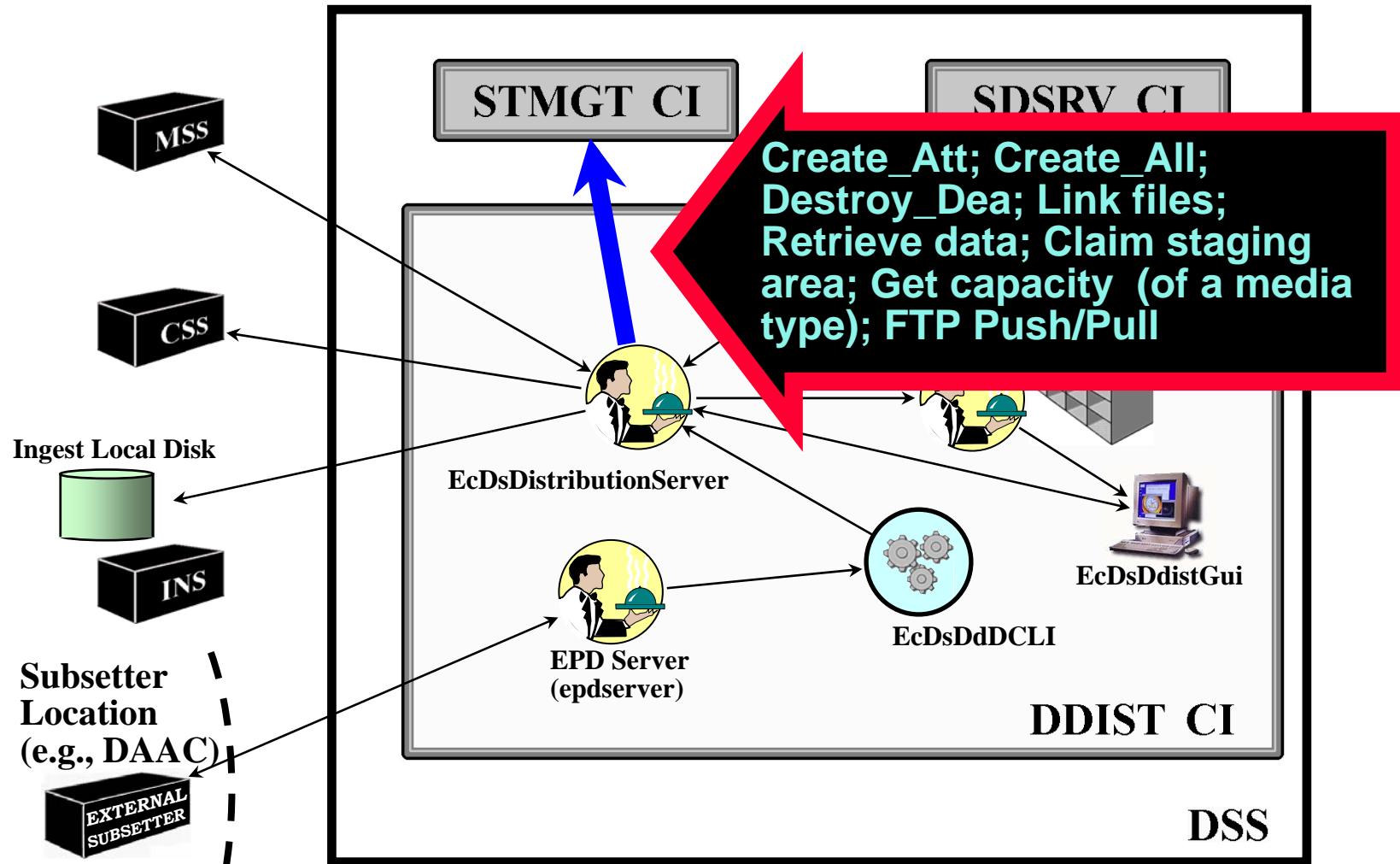
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



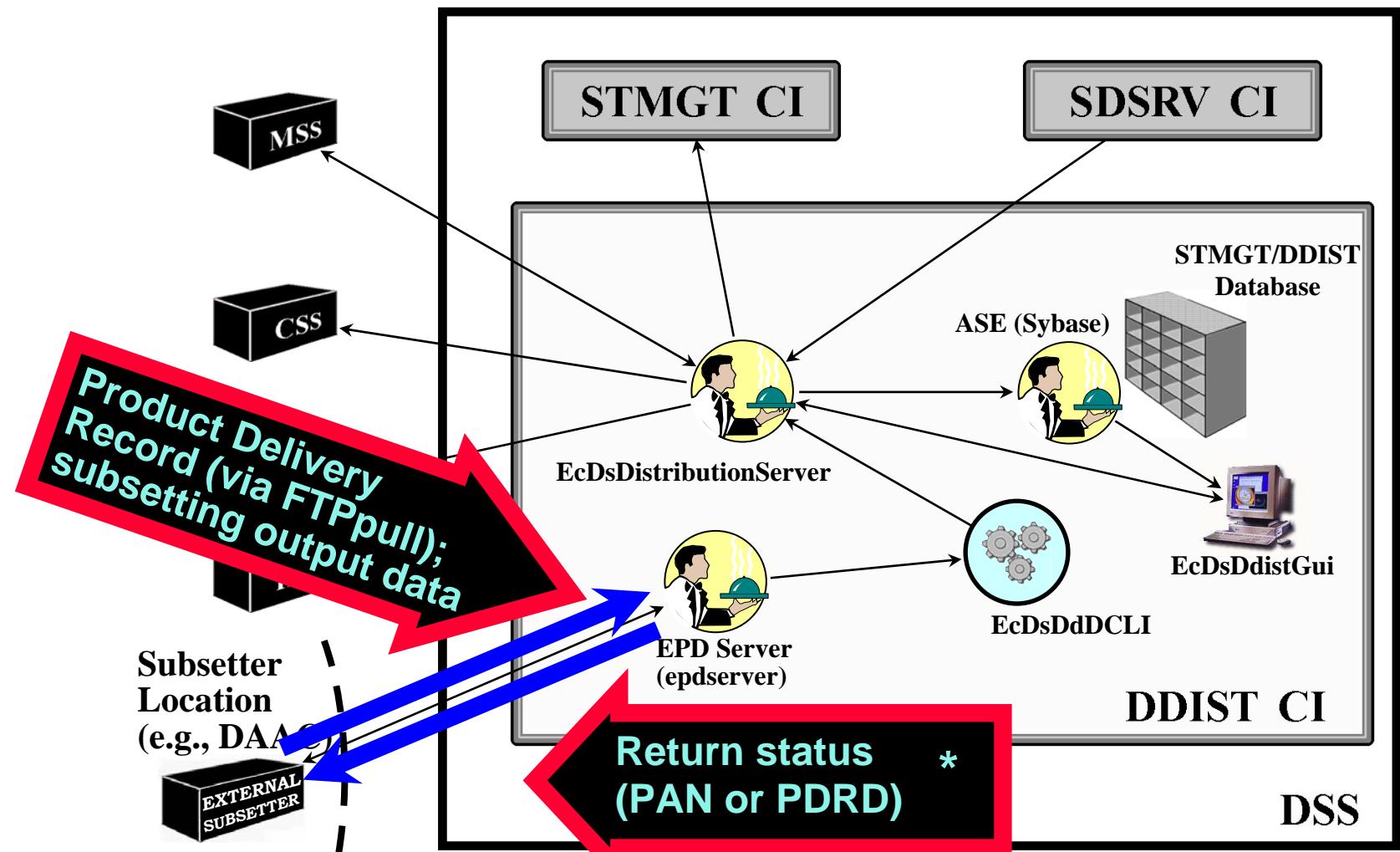
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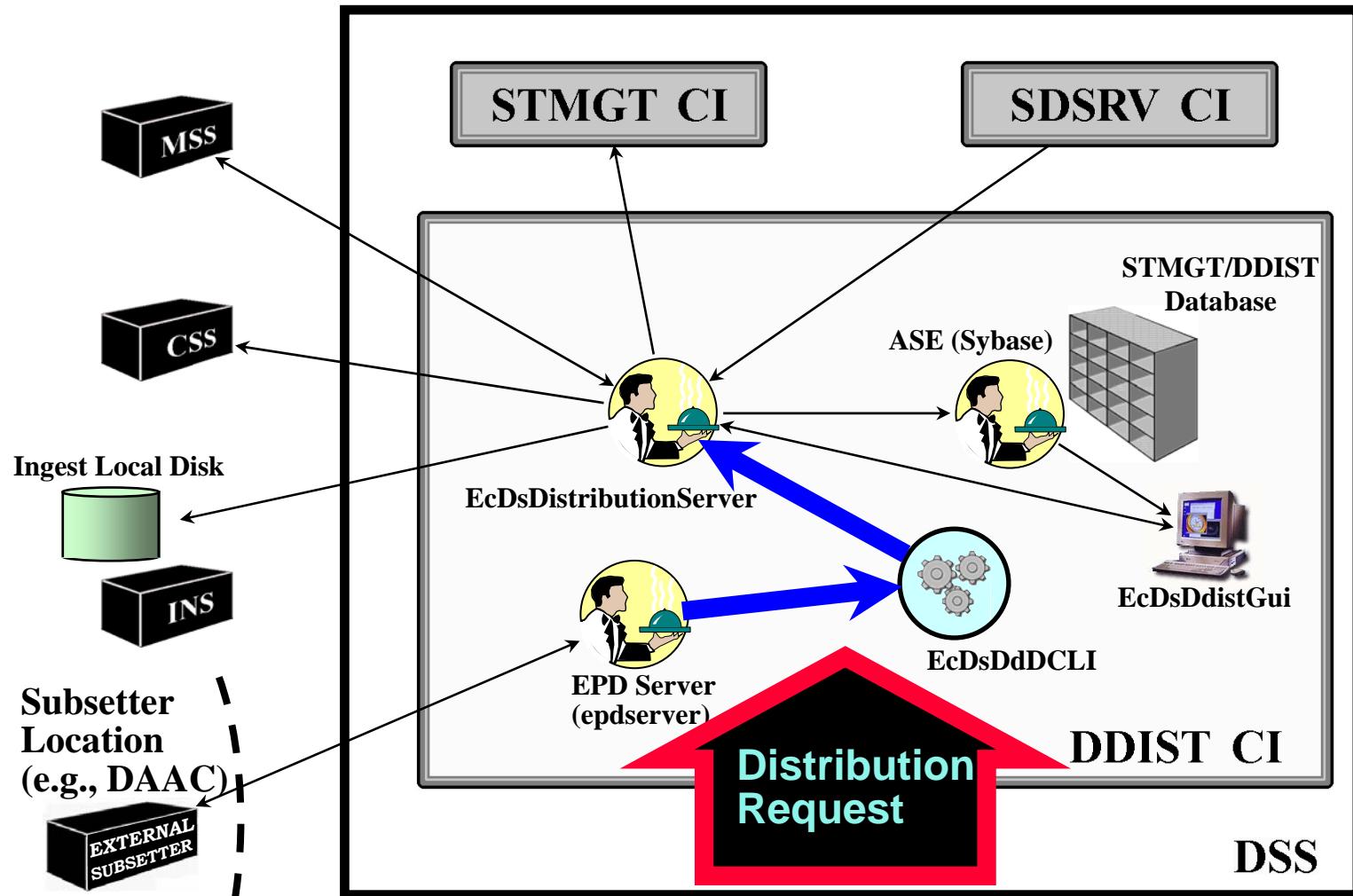


Subsystems and CSCIs: DSS DDIST Architecture and Interfaces

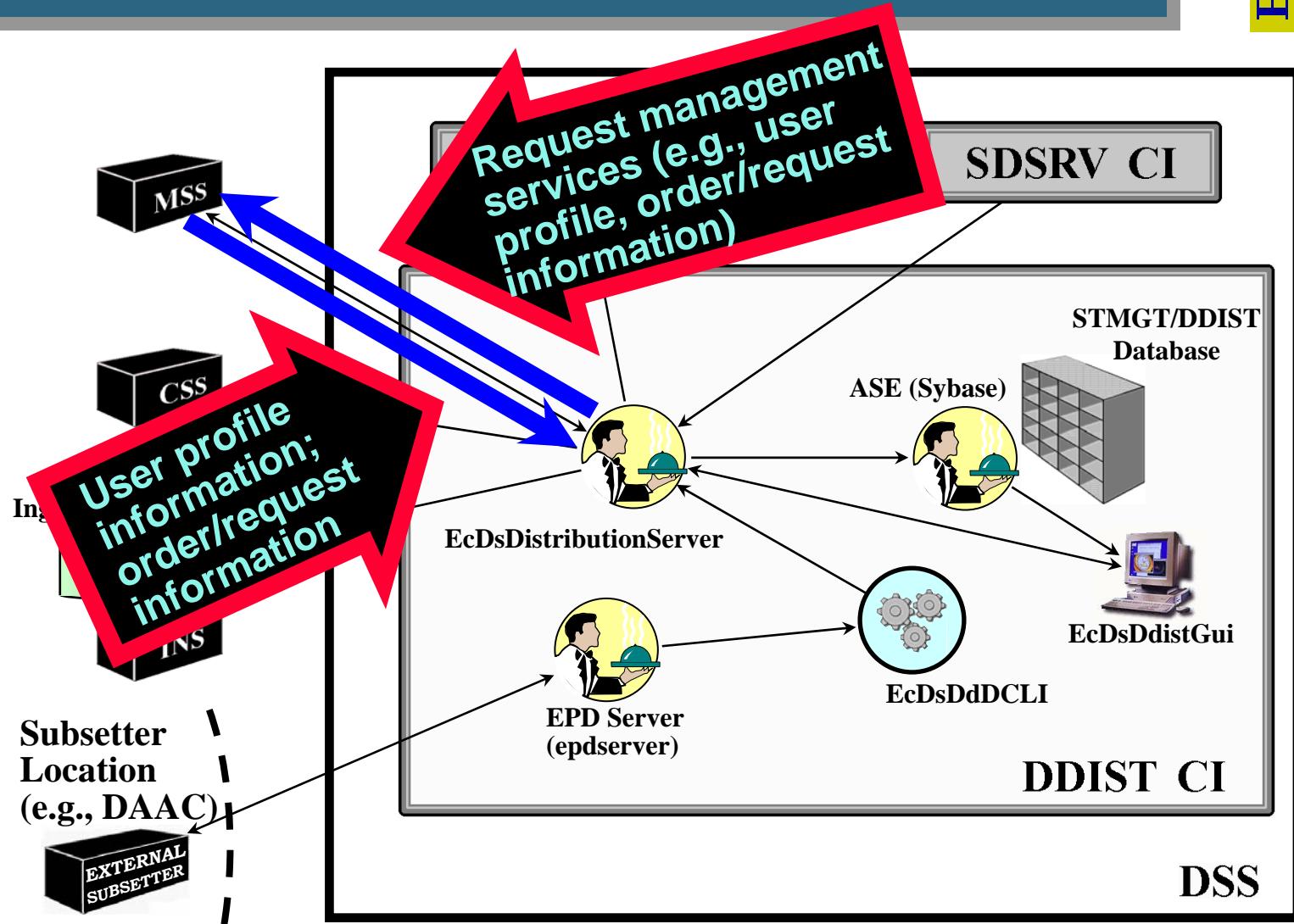


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PAN Product Acceptance Notification
PDRD Product Delivery Record Discrepancy

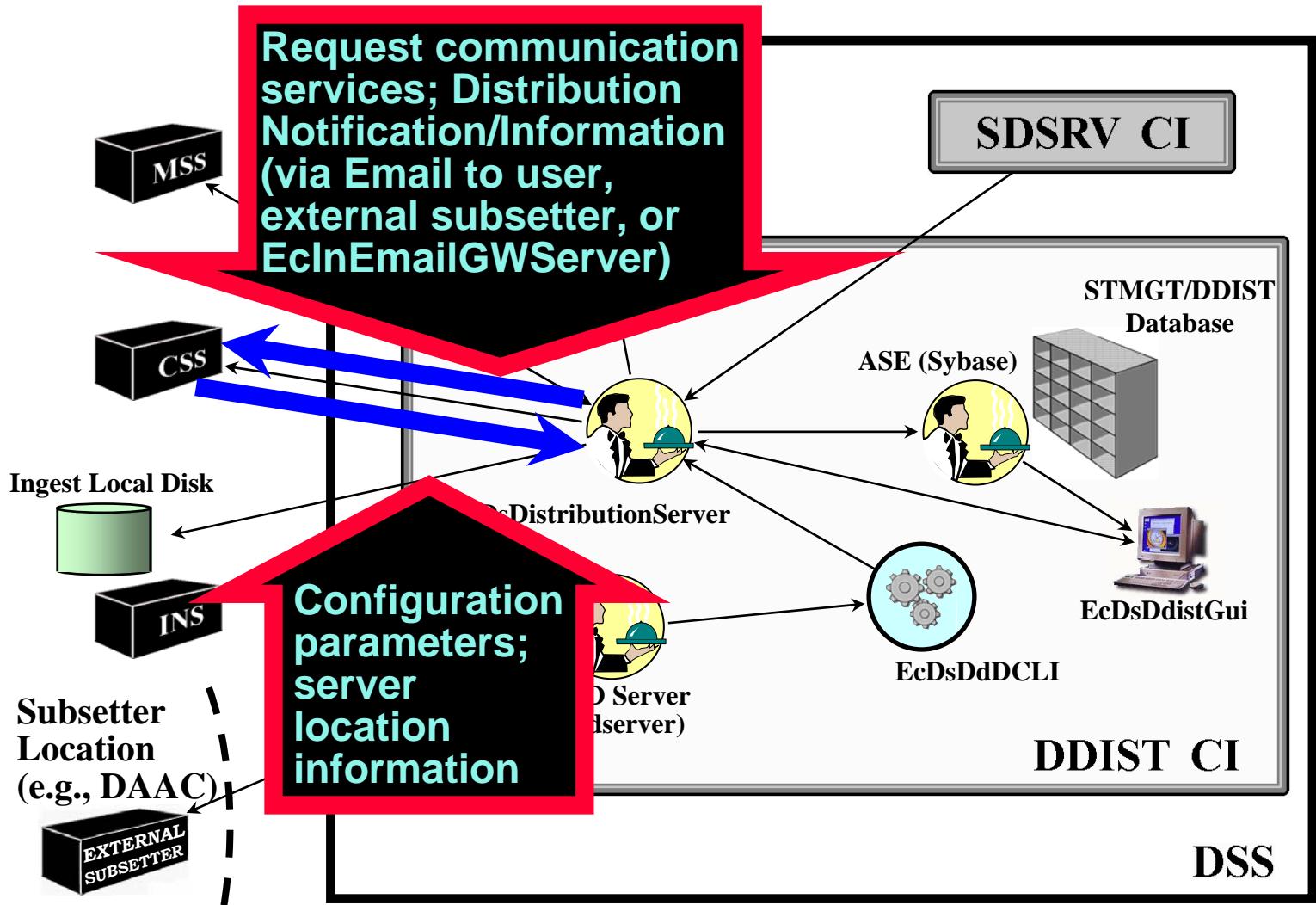
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



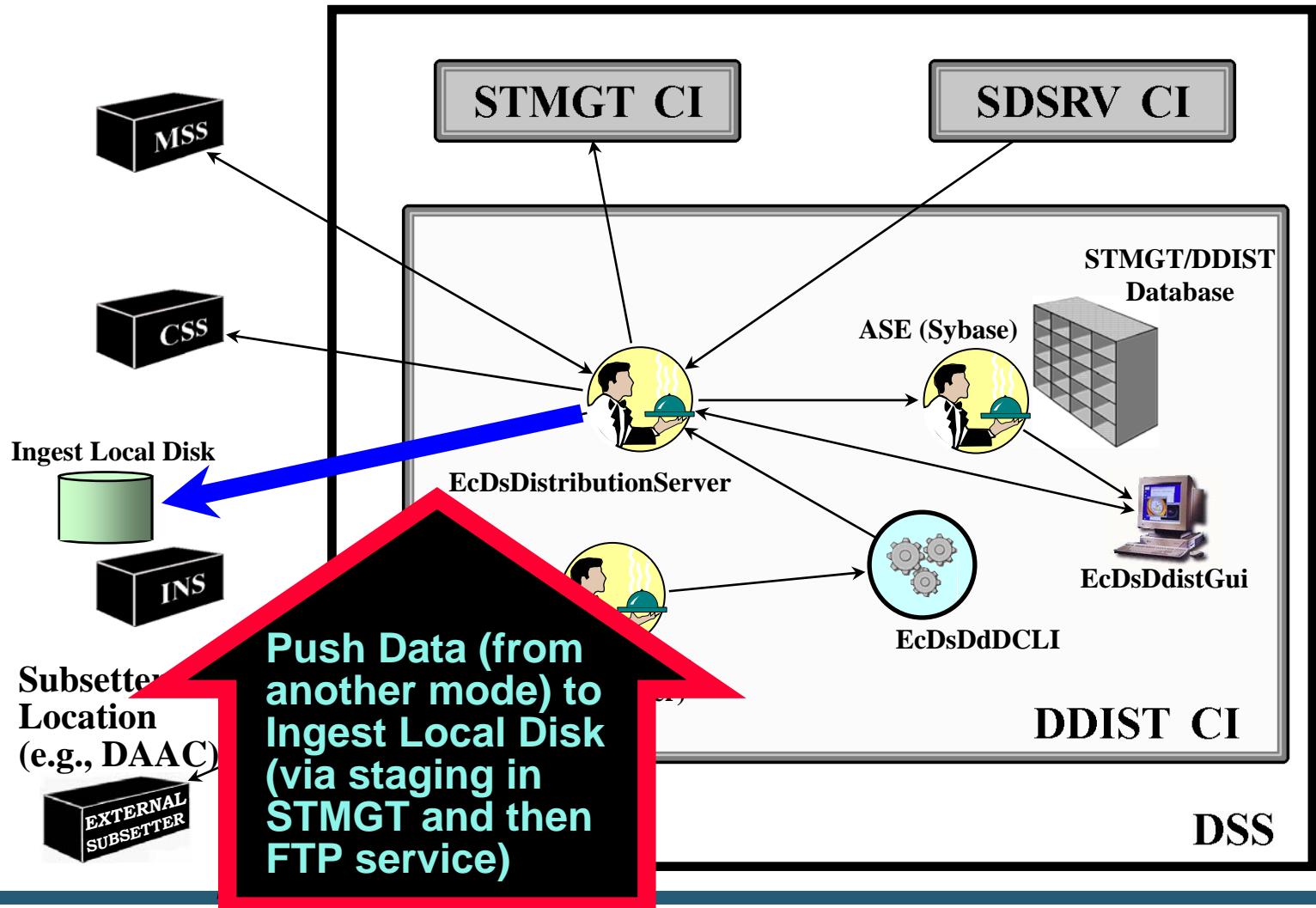
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



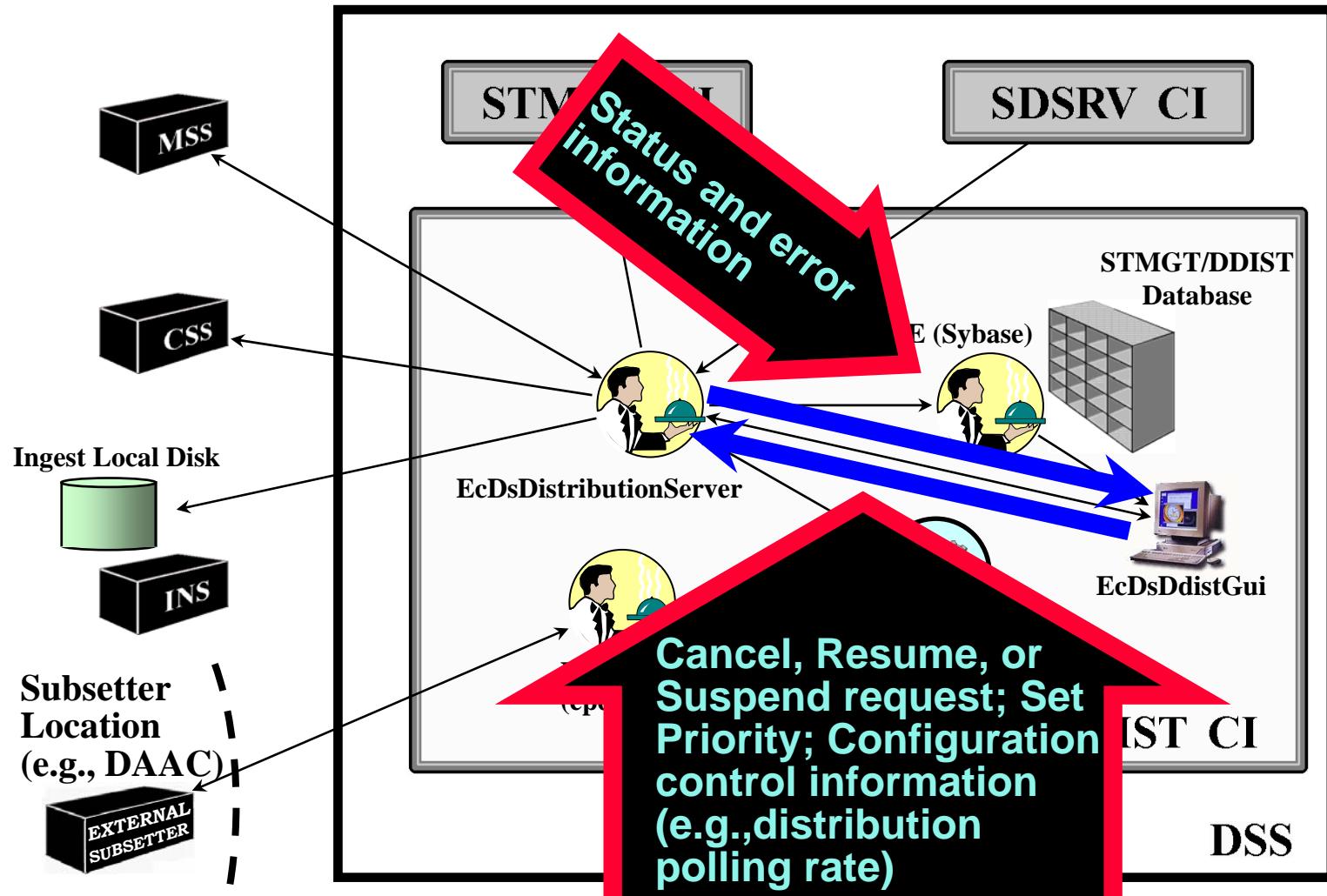
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



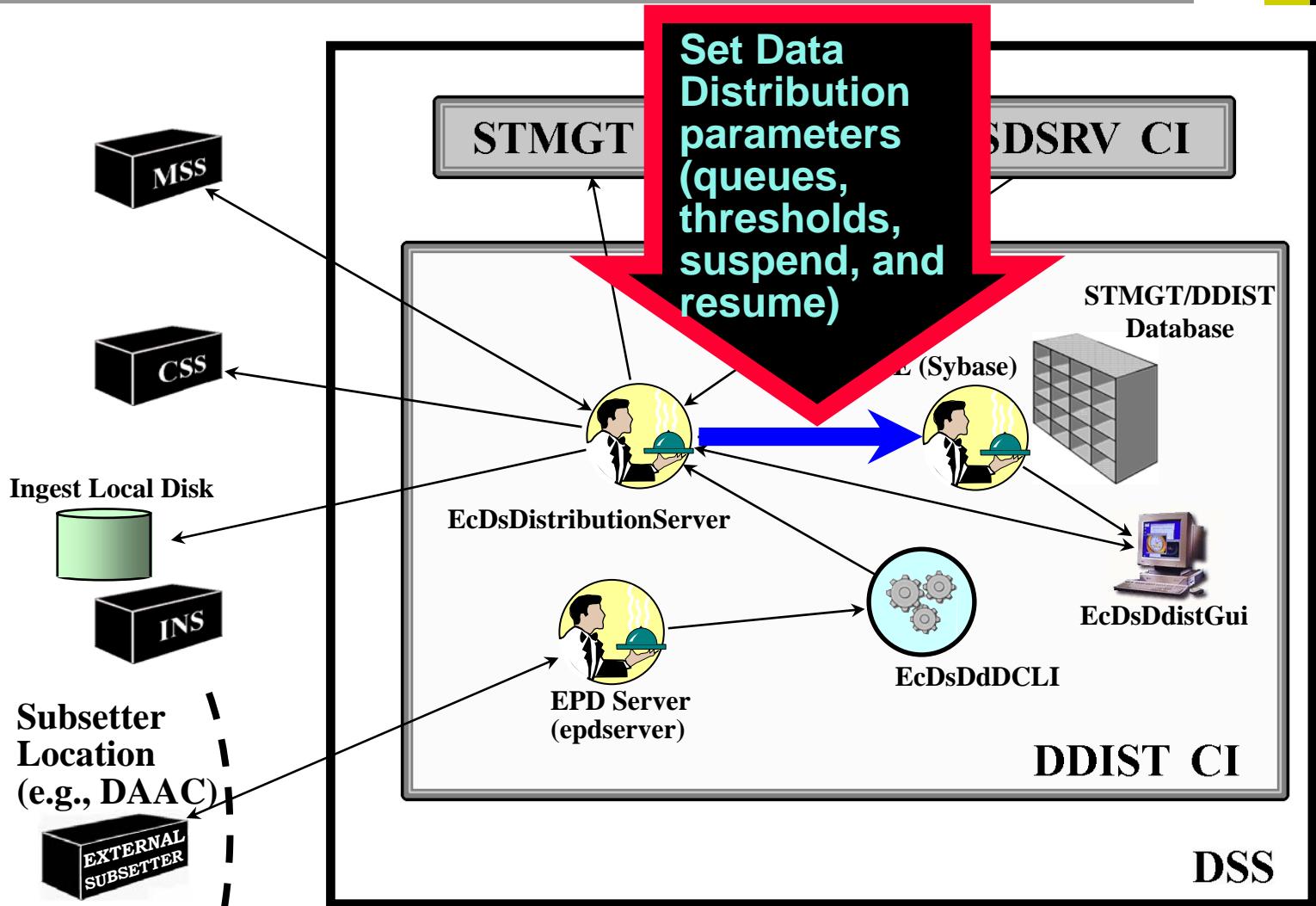
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



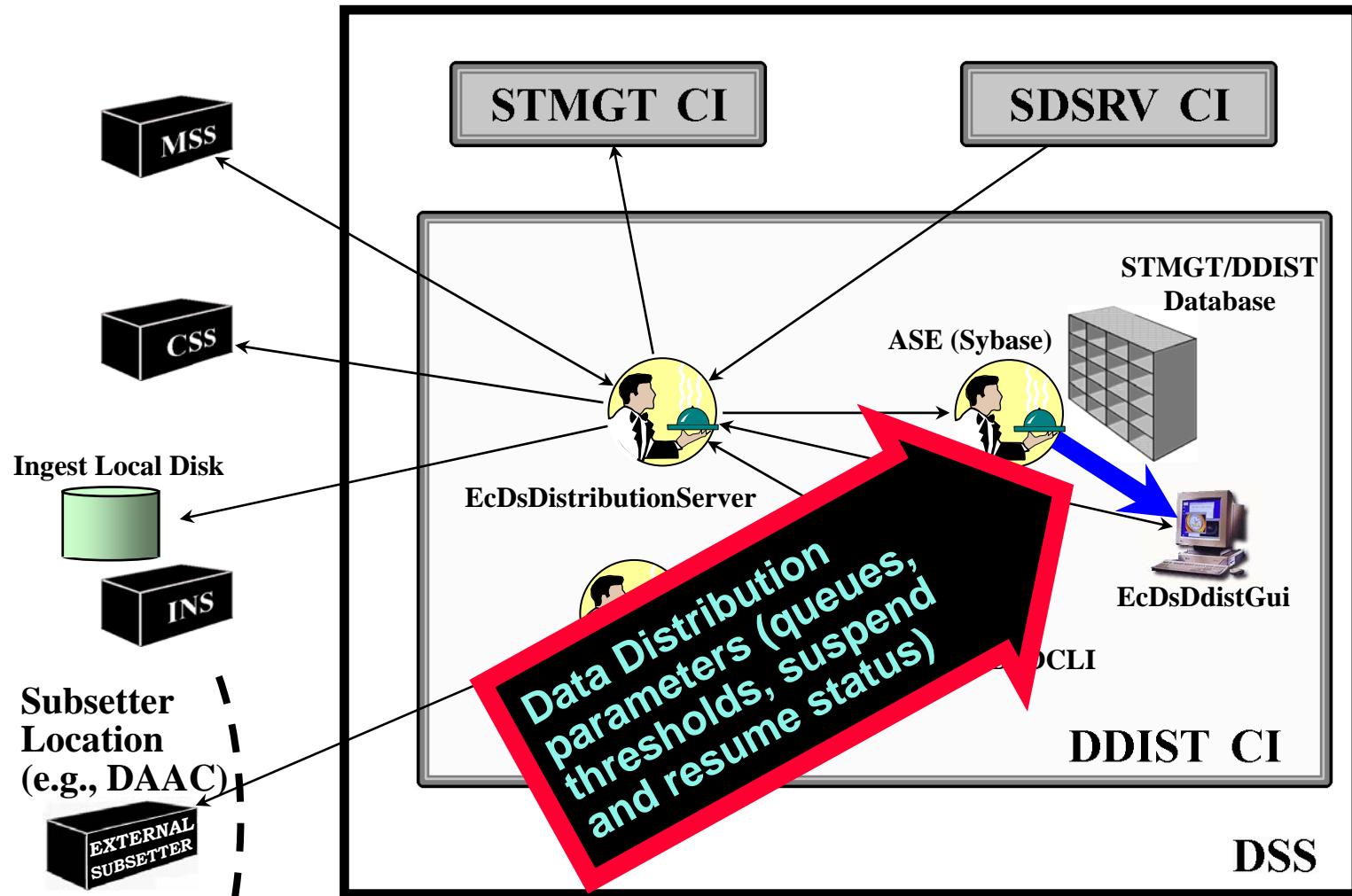
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



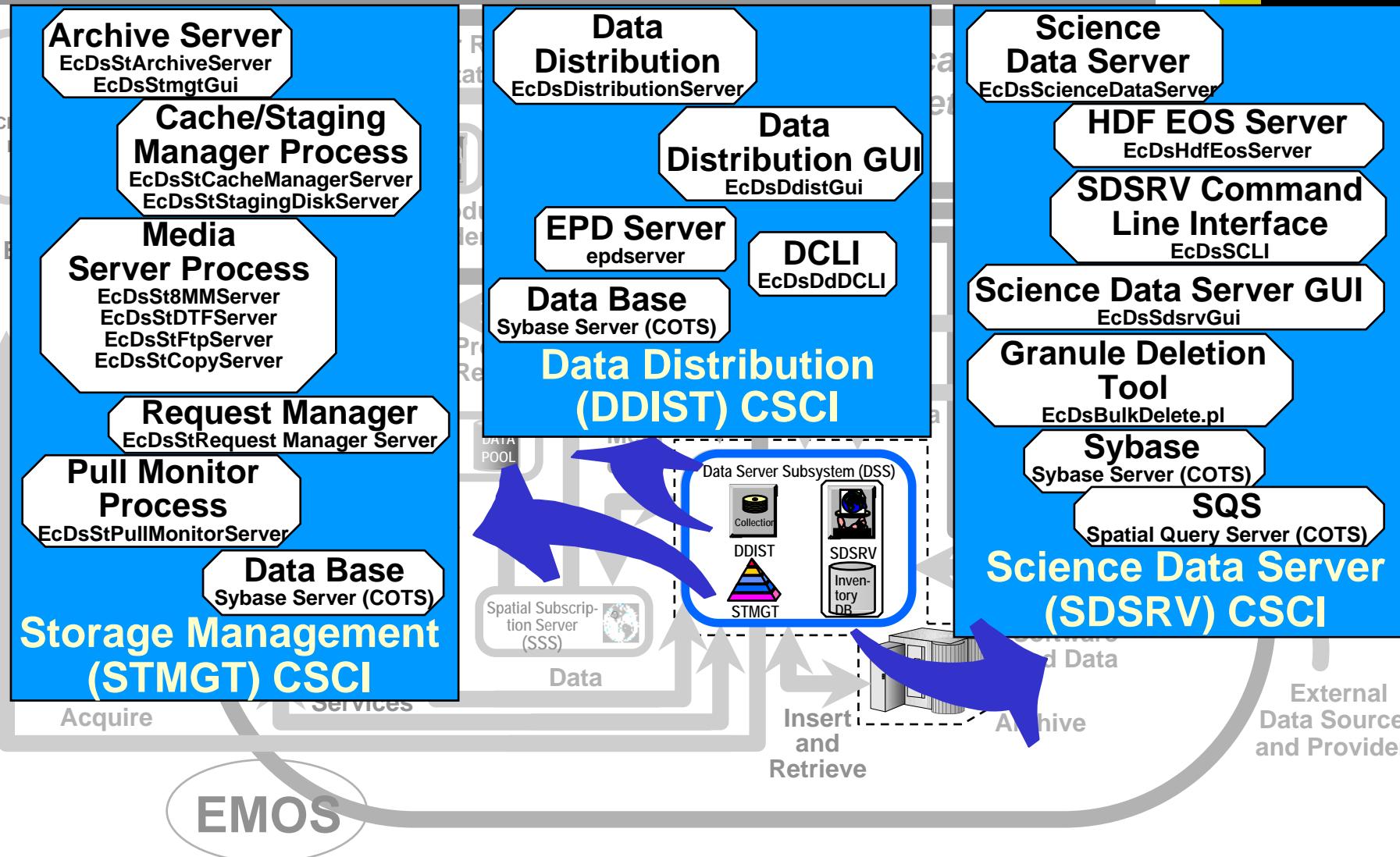
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



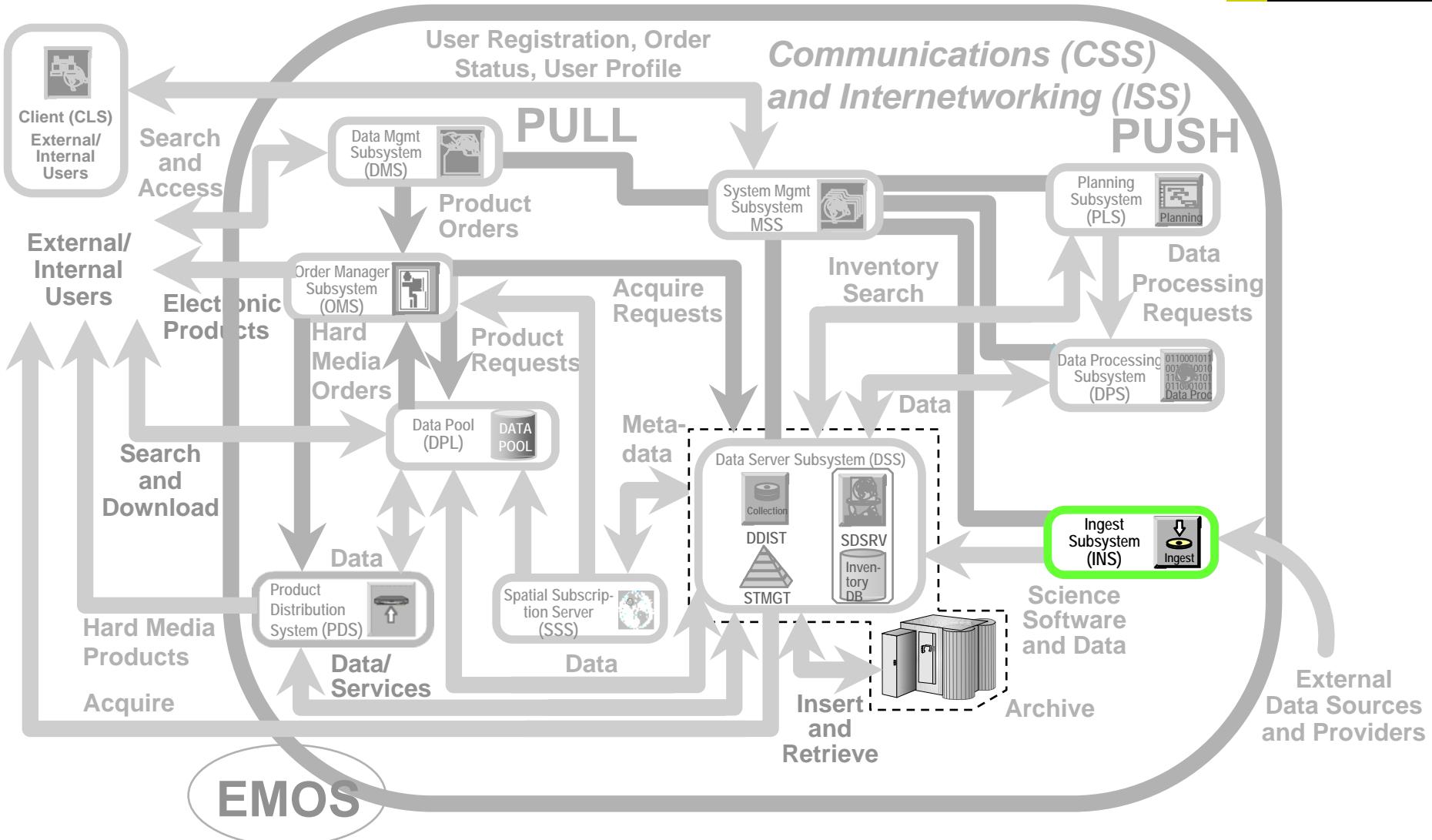
Subsystems and CSCIs: DSS DDIST Architecture and Interfaces



Subsystems and CSCIs: DSS (Cont.)



Subsystems and CSCIs: INS



Subsystems and CSCIs: INS



- **Ingest Subsystem (INS)**

- Transfer of data into ECS (SDPS repositories) in accordance with approved ICDs
- Supports varied data formats and structures
- *Ingest Client*: A set of ingest software configured for requirements of a specific situation
- Ingest clients perform data preprocessing, such as format conversion, metadata extraction, and metadata validation on incoming data
- Data staged to one of two areas
 - Level 0 (L0) data from ongoing missions, and EDOS ancillary data, staged to INS working storage area
 - Non-L0 data (e.g., non-EDOS ancillary data, L1A-L4 data) staged directly to DSS working storage area
- Uses several COTS tools: RogueWave class libraries, Sybase relational database, CCS Middleware Client



Subsystems and CSCIs: INS (Cont.)

- **Ingest (INGST) CSCI**
 - Gets data by various methods and transfers the data into ECS
 - Polling: transfer of data from predetermined network locations which Ingest periodically checks for new data
 - With Delivery Record
 - Without Delivery Record
 - Media: reading data from physical media; uses GUI
 - Cross-Mode Ingest: E-mail distribution notification used to create a Delivery Record File for Polling with Delivery Record
 - Stores and manages request information
 - Provides for data preprocessing and insertion



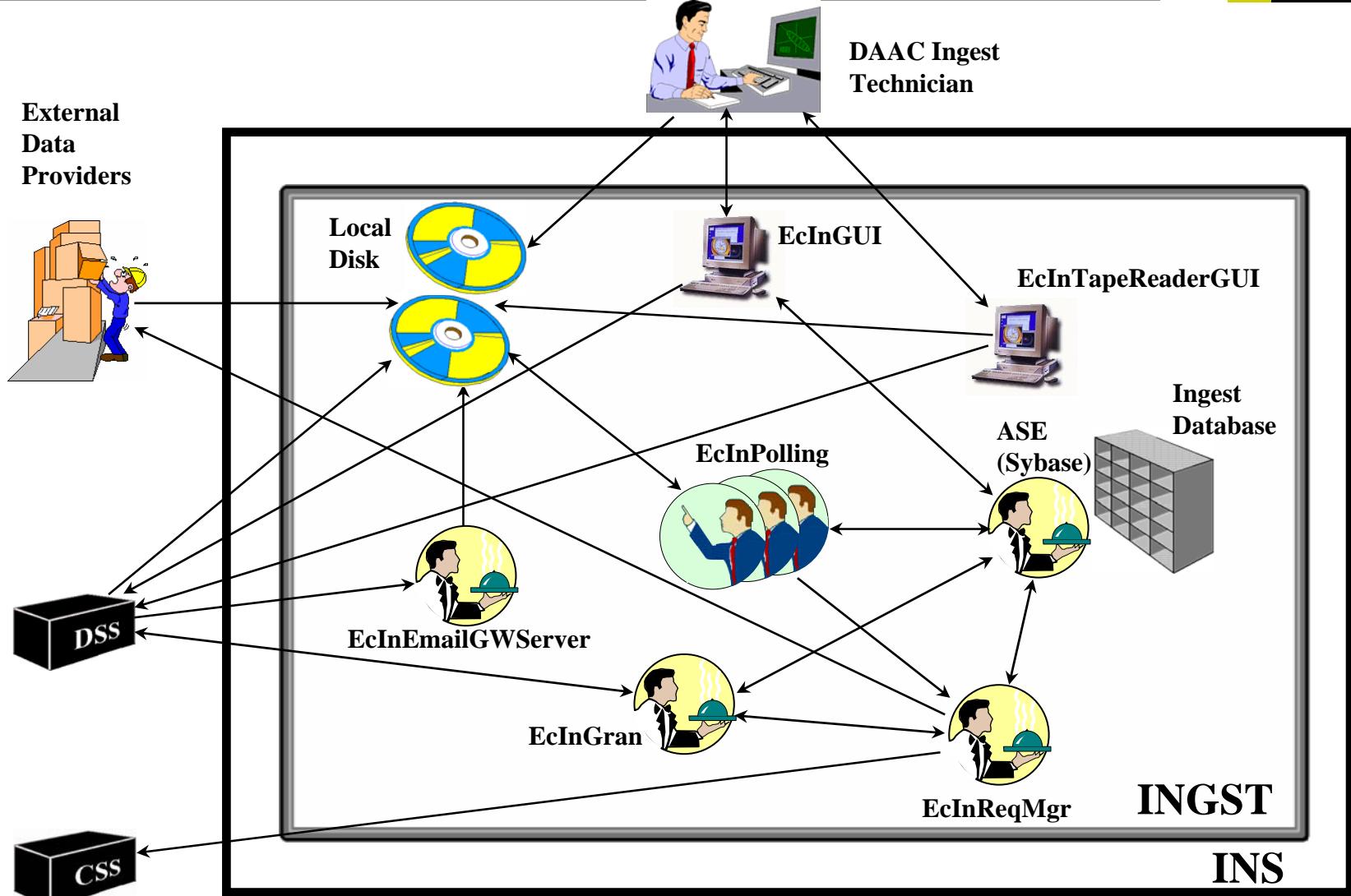


Subsystems and CSCIs: INS (Cont.)

- Ingest (INGST) CSCI (Cont.)
 - Six major components
 - **Polling Ingest Client Interface** - creates polling request, detects new files in a specified external location, creates and submits ingest request
 - **Media Ingest Interface** - provides operators ability to perform ingest from physical media
 - **Cross-Mode Ingest Interface** - provides an E-mail gateway server to receive E-mail distribution notifications and store them as files in a location for polling with delivery record
 - **Ingest Request Manager** - manages ingest request traffic and processing
 - **Ingest Granule Server** - provides services for required preprocessing of data and subsequent insertion into Data Server
 - **Ingest Database** - stores and provides access to Ingest Subsystem internal data (e.g., Request Status, History Logs)

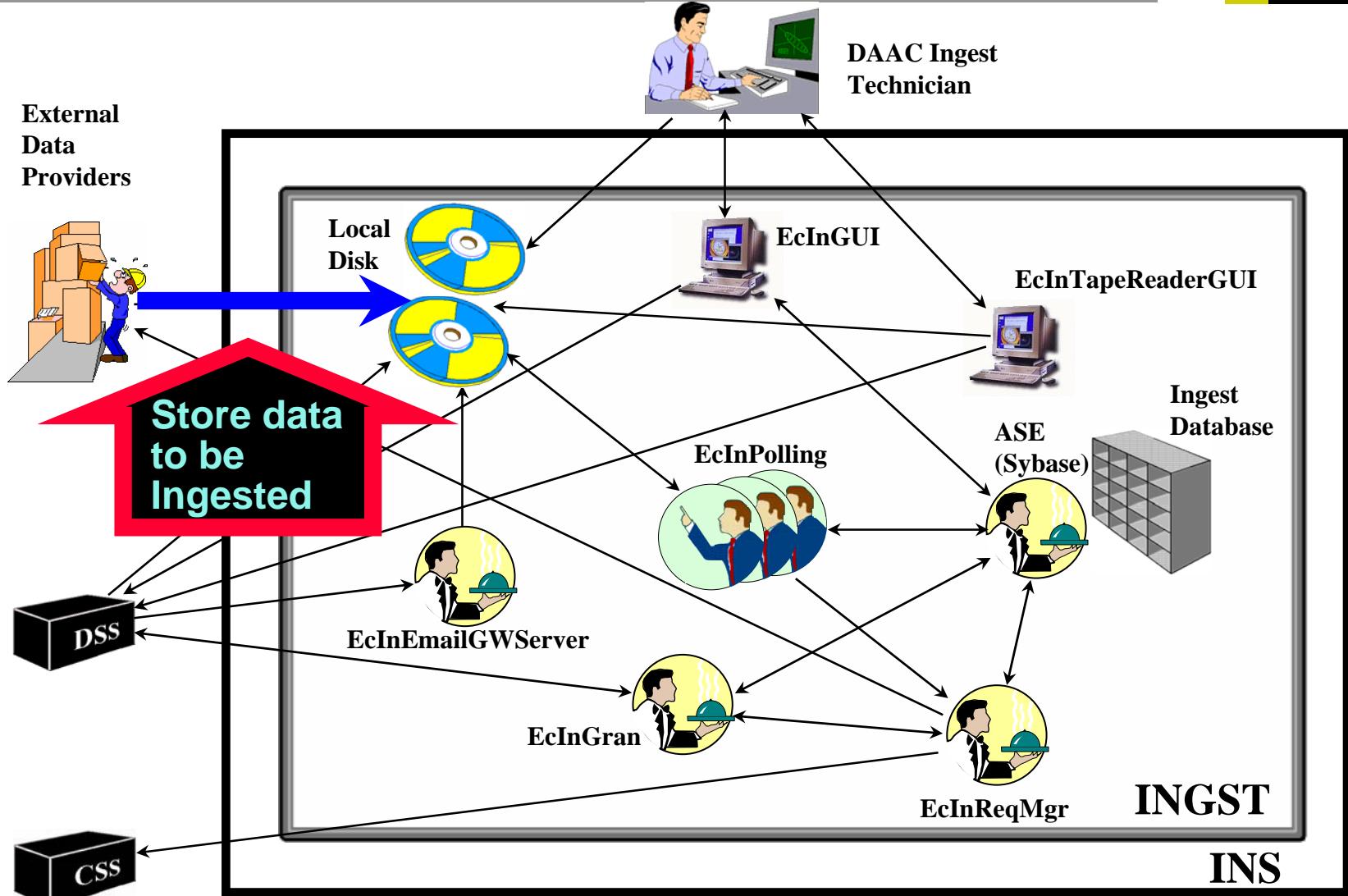
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



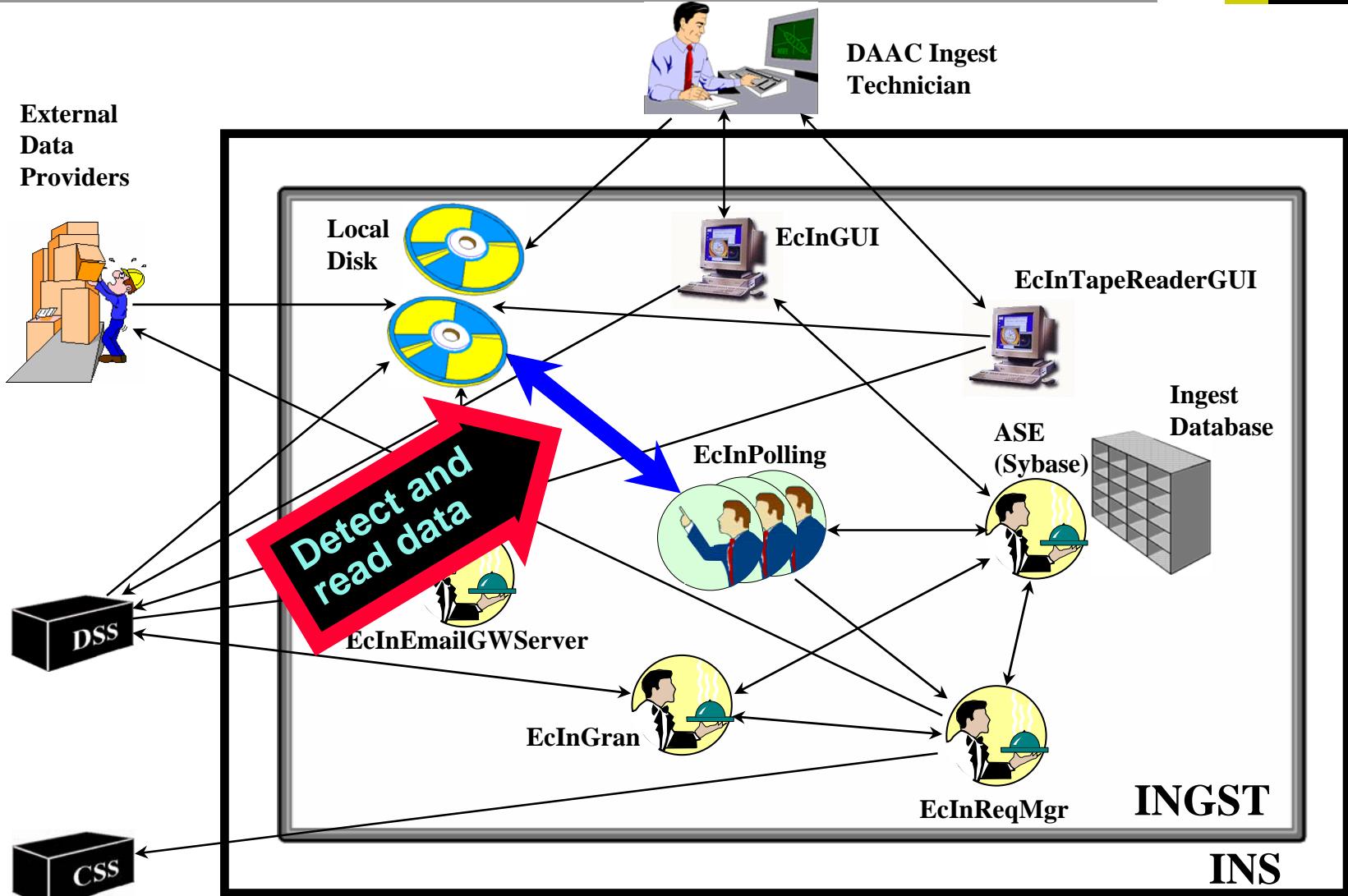
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



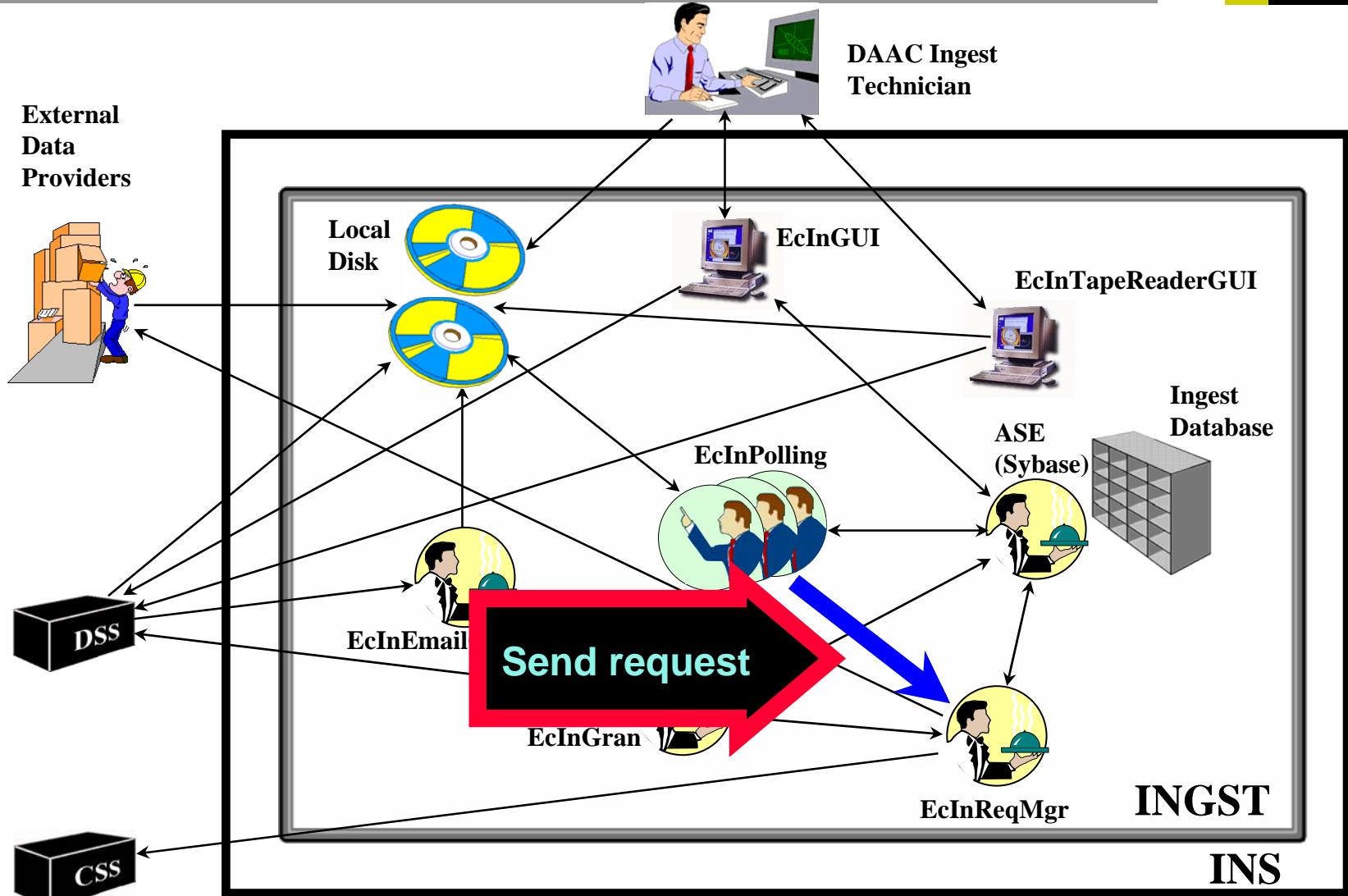
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



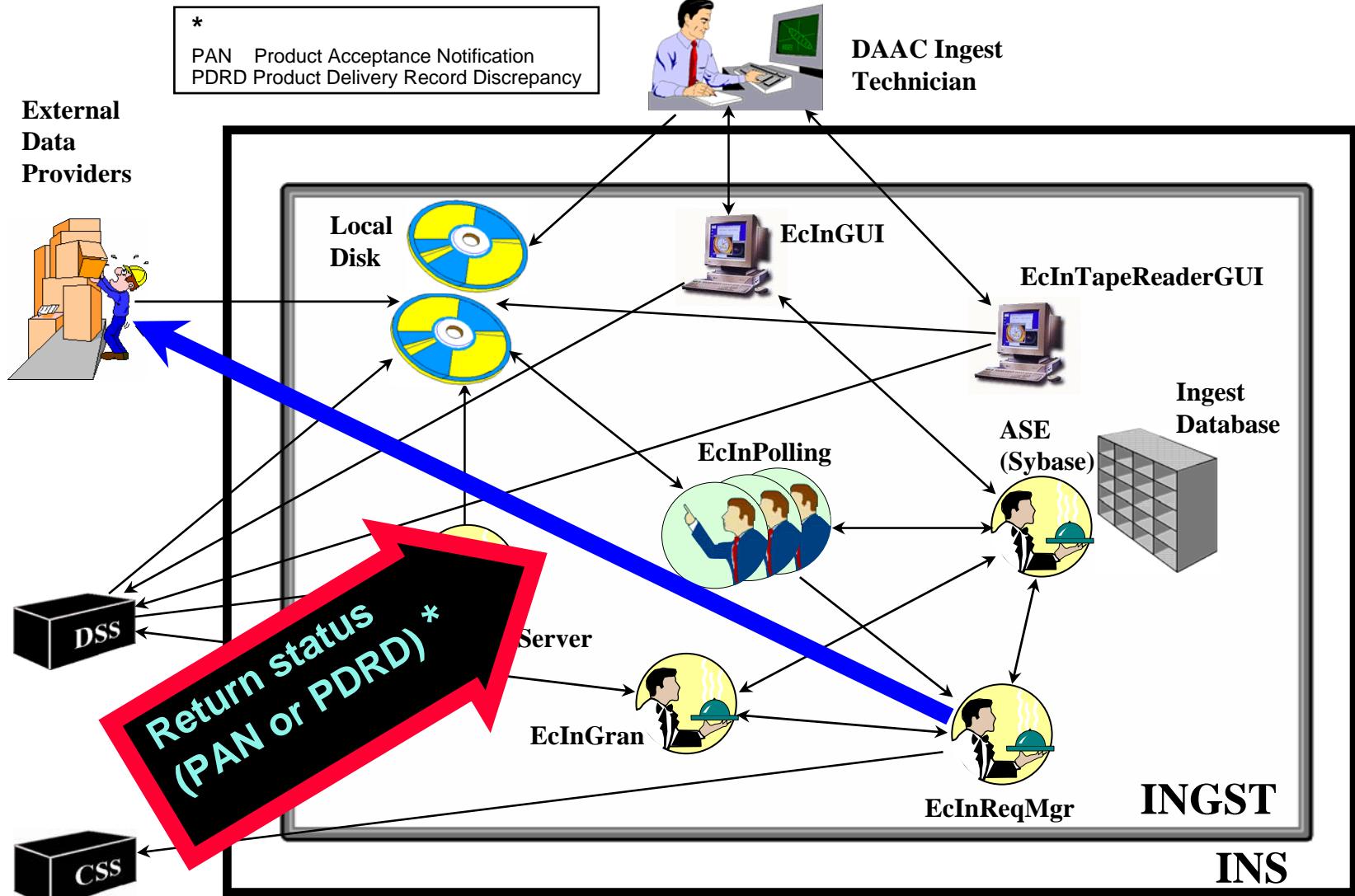
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



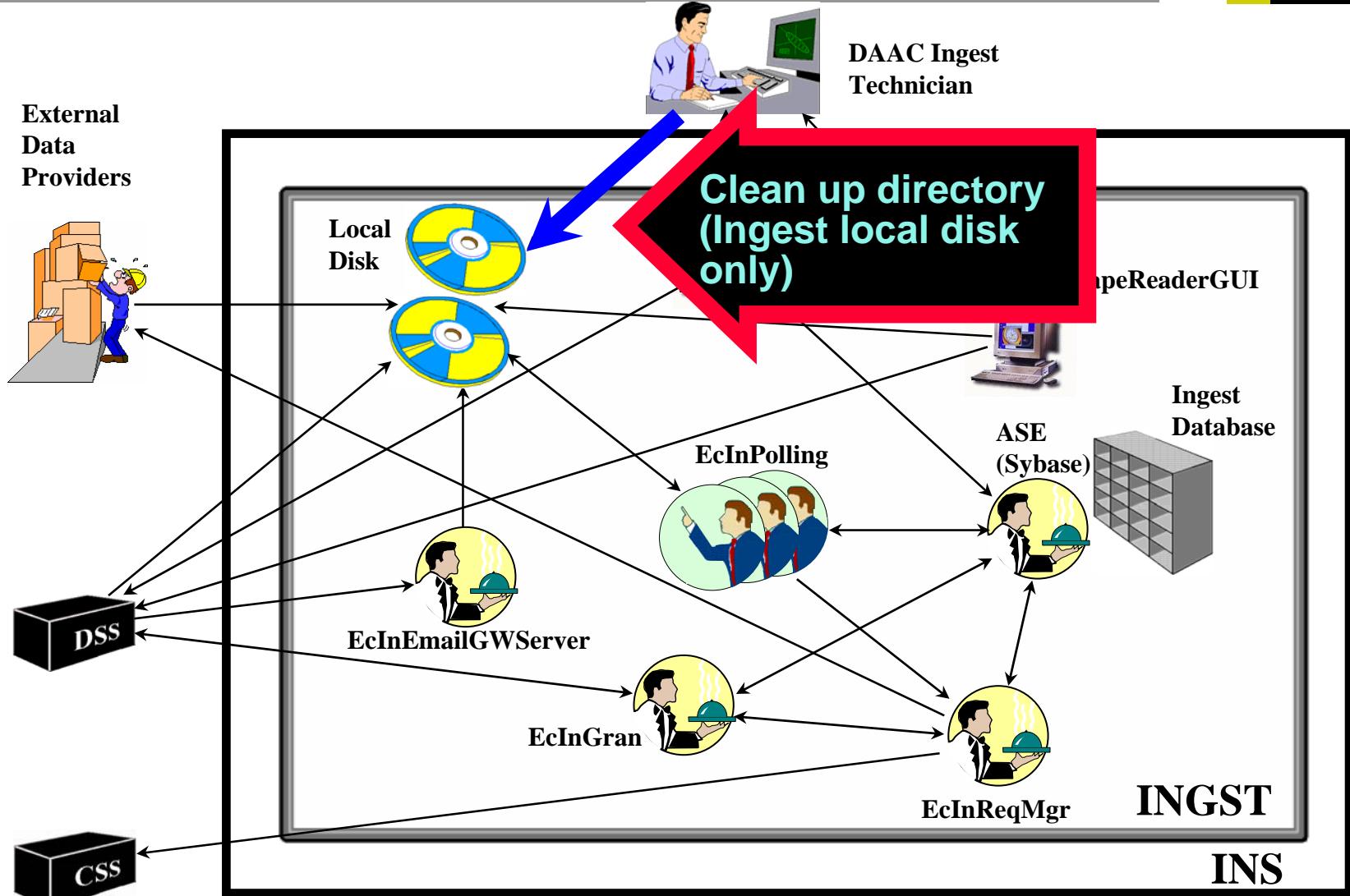
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



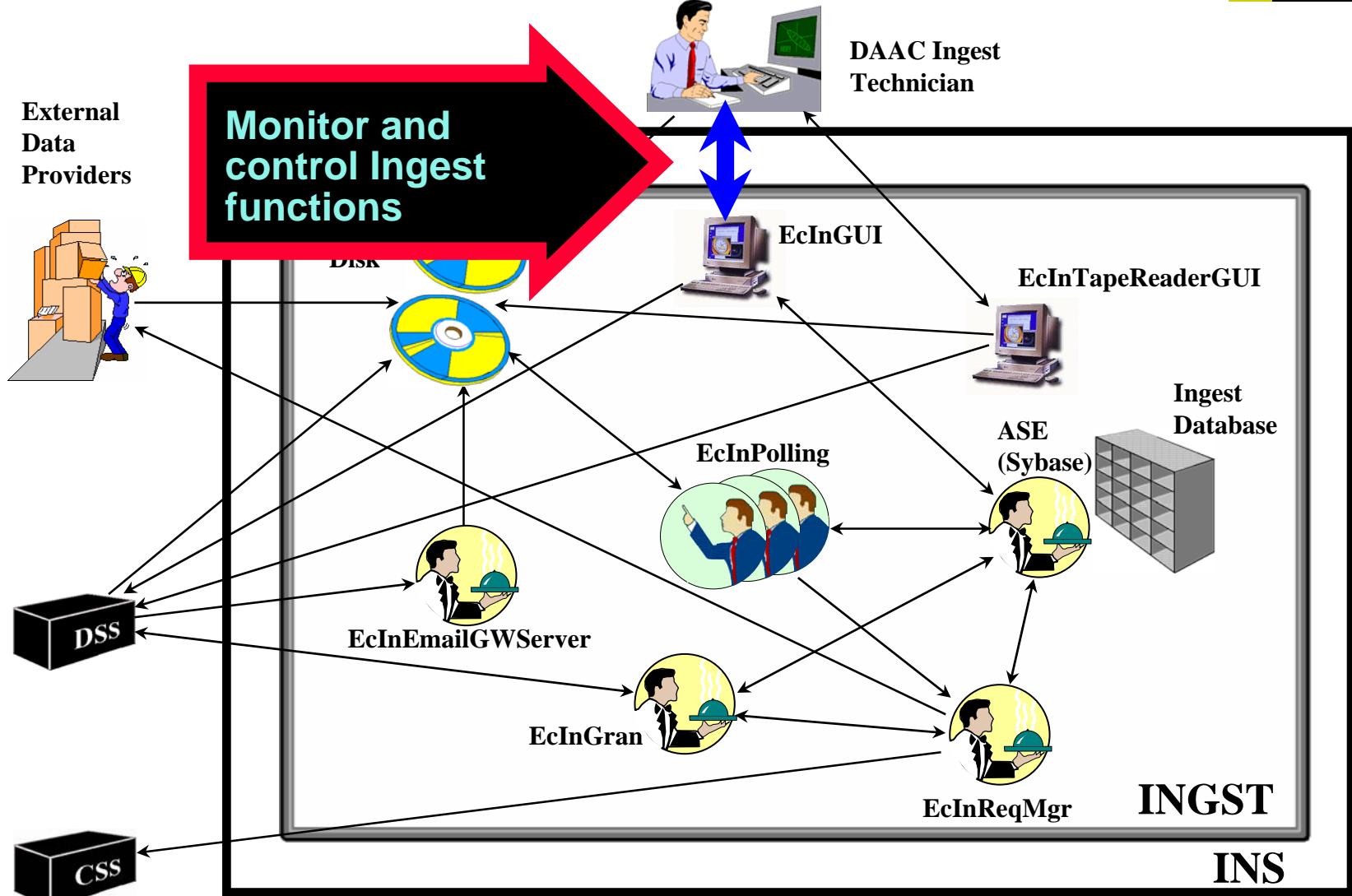
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



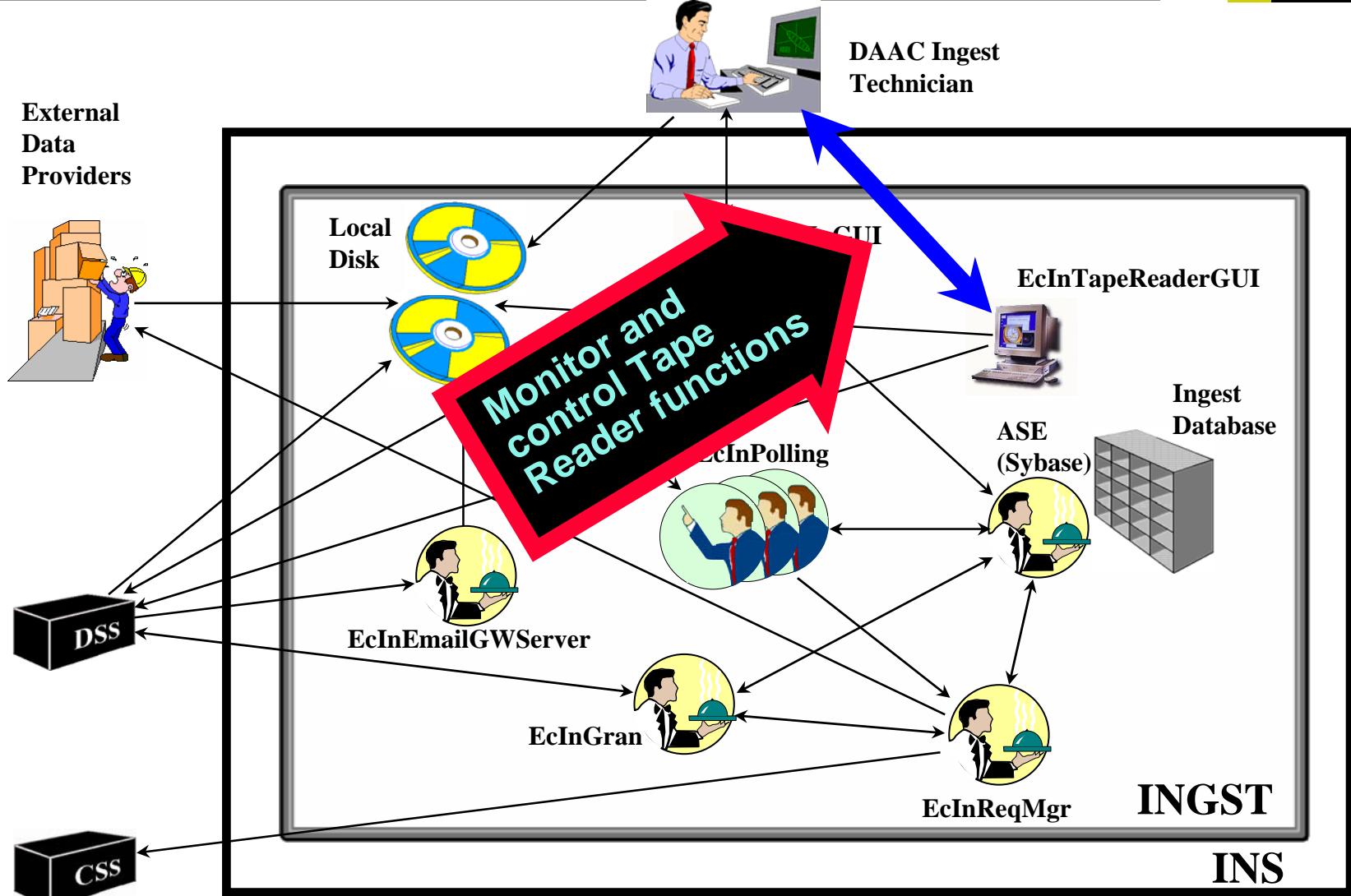
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



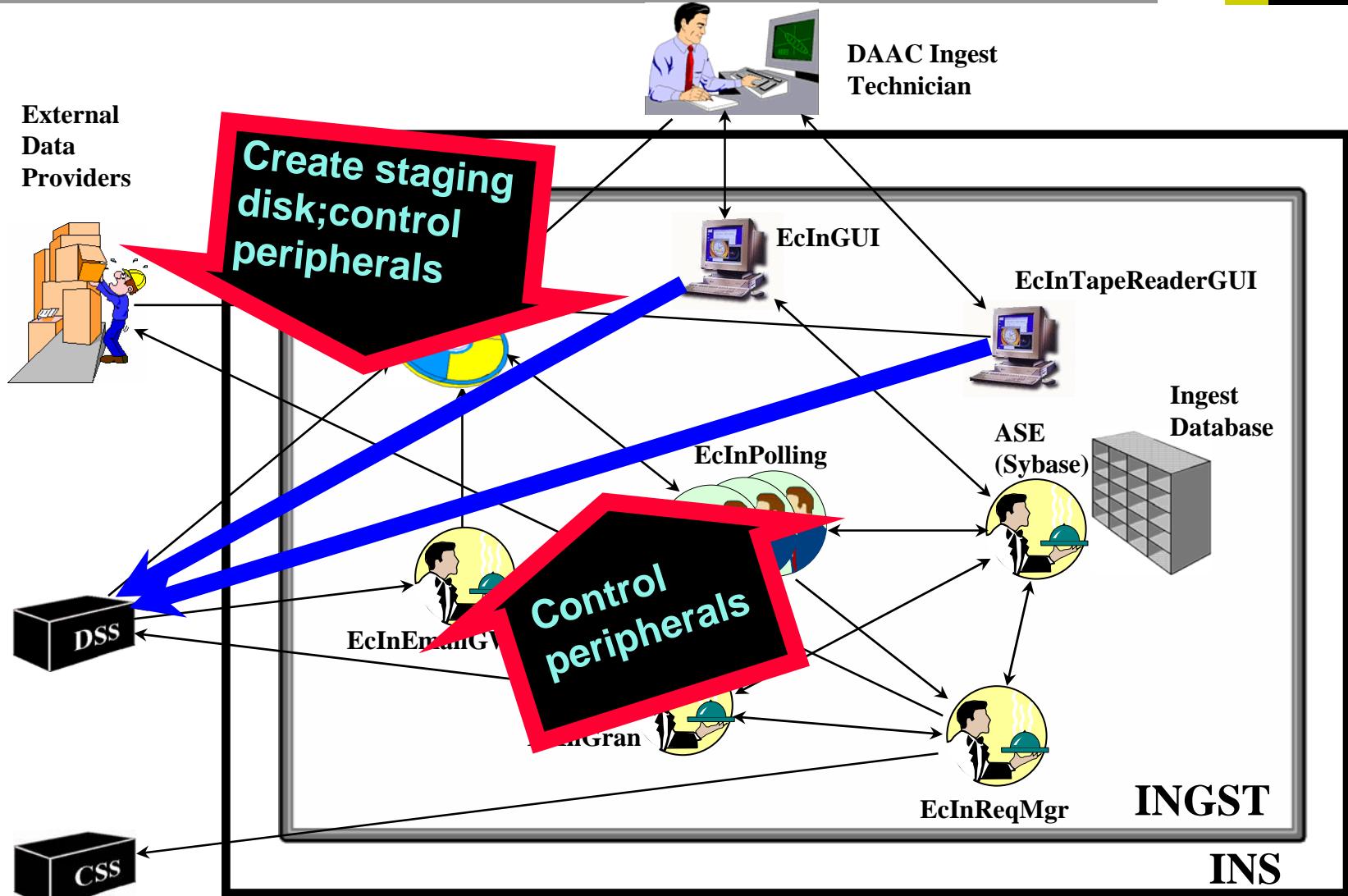
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



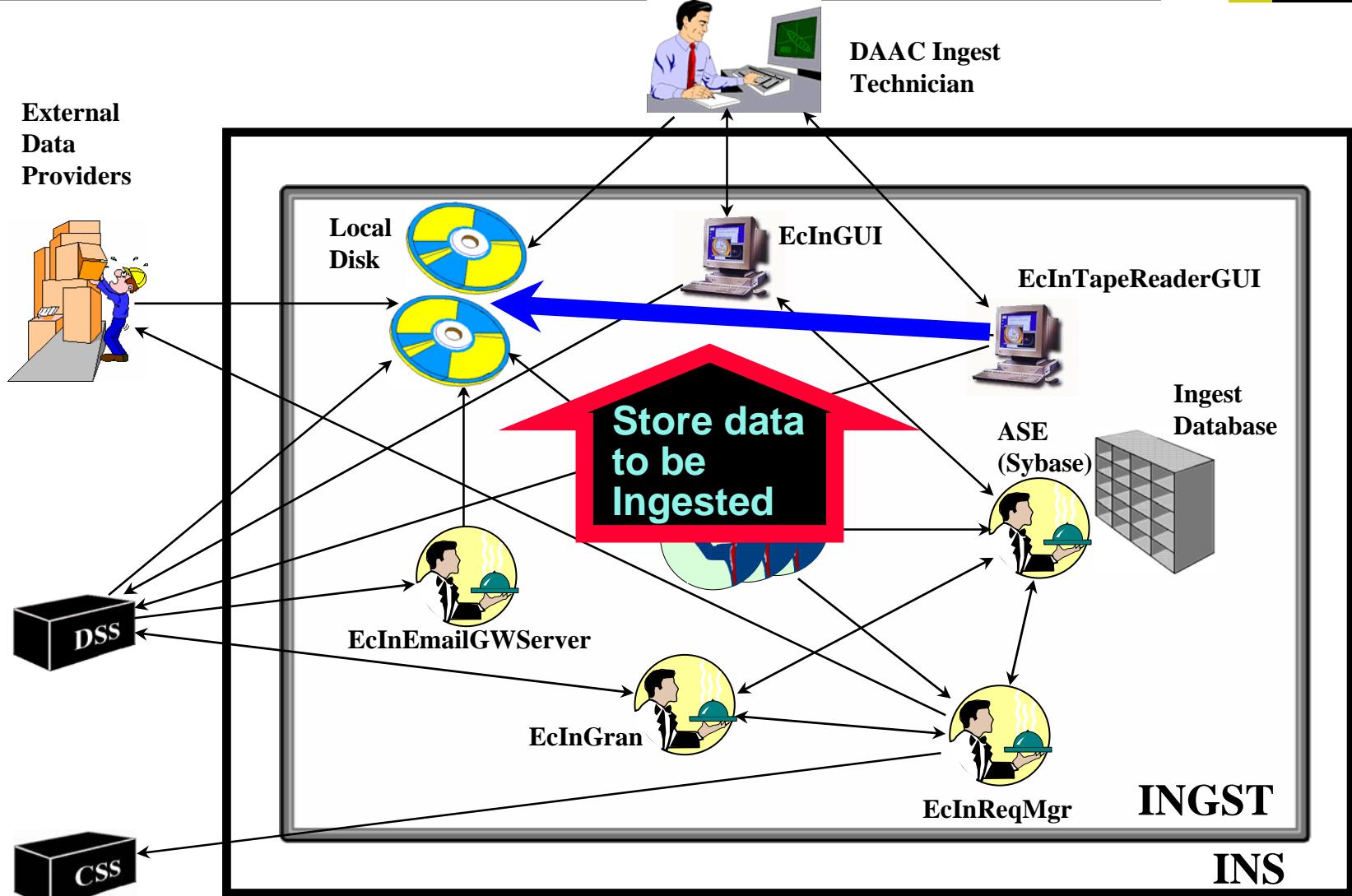
Subsystems and CSCLs: INS (Cont.)

Architecture and Interfaces



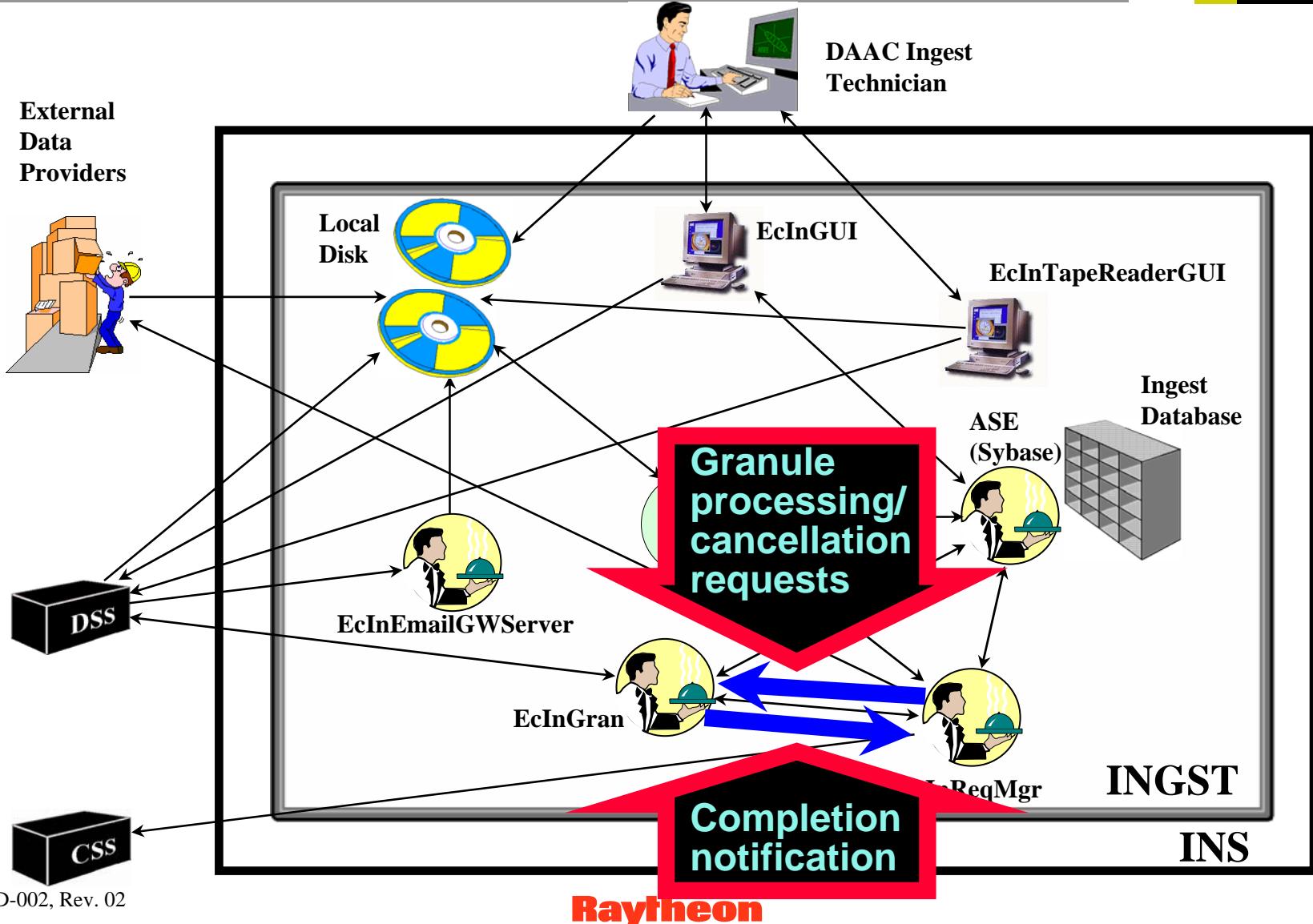
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



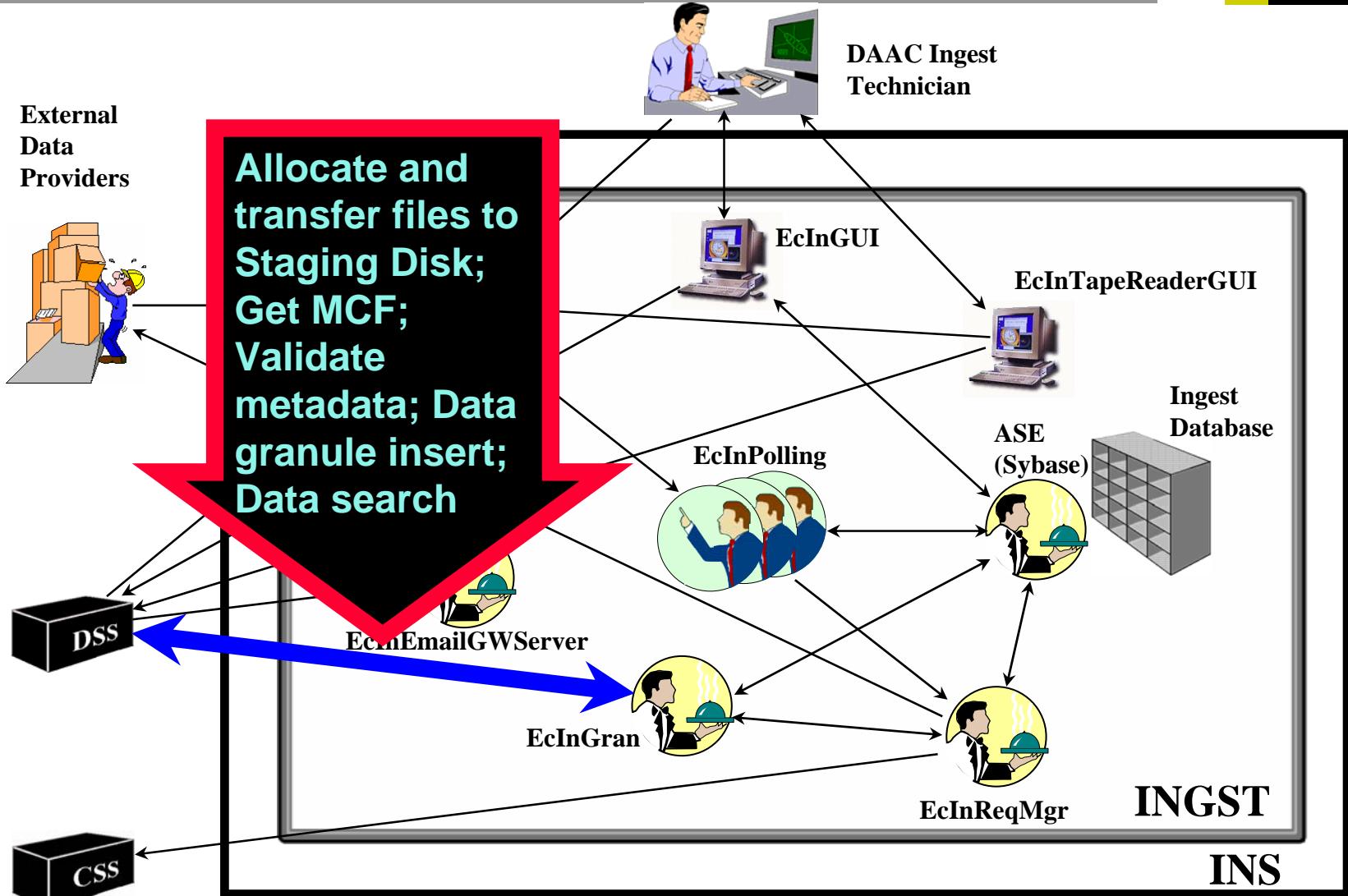
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



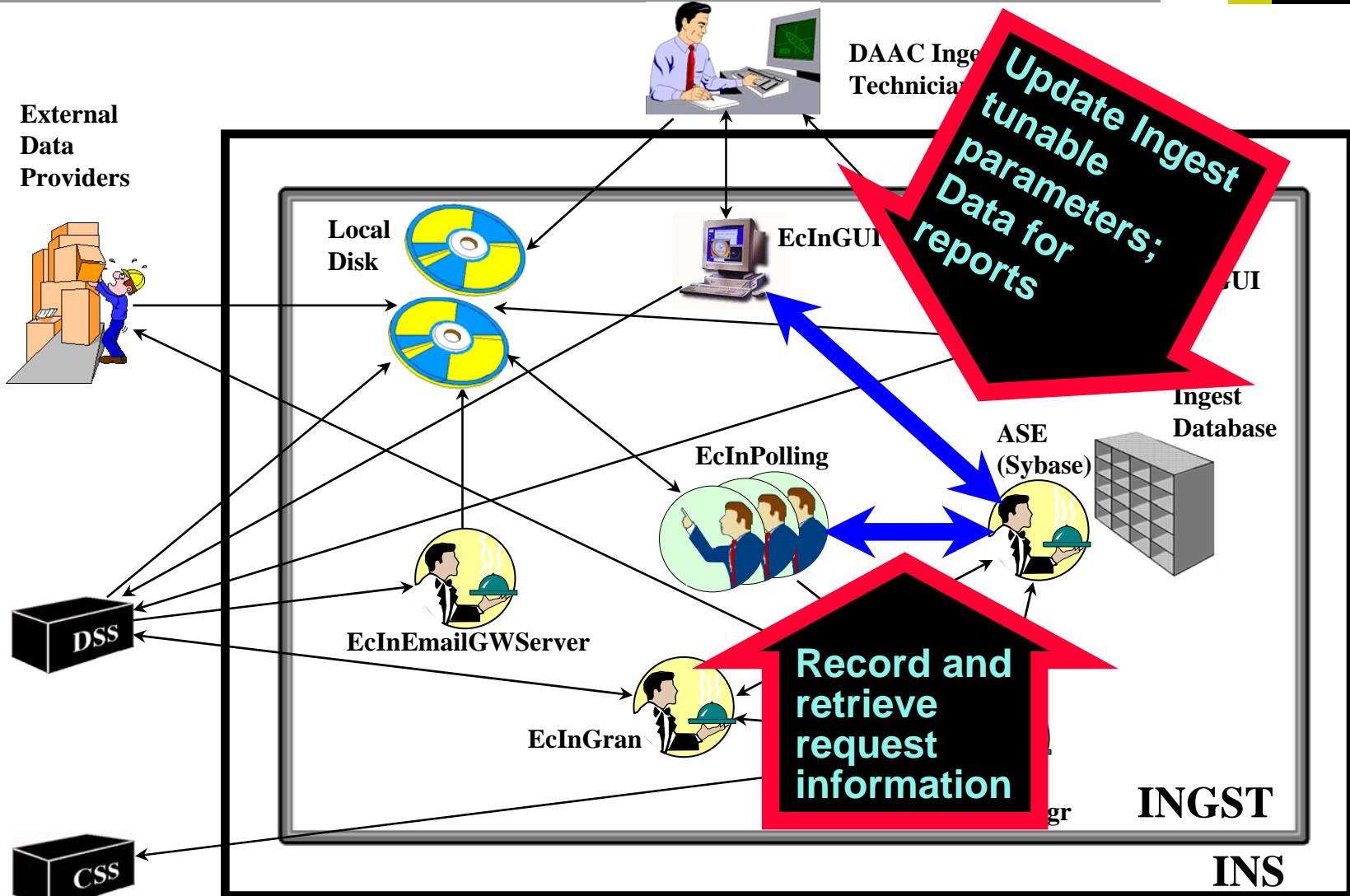
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Architecture and Interfaces



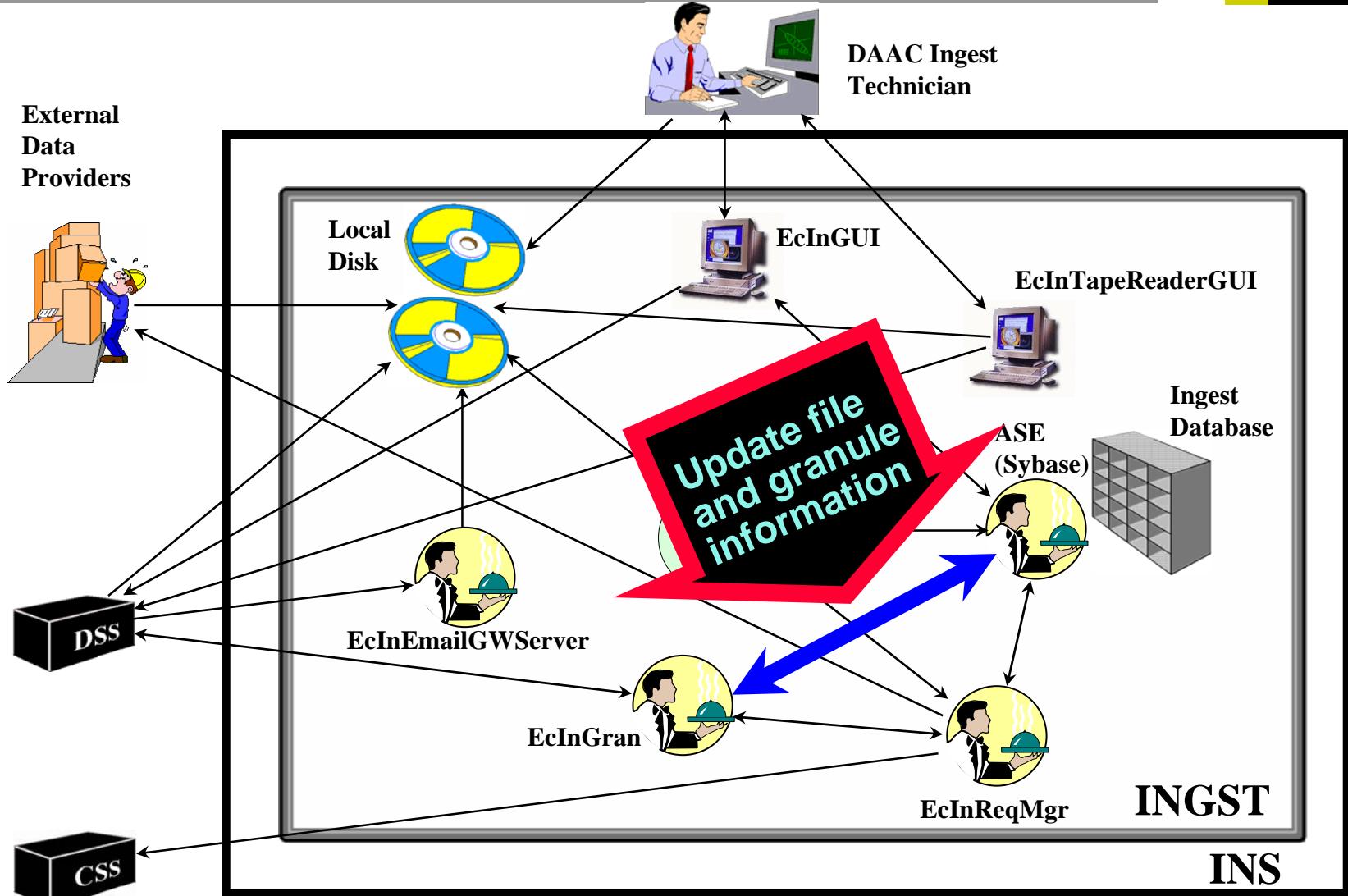
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Architecture and Interfaces



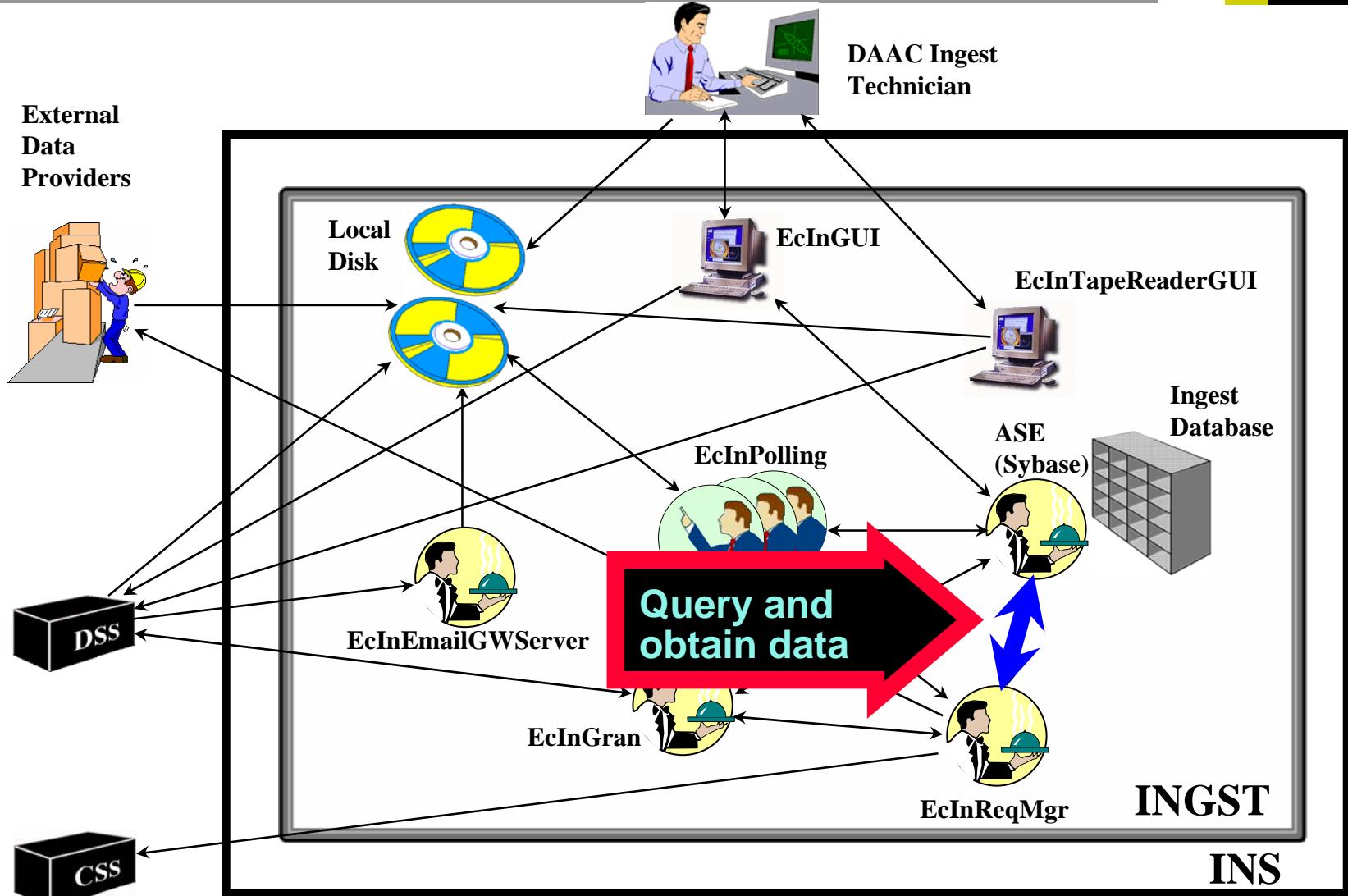
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Architecture and Interfaces



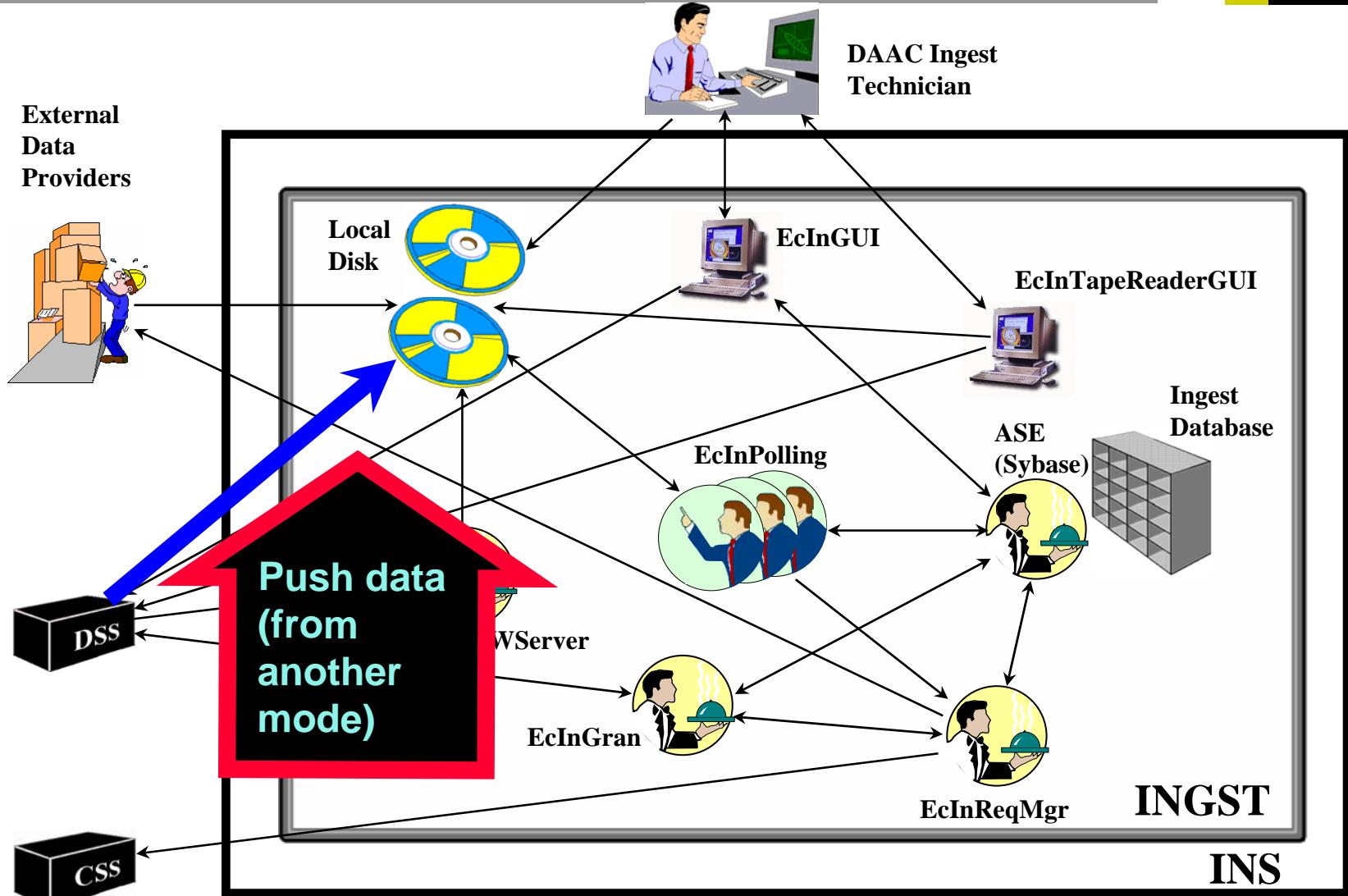
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Architecture and Interfaces



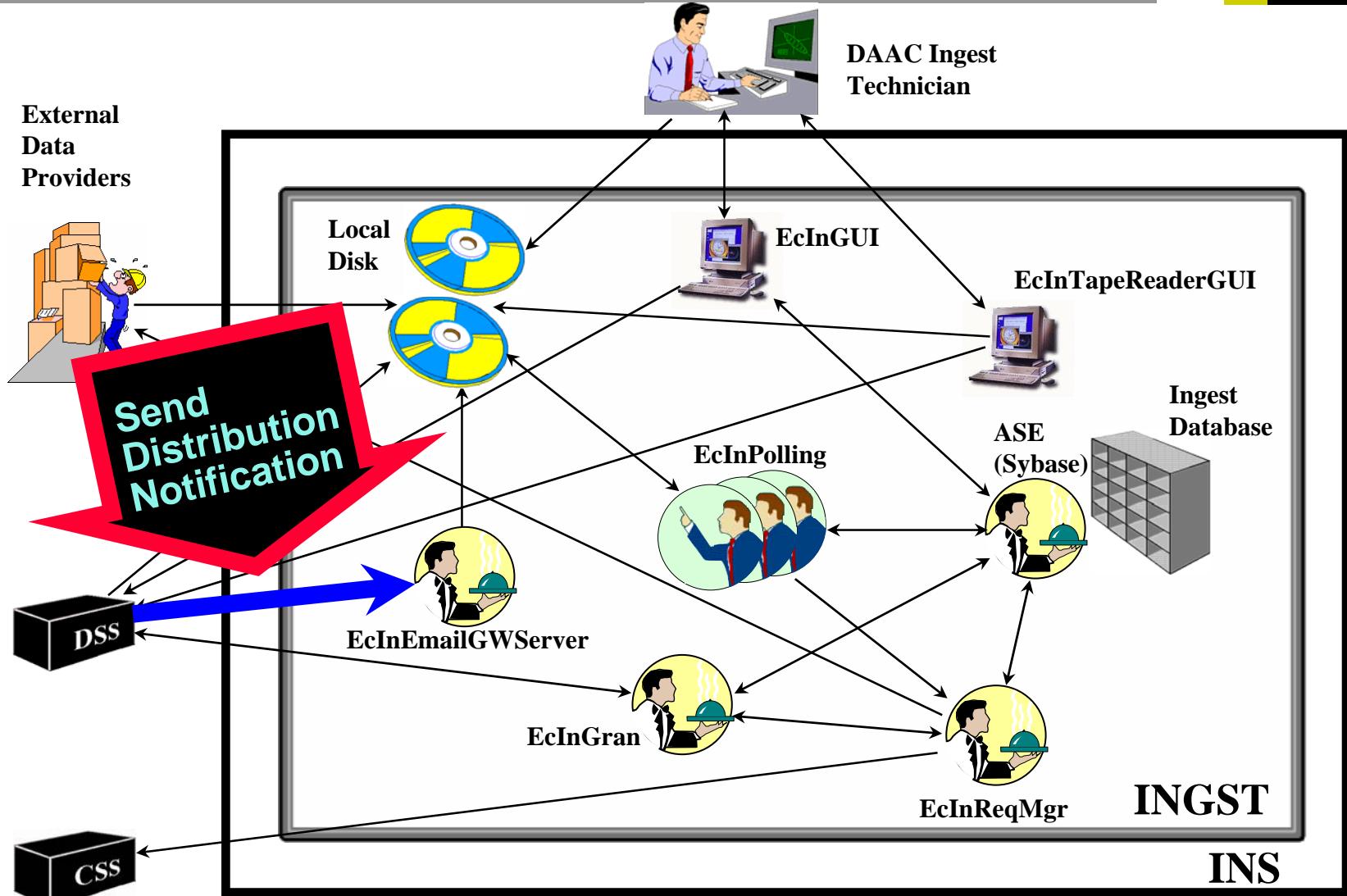
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



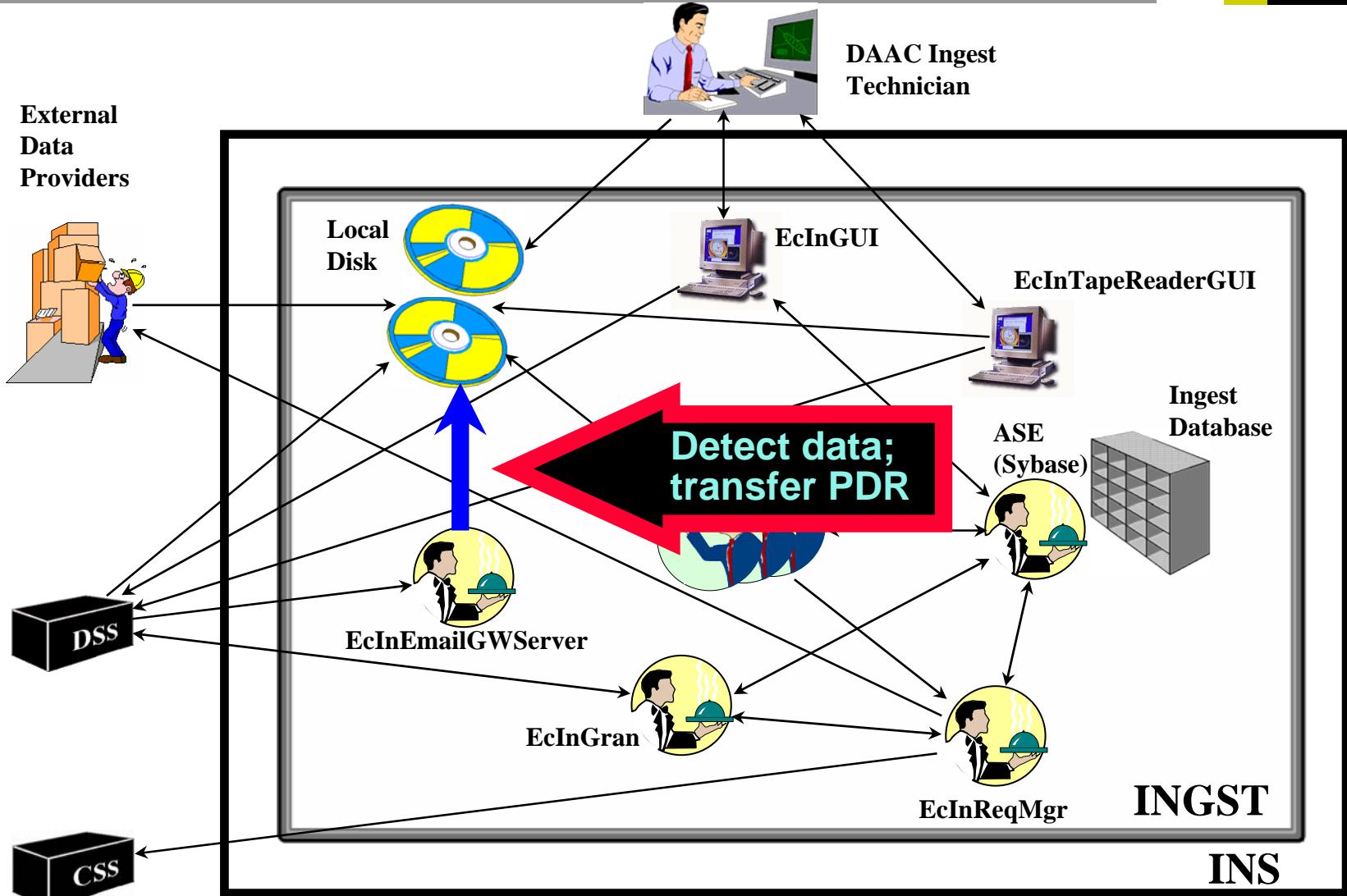
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



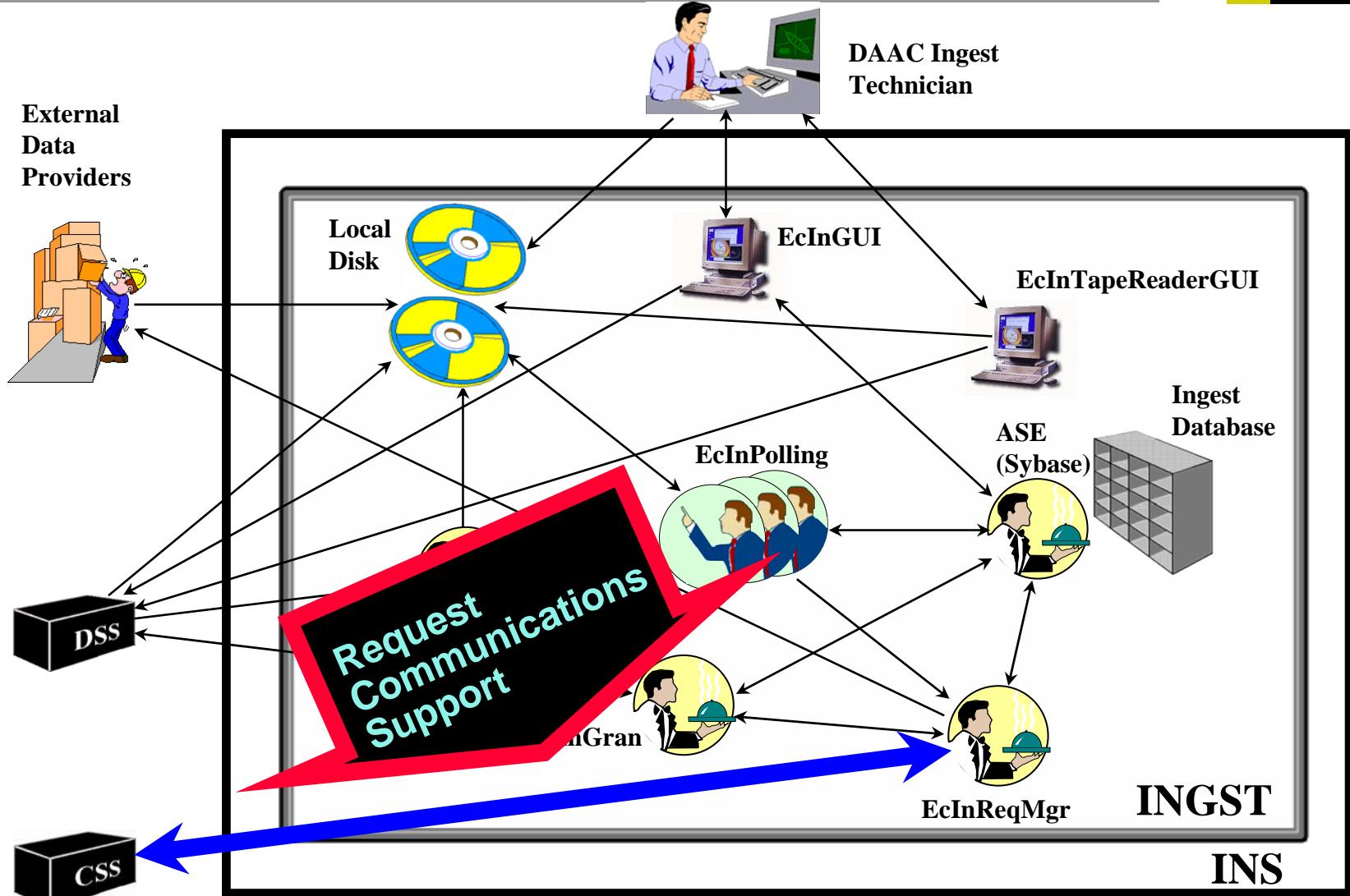
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces



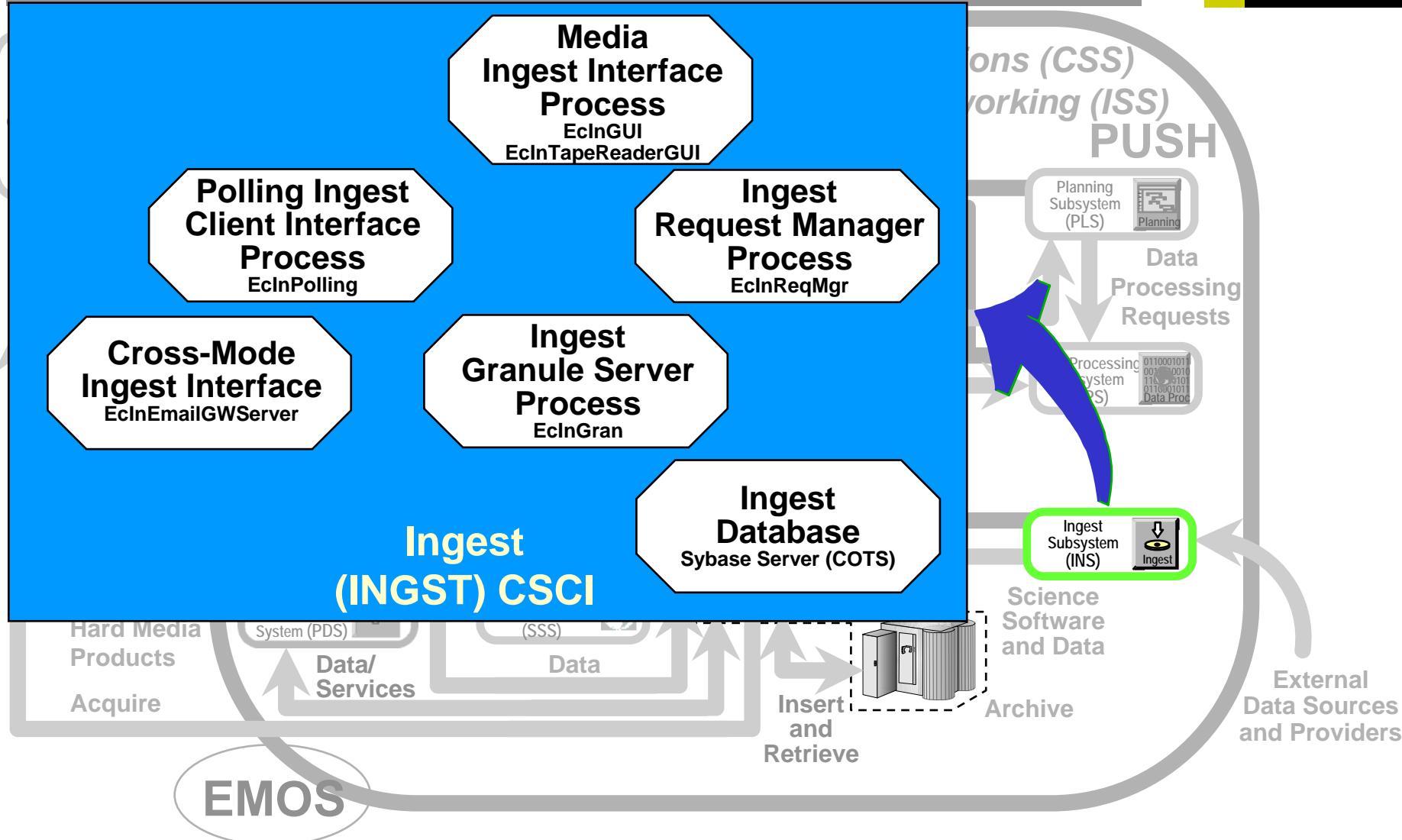
Subsystems and CSCIs: INS (Cont.)

Architecture and Interfaces

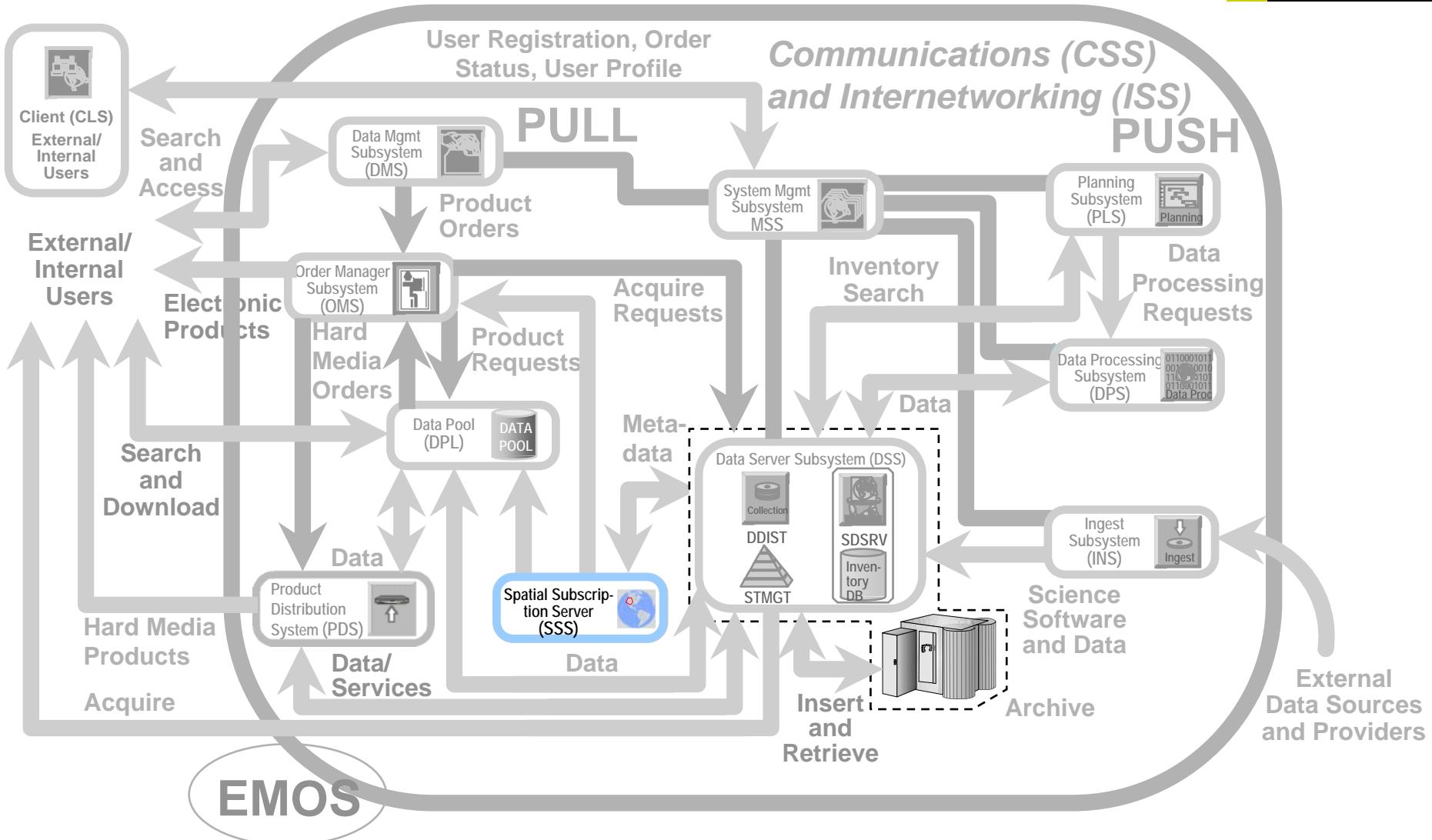




Subsystems and CSCIs: INS (Cont.)



Subsystems and CSCIs: SSS



Subsystems and CSCIs: SSS



- **Spatial Subscription Server (SSS)**

Spatial Subscription Server (SSS) 

- Creating, viewing, updating Subscriptions (specification of an action and an event that initiates the action)
 - Actions: Notification, Distribution, Data Pool Insert
 - Events: Granule Insert, Granule Deletion, Metadata Update
- Creating, viewing, deleting Bundling Orders (specification of distribution packages and criteria for package completion)
 - Minimum bundle size
 - Minimum granule count
 - Maximum bundle age
 - Bundling order information stored in Order Manager database
- Subscription processing triggered by appearance of events in Science Data Server database
 - Identify all subscriptions to the specified event
 - Process the actions defined in the subscriptions



Subsystems and CSCIs: SSS (Cont.)

- **Spatial Subscription Server (SSS) (Cont.)**
 - Uses several COTS tools: Netscape Navigator, Sun ONE Web Server, Sybase ASE
- **Spatial Subscription Server (NBSRV) CSCI (a.k.a. NSBRV CSCI)**
 - Provides a Graphical User Interface (GUI) and a set of drivers for implementing subscription functions
 - Six major components
 - **Spatial Subscription Server database** - repository for all data created expressly for use by the NBSRV
 - **Subscription GUI** - tool for entering, modifying, or deleting subscriptions and bundling orders
 - **Event Queue Monitor** - multiple instances of a Perl script that monitors the event queue for new arrivals
 - **Action Queue Monitor** - multiple instances of a Perl script that monitors the action queue for new arrivals

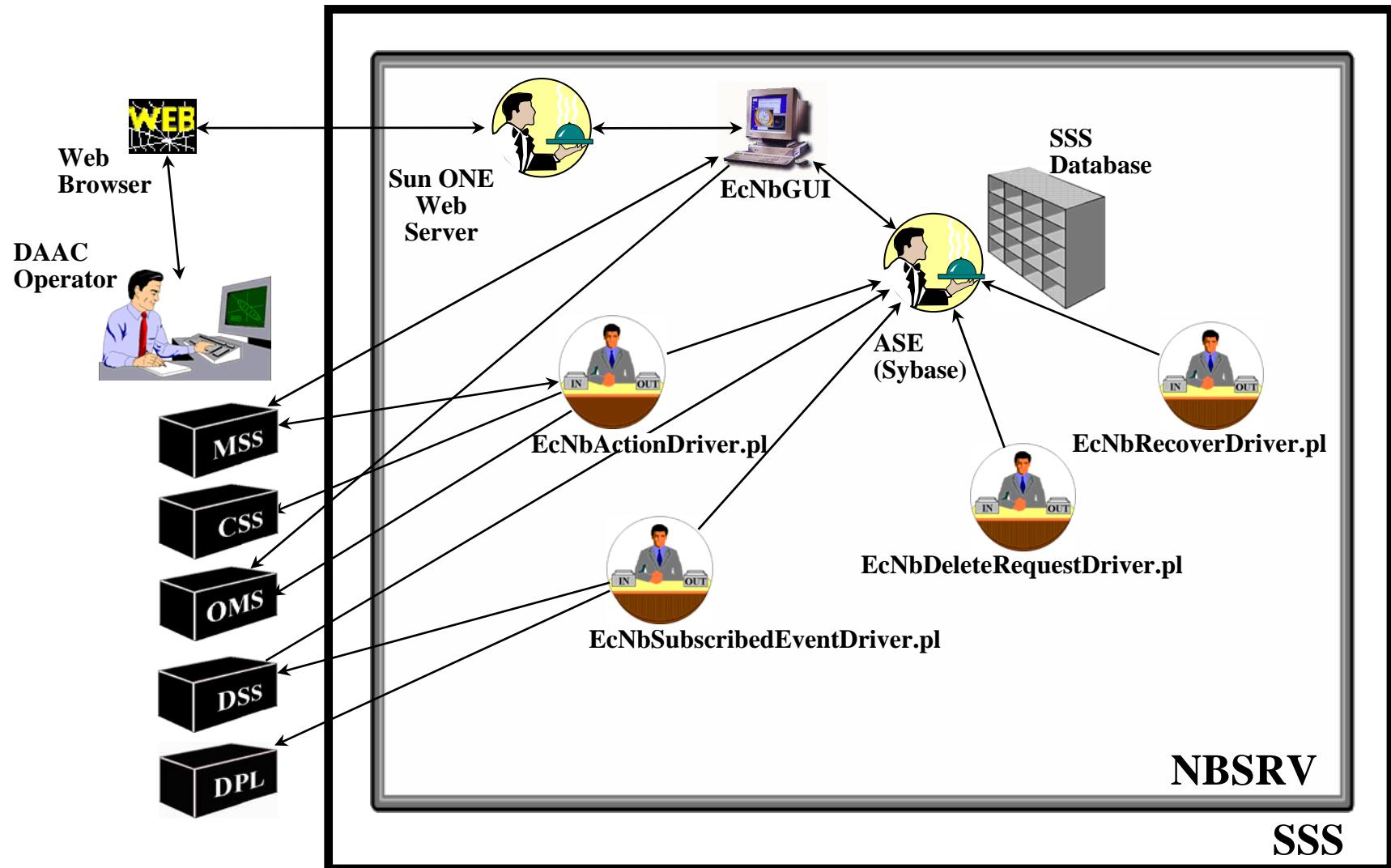


Subsystems and CSCIs: SSS (Cont.)

- **Spatial Subscription Server (NBSRV) CSCI (a.k.a. NSBRV CSCI) (Cont.)**
 - **Six major components (Cont.)**
 - **Recovery Driver** - Monitors logs for stalled events or actions; re-enqueues stalled events/actions
 - **Deletion Driver** - Works off a deletion queue to purge the database of outdated information (e.g., completed events/actions)

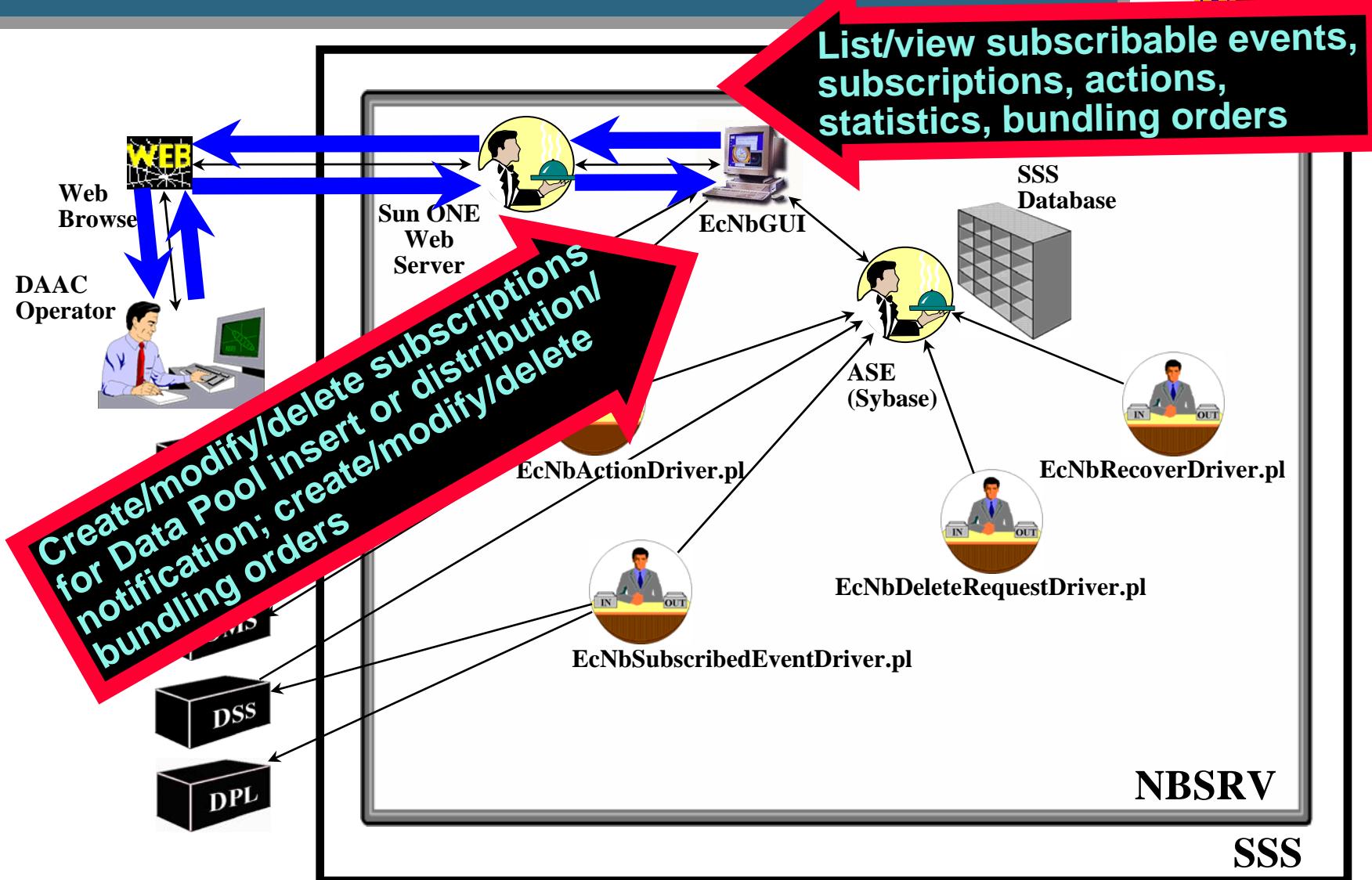
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



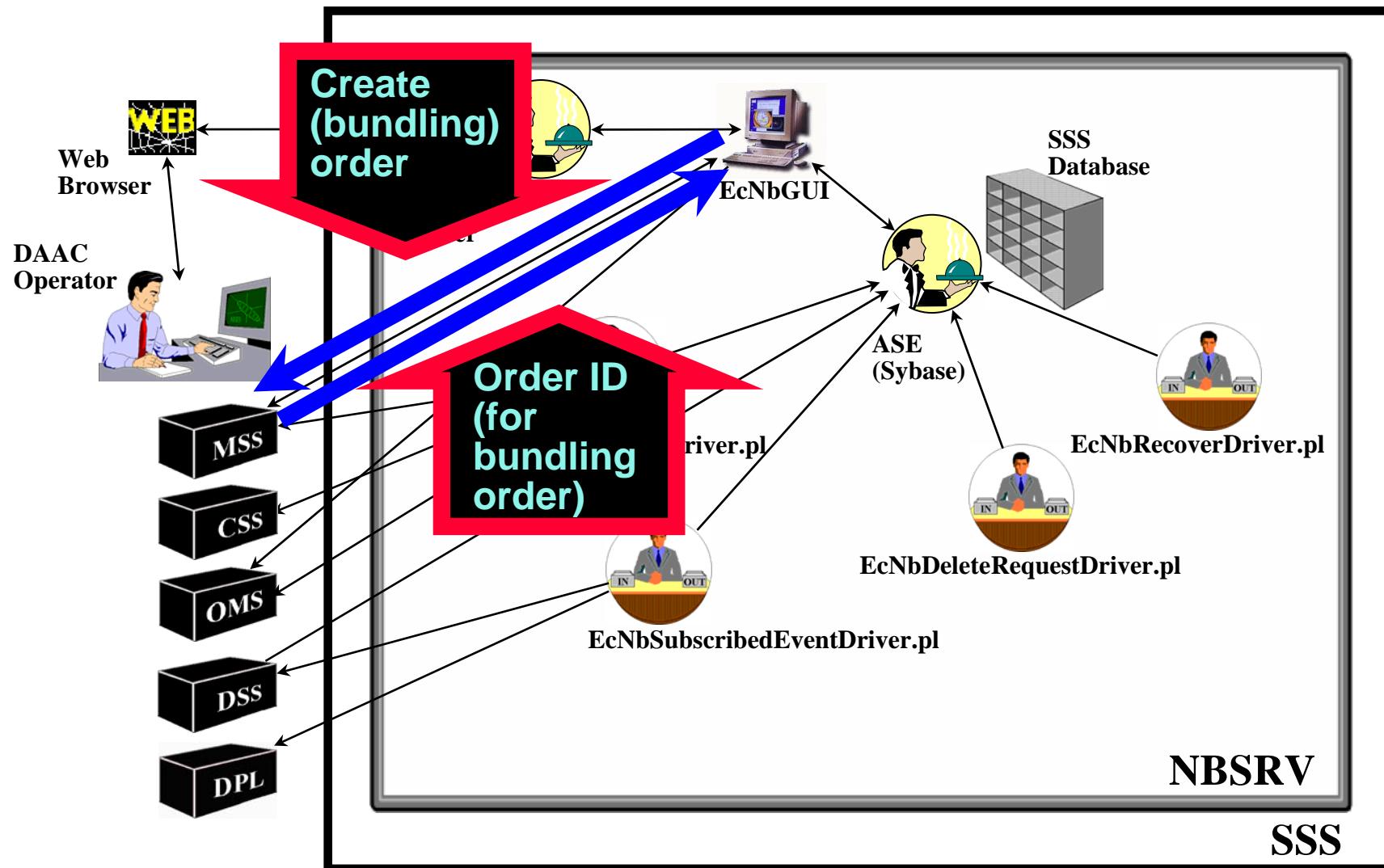
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



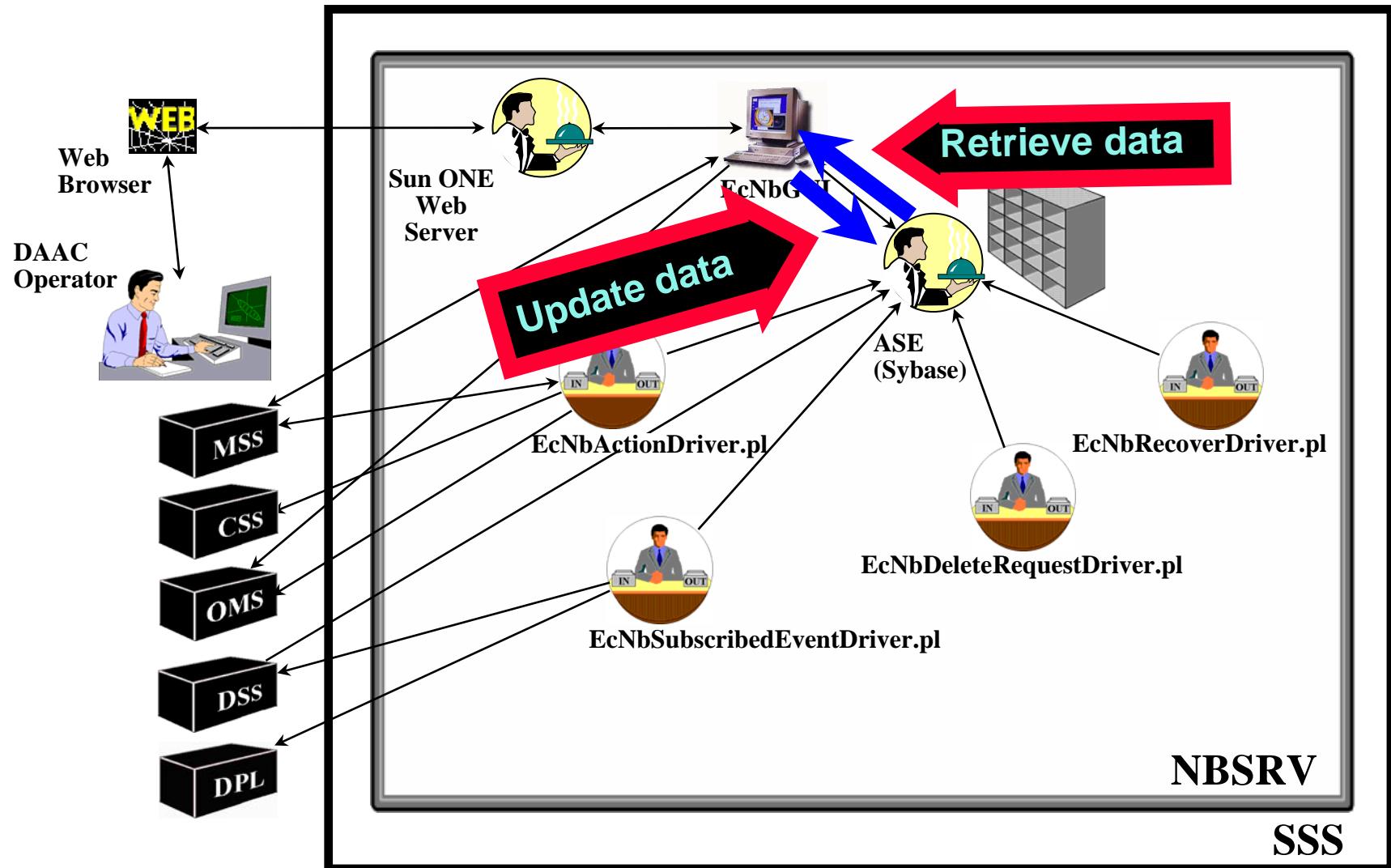
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



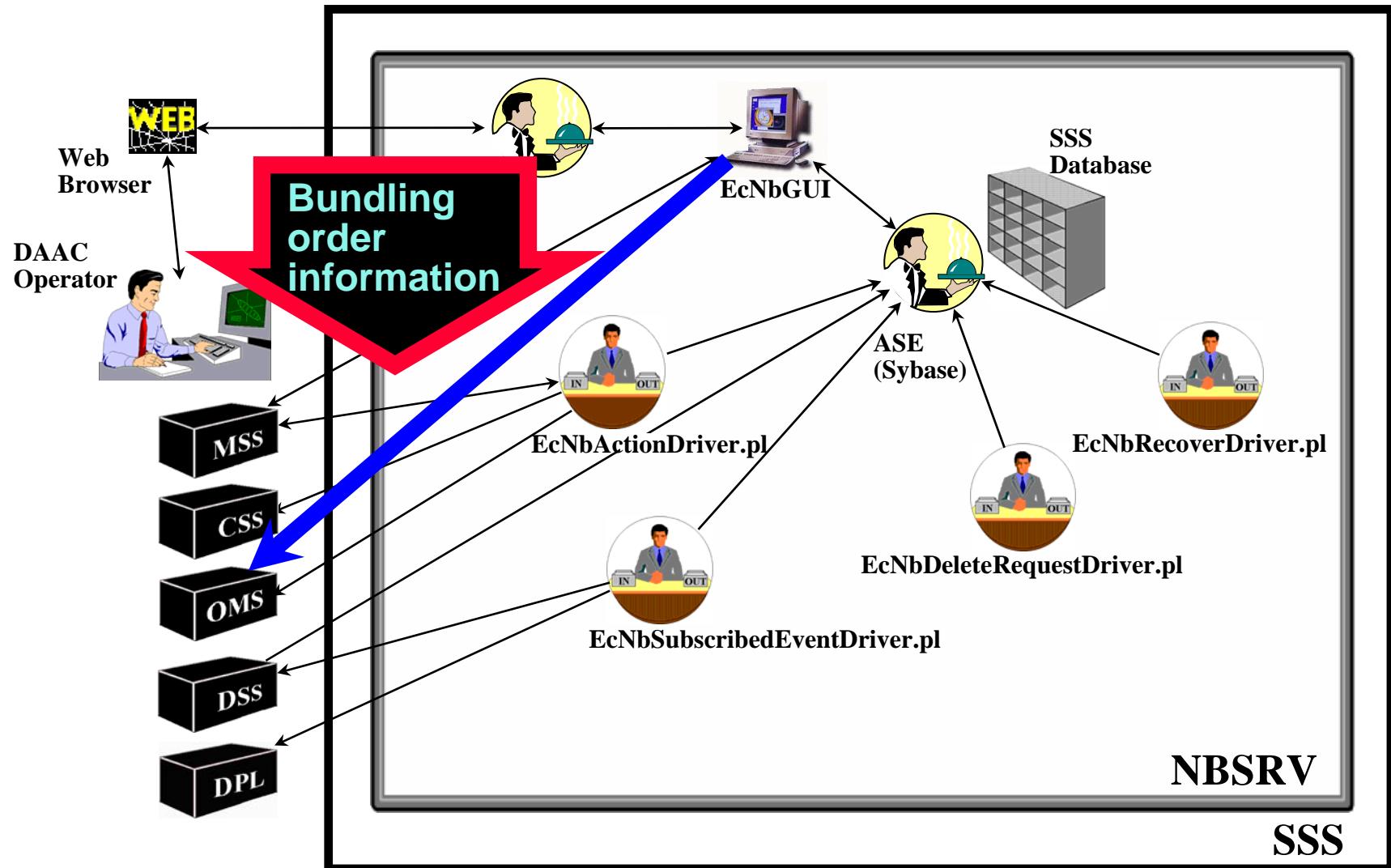
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



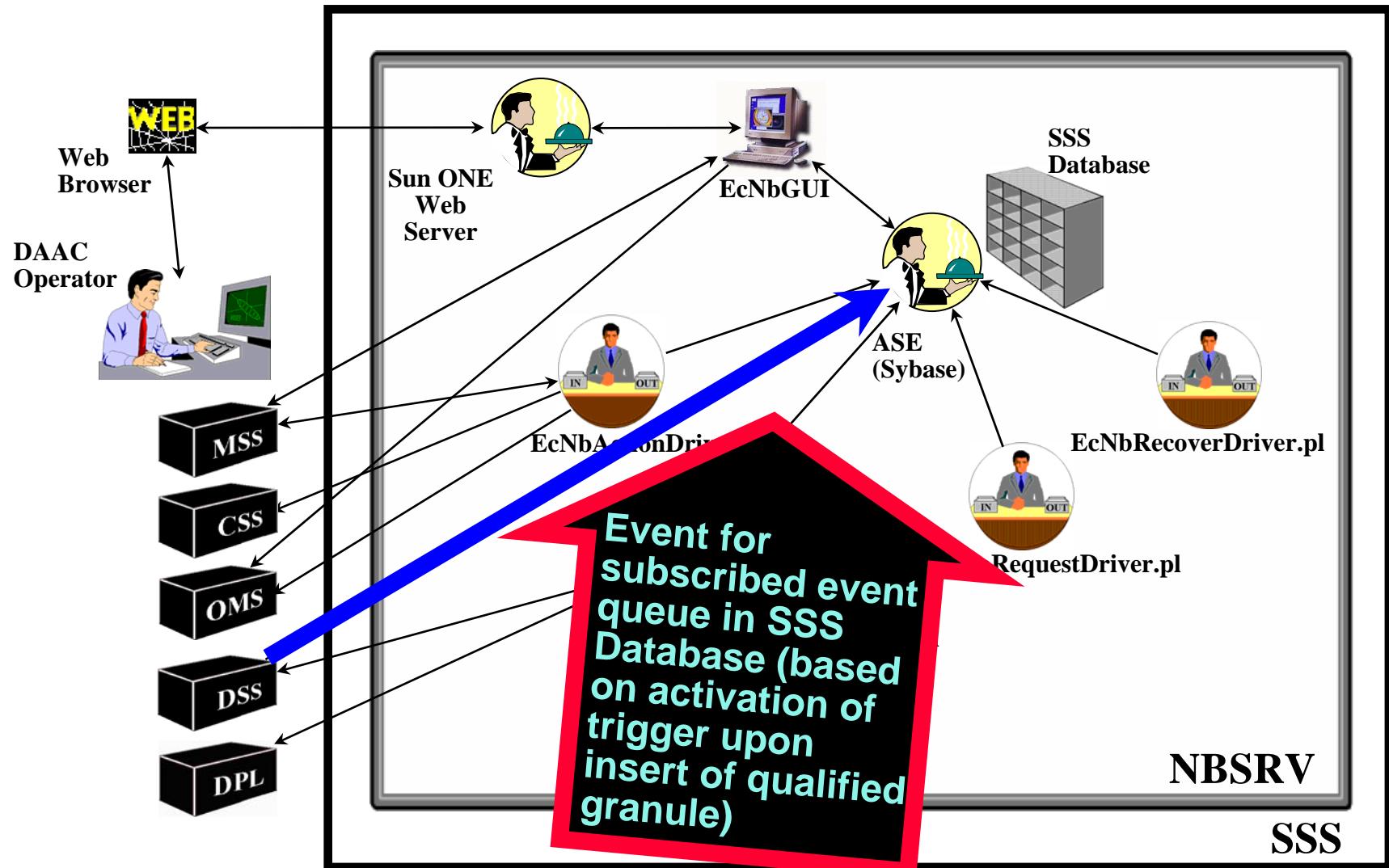
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



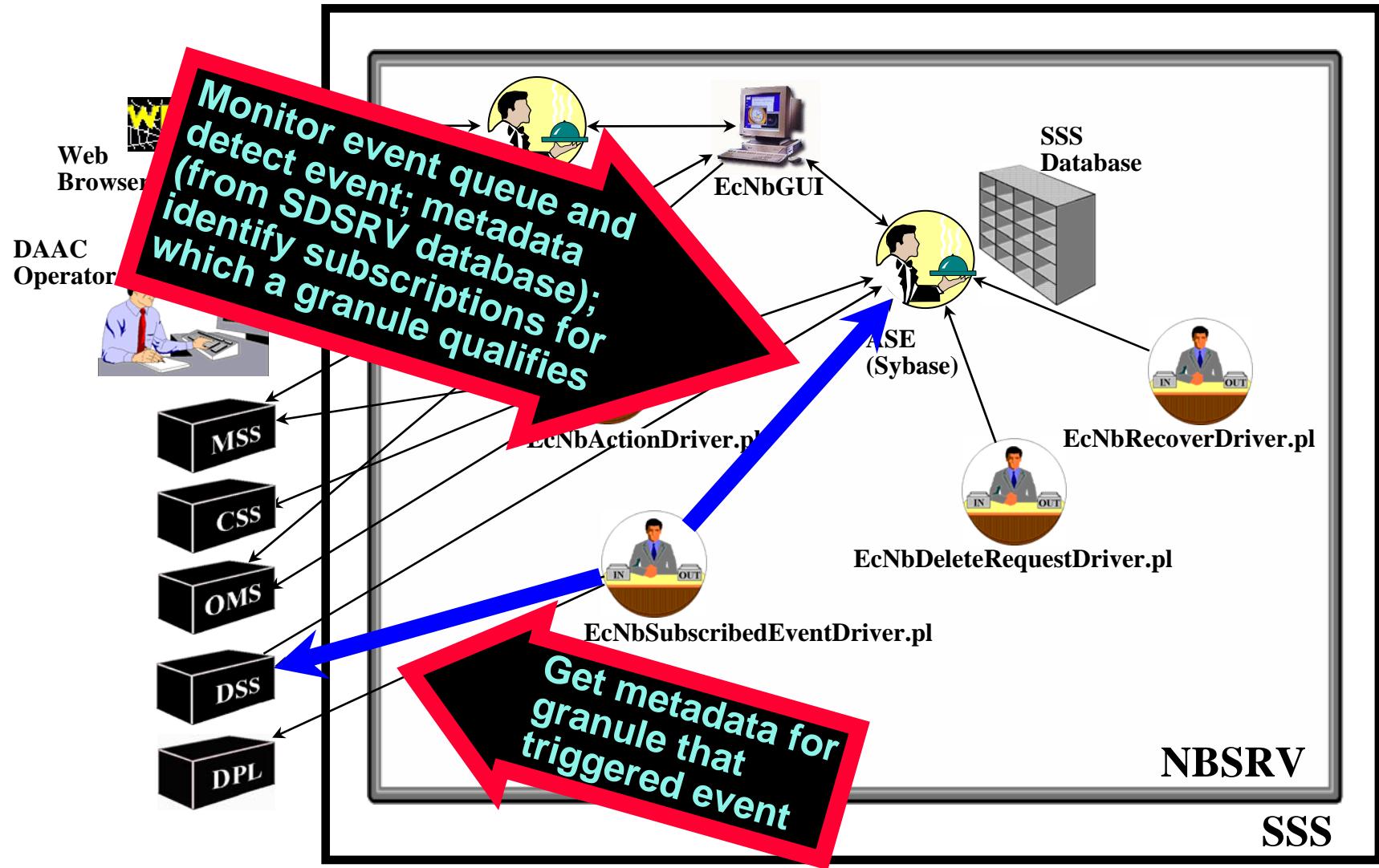
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NBSRV Architecture and Interfaces



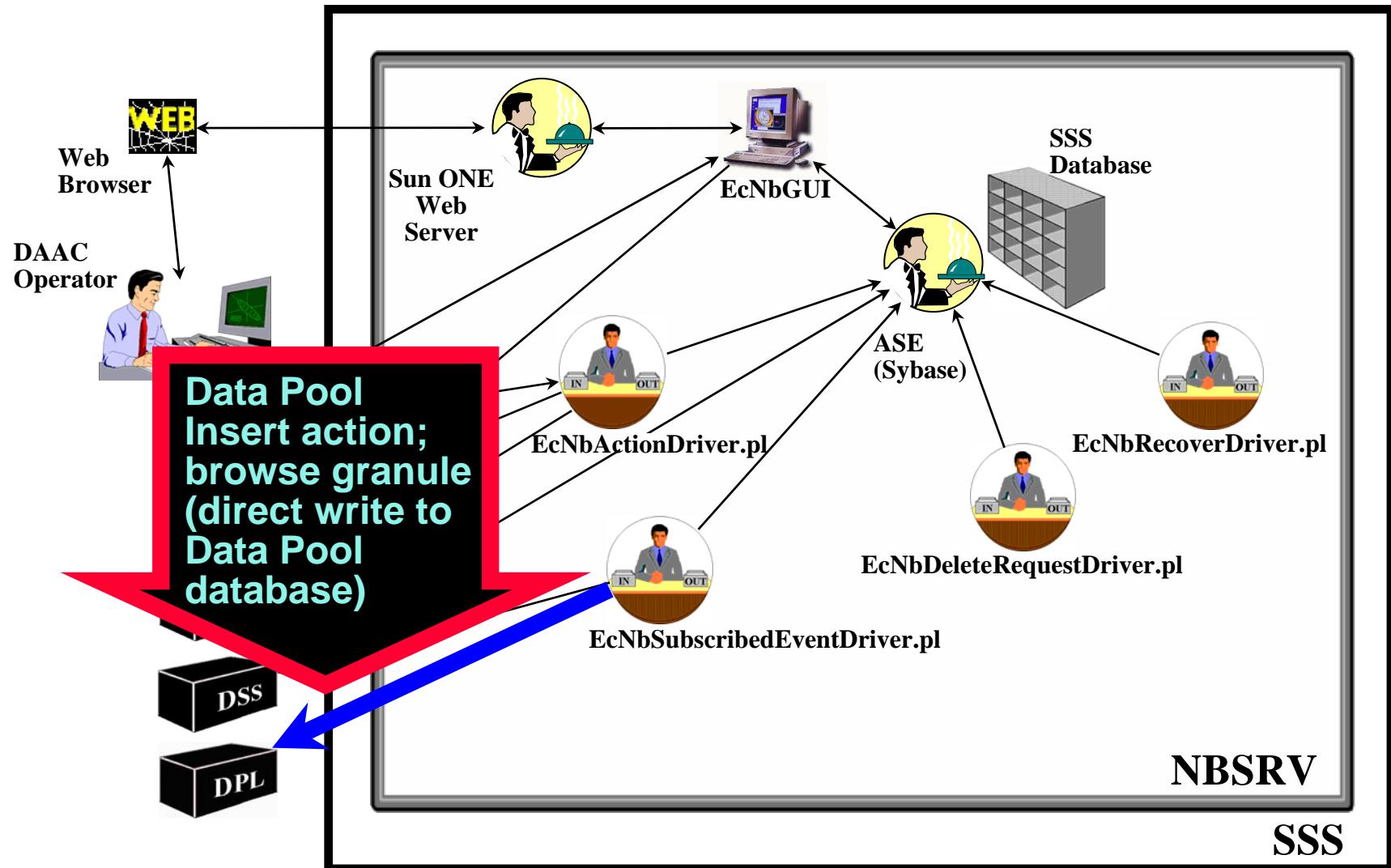
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NBSRV Architecture and Interfaces



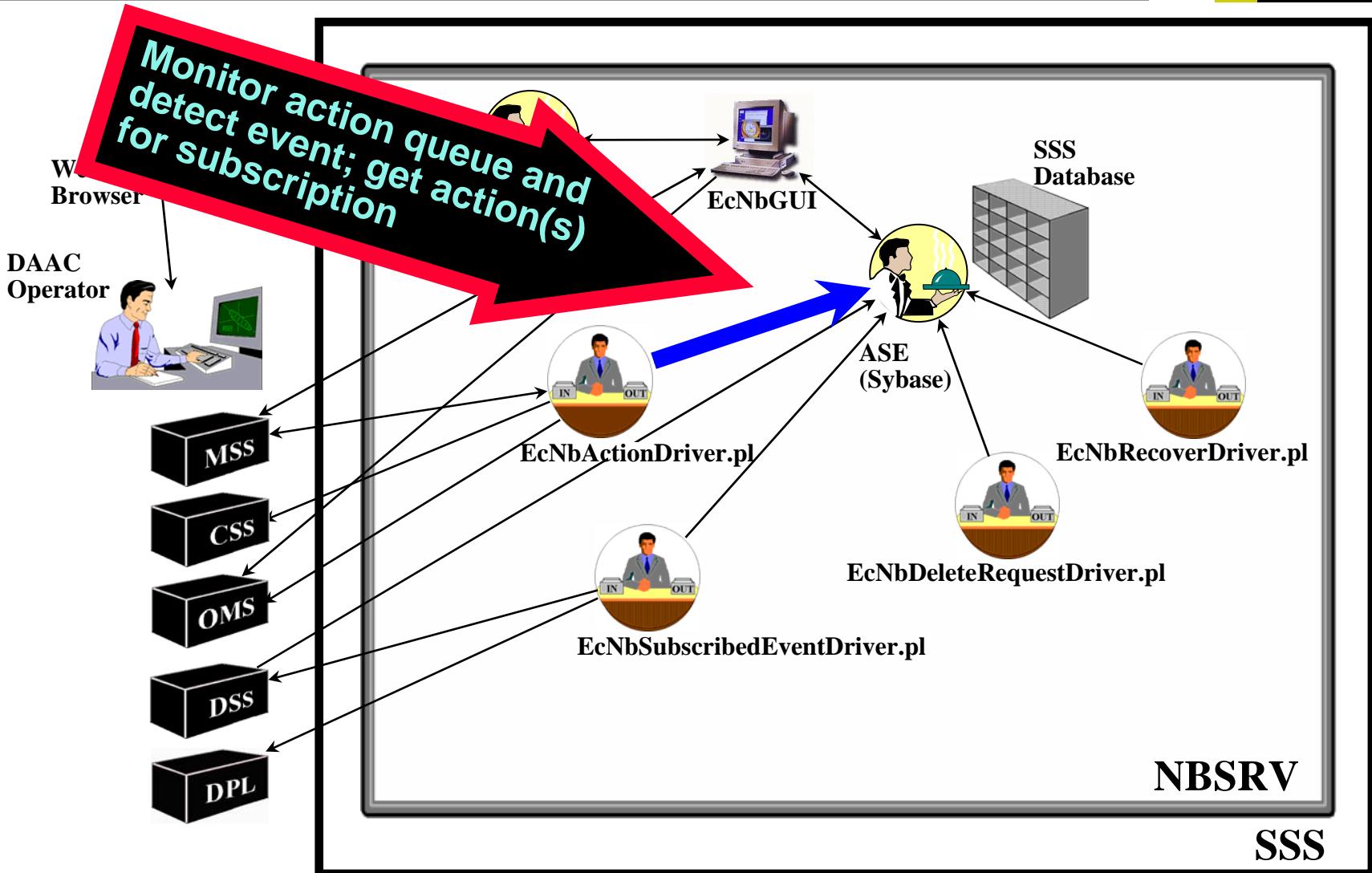
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NBSRV Architecture and Interfaces



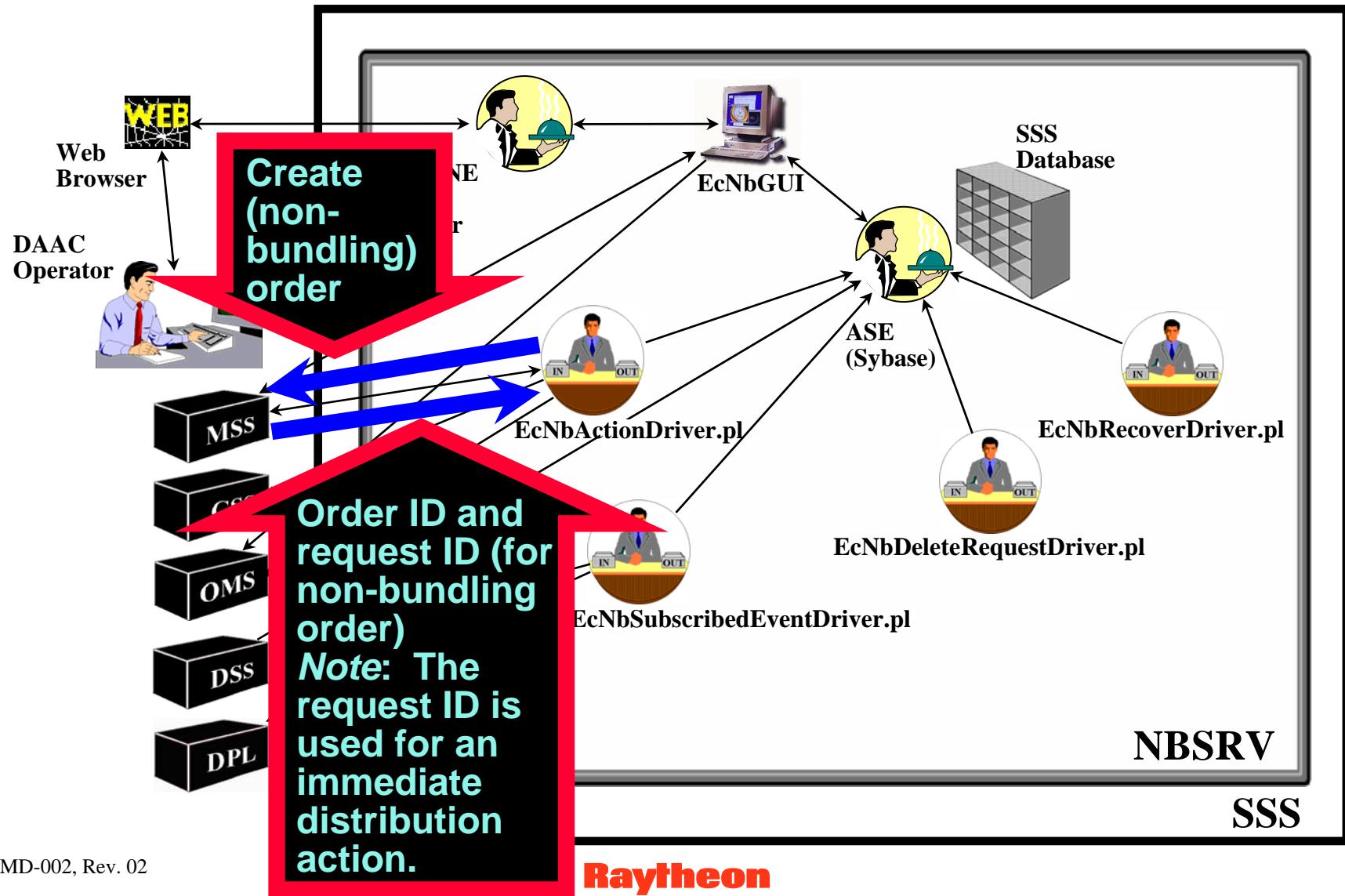
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



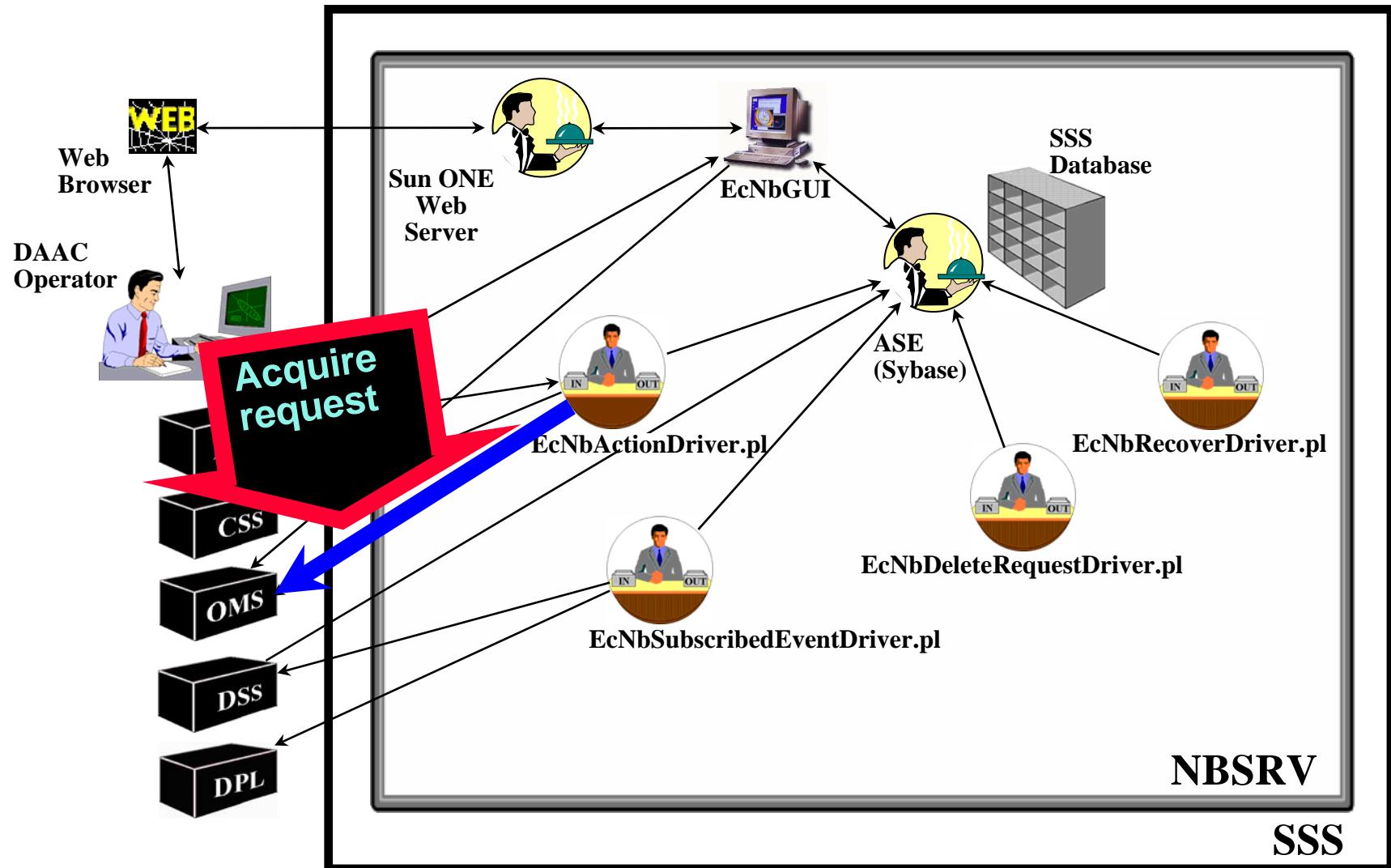
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



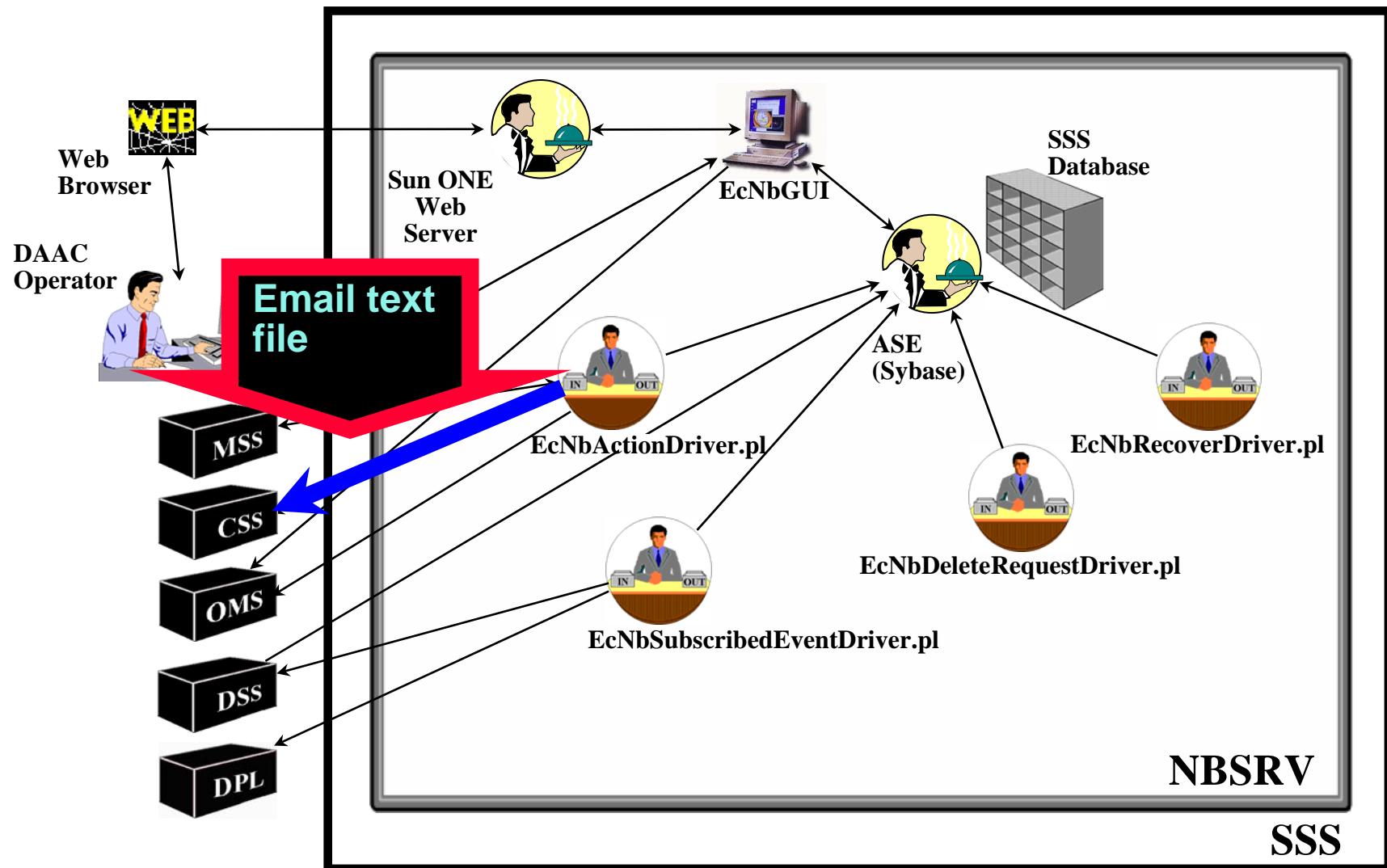
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NBSRV Architecture and Interfaces



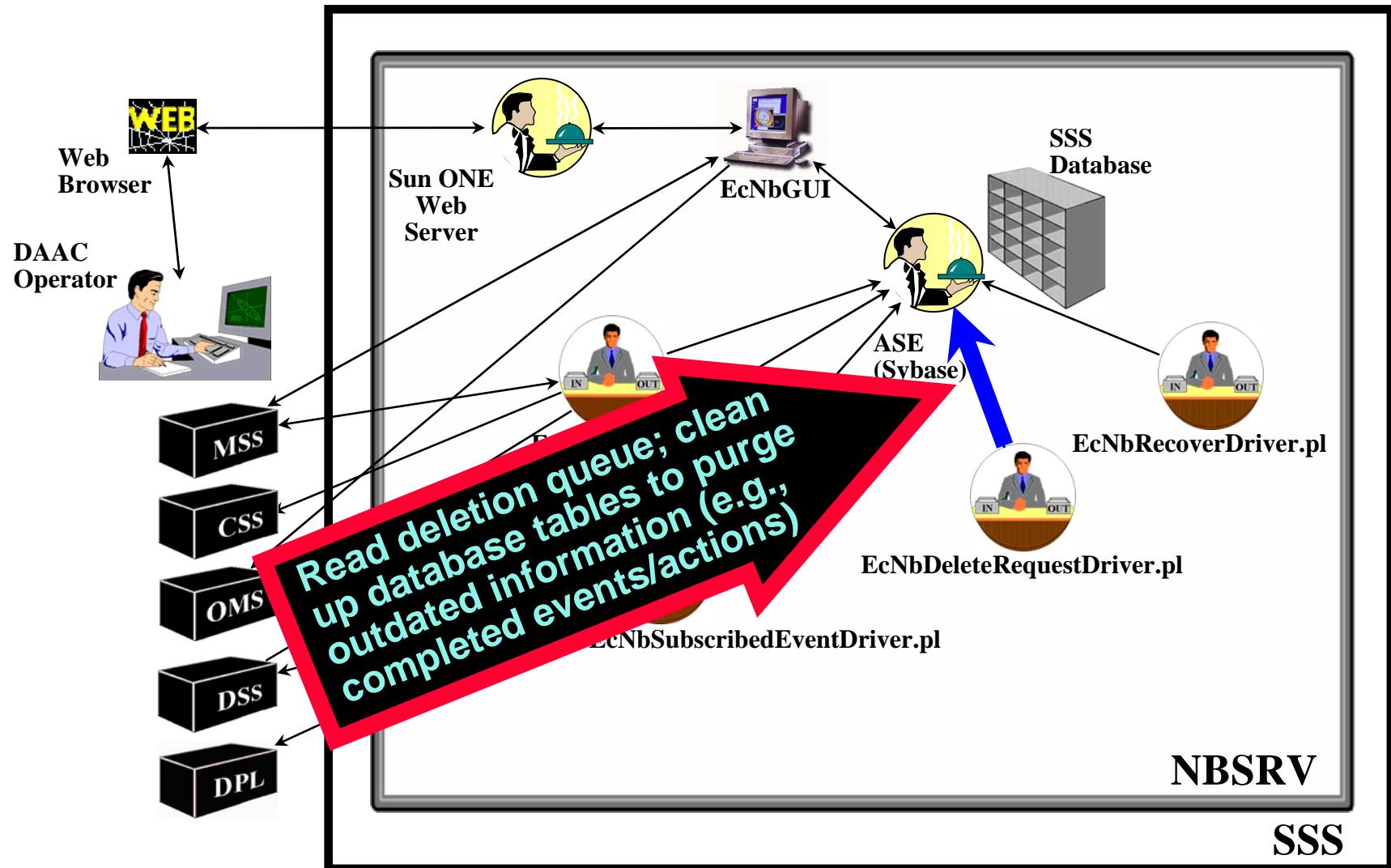
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



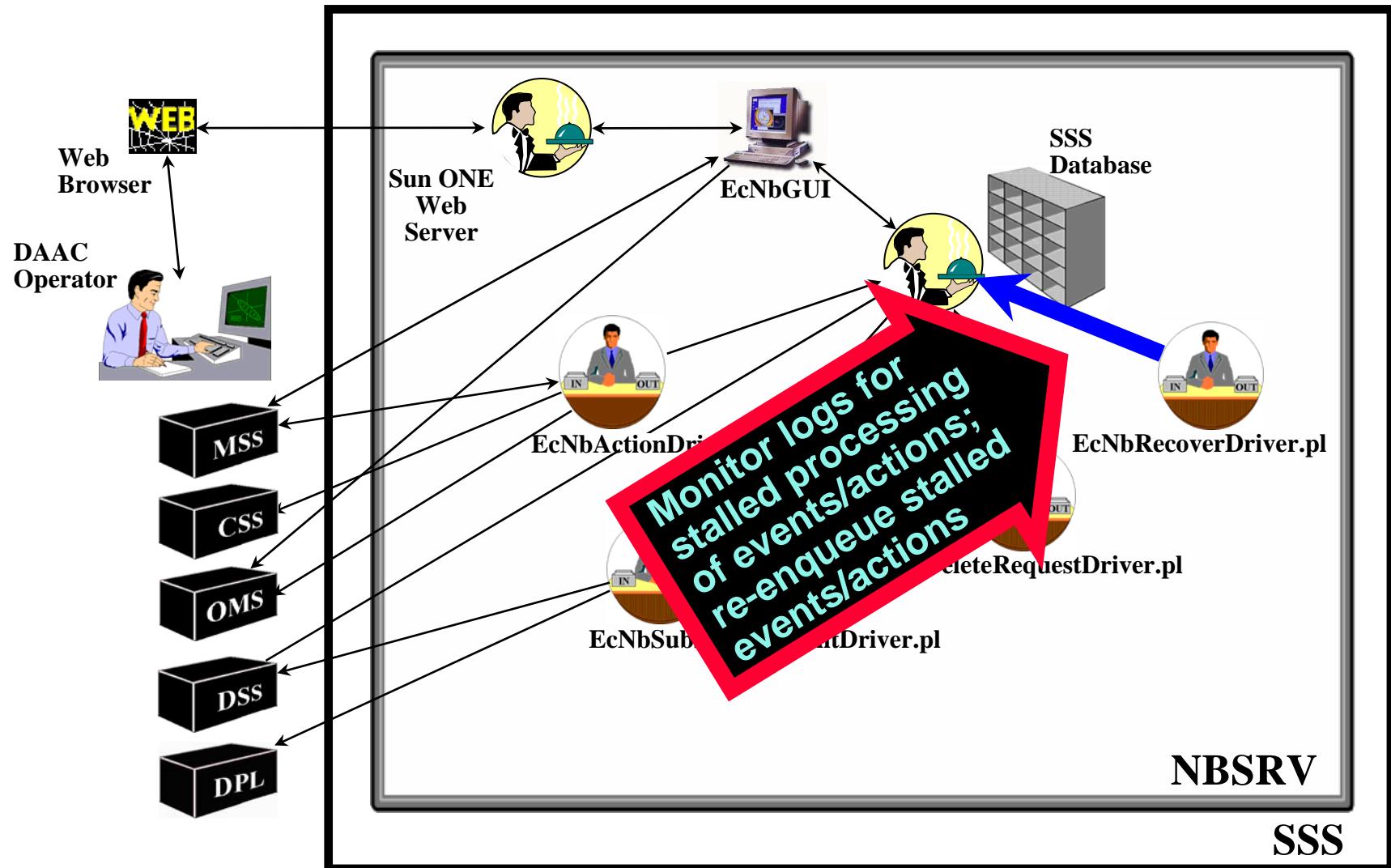
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces



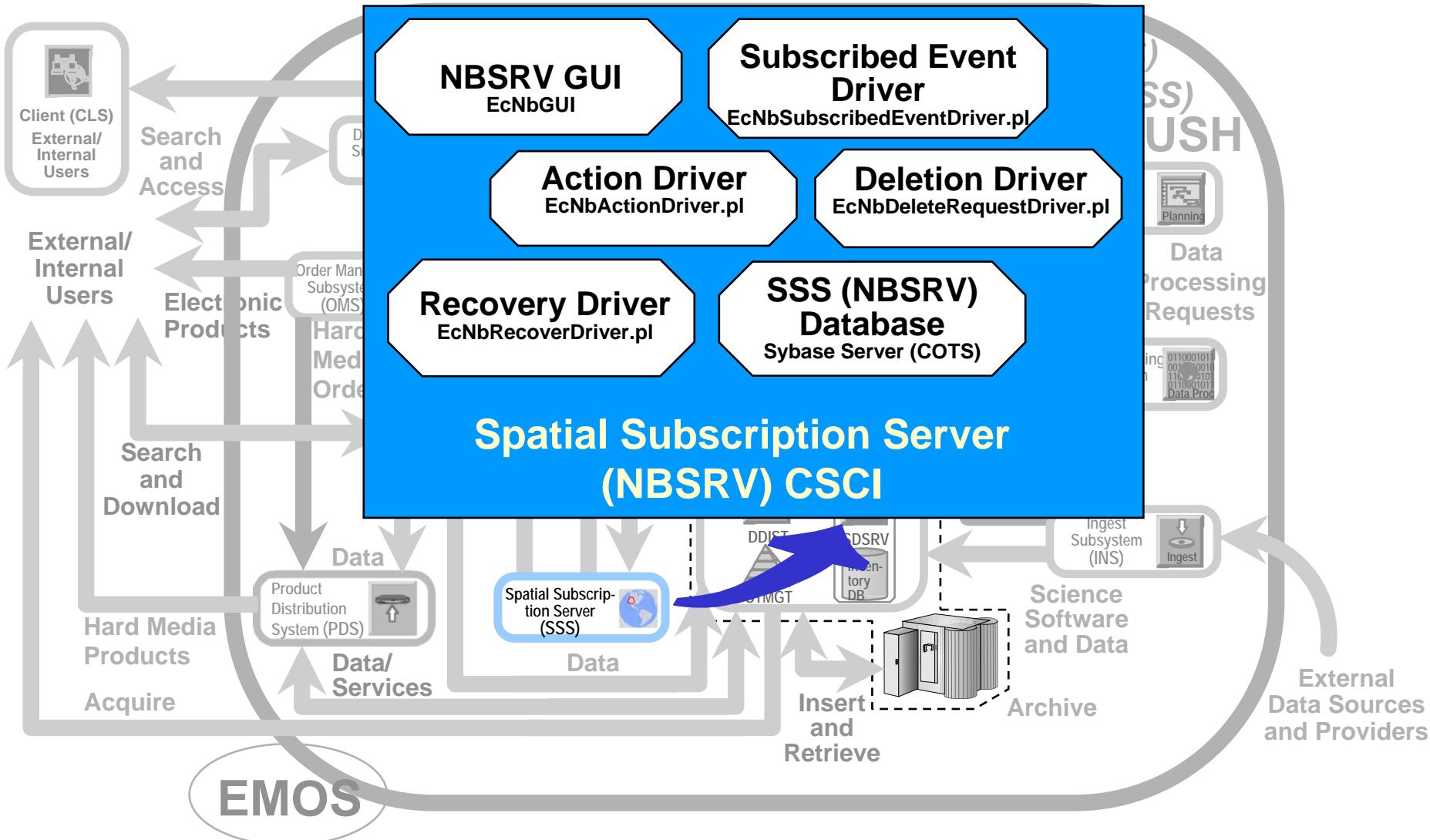
Subsystems and CSCIs: SSS (Cont.)

NBSRV Architecture and Interfaces

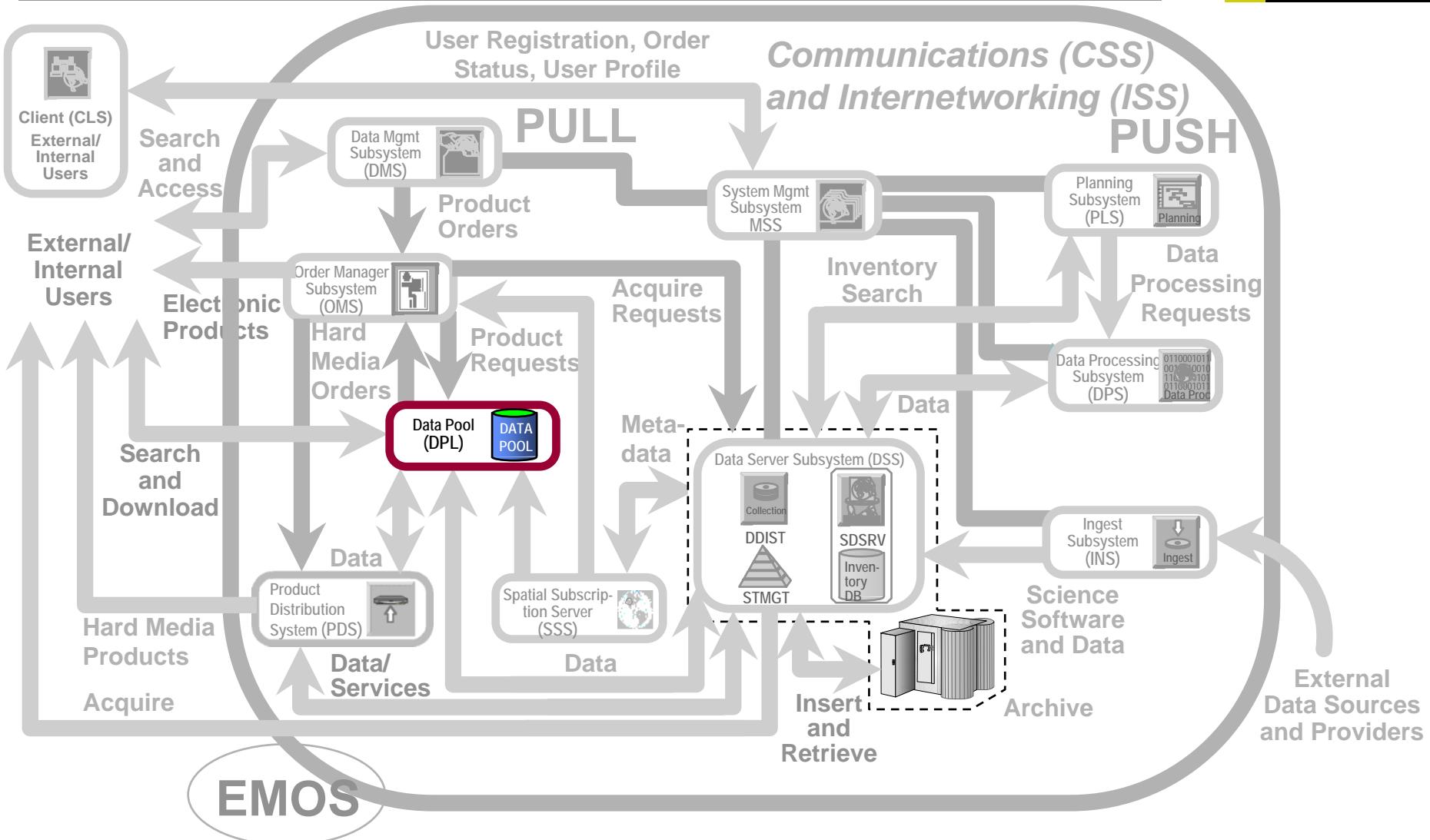




Subsystems and CSCIs: SSS (Cont.)



Subsystems and CSCIs: DPL



Subsystems and CSCIs: DPL



- **Data Pool (DPL)**

Data Pool
(DPL)



- An on-line repository of selected granules with associated metadata and, if available, browse granules
- Accessible through a web browser
- Accessible through FTP
- Data downloadable via FTP
- Provides easy-to-use drill-down web user interface
- Included in EDG data search results
- Populated by subscriptions for Data Pool insert
- Stages data for OMS FTP distributions
- Uses several COTS tools: Netscape Navigator, Sun ONE Web Server, Apache Web Server, wuftp (COTS FTP Server), Sybase ASE



Subsystems and CSCIs: DPL (Cont.)

- **Data Pool Management (DPMGT) CSCI**
 - Provides on-line cache for access to selected ECS data, metadata, and browse granules
 - Permits user search and FTP download through a web interface
 - Permits user browsing and download during an FTP session
 - Provides an Insert Utility for insert of data and metadata
 - Serves as staging cache for OMS FTP distributions (push and pull)
 - Manages archive drive resources (with OMS help)

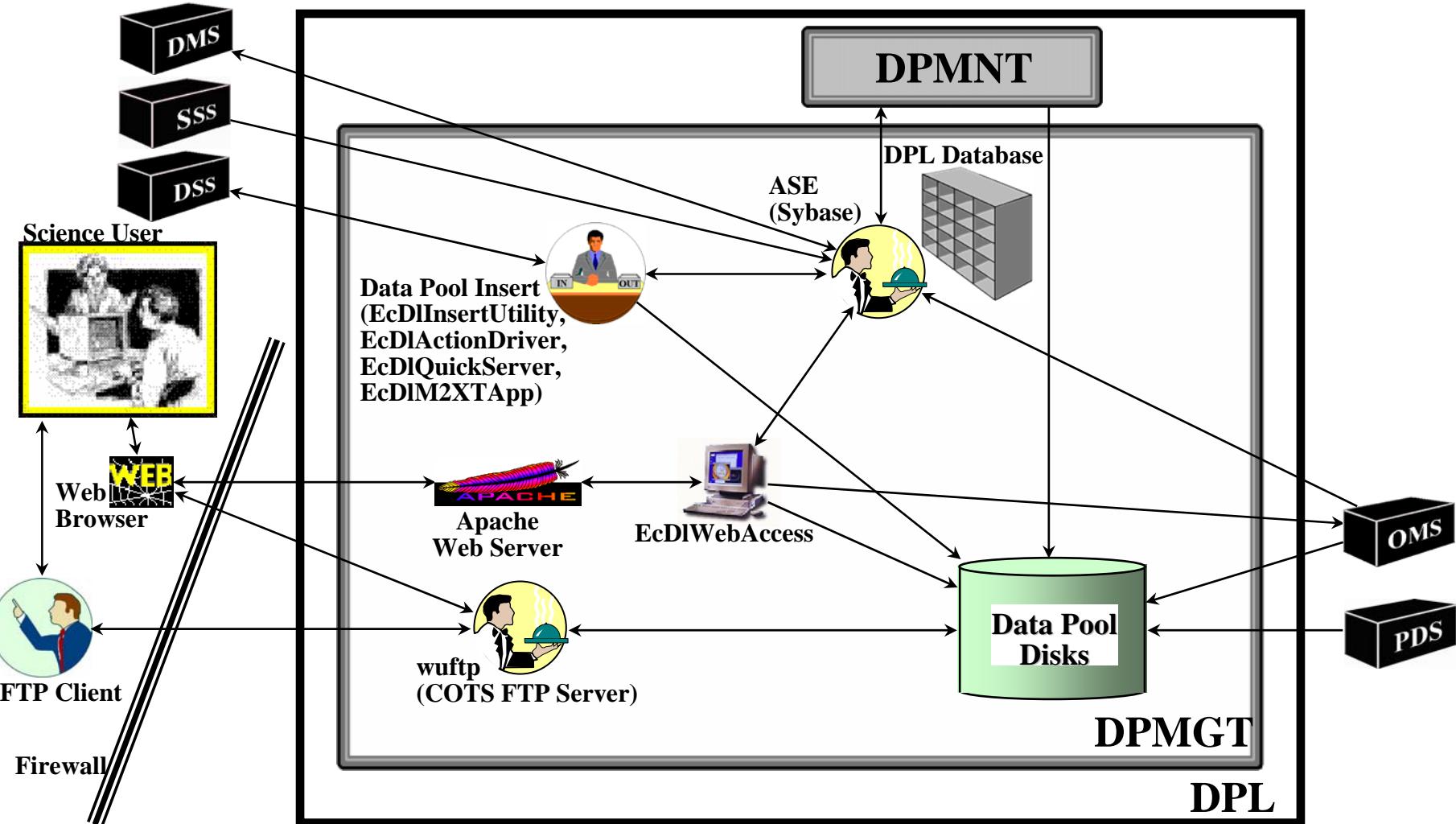
Subsystems and CSCIs: DPL (Cont.)



- **Data Pool Management (DPMGT) CSCI (Cont.)**
 - **Four major components**
 - **Data Pool Insert Utility** - consists of four subcomponents
 - **Action Driver** schedules insert actions
 - **Insert Utility** requests copy to the Data Pool and updates the inventory
 - **Quick Server**, a C++ executable, performs the copy from AMASS
 - **EcDIM2XT**, a java executable, translates granule metadata into XML format
 - **Data Pool Web Access** - a web-based GUI that provides easy drill-down search and FTP download for the user
 - **wuftp** - COTS FTP server for user-interactive FTP sessions
 - **Data Pool Database** - Sybase database stores Data Pool inventory and configuration information

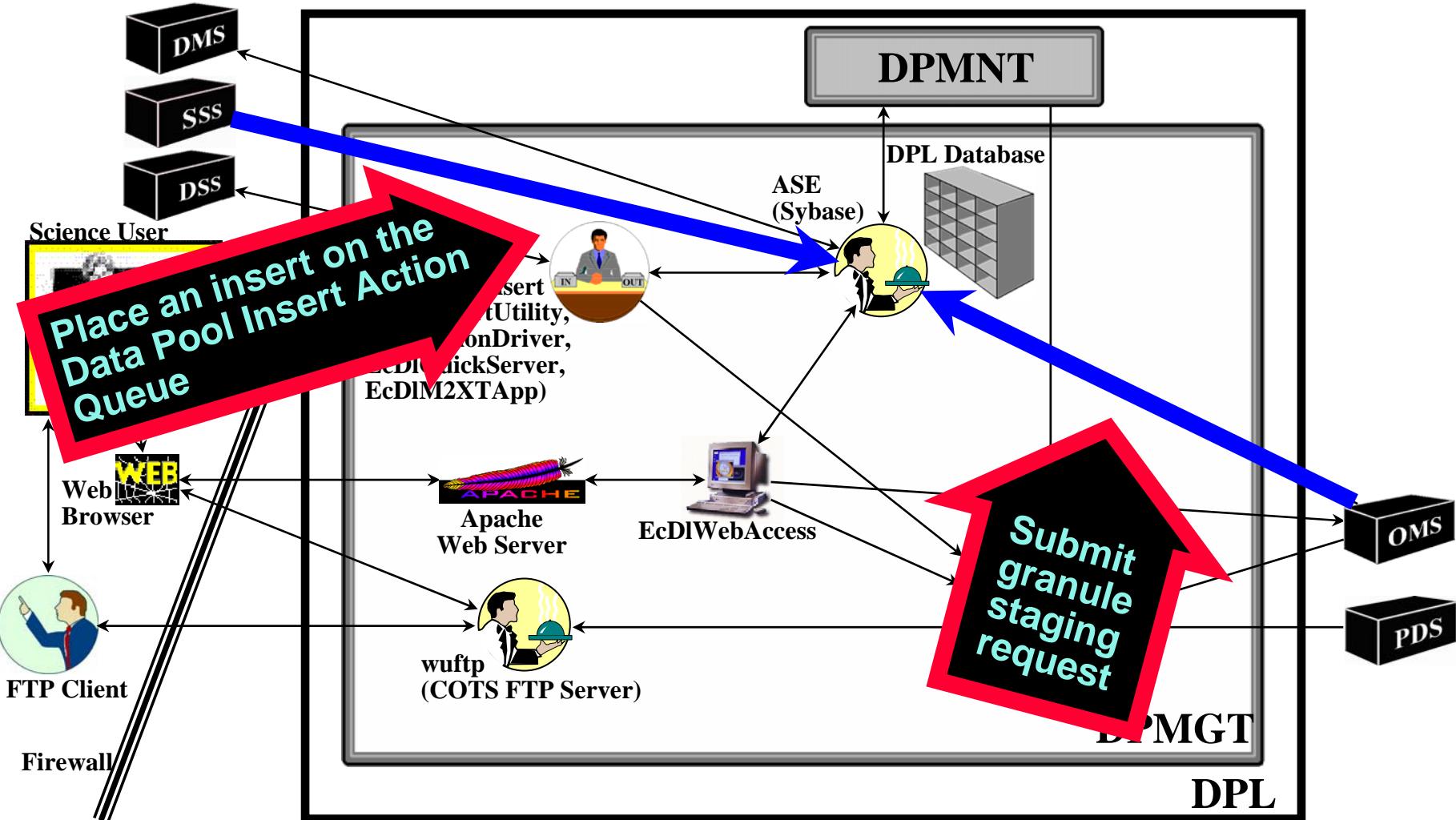
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces



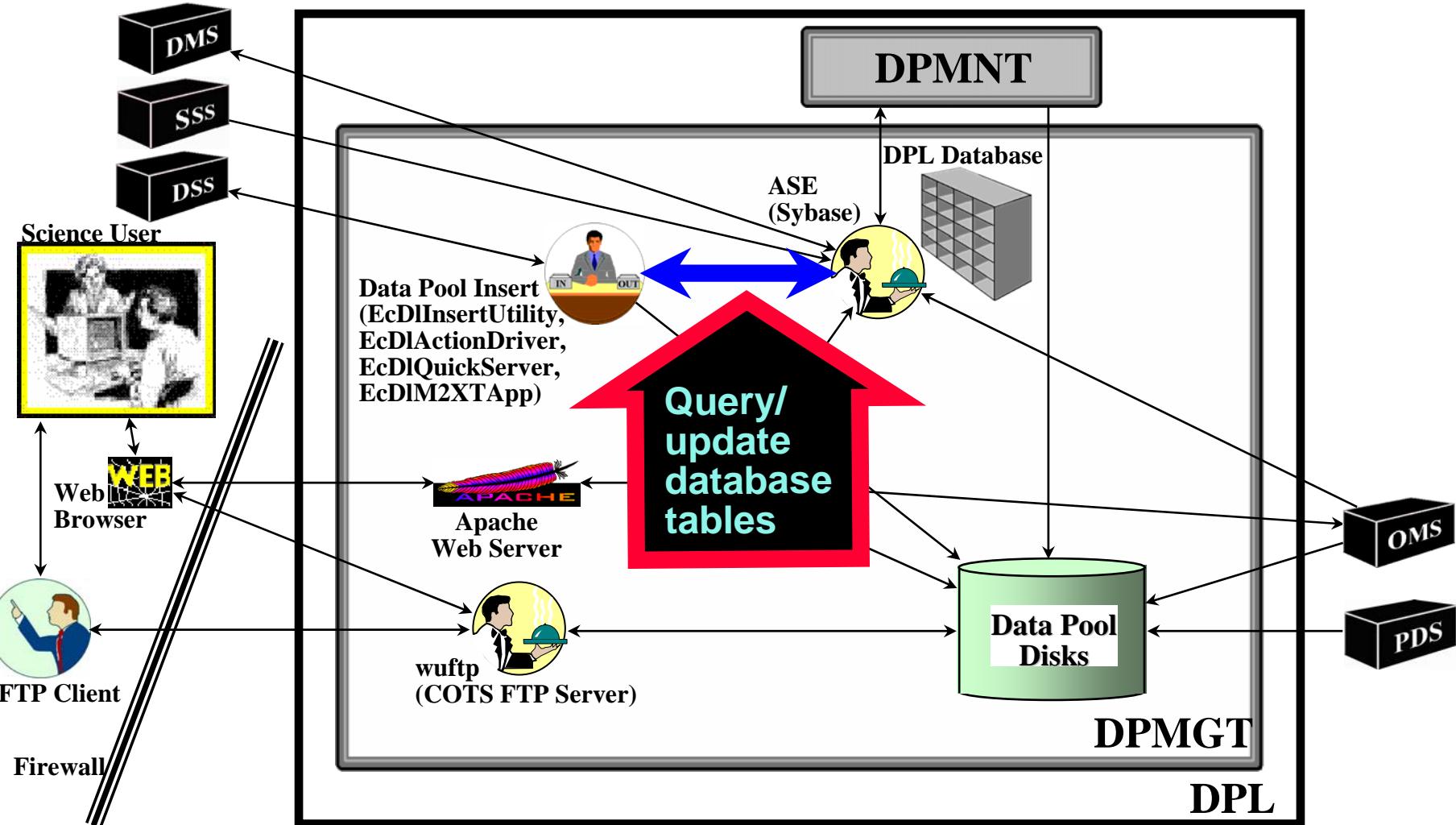
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces



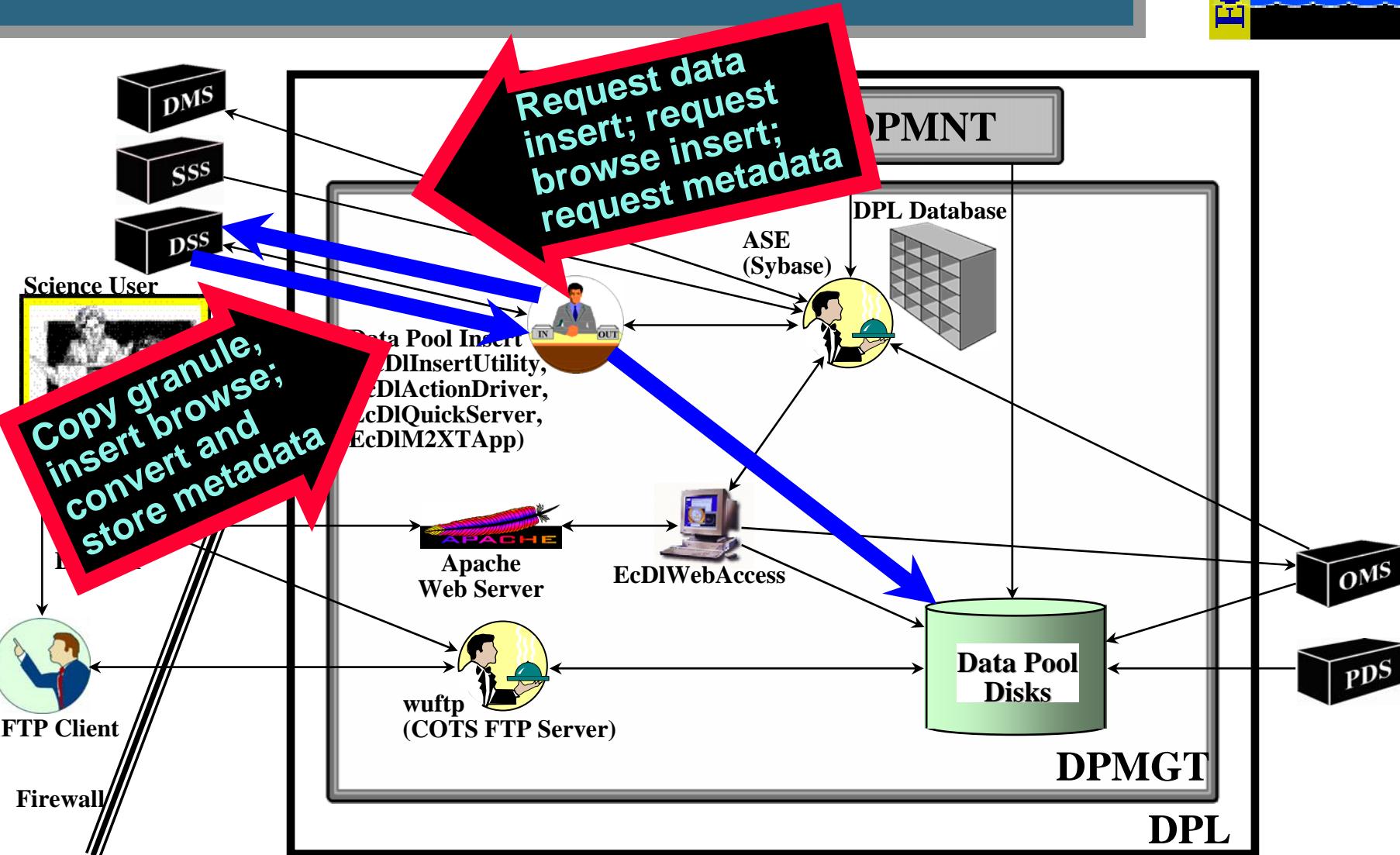
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces



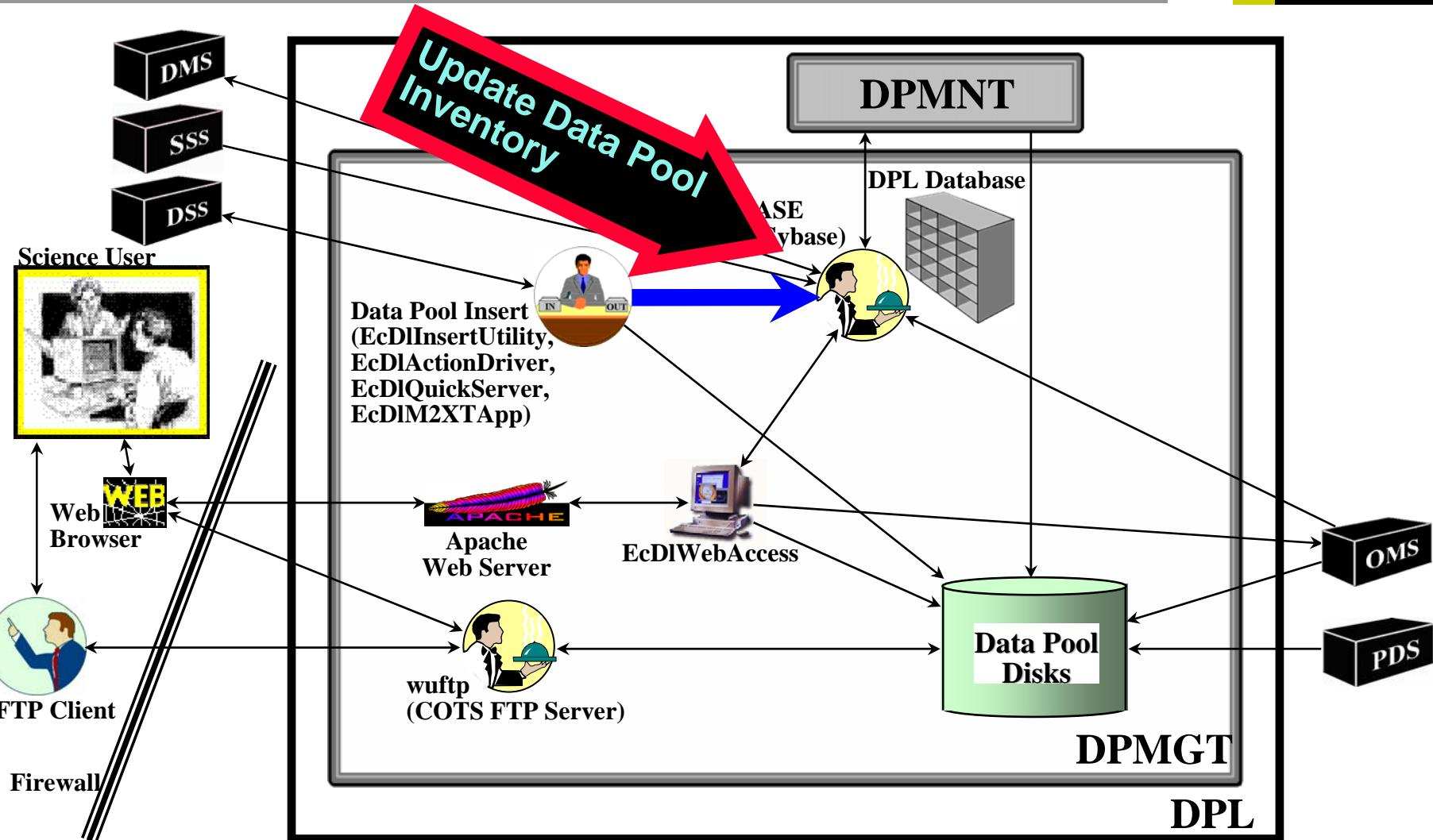
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DPMGT Architecture and Interfaces



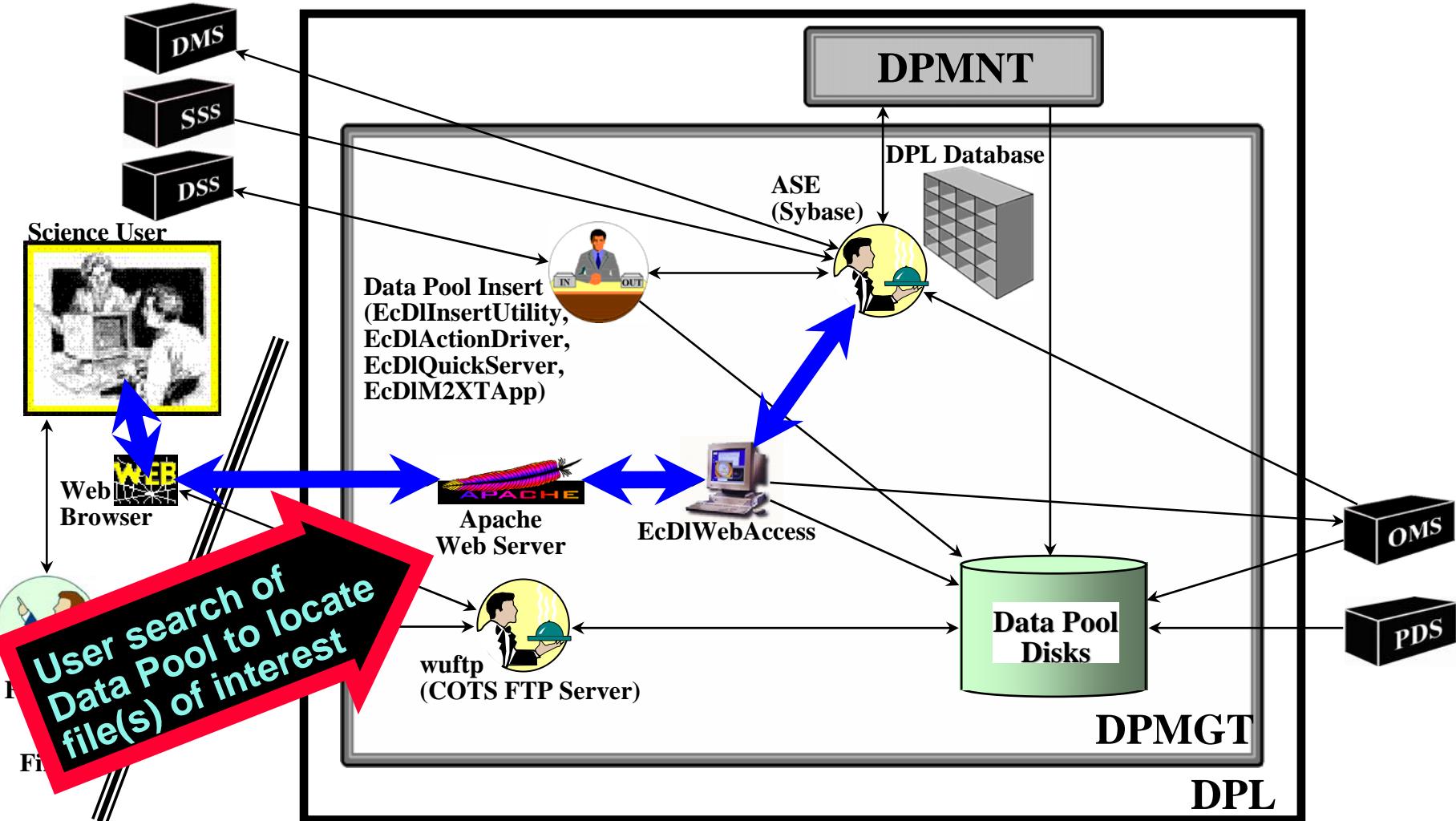
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces



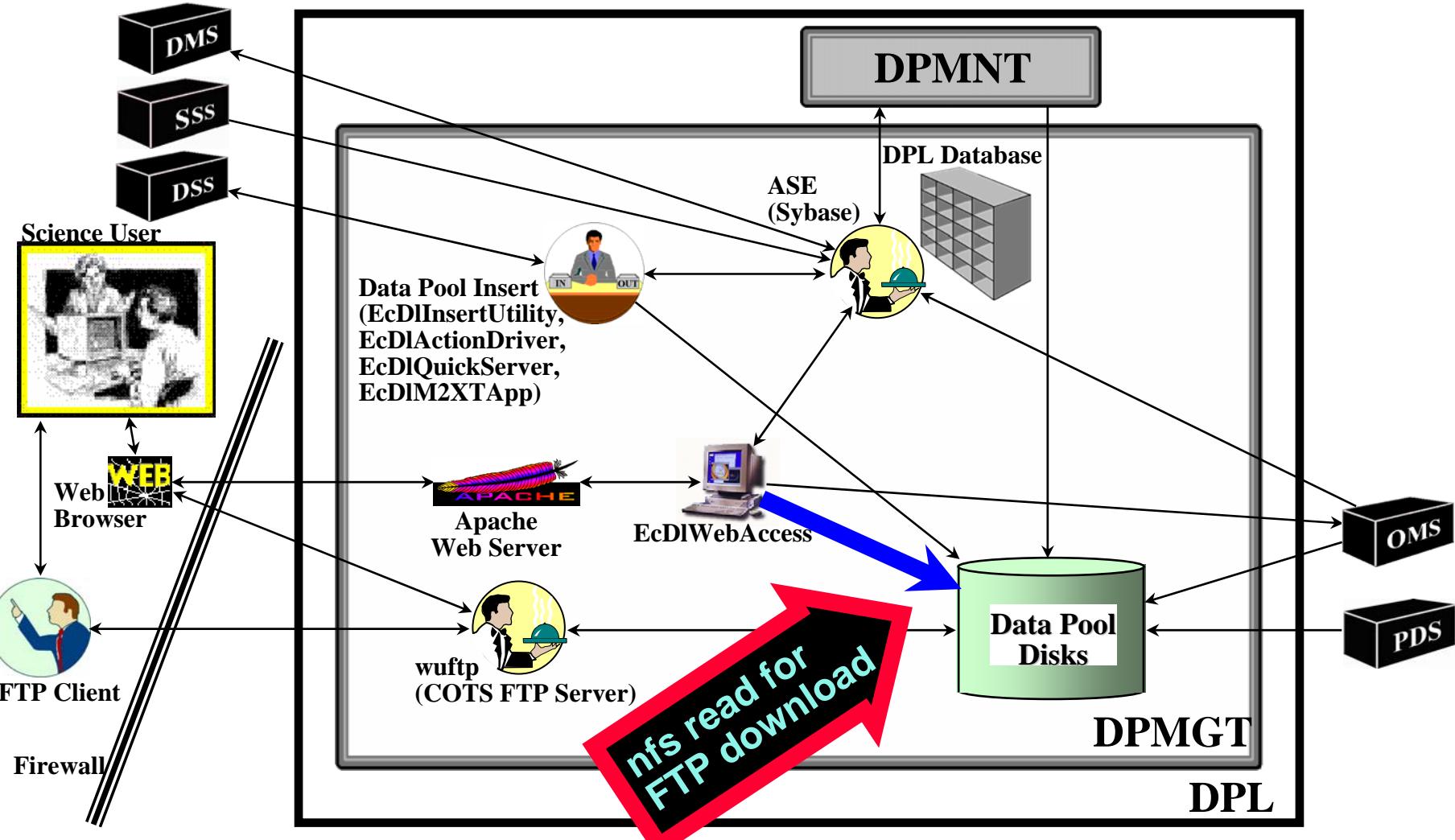
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DPMGT Architecture and Interfaces



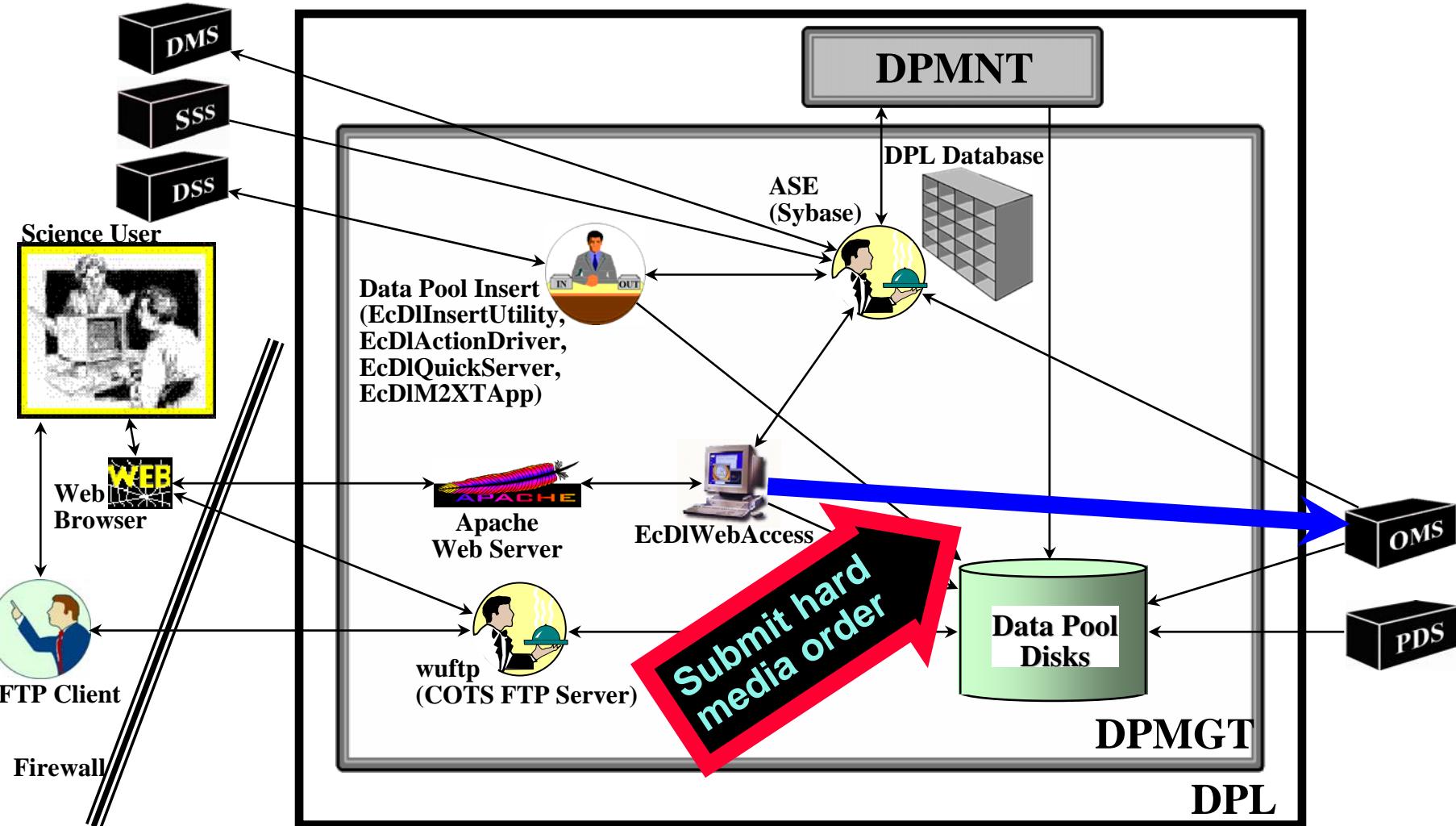
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DPMGT Architecture and Interfaces



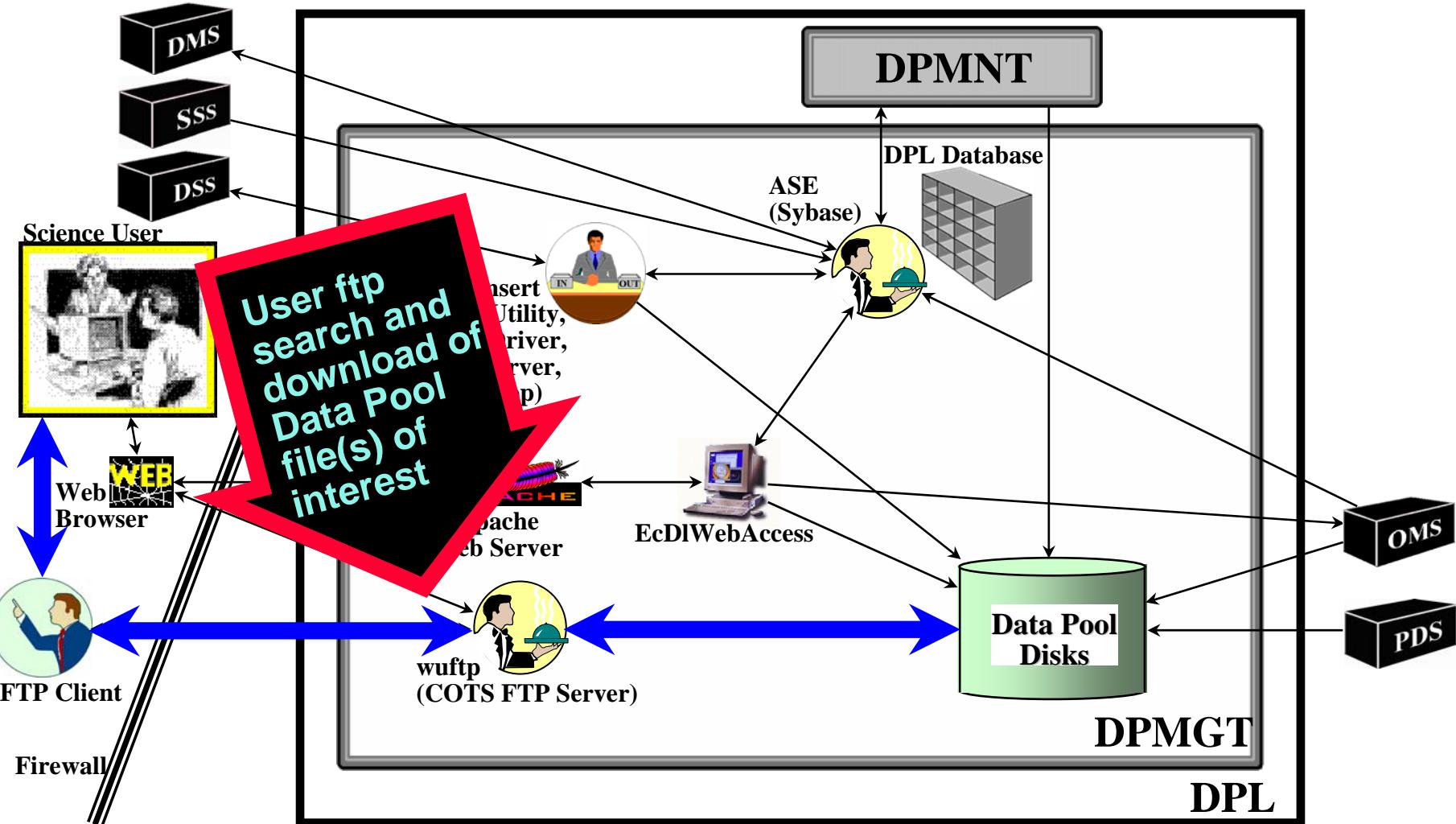
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DPMGT Architecture and Interfaces



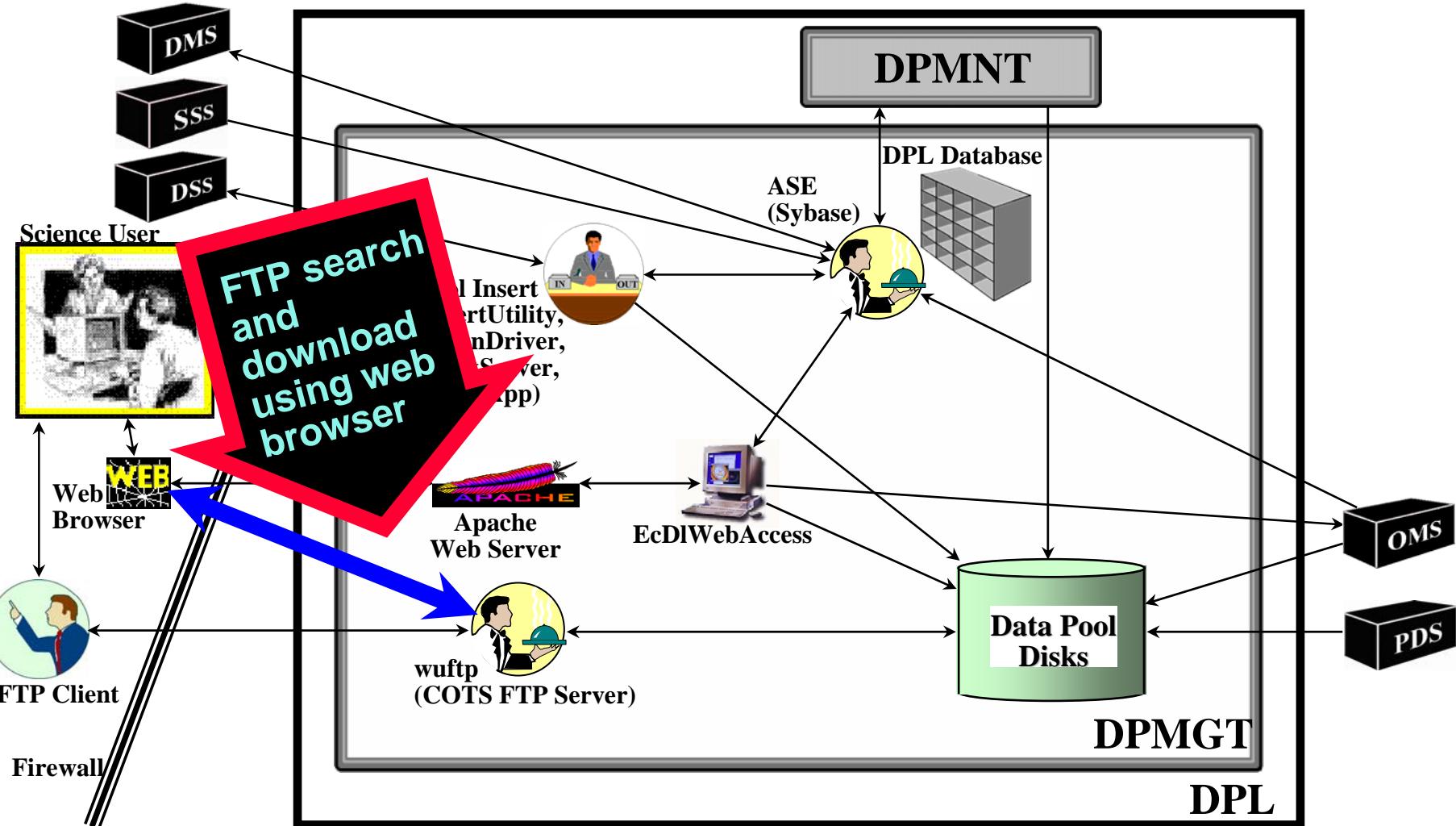
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces



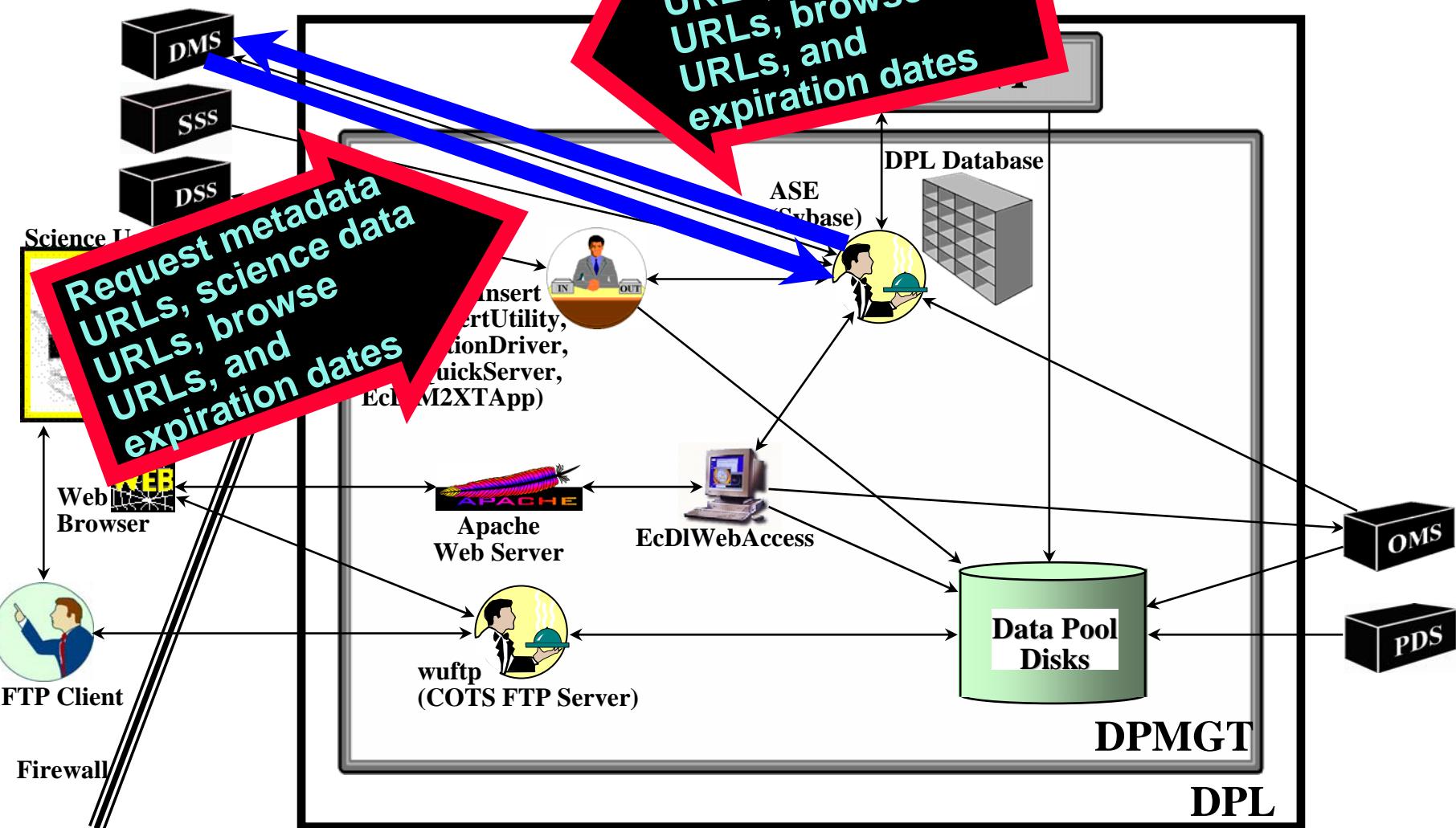
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces



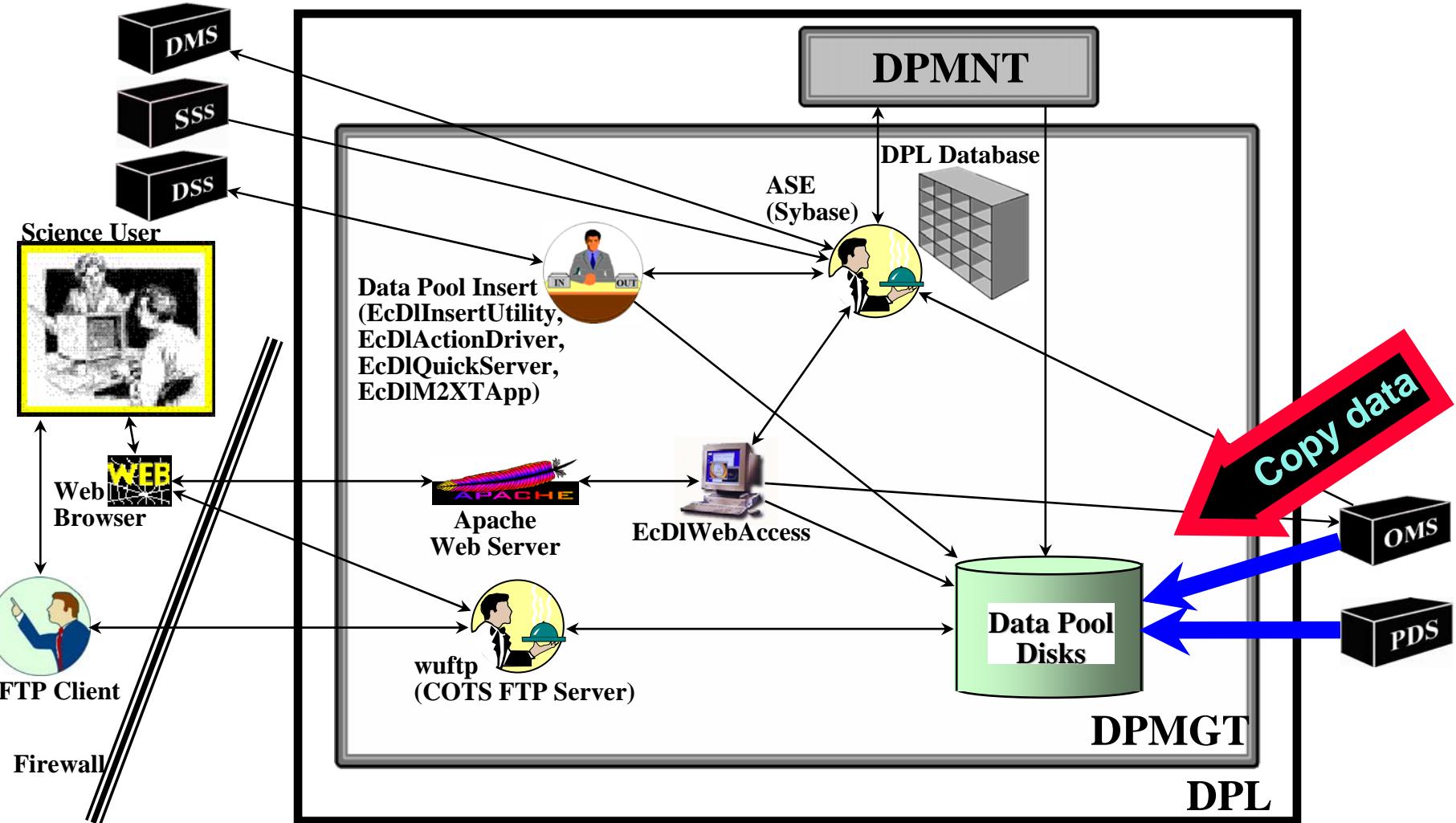
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture



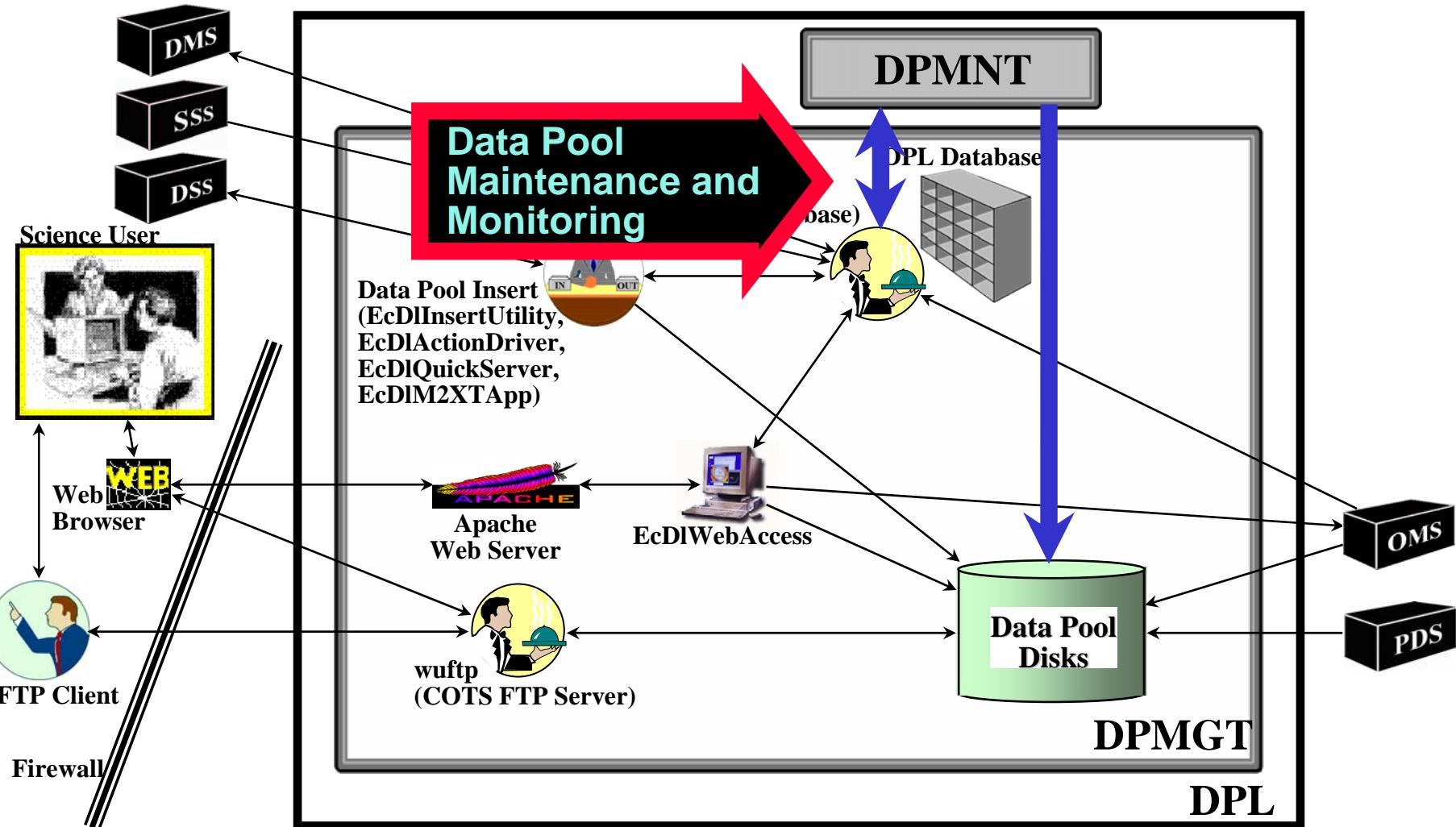
Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces



Subsystems and CSCIs: DPL (Cont.)

DPMGT Architecture and Interfaces





Subsystems and CSCIs: DPL (Cont.)

- **Data Pool Maintenance (DPMNT) CSCI**
 - Provides a maintenance GUI that allows operators to monitor and control Data Pool insert activity and control the Data Pool configuration
 - Provides utilities and scripts for Data Pool maintenance
 - Nine major components
 - **Data Pool Maintenance (DPM) GUI** - a Perl web-based GUI for Data Pool monitoring and control
 - **Update Granule Expiration Utility** - a Perl utility that allows updating the expiration date and retention priority for granules in the Data Pool
 - **Data Pool Cleanup** - a Perl utility that removes expired granules from the Data Pool and database (normally run as a cron job)
 - **Data Pool Access Statistics Utility (DPASU)** - Perl utilities that extract access statistics from logs and roll up access information for storage in the Data Pool database

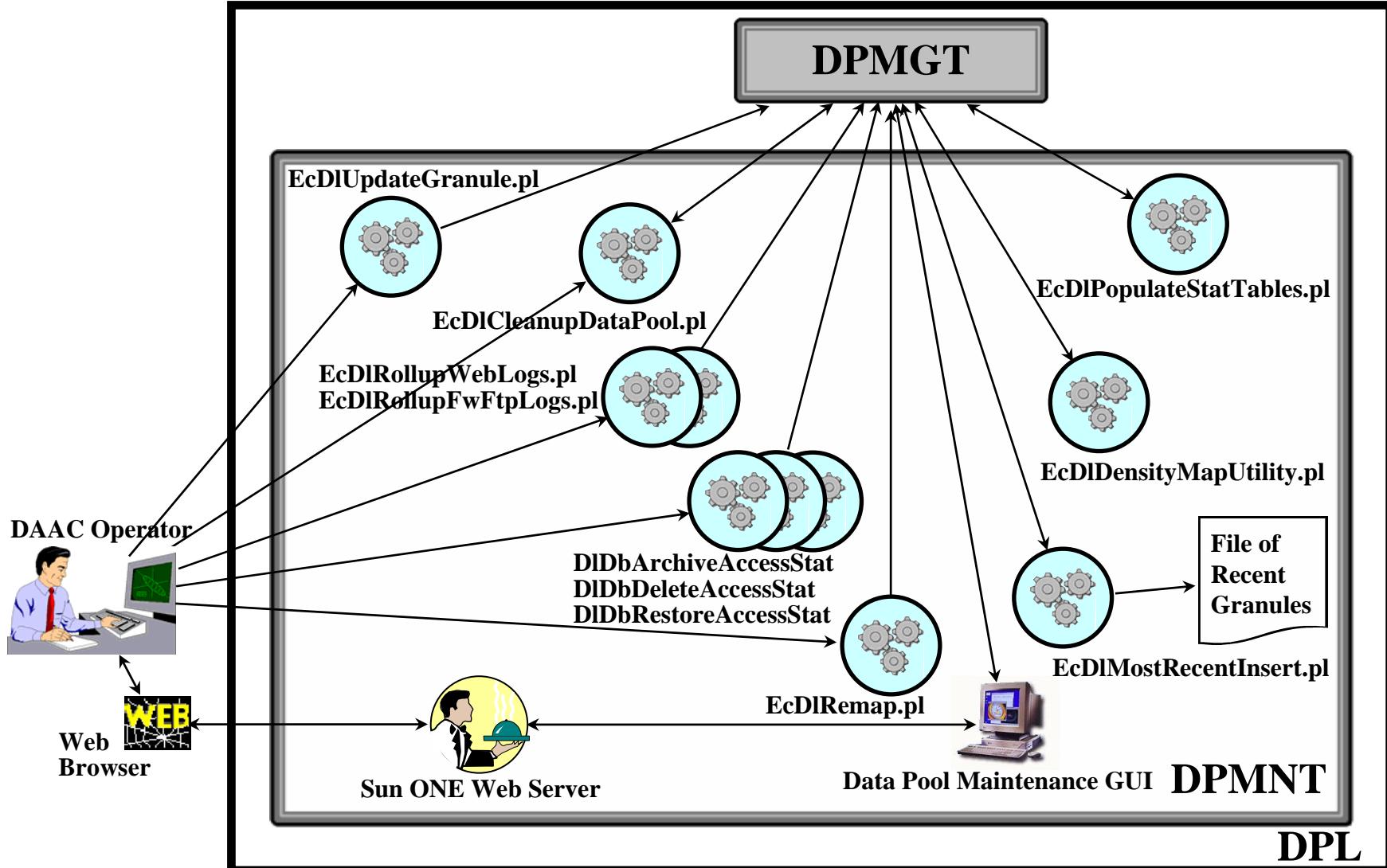


Subsystems and CSCIs: DPL (Cont.)

- Data Pool Maintenance (DPMNT) CSCI (Cont.)
 - Nine major components (Cont.)
 - **Data Pool Archive/Delete/Restore Access Statistics** - shell scripts to manage access statistics
 - **Data Pool Most Recent Insert Utility** - a Perl utility that creates files containing information concerning granules recently inserted into the Data Pool
 - **Data Pool Collection Remapping Utility** - a Perl utility that allows DAAC operations staff to remap all data in a Data Pool collection directory from one higher-level collection group directory to another
 - **Data Pool Density Map Utility** - a Perl utility that calculates spatial density map information about Data Pool collections and stores the information in the Data Pool database
 - **Data Pool Statistics Table Population Utility** - a Perl utility that populates Data Pool database tables which maintain counts of granules by collection and collection group for use by the Web Access drill down GUI

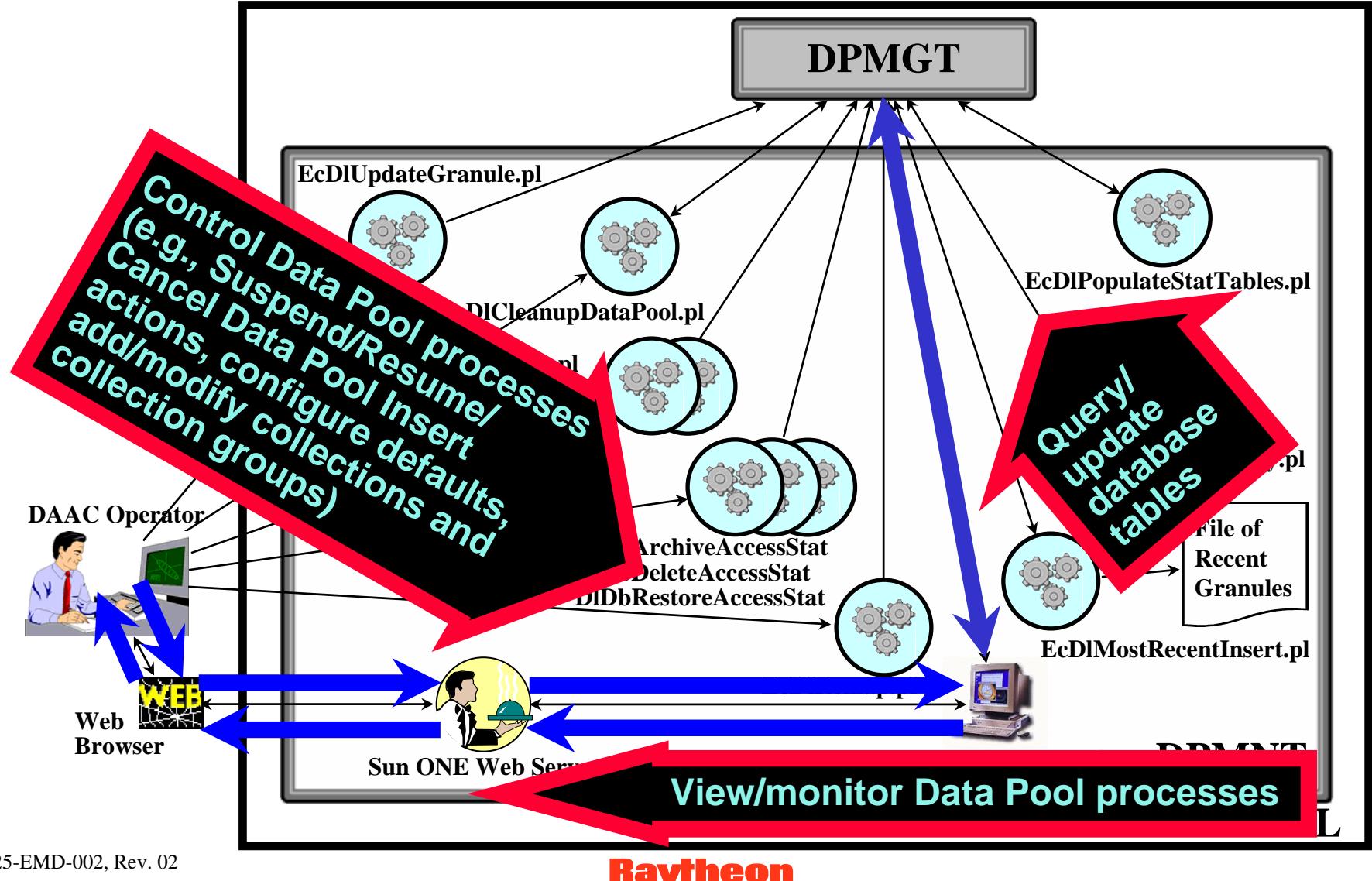
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



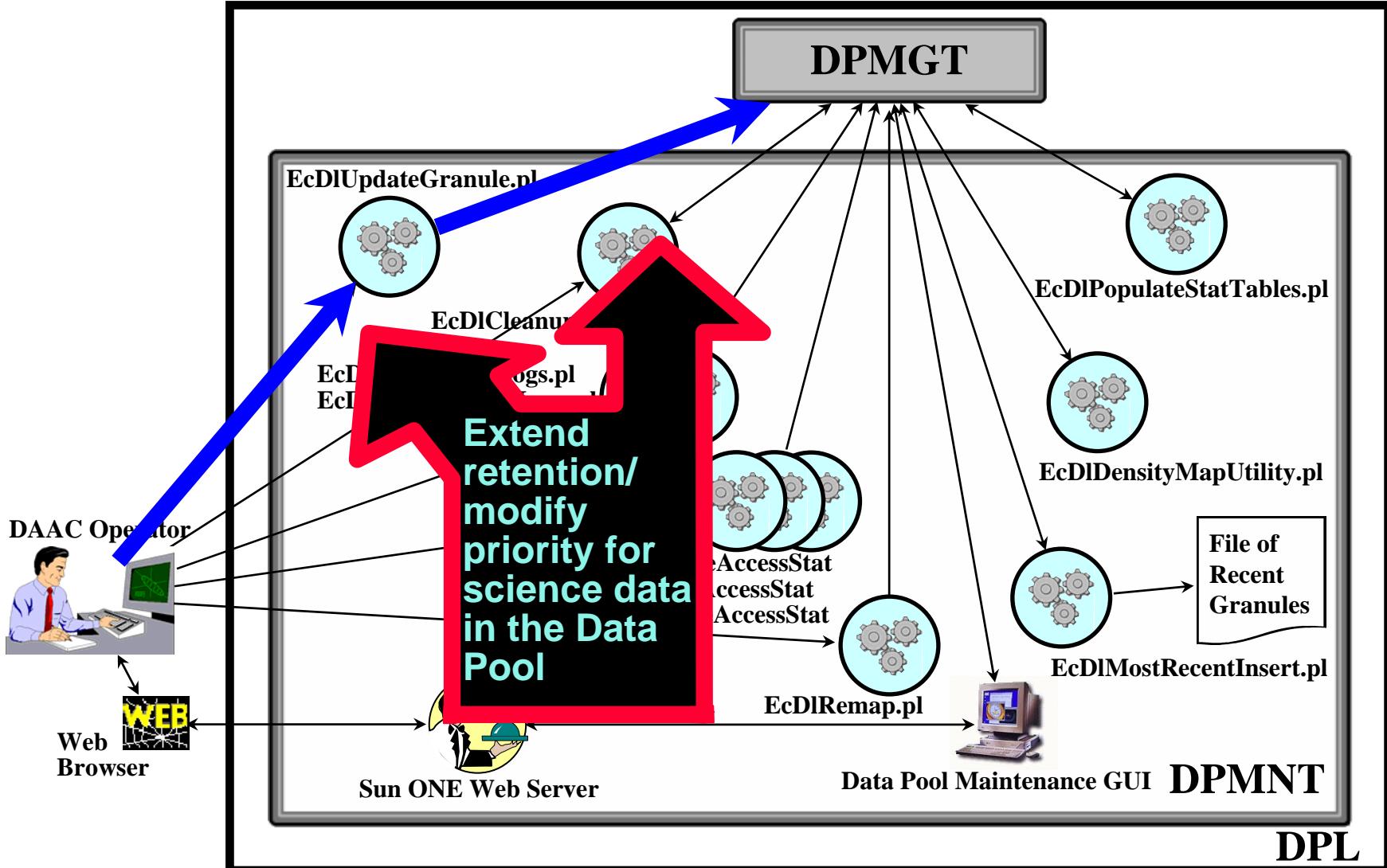
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



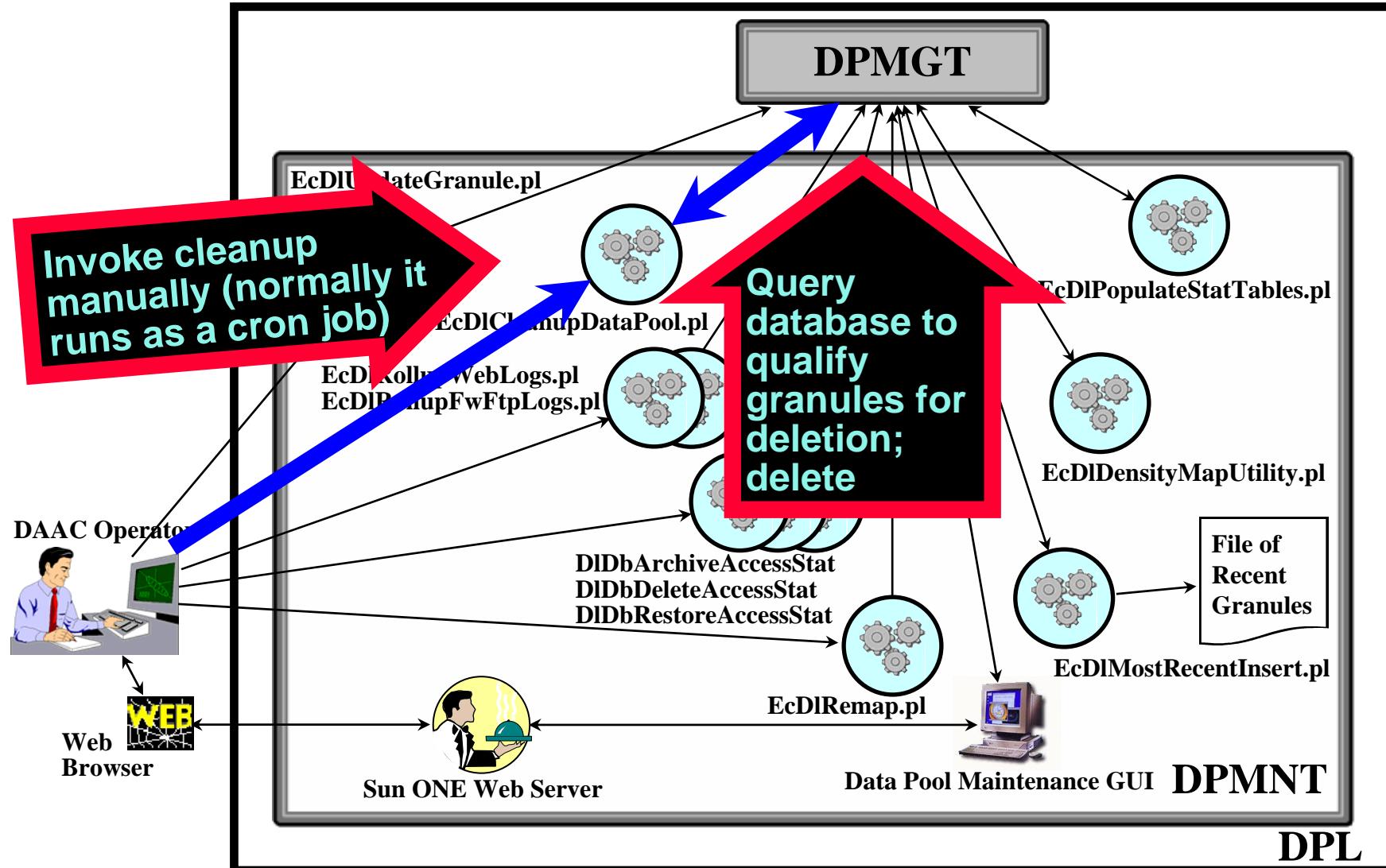
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



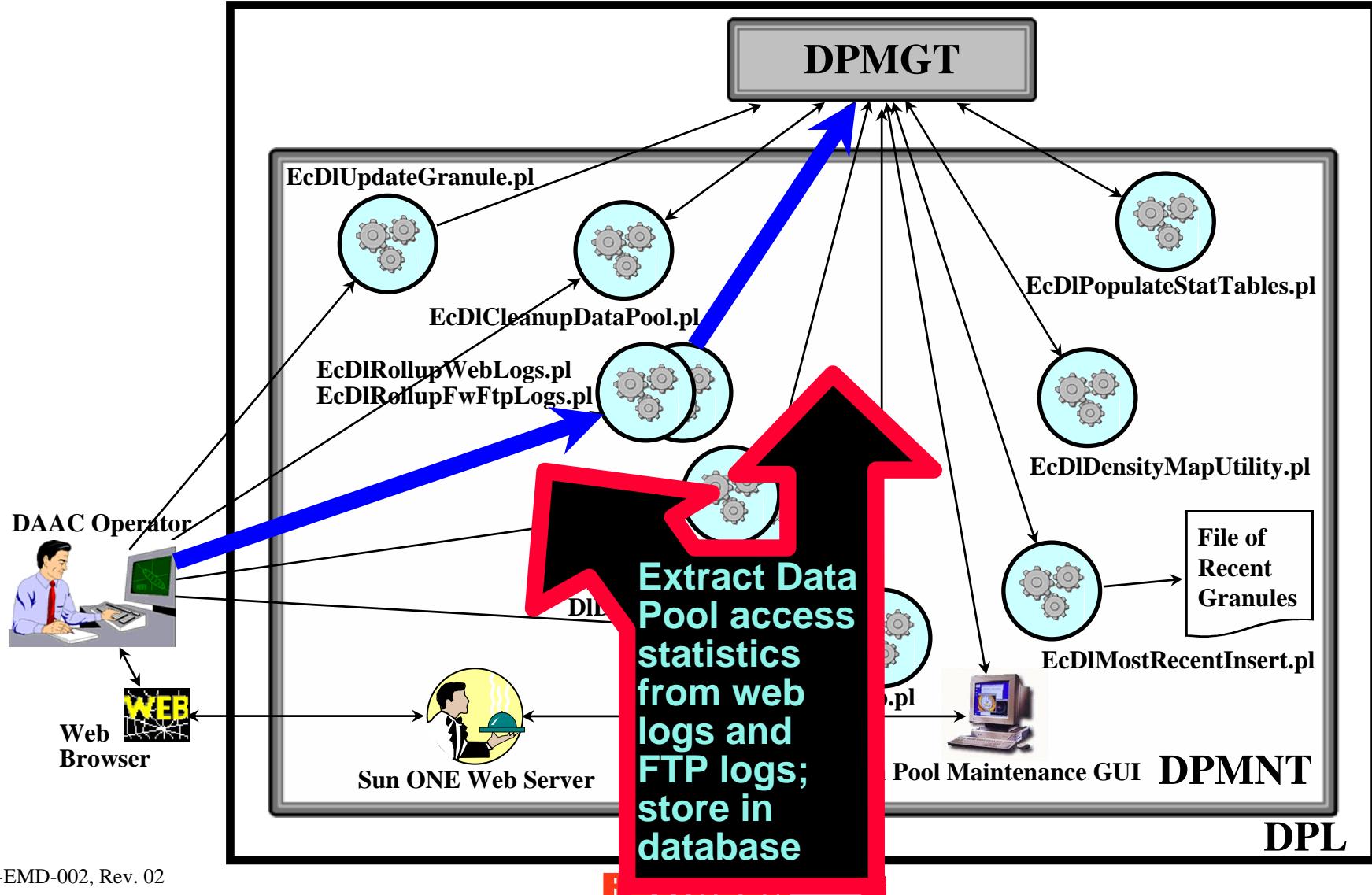
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



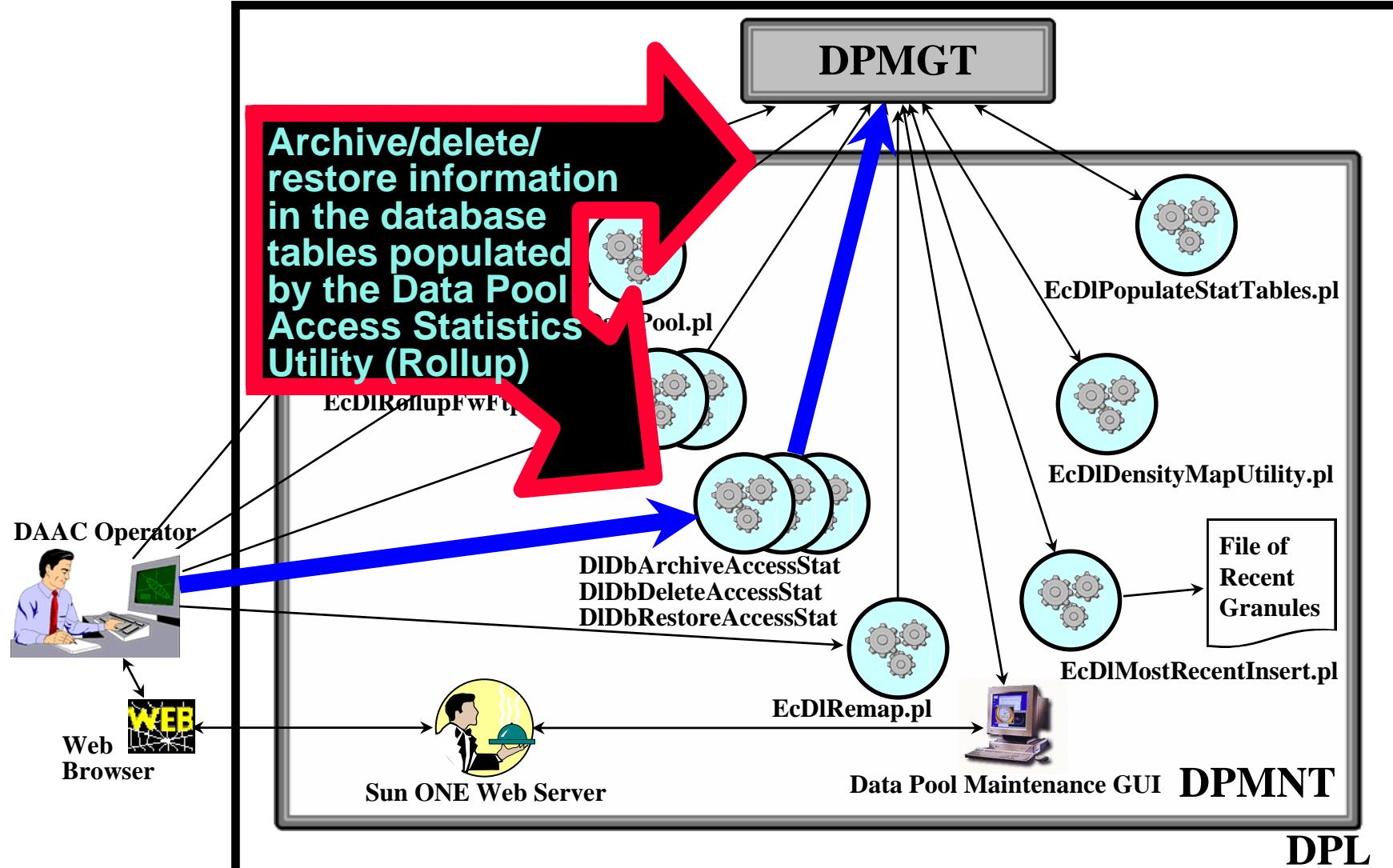
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



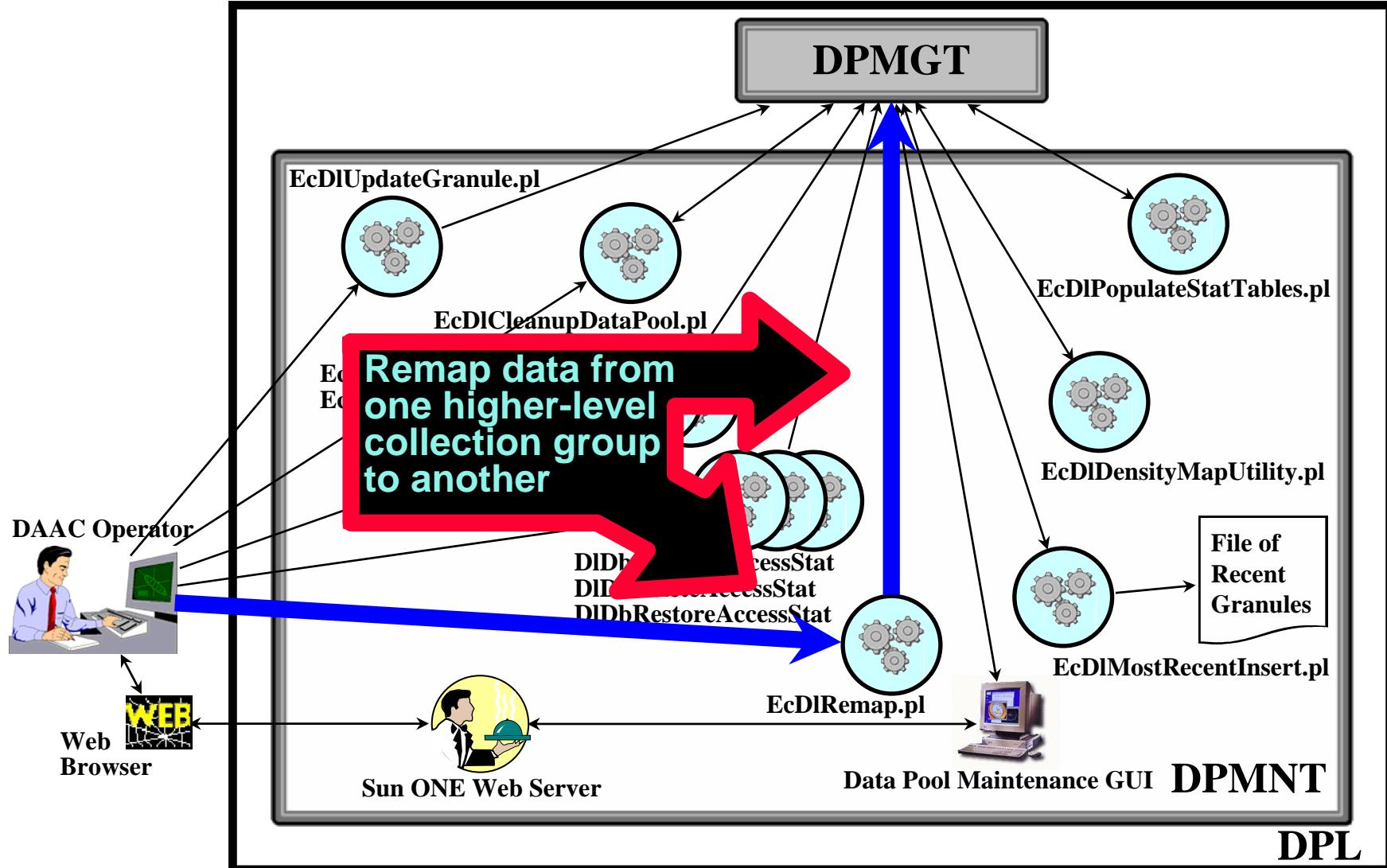
Subsystems and CSCLs: DPL (Cont.)

DPMNT Architecture and Interfaces



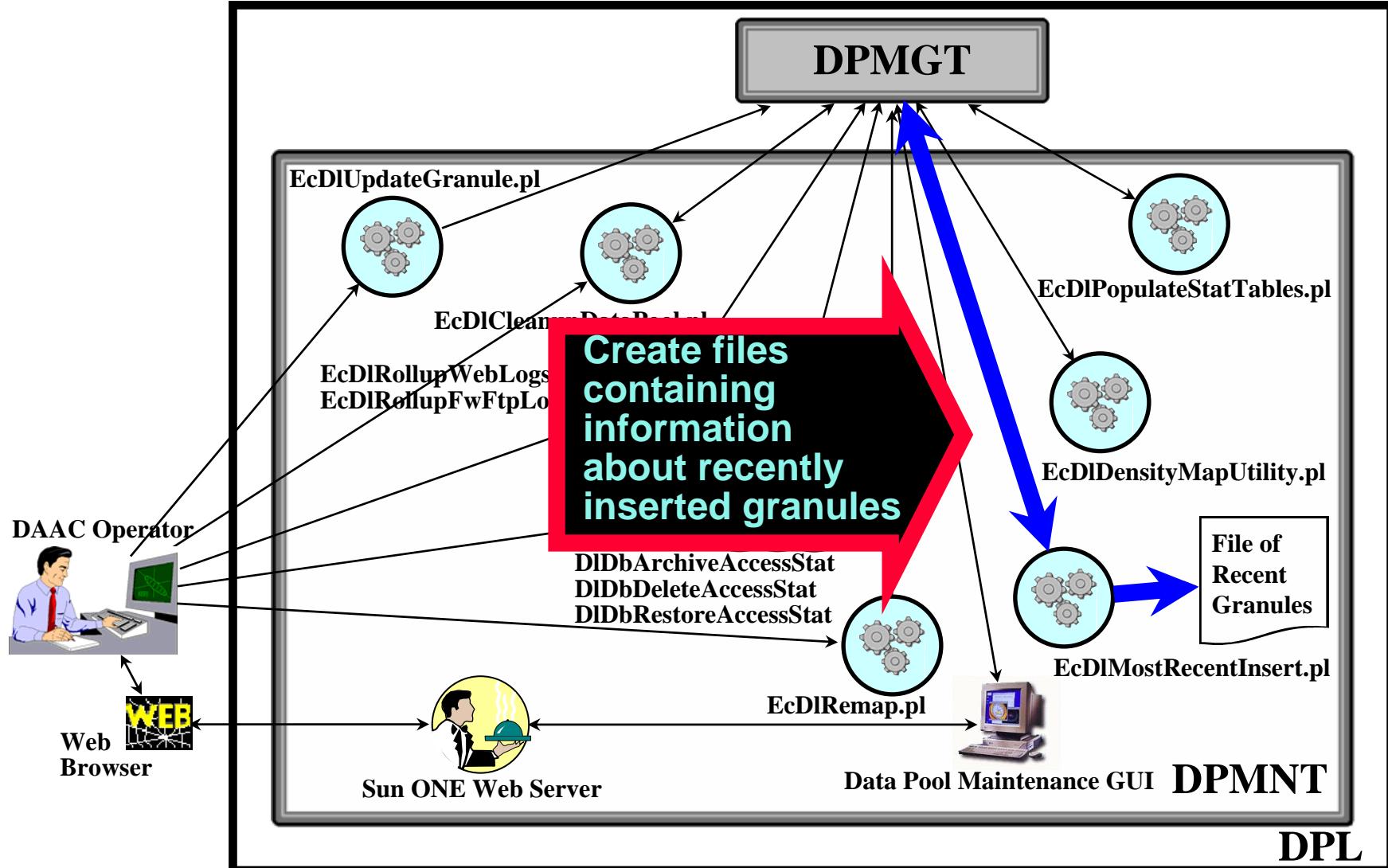
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



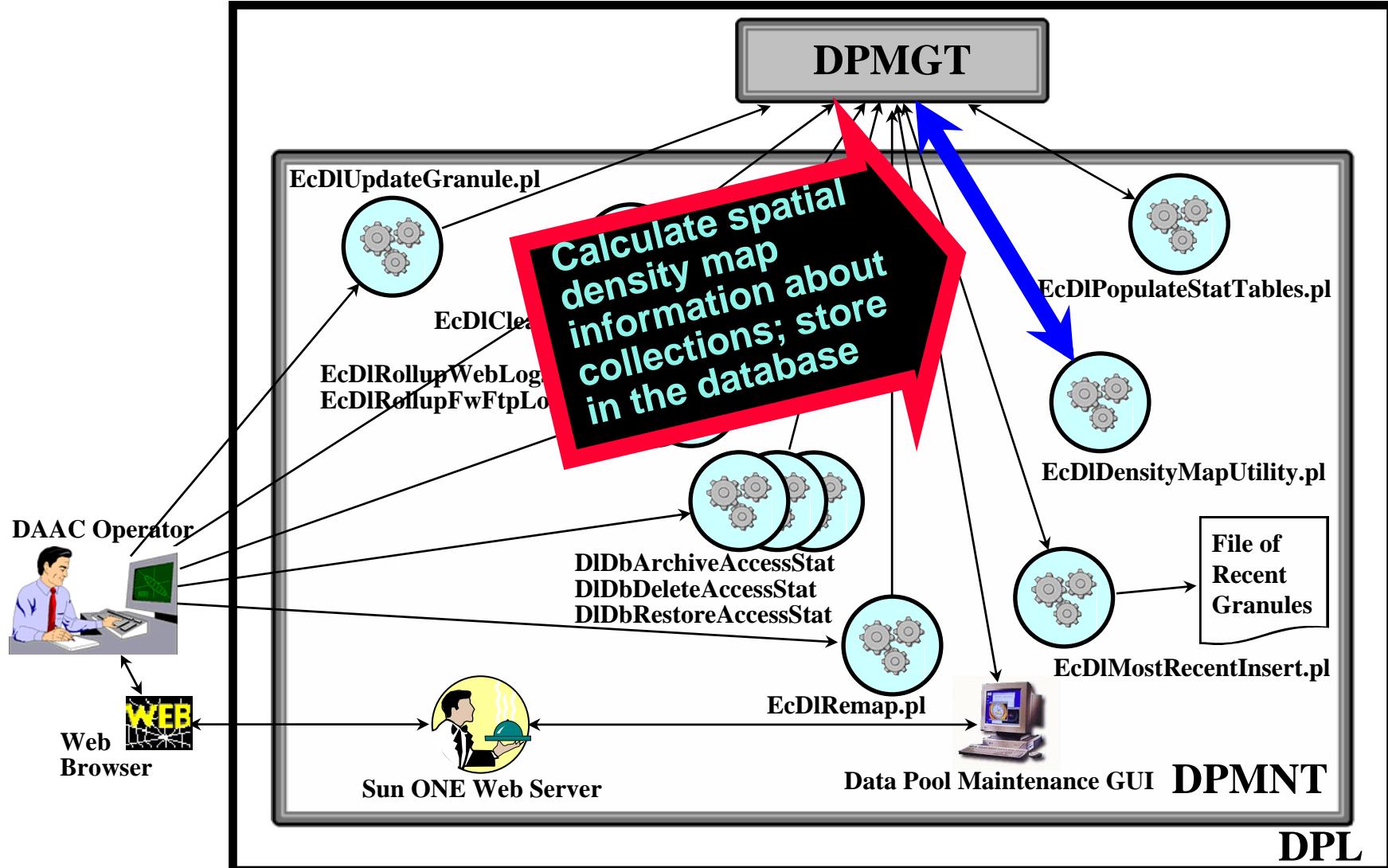
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



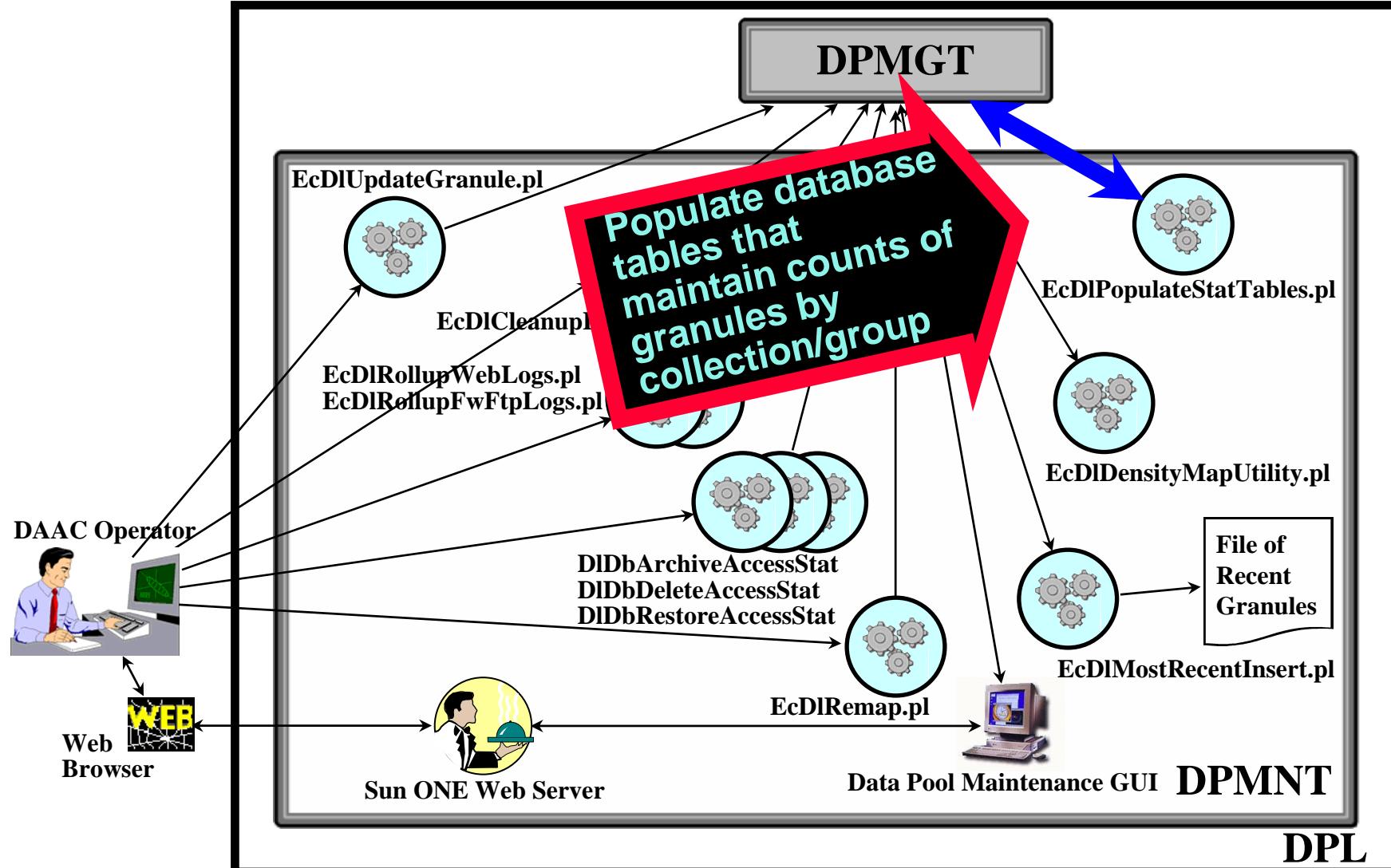
Subsystems and CSCIs: DPL (Cont.)

DPMNT Architecture and Interfaces



Subsystems and CSCLs: DPL (Cont.)

DPMNT Architecture and Interfaces





CIs: DPL (Cont.)

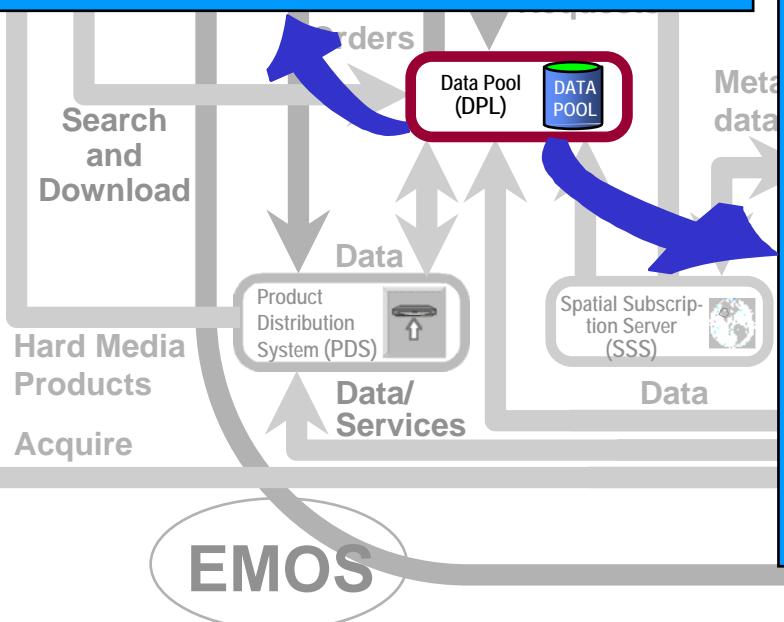
Data Pool Insert Utility
EcDIInsertUtility
EcDIActionDriver
EcDIQuickServer
EcDIM2XTApp

Data Pool Web Access GUI
EcDIWebAccess

COTS FTP Server
wuftp

Data Pool Database
Sybase Server (COTS)

Data Pool Management (DPMGT) CSCI



DPM GUI
EcDIDpmHomepage.pl

Data Pool Update Granule Expiration
EcDIUpdateGranule.pl

Data Pool Cleanup
EcDICleanupDataPool.pl

Data Pool Most Recent Insert Utility
EcDIMostRecentInsert.pl

Data Pool Density Map Utility
EcDIDensityMapUtility.pl

Data Pool Archive Access Statistics Scripts
DIDbArchiveAccessStat
DIDbDeleteAccessStat
DIDbRestoreAccessStat

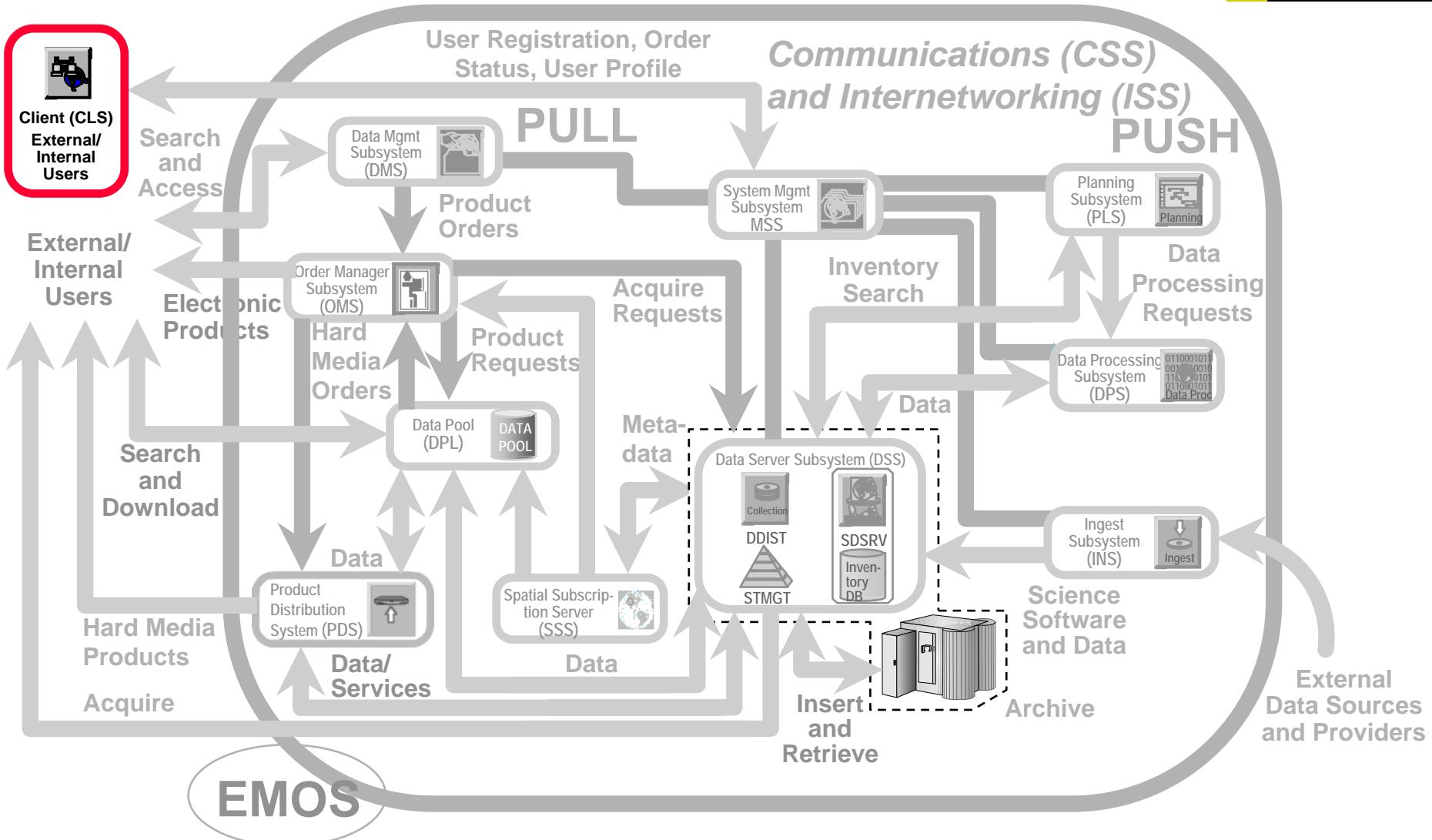
Data Pool Access Statistics Utility
EcDIRollupWebLogs.pl
EcDIRollupFtpLogs.pl

Data Pool Collection Remapping Utility
EcDRemap.pl

Data Pool Statistics Table Population Utility
EcDIPopulateStatTables.pl

Data Pool Maintenance (DPMNT) CSCI

Subsystems and CSCIs: CLS



Subsystems and CSCIs: CLS



- **Client Subsystem (CLS)**
 - User access to ECS services for ASTER
 - Permits Data Acquisition Request to task ASTER instrument
 - Supports request of ASTER On-demand Products
 - Provides user authentication and User Profile information to the Search and Order tool
 - Search and retrieval of data are performed by the EOS Data Gateway (Version 0 Web Client)
 - Includes applications programs accessible via user interfaces
 - EOSView
 - ASTER Data Acquisition Request (DAR) Tool
 - On-Demand Form Request Manager (ODFRM)
 - Uses several COTS tools: Netscape Navigator, Netscape Enterprise Server, XVT (widget set and development tool for EOSView), and Interactive Data Language (IDL) (used in EOSView visualization features)



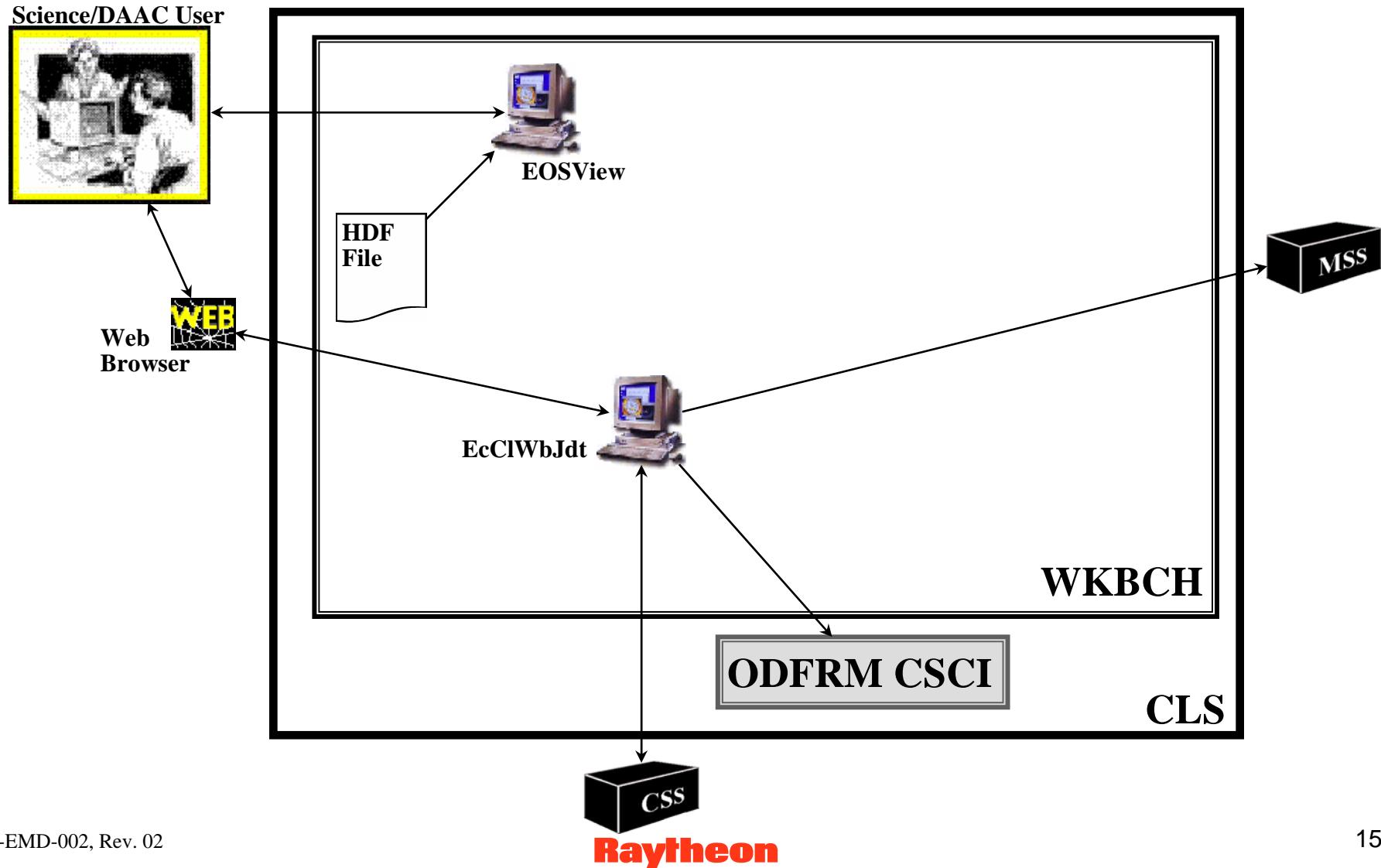
Subsystems and CSCIs: CLS (Cont.)



- **Workbench (WKBCN) CSCI**
 - Includes a set of application programs that implement functions of the CLS science user interface
 - Release 7 Workbench includes two tools
 - [EOSView](#) (X/Motif-based)
 - [ASTER DAR Tool](#) (Java/HTML-based)

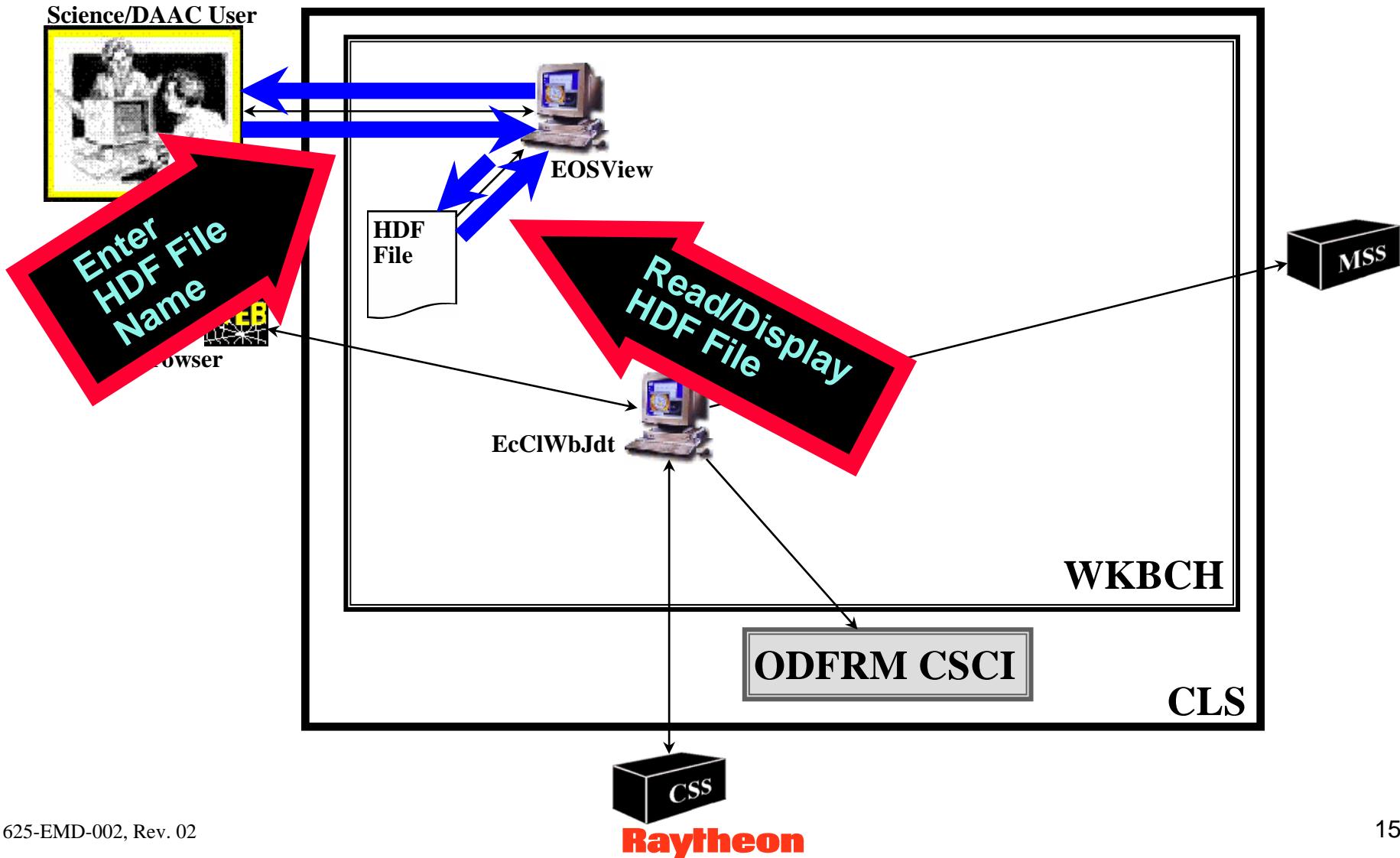
Subsystems and CSCIs: CLS (Cont.)

WKBCH Architecture and Interfaces



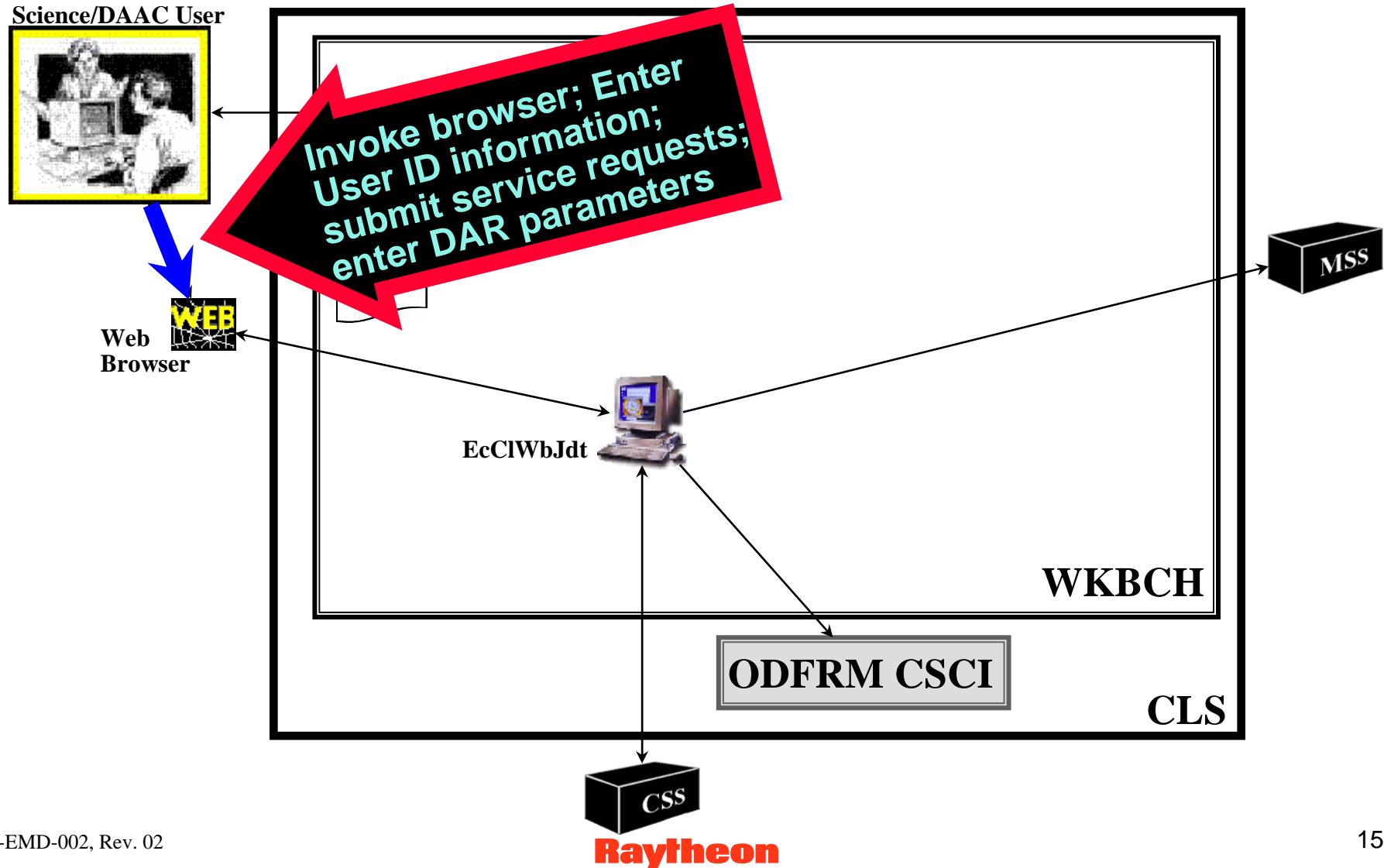
Subsystems and CSCIs: CLS (Cont.)

WKBCH Architecture and Interfaces

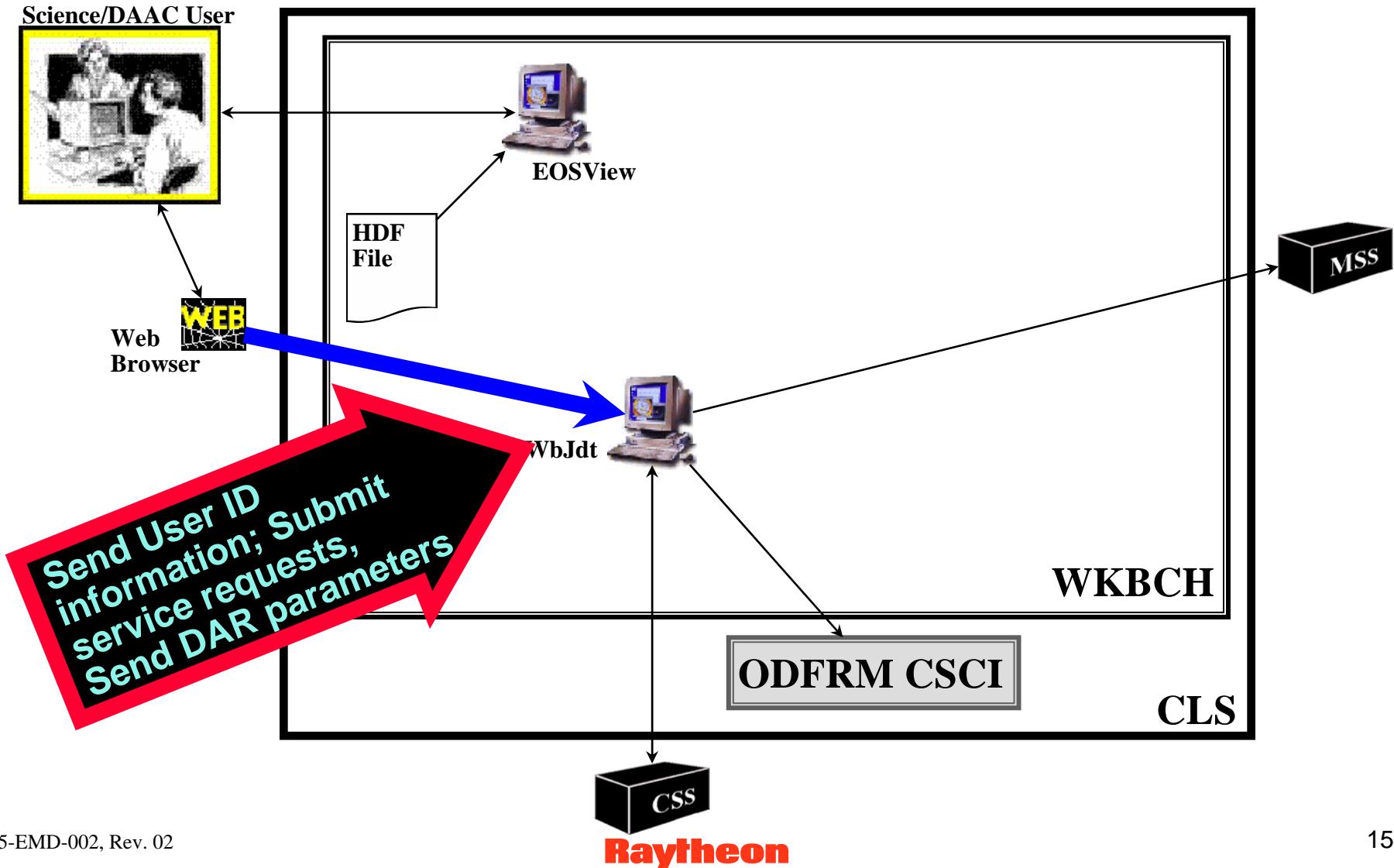


Subsystems and CSCIs: CLS (Cont.)

WKBCH Architecture and Interfaces

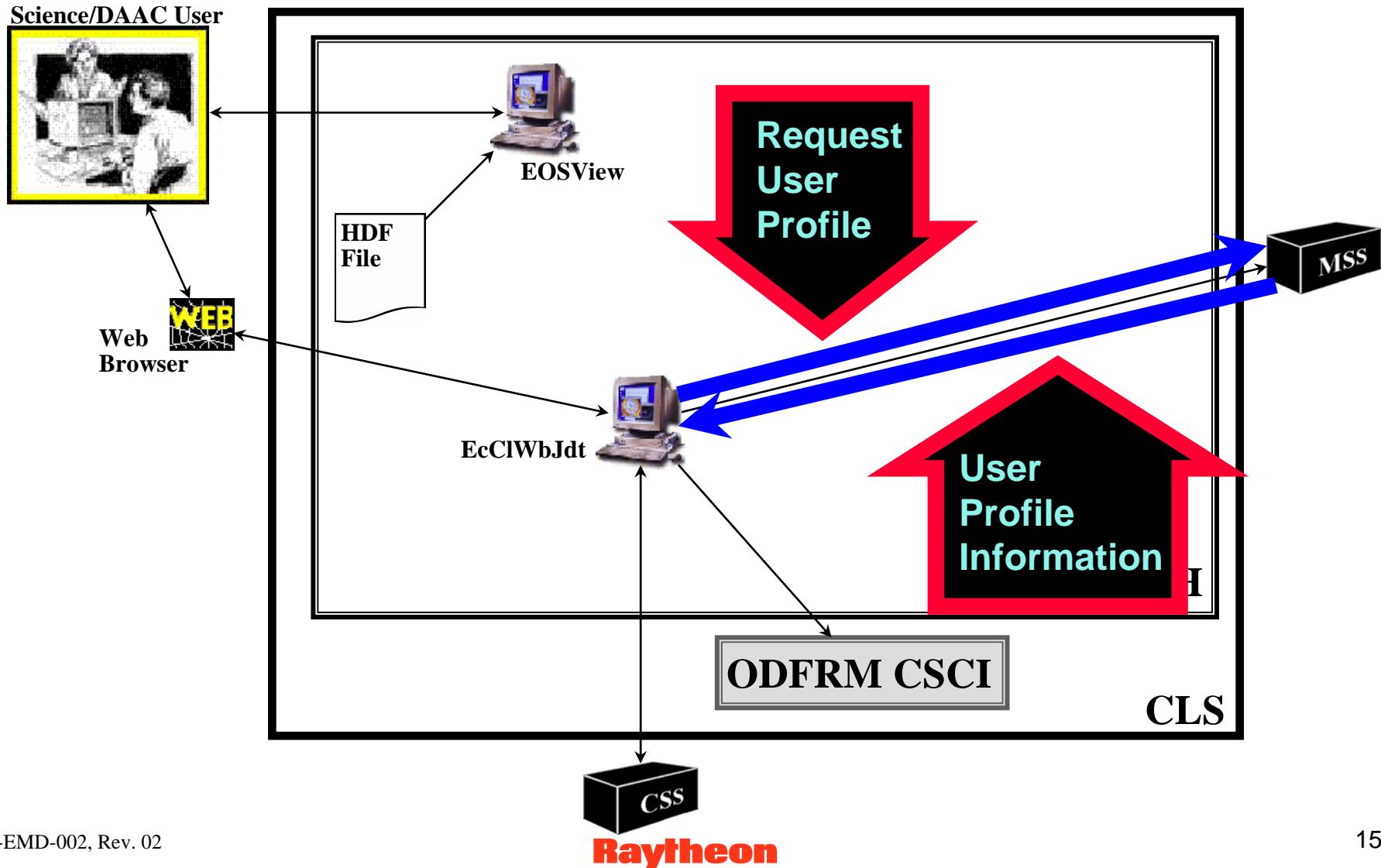


Subsystems and CSCIs: CLS (Cont.) WKBCH Architecture and Interfaces

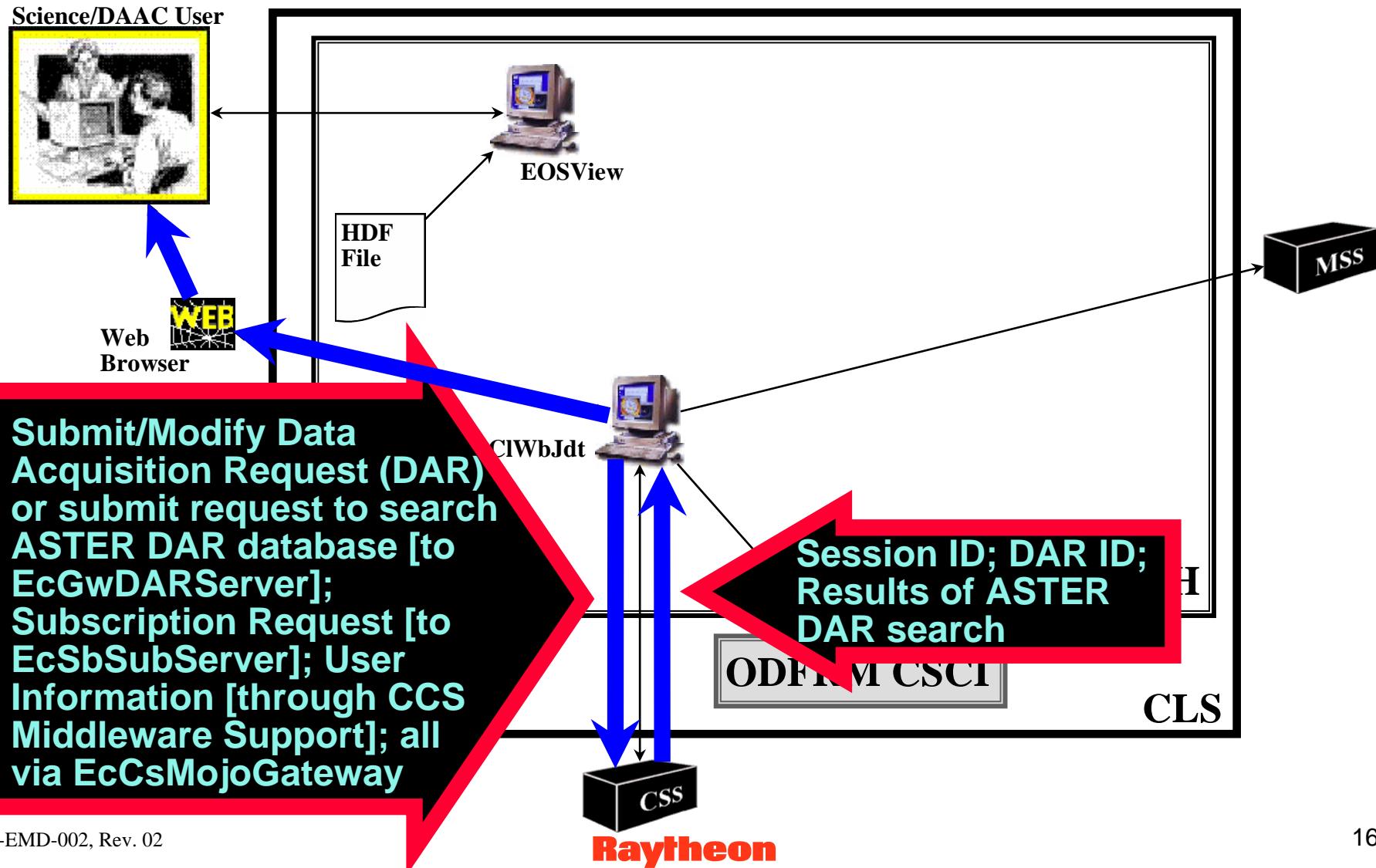


Subsystems and CSCIs: CLS (Cont.)

WKBCH Architecture and Interfaces

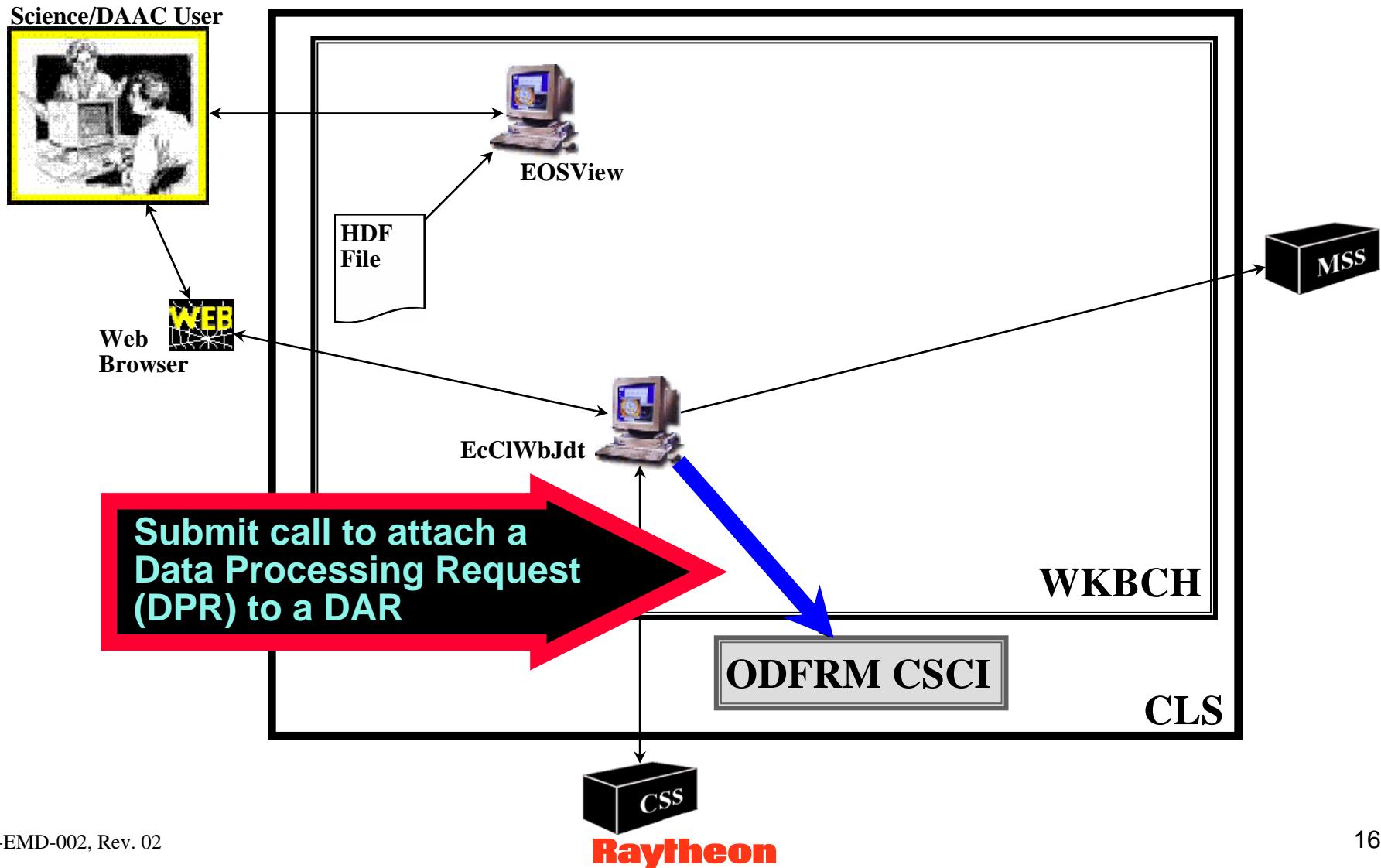


Subsystems and CSCIs: CLS (Cont.) WKBCH Architecture and Interfaces



Subsystems and CSCIs: CLS (Cont.)

WKBCH Architecture and Interfaces



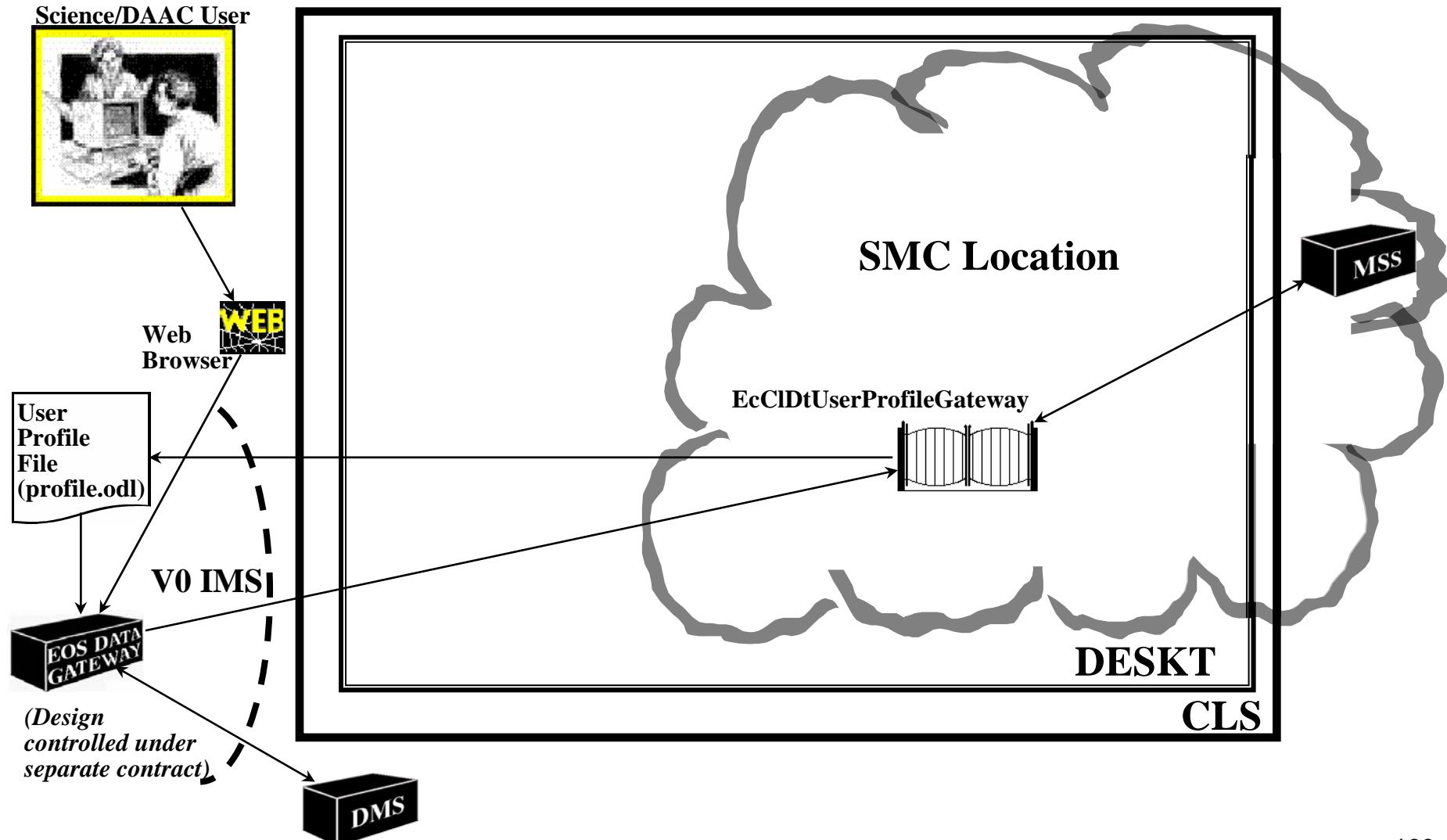
Subsystems and CSCIs: CLS (Cont.)



- **Desktop (DESKT) CSCI**
 - Provides a gateway server for communication with MSS User Registration Server to support seamless user registration through the EOS Data Gateway (EDG) web client and to obtain or update user profile information
 - **User Profile Gateway** - provides user profile information to the EDG for ECS users
 - User authentication
 - Submit/Update user information in profile

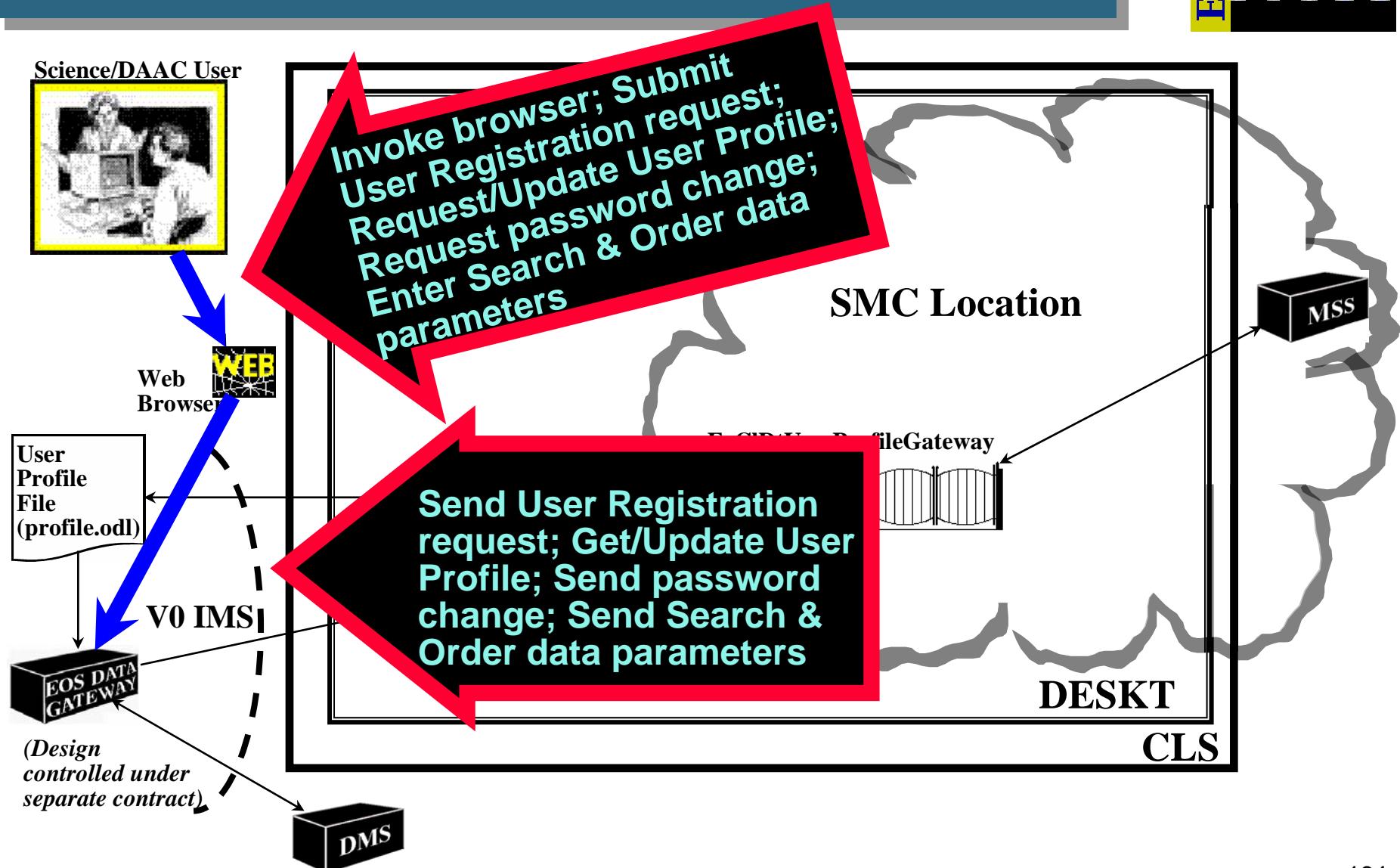
Subsystems and CSCIs: CLS (Cont.)

DESKT Architecture and Interfaces



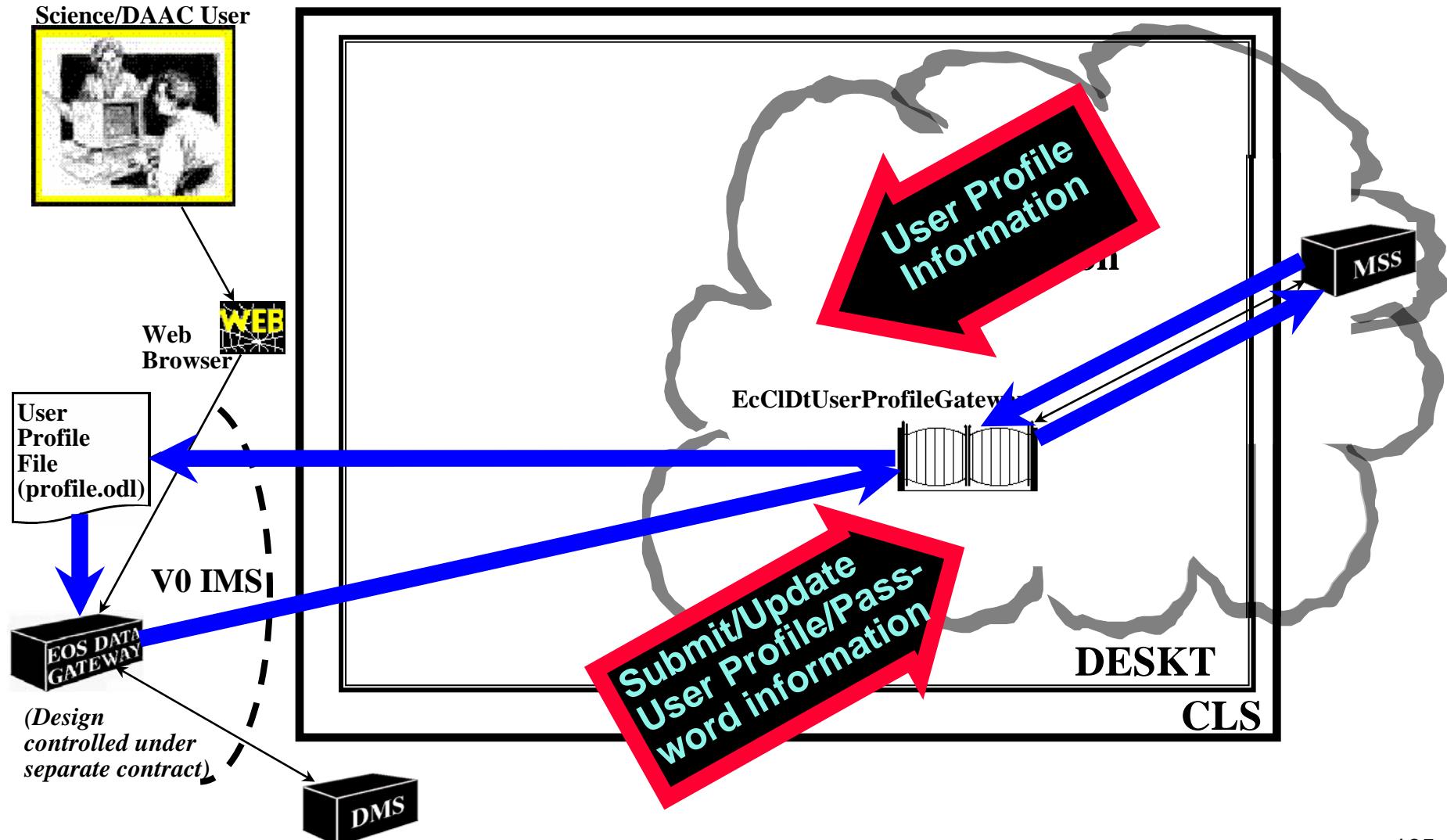
Subsystems and CSCIs: CLS (Cont.)

DESKT Architecture and Interfaces



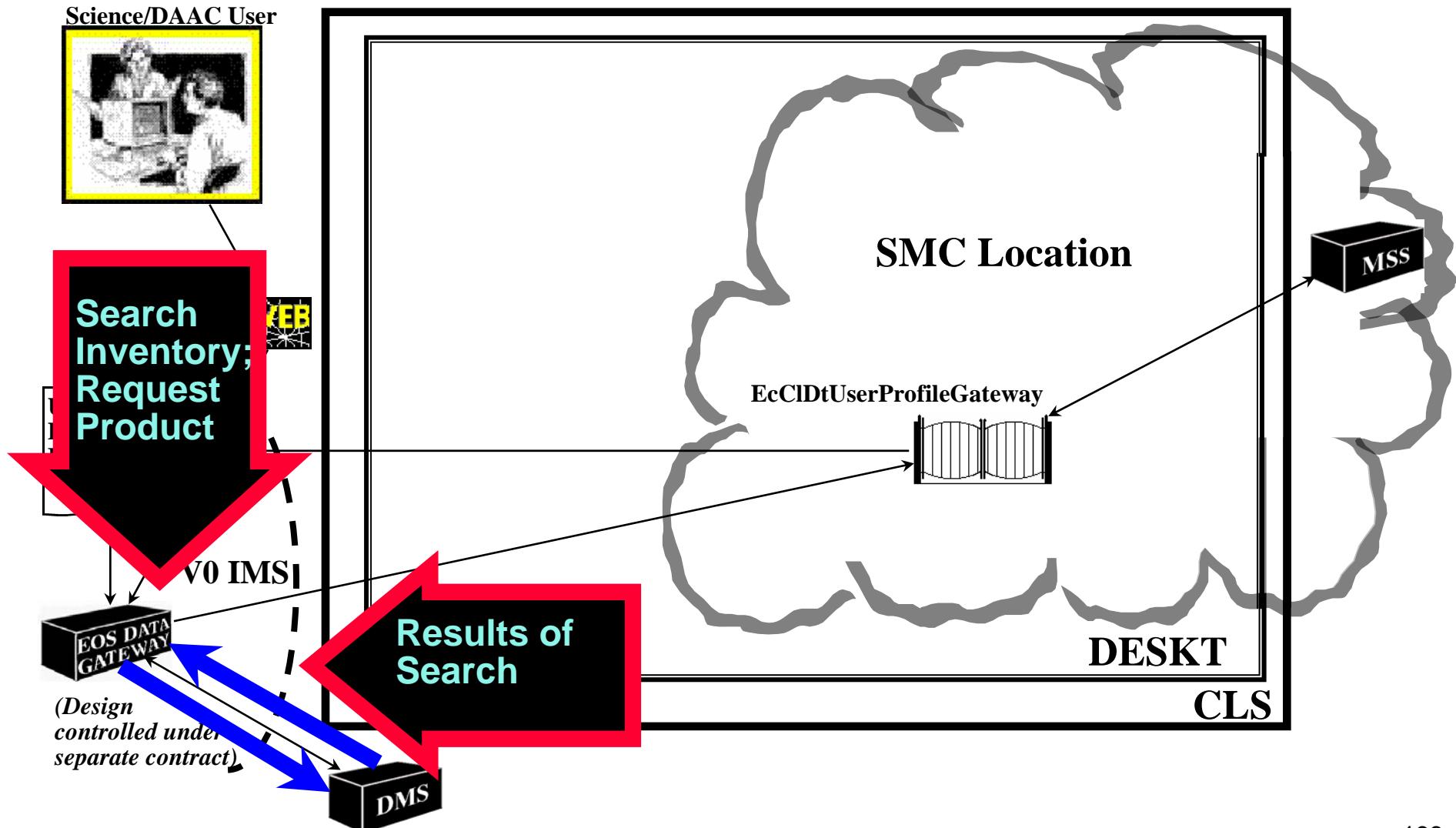
Subsystems and CSCIs: CLS (Cont.)

DESKT Architecture and Interfaces



Subsystems and CSCIs: CLS (Cont.)

DESKT Architecture and Interfaces





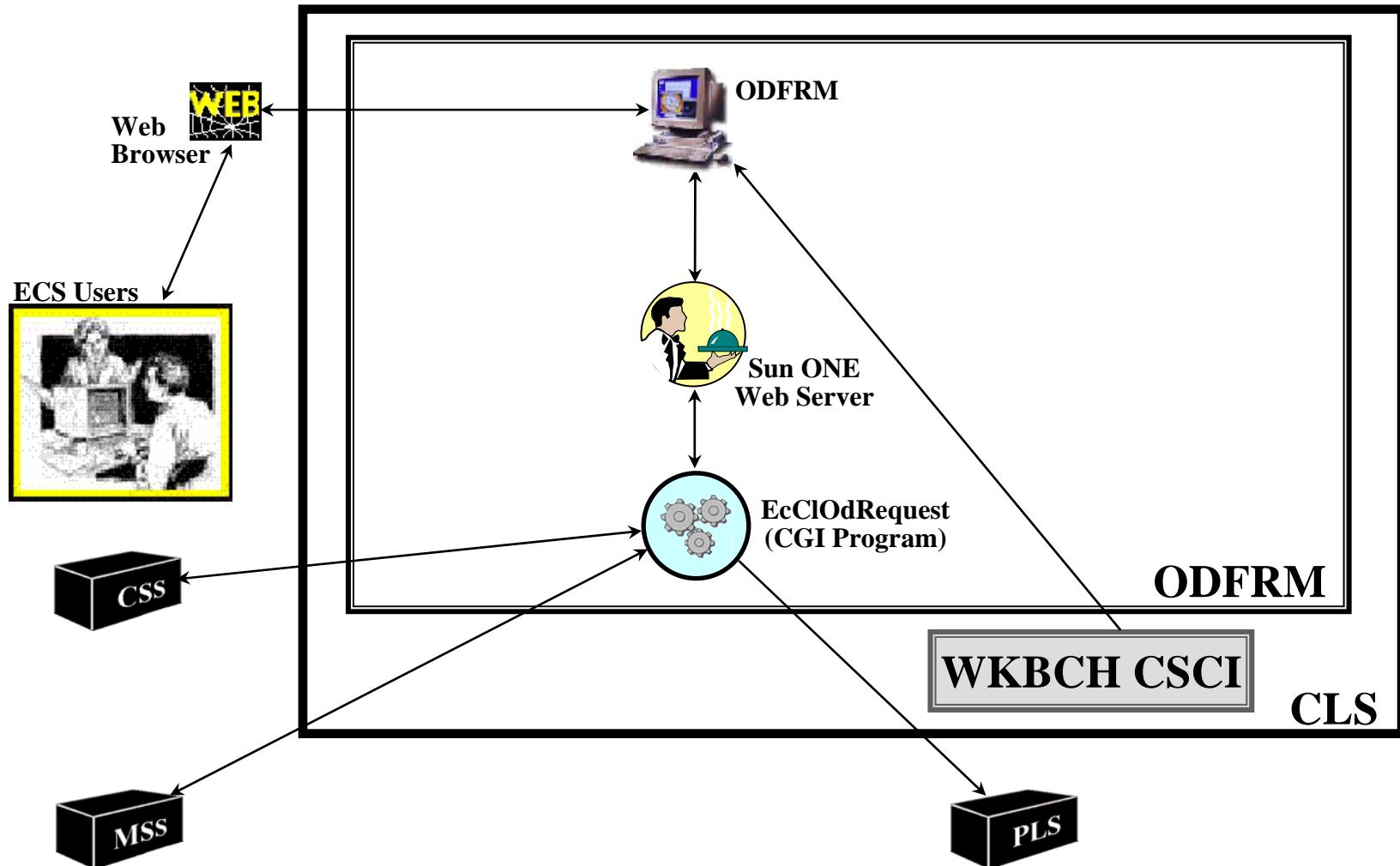
Subsystems and CSCIs: CLS (Cont.)

- **On-Demand Form Request Manager (ODFRM) CSCI**
 - Supports attachment of a Data Processing Request (DPR) to an ASTER Data Acquisition Request (a required capability that is not used)
 - **ODFRM HTML pages and Common Gateway Interface (CGI) programs**
 - Creation of an on-demand processing request and its submission to the Planning Subsystem (PLS) is now done through the EOS Data Gateway (EDG) tool
 - ASTER on-demand products
 - ASTER L1B*
 - ASTER DEM (Digital Elevation Model)*
 - ASTER higher-level products (AST_04, AST_05, AST_06V, AST_06T, AST_06S, AST_07S, AST_07V, AST_09T, AST_09V, AST_09S, AST_08)

* Note: Requires special privilege (in User Profile) to use ODFRM to order this product

Subsystems and CSCIs: CLS (Cont.)

ODFRM Architecture and Interfaces

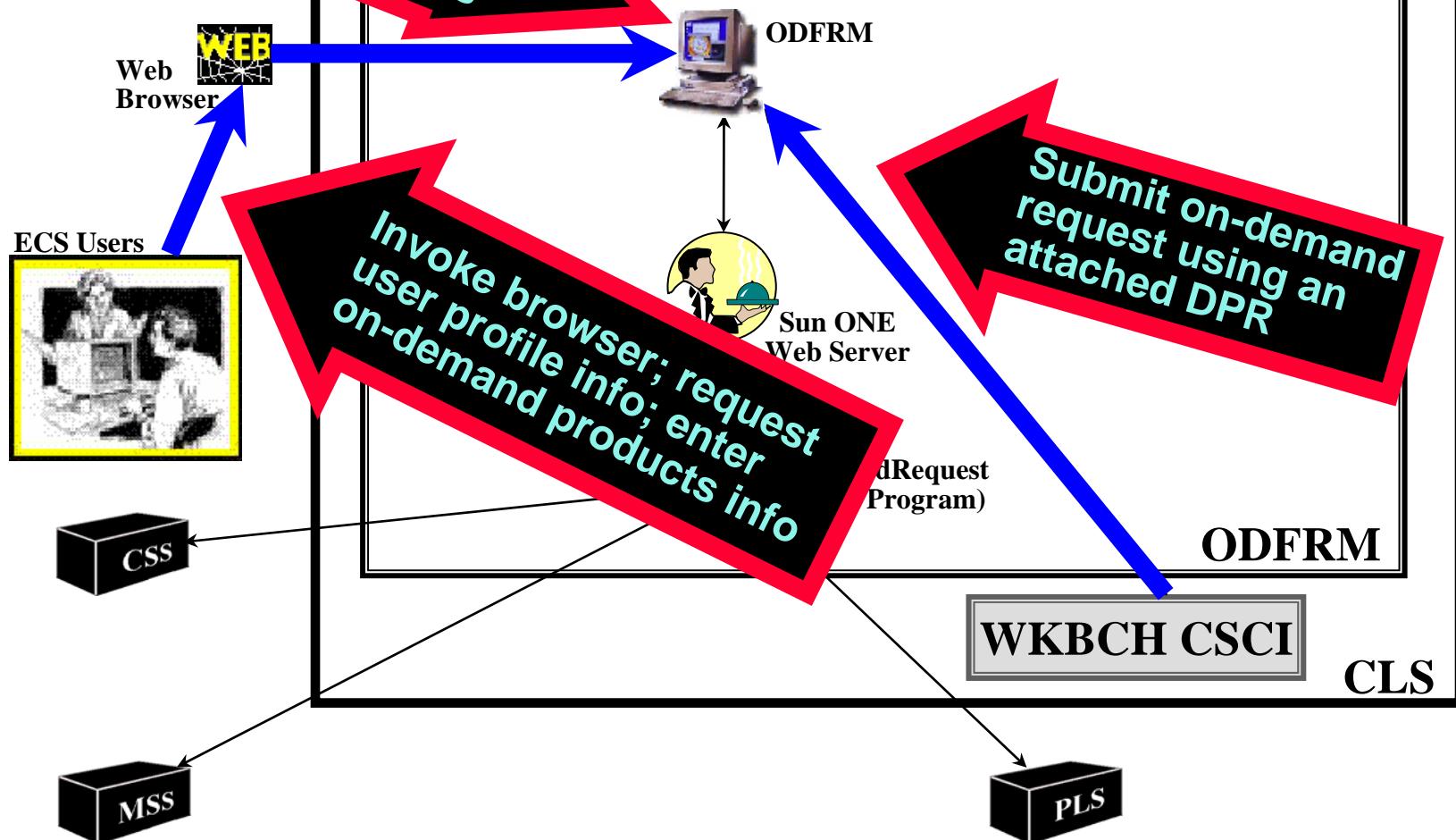


Systems and CSCIs: CLS (Cont.)

Architecture and Interfaces

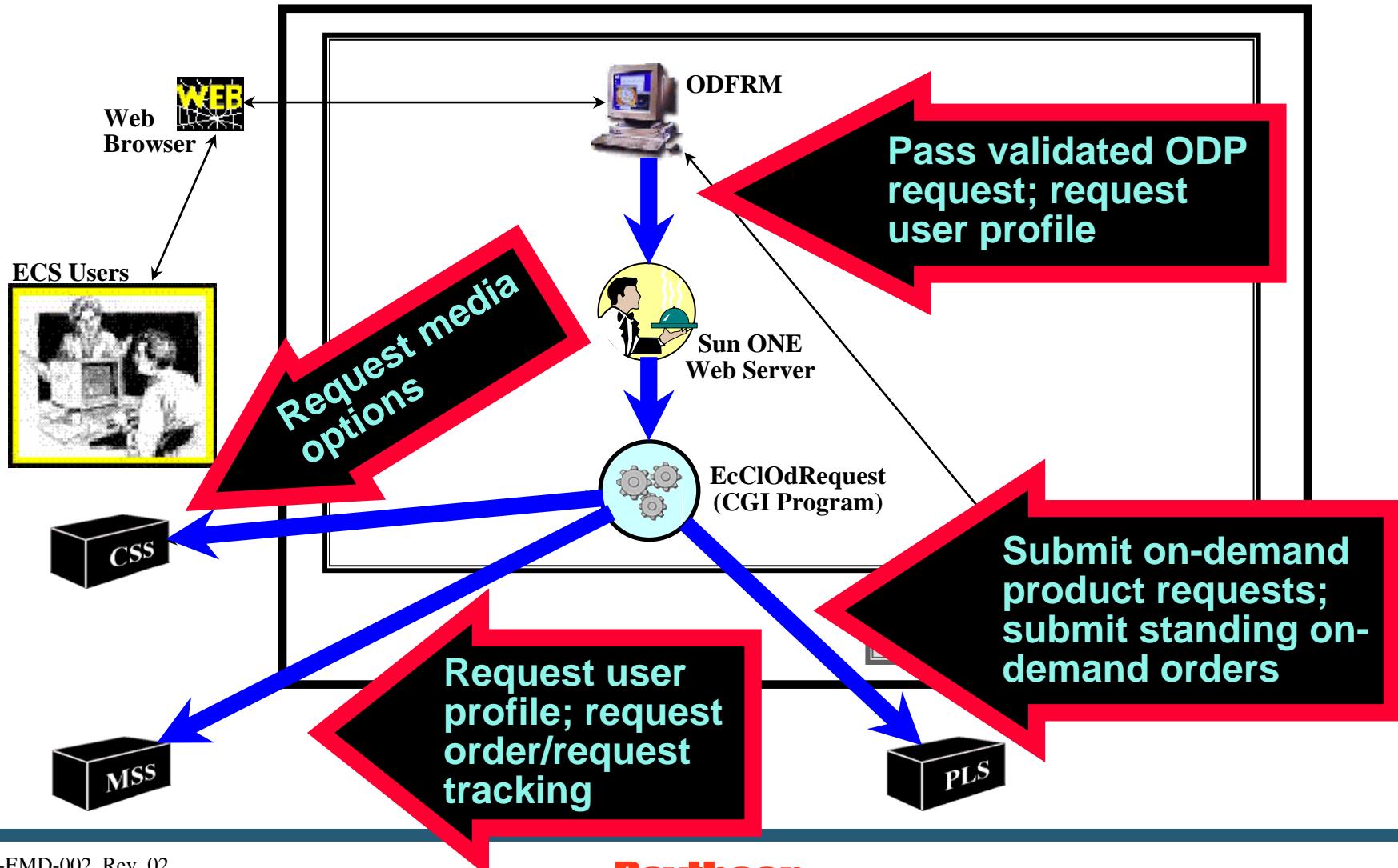


*Request user profile info;
Create On-Demand
Product (ODP) Requests*



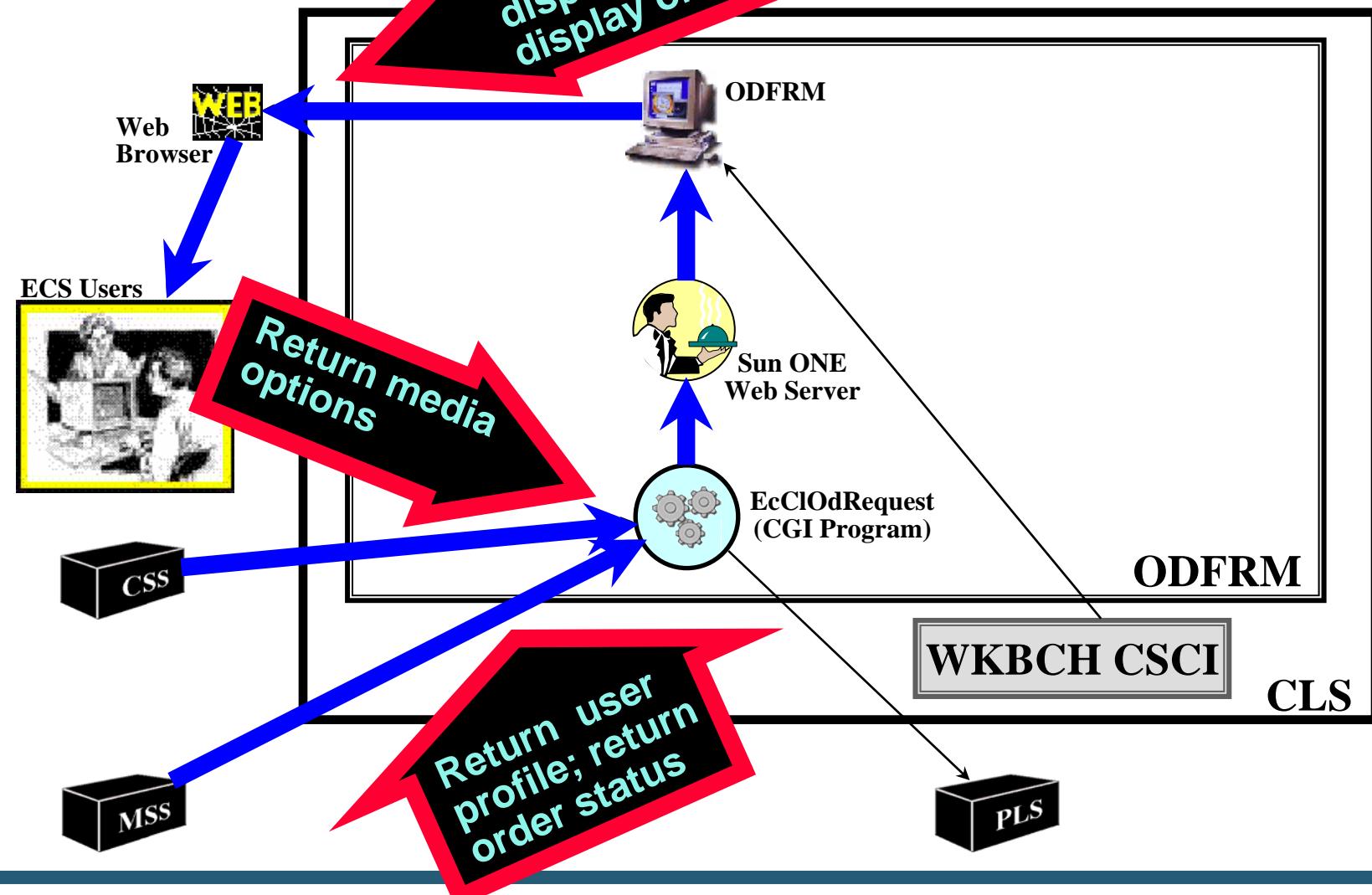
Subsystems and CSCIs: CLS (Cont.)

ODFRM Architecture and Interfaces



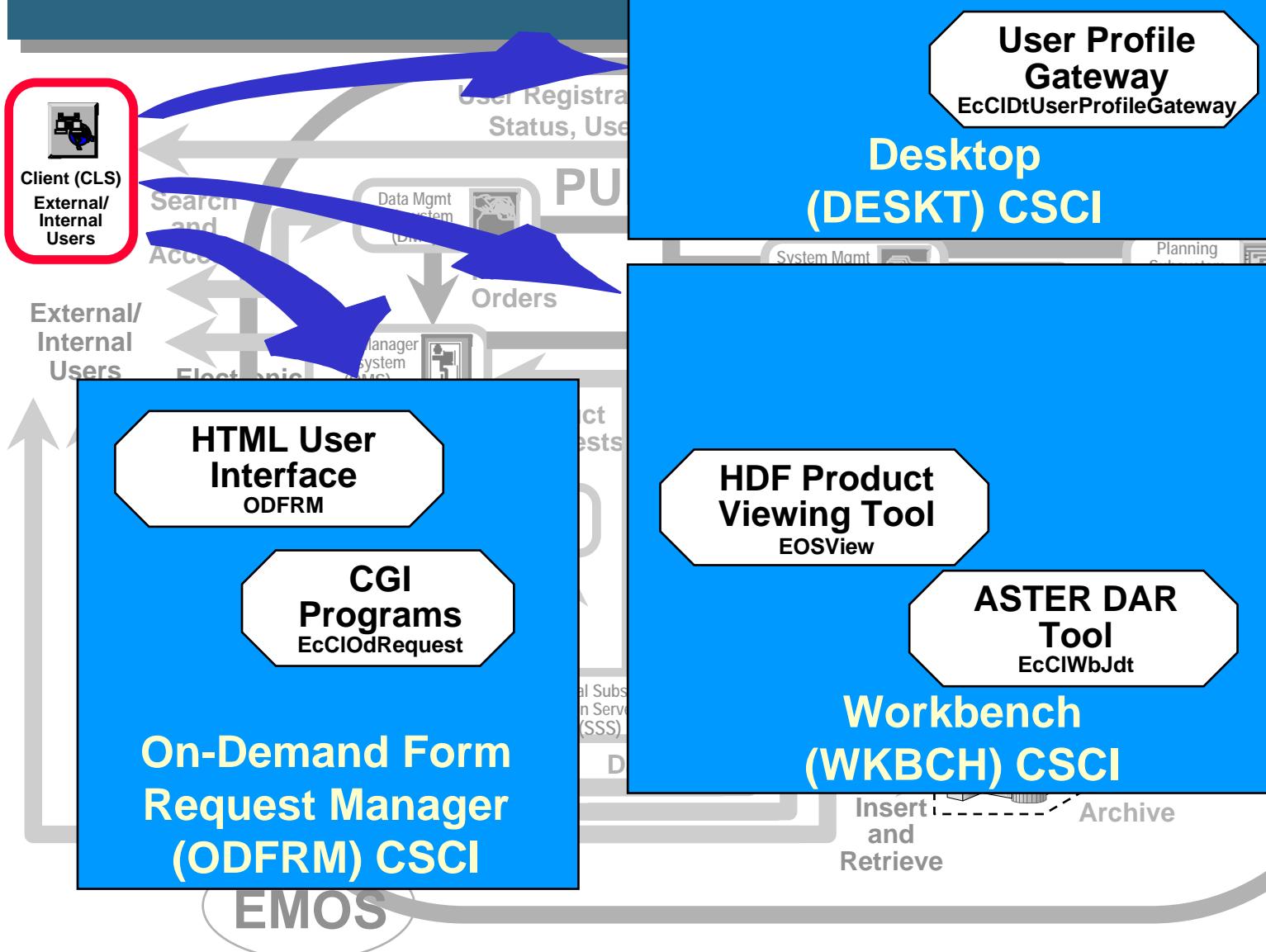
Subsystems and CSCIs - CLS (Cont.)

ODFRM Architecture: User Interfaces

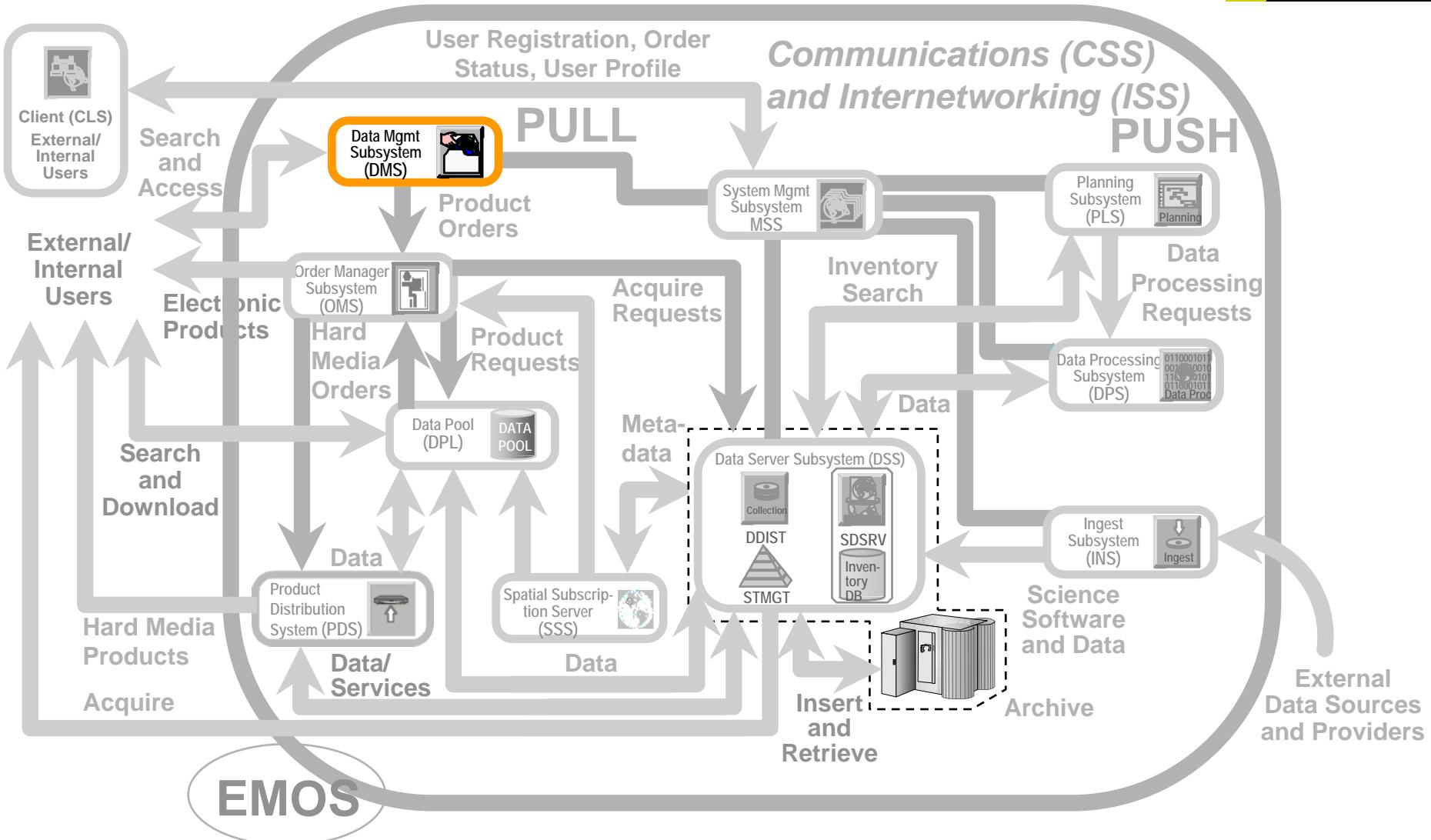




Subsystems and CSCIs: CLS (Cont.)



Subsystems and CSCIs: DMS



Subsystems and CSCIs: DMS



Data Mgmt
Subsystem



- **Data Management Subsystem (DMS)**
 - Provides one-way catalog interoperability between ECS and the V0 Information Management System (IMS)
 - Supplies gateway processes to translate requests between V0 protocol and ECS
 - Maintains a Data Dictionary that stores ECS data collection information (i.e., collection metadata, attributes, valid keywords) and mappings between this information and V0 to permit translation of requests between the systems
 - Uses several COTS tools: RogueWave class libraries, Builder Xcessory (GUI builder tool), and Sybase ASE Server (for Data Dictionary database search and update)

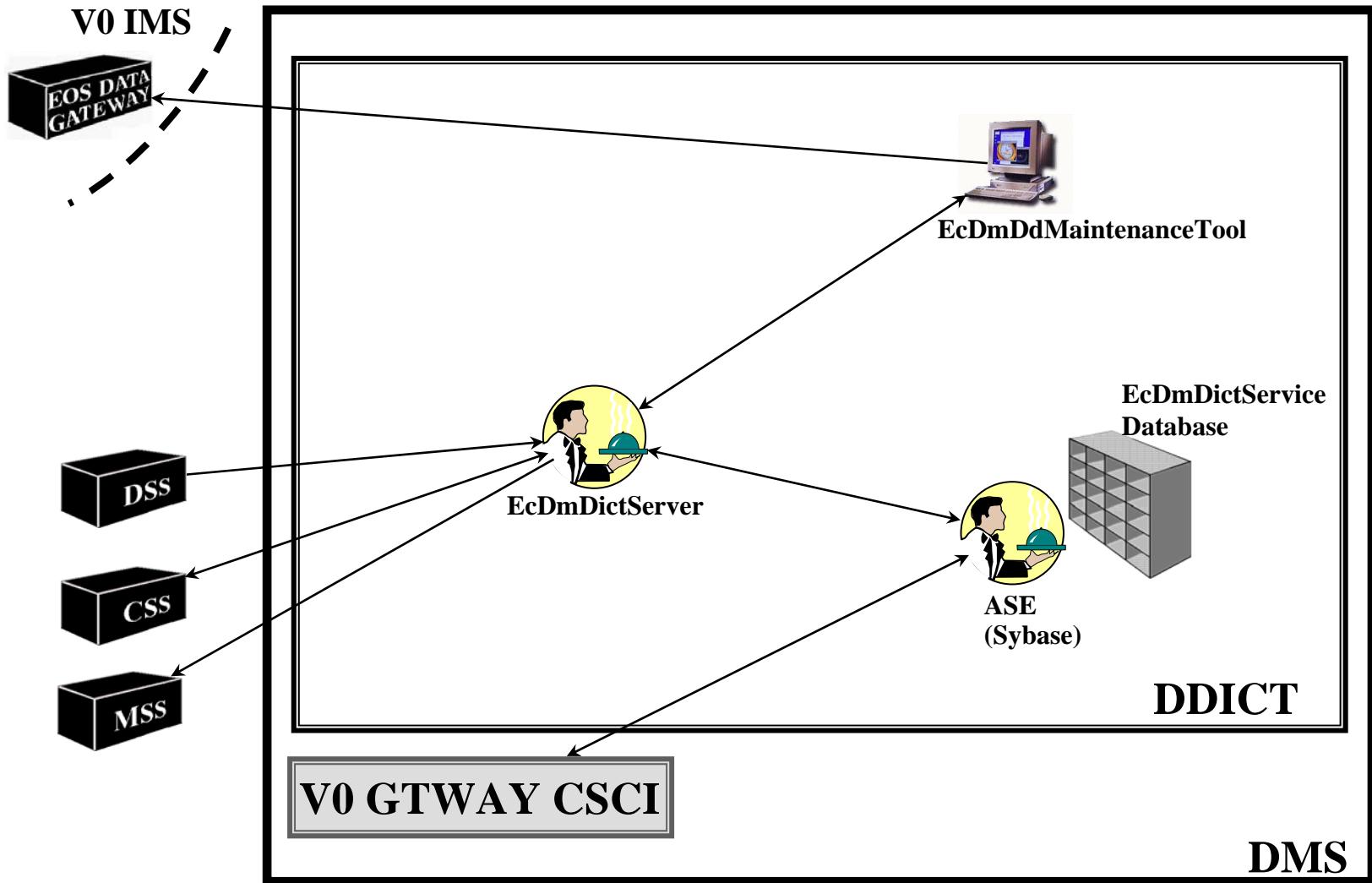


Subsystems and CSCIs: DMS(Cont.)

- **Data Dictionary (DDICT) CSCI**
 - Manages definitions of data collections including metadata, data domains (valid values), and data location
 - Stored in a relational Database Management System (DBMS)
 - Three major components
 - **Data Dictionary Server** - provides DDICT client processes the ability to perform data searches, inserts, updates, or deletes to the DDICT database
 - **Data Dictionary Maintenance Tool** - provides a GUI to insert, update, or delete schema information held in the DDICT database, and allows operations staff to modify database attributes (e.g., valids, mapping)
 - **Data Dictionary ASE Server** - COTS database server

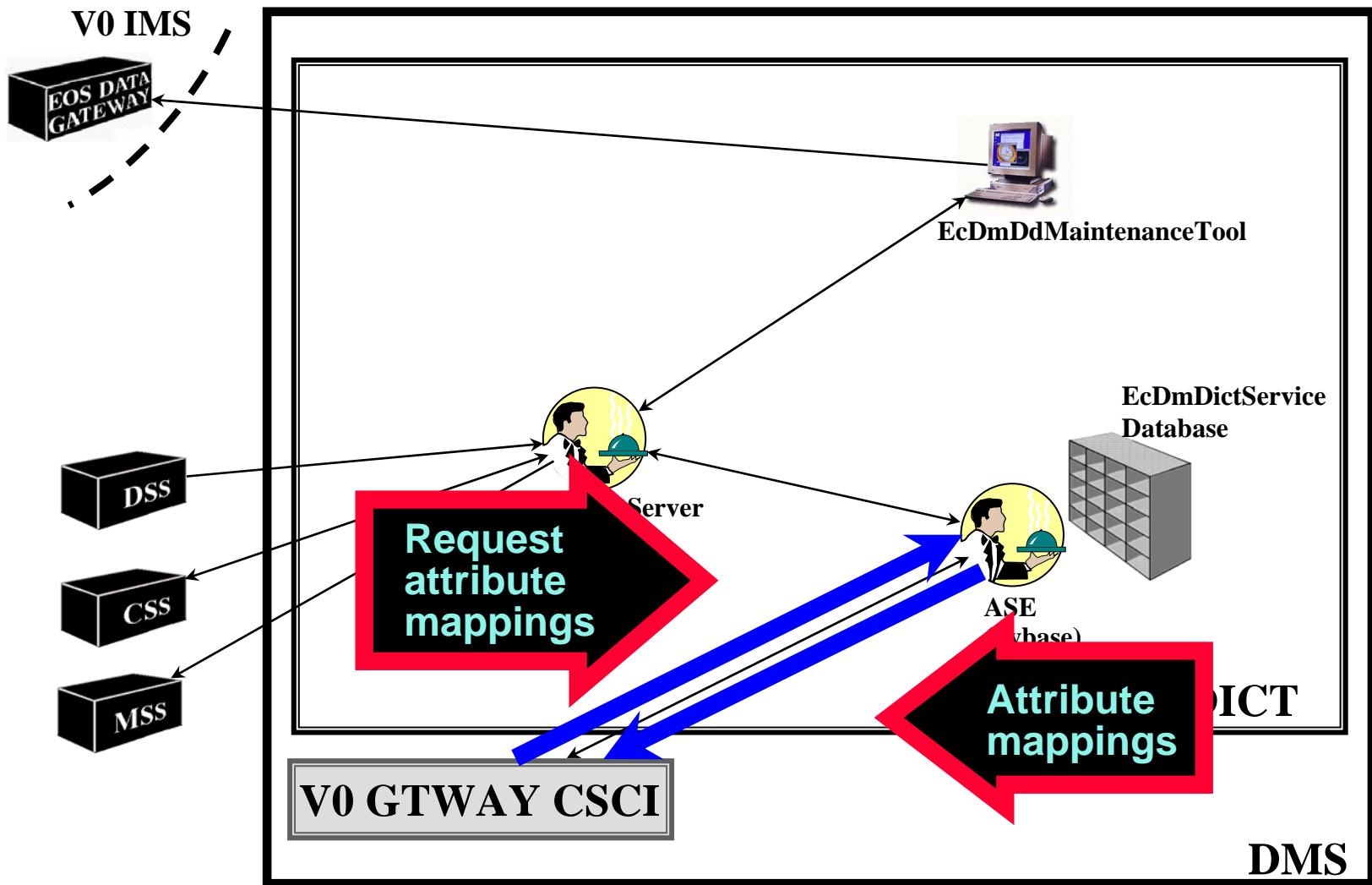
Subsystems and CSCIs: DMS (Cont.)

DDICT Architecture and Interfaces



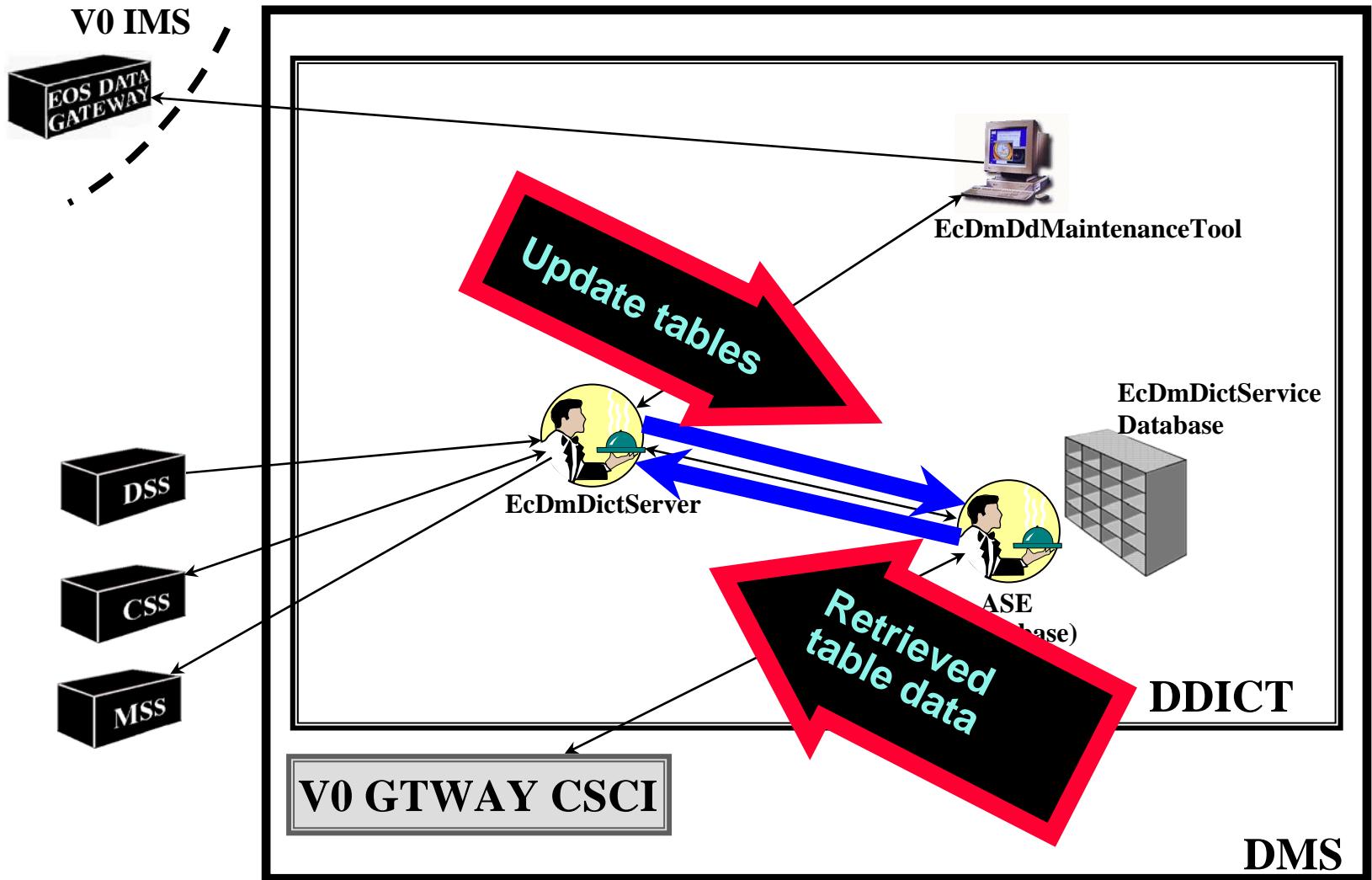
Subsystems and CSCLs: DMS (Cont.)

DDICT Architecture and Interfaces



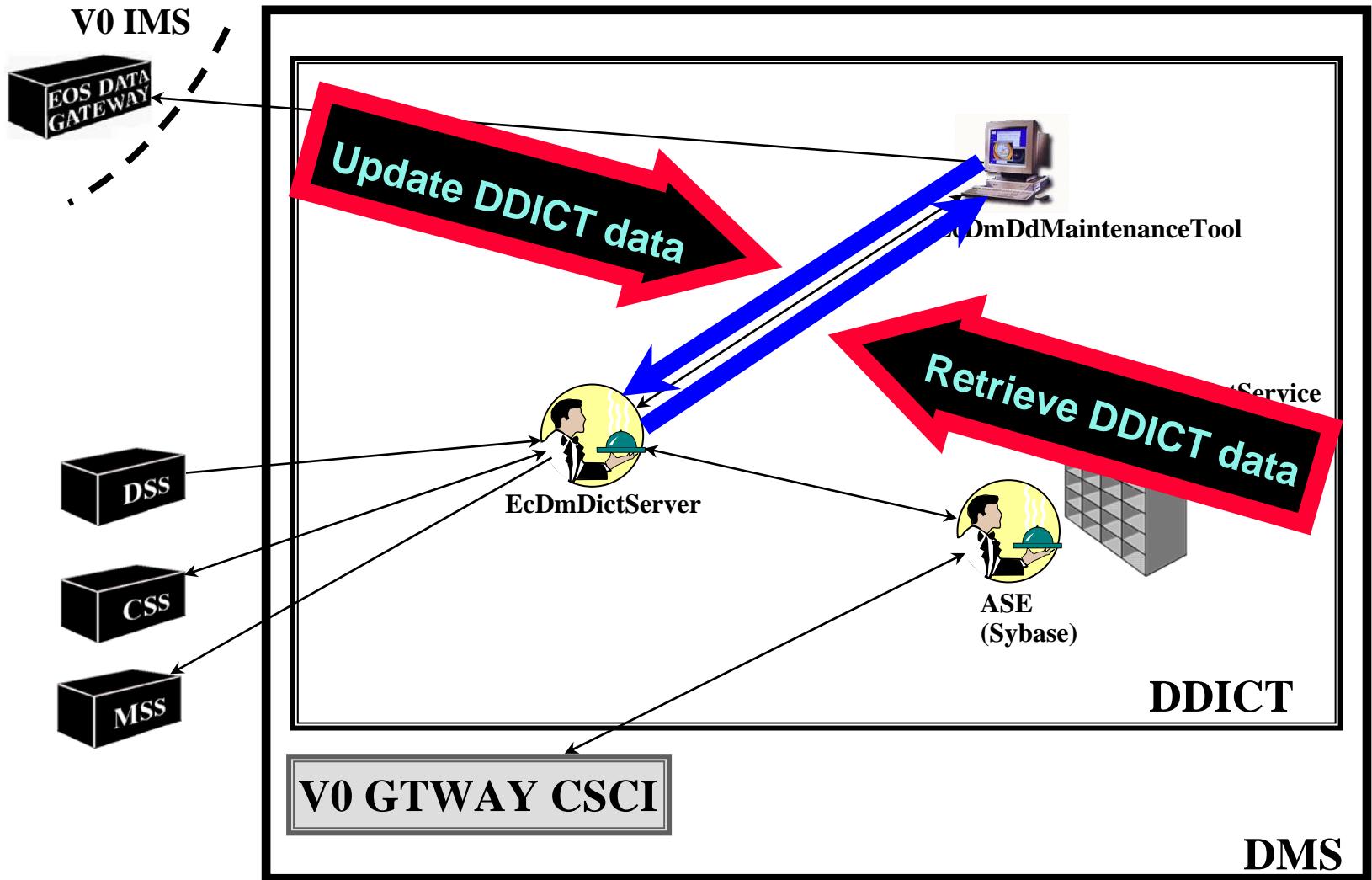
Subsystems and CSCIs: DMS (Cont.)

DDICT Architecture and Interfaces



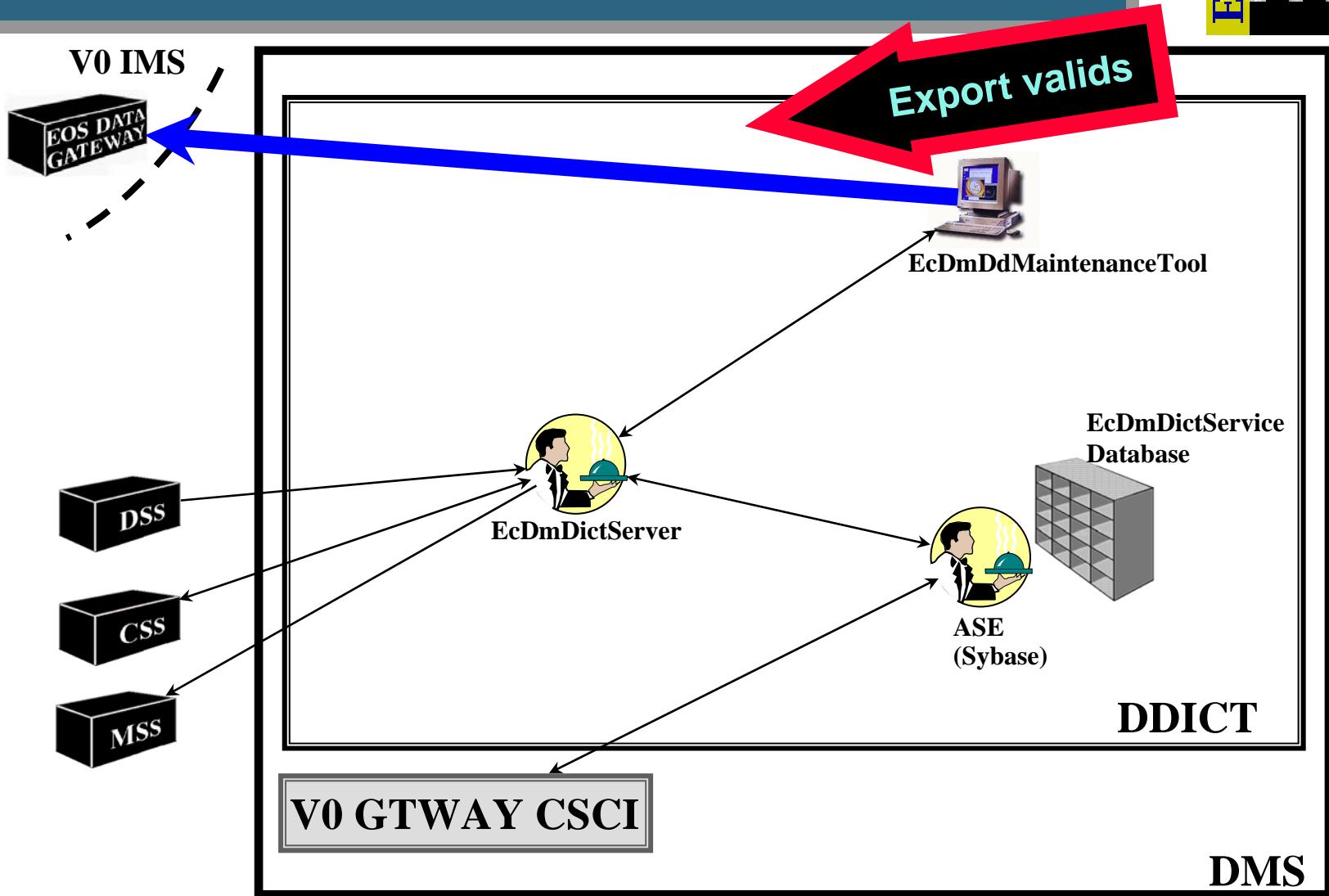
Subsystems and CSCIs: DMS (Cont.)

DDICT Architecture and Interfaces



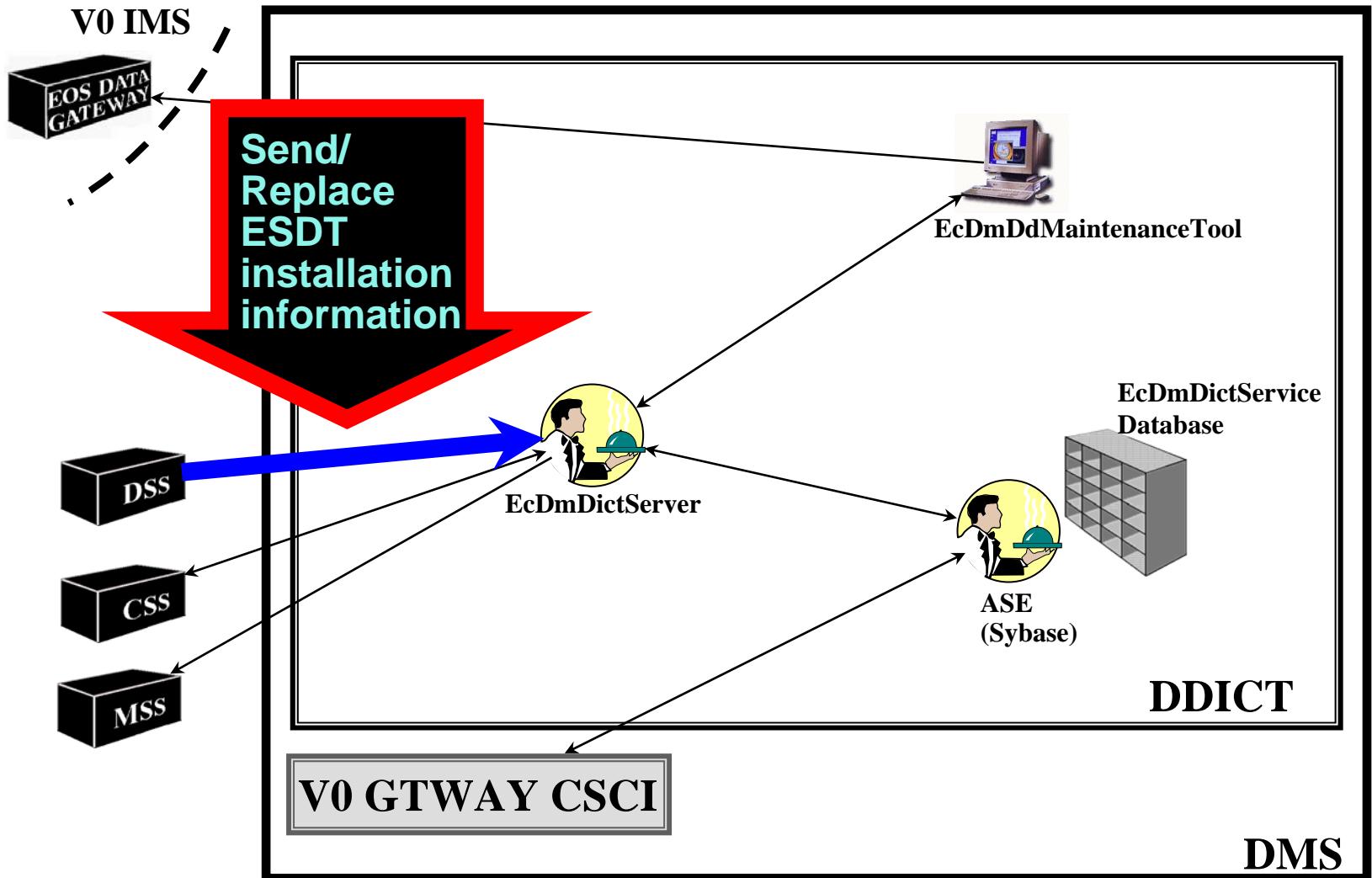
Subsystems and CSCIs: DMS (Cont.)

DDICT Architecture and Interfaces



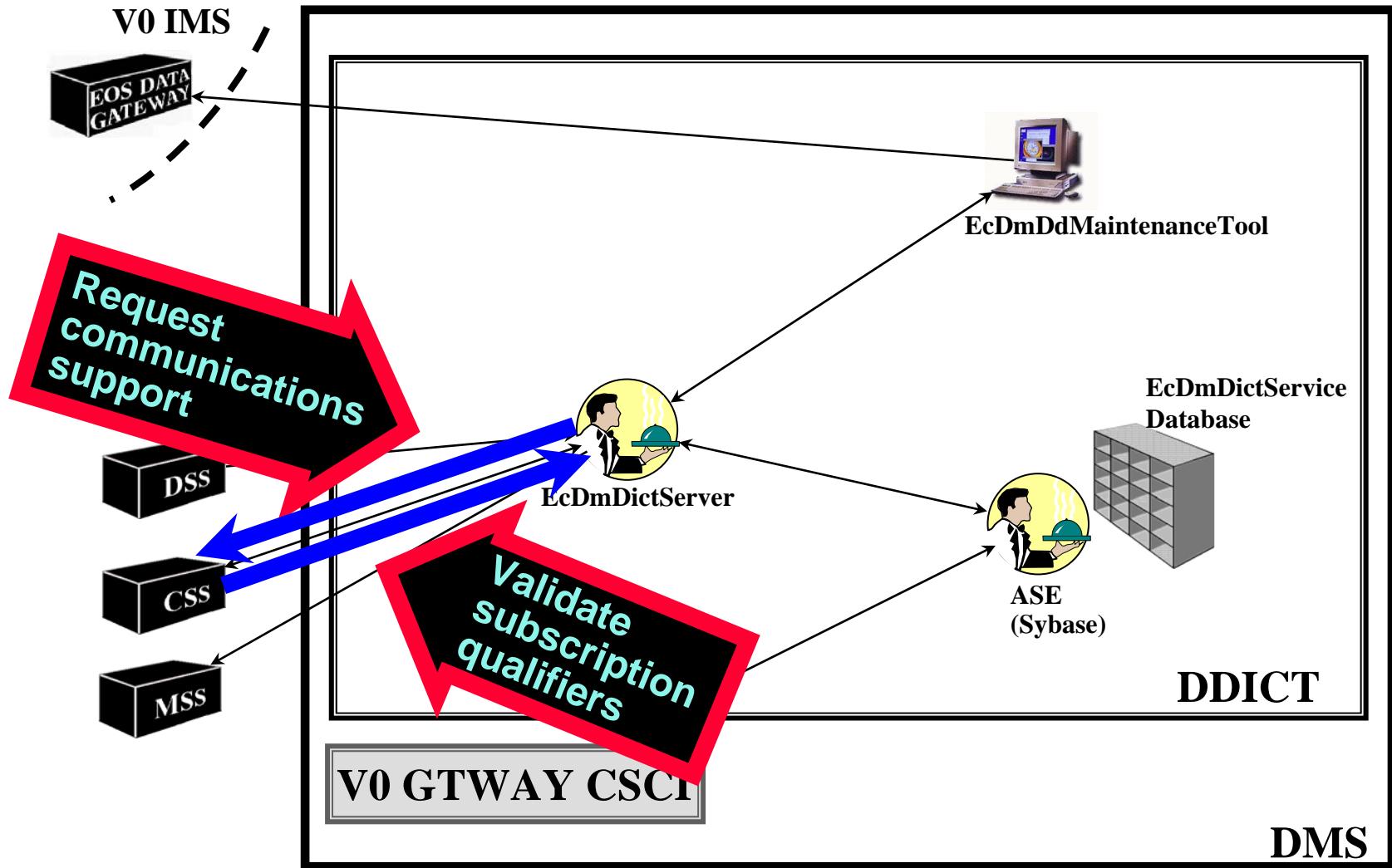
Subsystems and CSCIs: DMS (Cont.)

DDICT Architecture and Interfaces



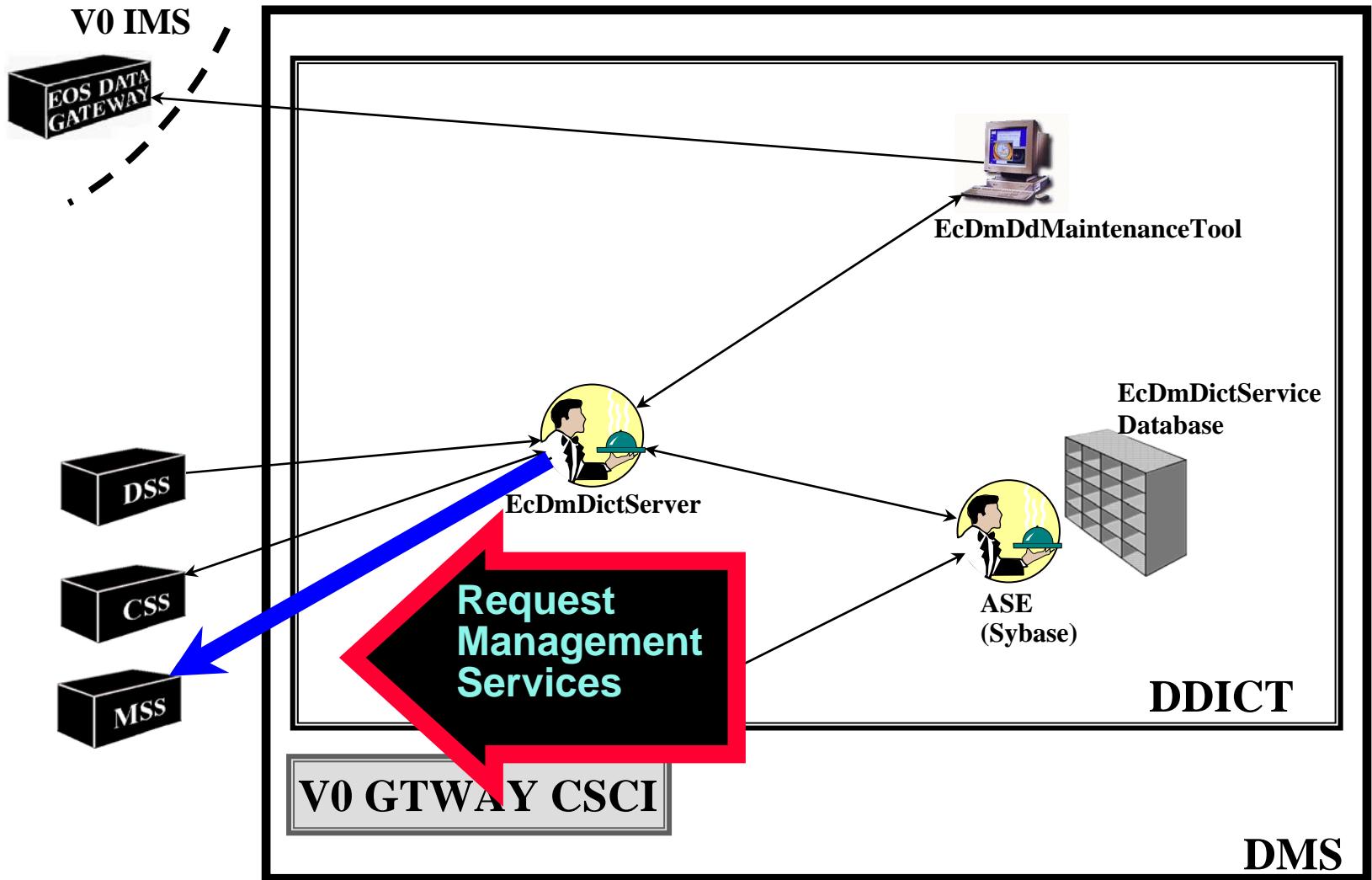
Subsystems and CSCIs: DMS (Cont.)

DDICT Architecture and Interfaces



Subsystems and CSCIs: DMS (Cont.)

DDICT Architecture and Interfaces





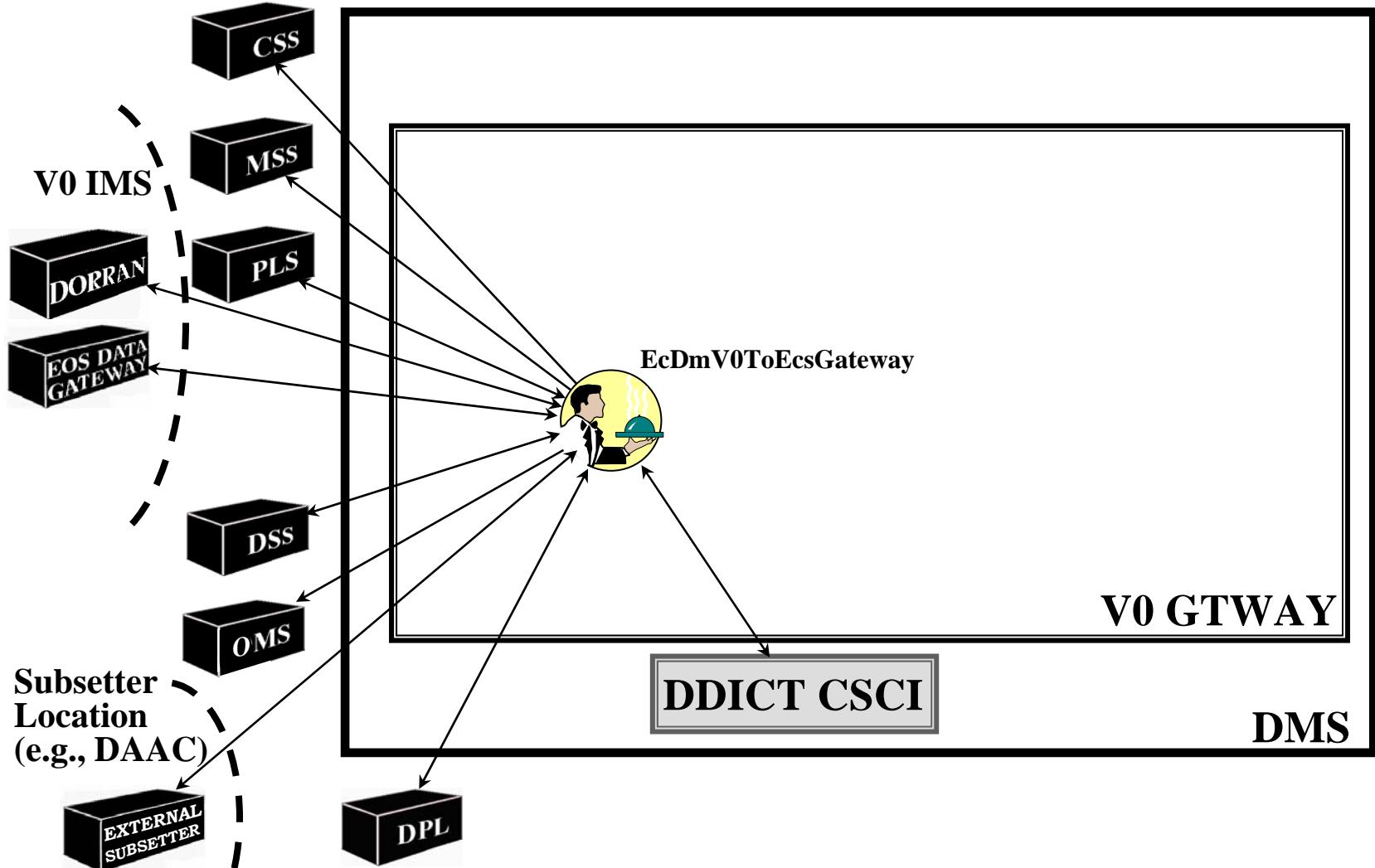
Subsystems and CSCIs: DMS (Cont.)

- **Version Zero Gateway (V0 GTWAY) CSCI**
 - Provides one-way interoperability with the V0 Information Management System (IMS) for inventory searches, browse requests, product orders, and price estimate requests; search results include links to URLs for Data Pool products
 - At the LP DAAC, transmits ASTER product requests to the V0 IMS to allow billing by the billing and accounting system
 - Distributed Ordering, Reporting, Researching, and Accounting Network (DORRAN)
 - Queries between V0 IMS and the ECS V0 GTWAY use the Object Description Language (ODL) format
 - One component
 - **V0 to ECS Gateway Server** - allows use of the EOS Data Gateway Web Client to search and request data and services defined within ECS



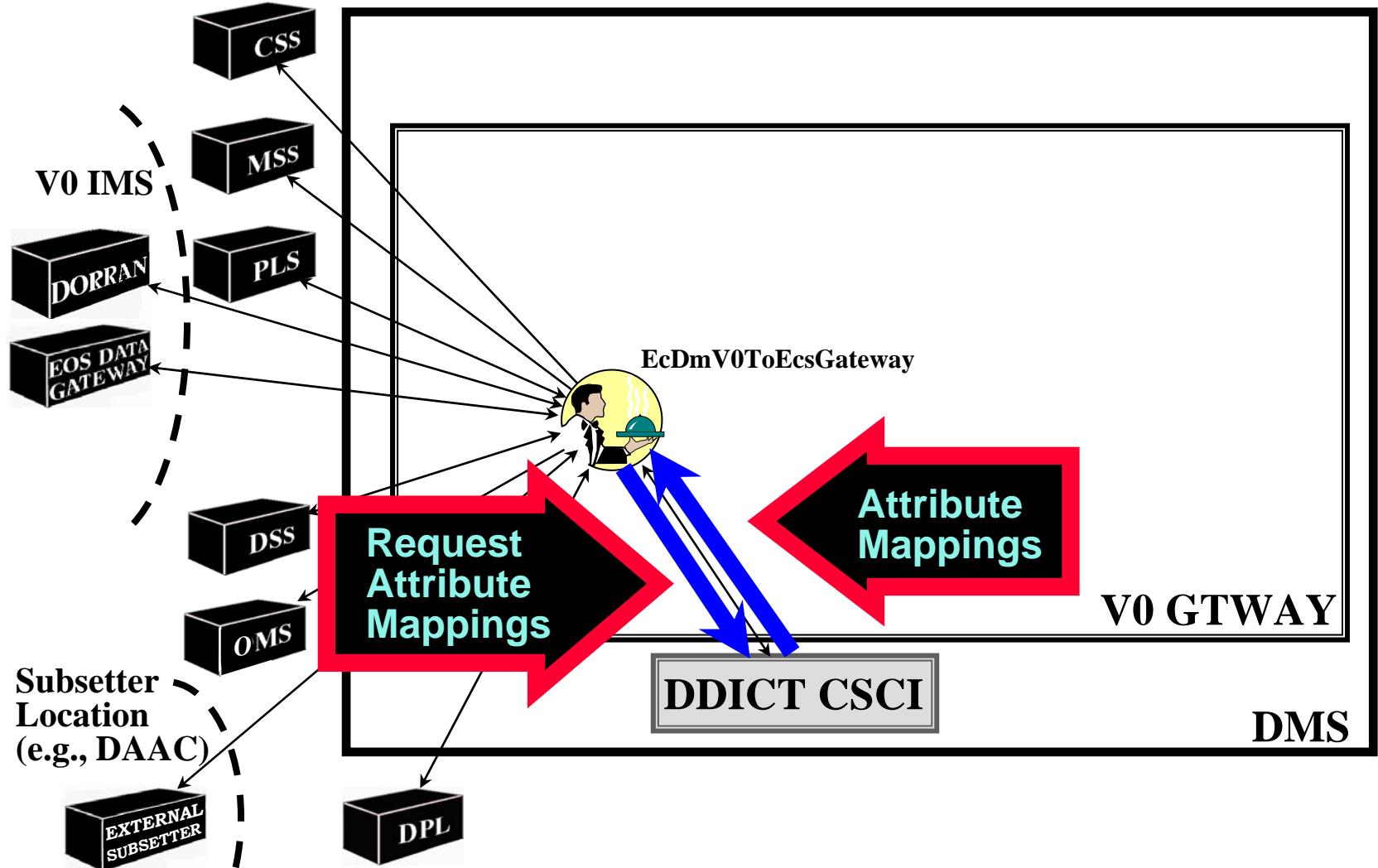
Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces



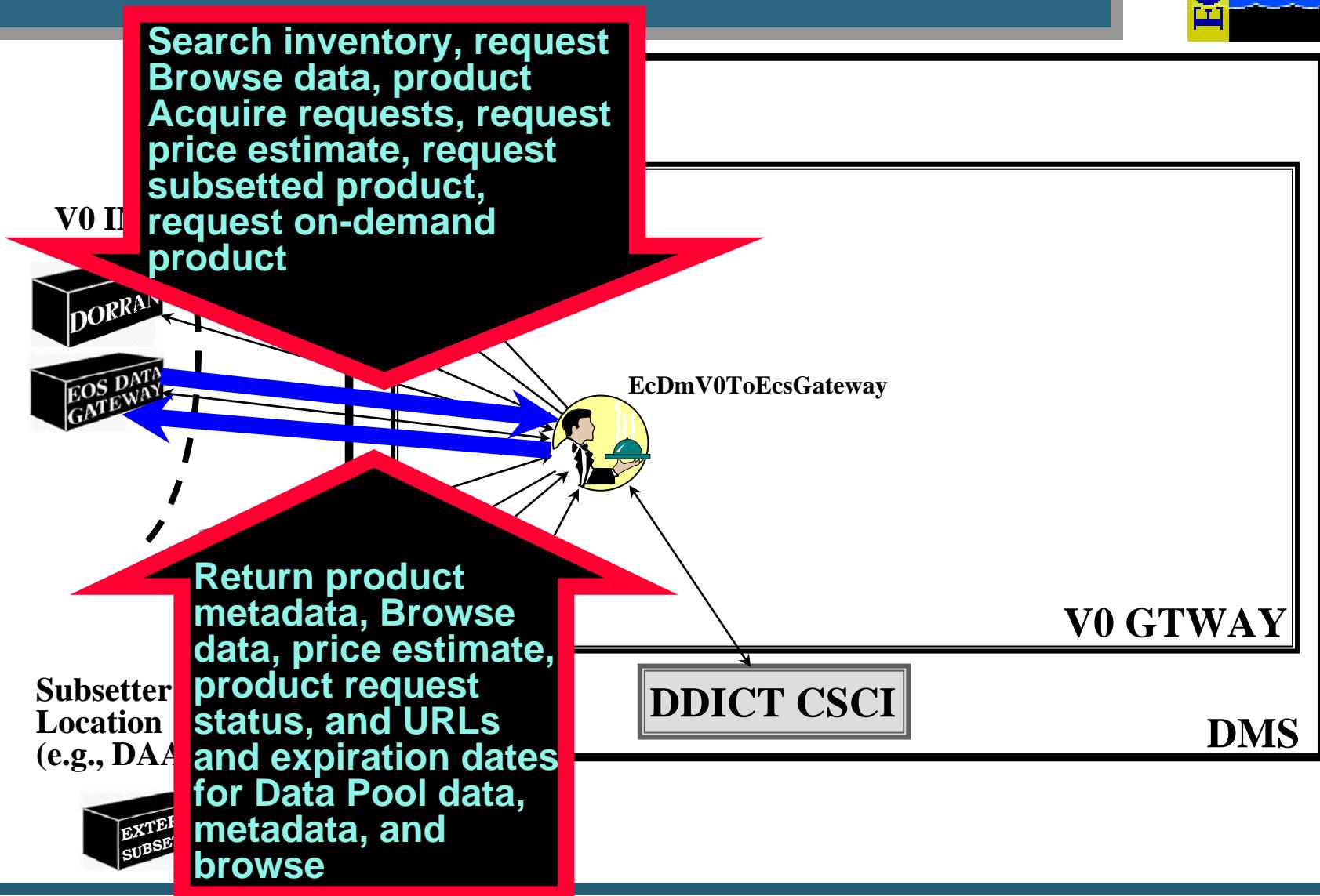
Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces



Subsystems and CSCIs: DMS (Cont.)

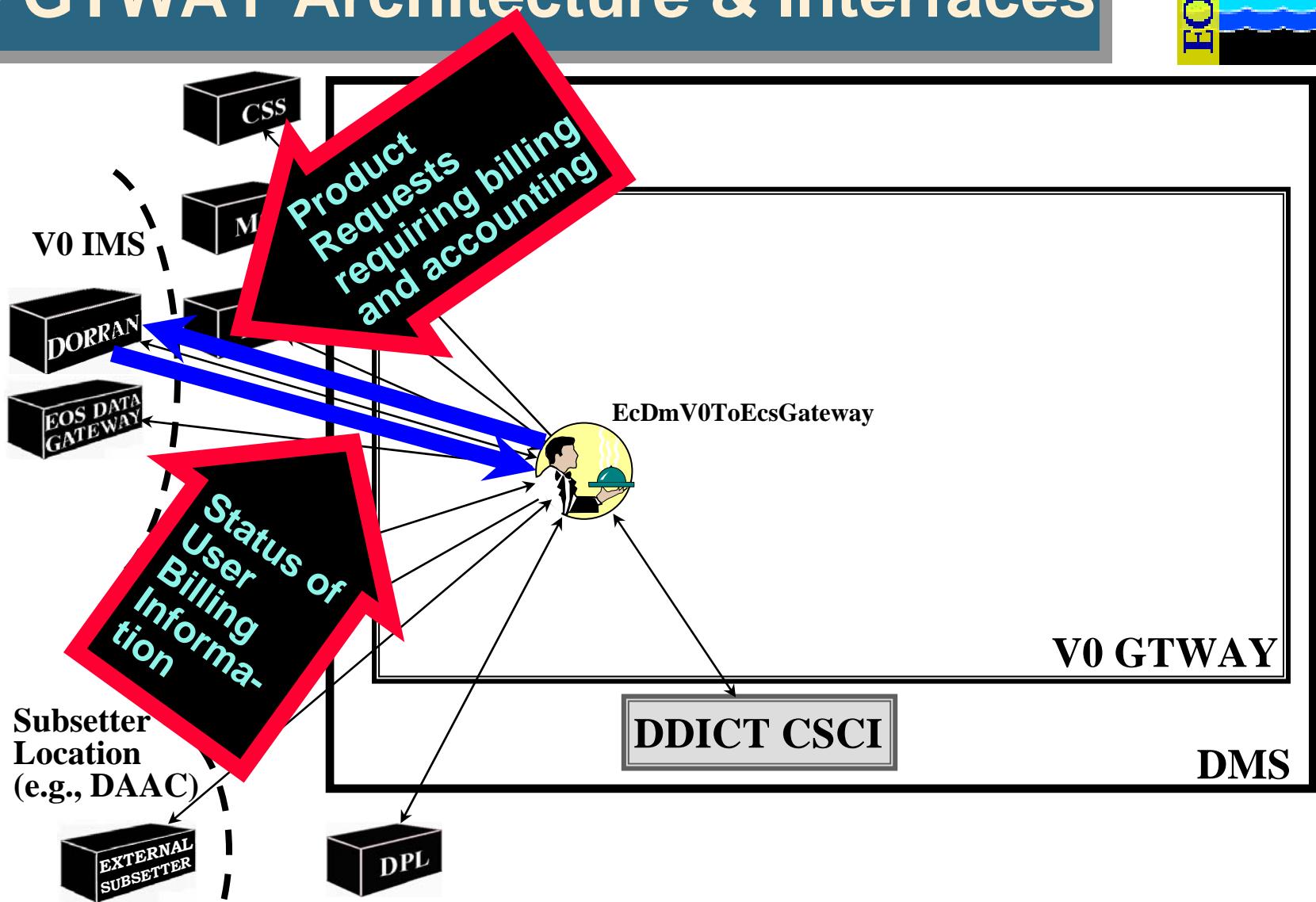
V0 GTWAY Architecture & Interfaces





Subsystems and CSCIs: DMS (Cont.)

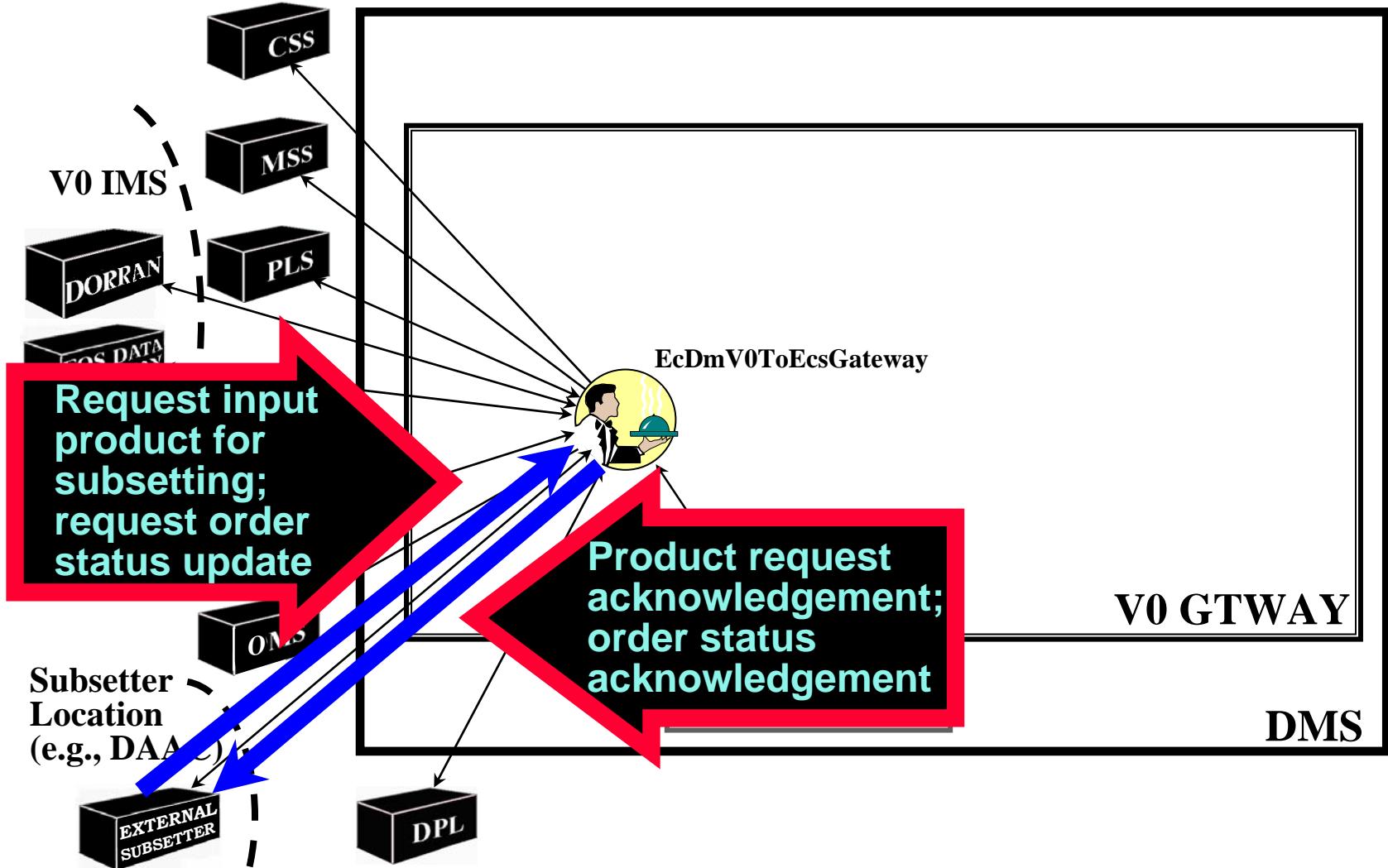
V0 GTWAY Architecture & Interfaces





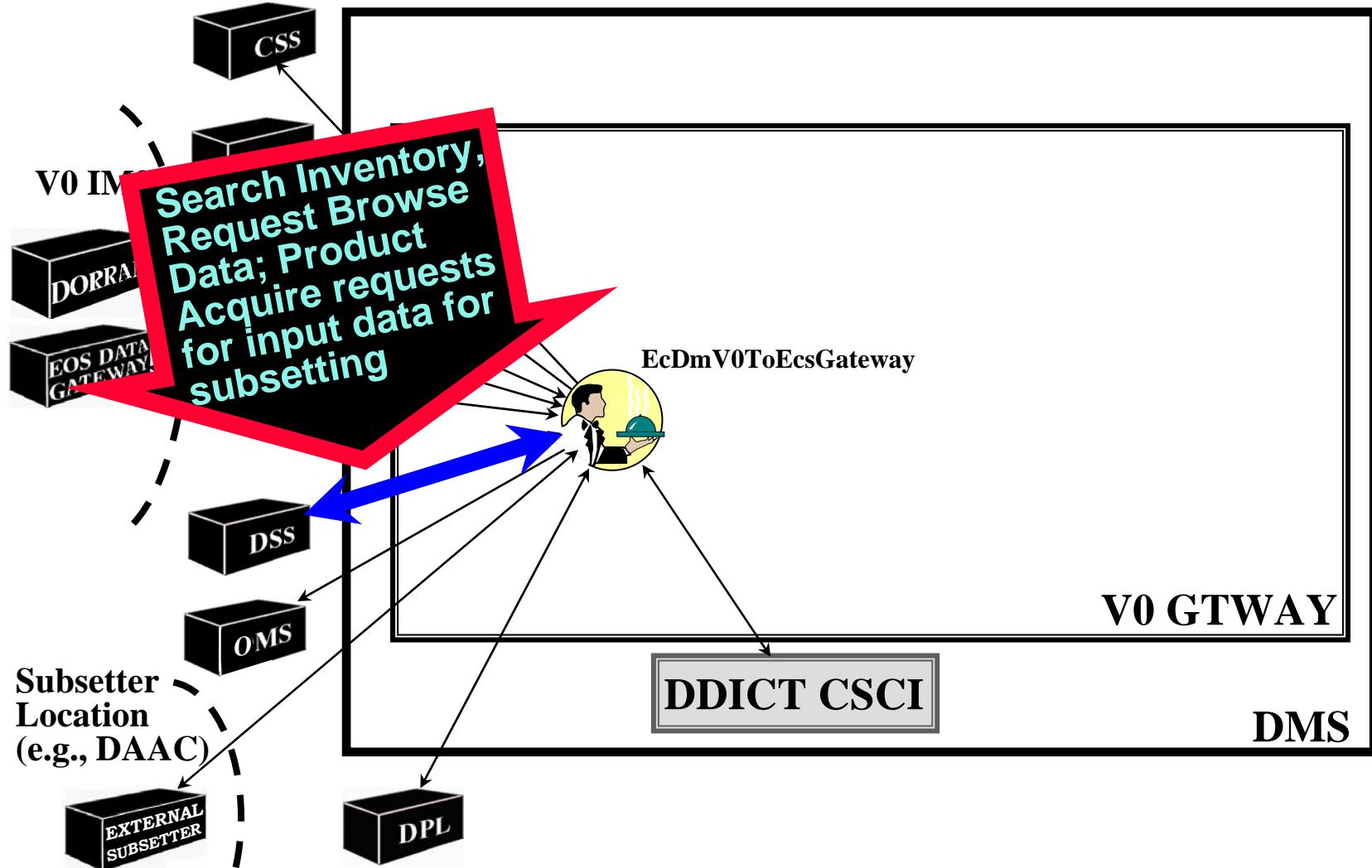
Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces



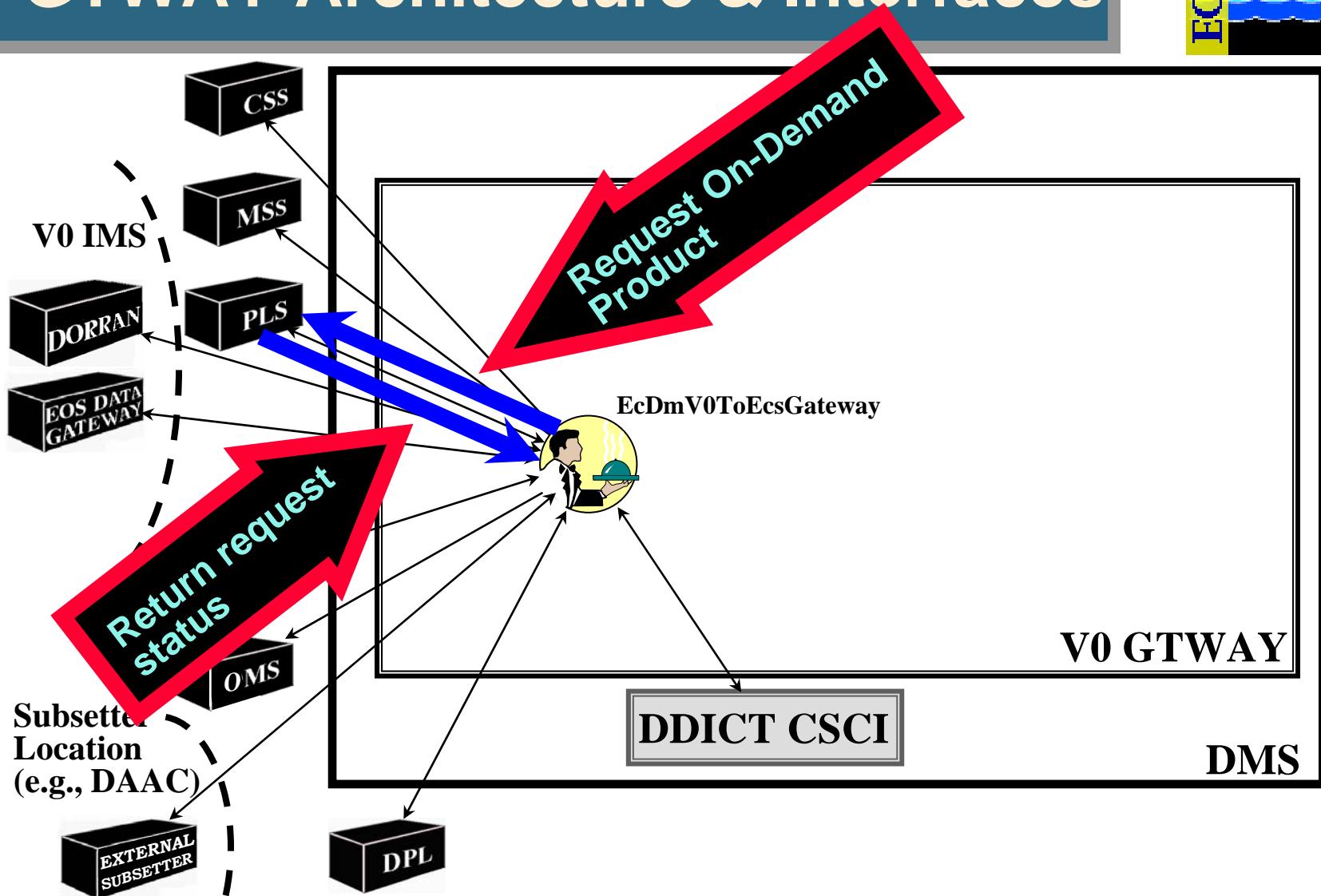
Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces



Subsystems and CSCIs: DMS (Cont.)

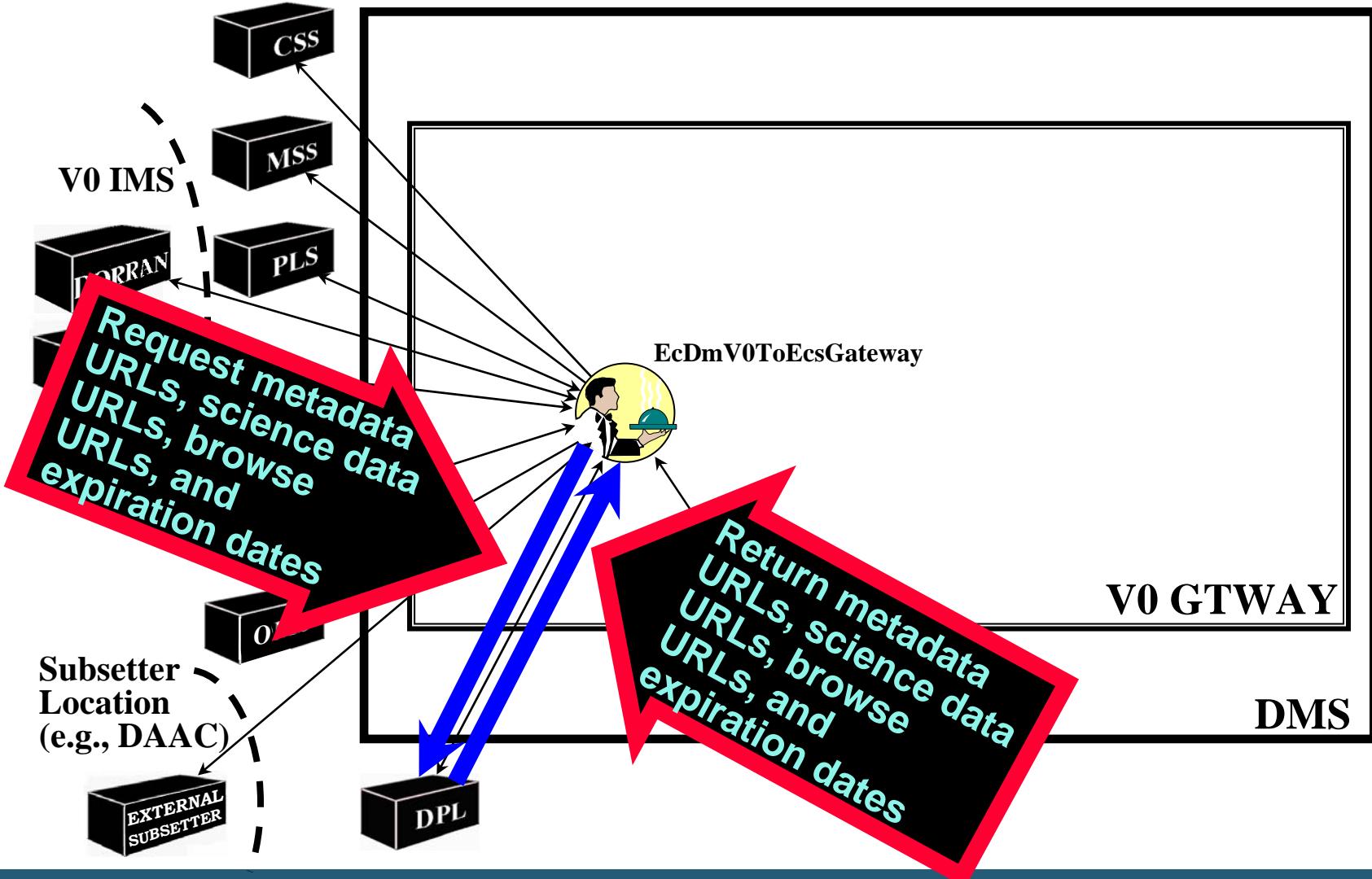
V0 GTWAY Architecture & Interfaces





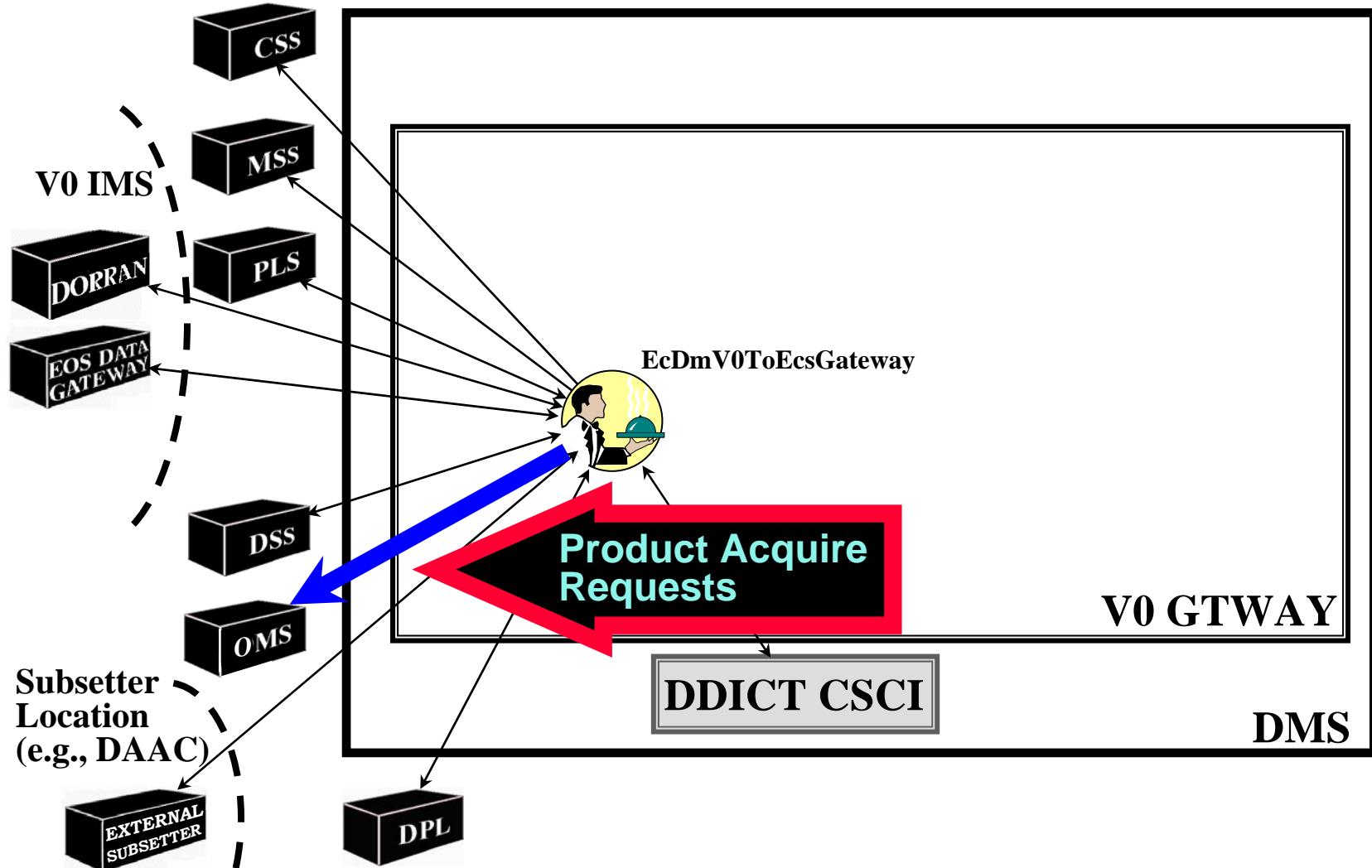
Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces



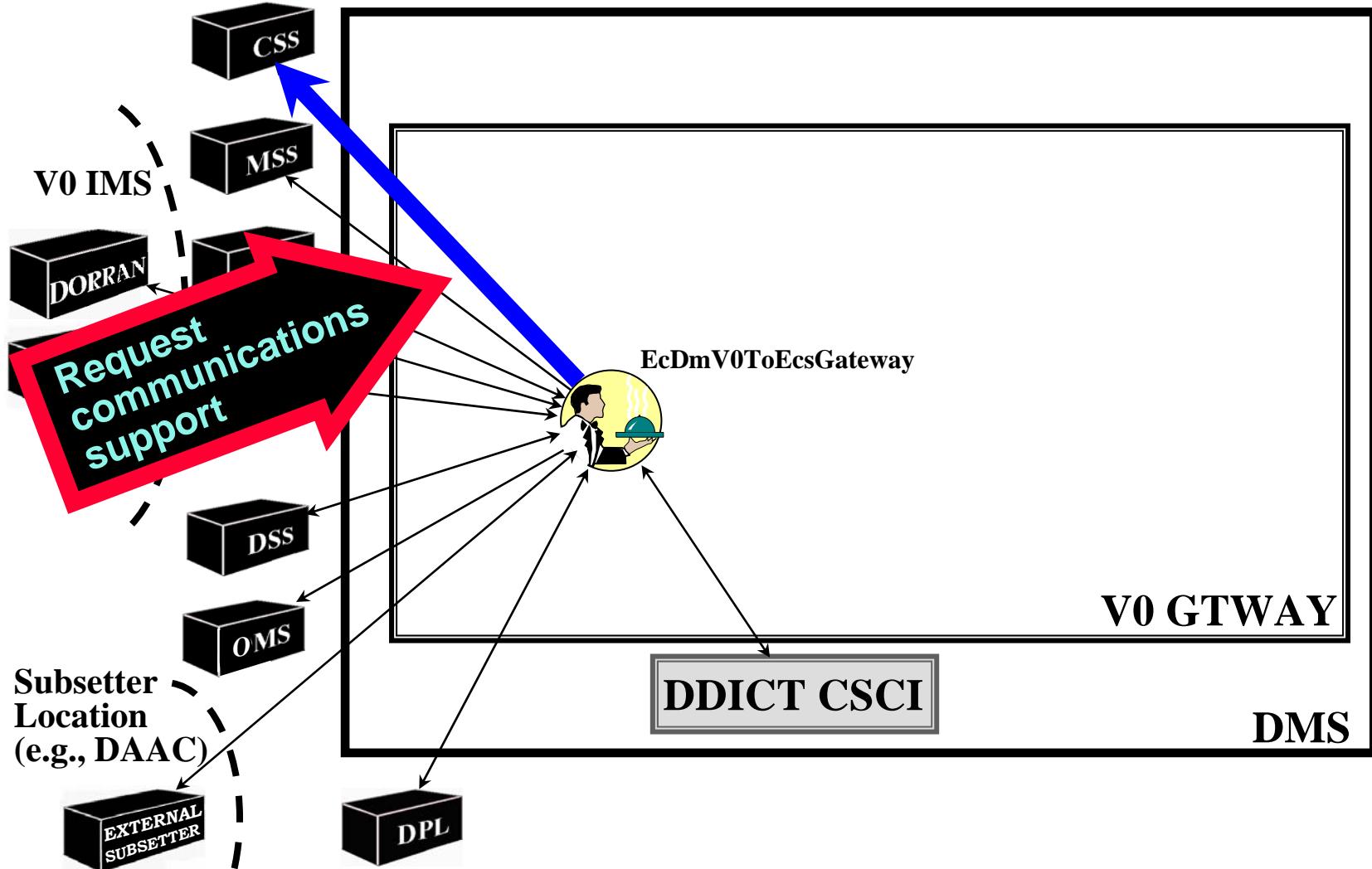
Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces



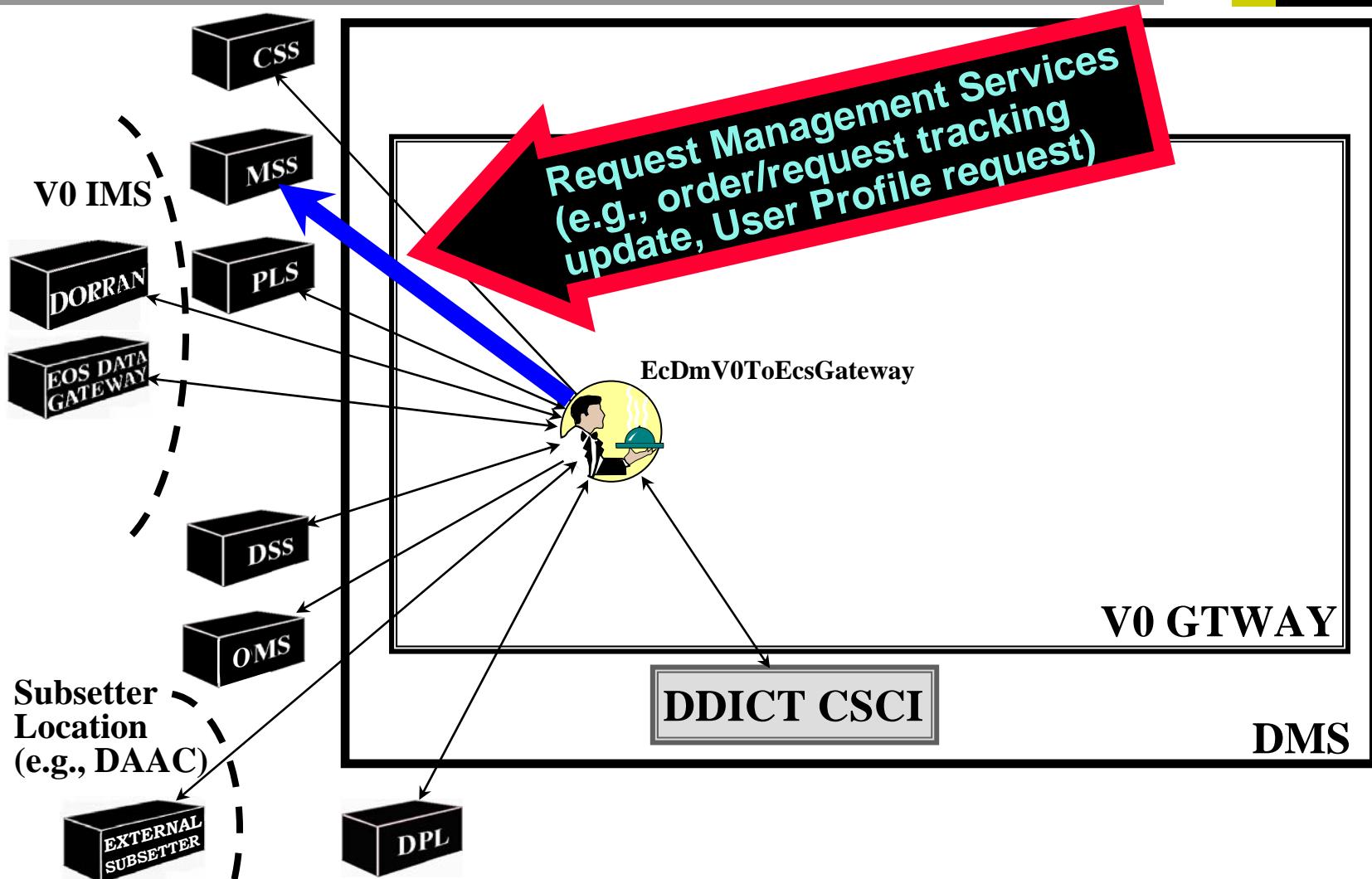
Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces

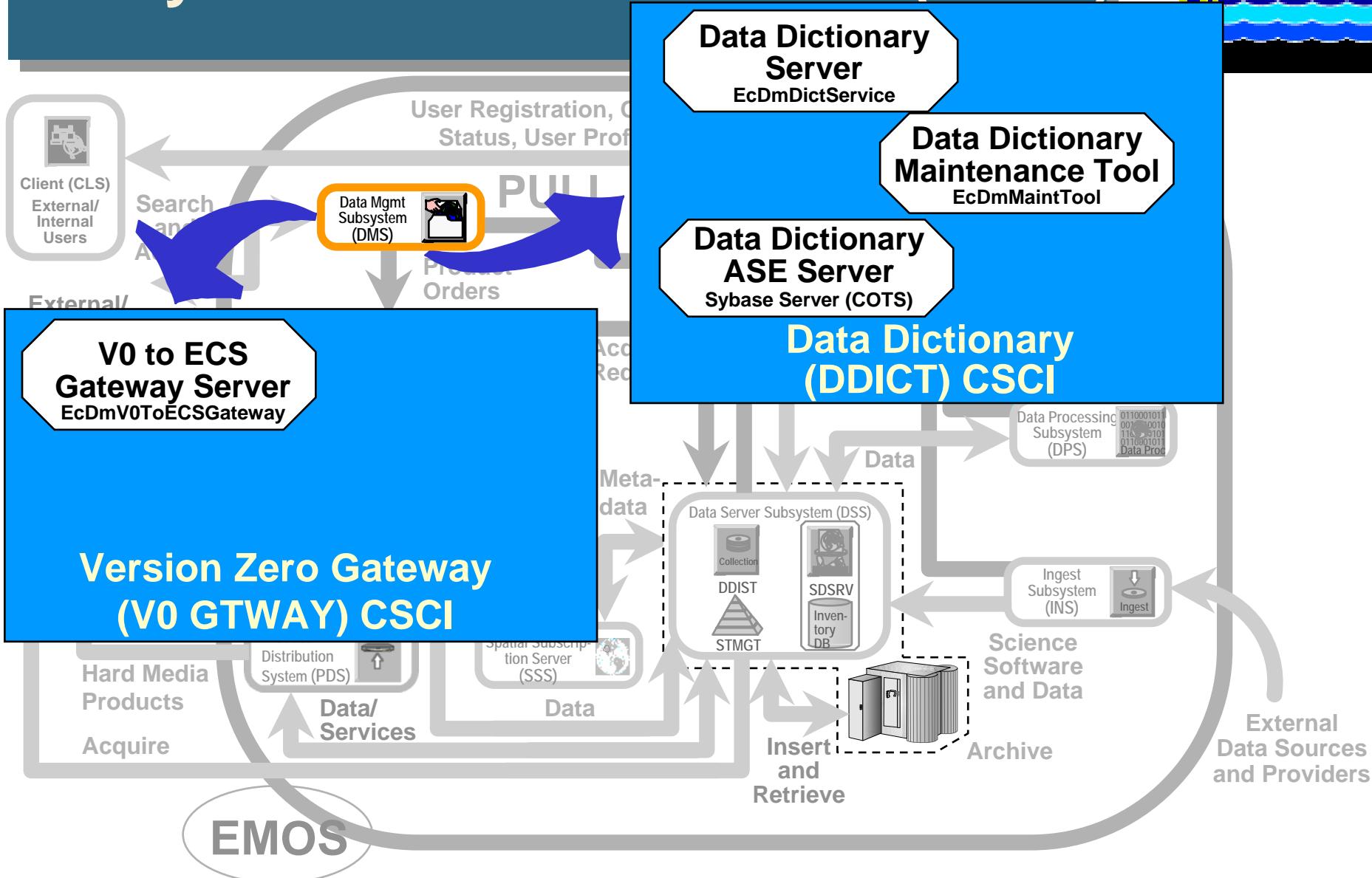


Subsystems and CSCIs: DMS (Cont.)

V0 GTWAY Architecture & Interfaces

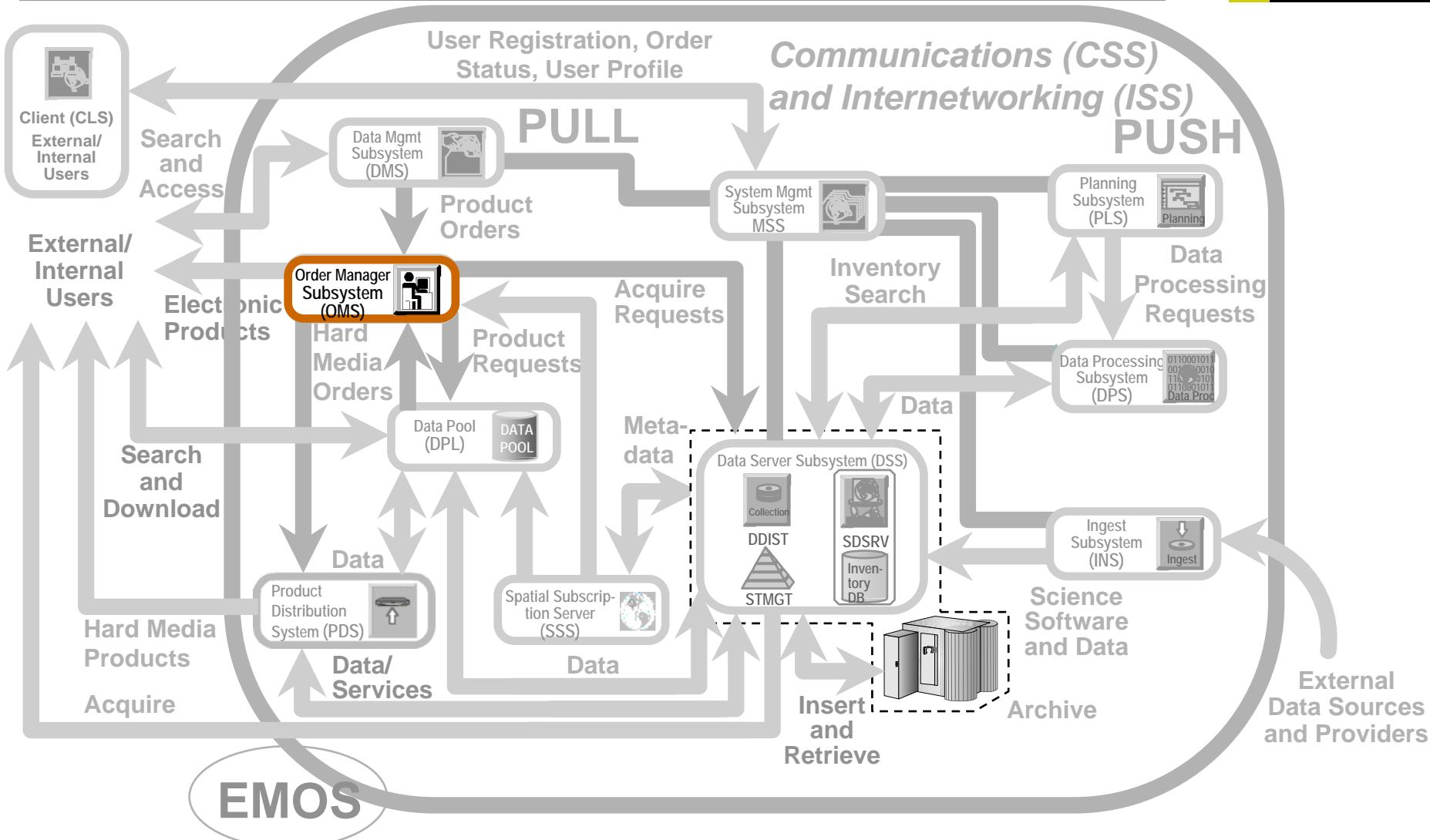


Subsystems and CSCIs: DMS (Cont.)





Subsystems and CSCIs: OMS



Subsystems and CSCIs: OMS



- **Order Manager Subsystem (OMS)**
 - Manages orders arriving via the following routes:
 - DMS V0 Gateway (i.e., from EDG, ECHO, and GDS users)
 - Spatial Subscription Server (NBSRV)
 - CSS Machine-to-Machine Gateway
 - SCLI
 - Data conversion (HEG) requests or media orders from the Data Pool Web Access GUI
 - Provides an Order Manager Server that receives the data distribution orders and forwards them to the appropriate ECS services
 - Orders for electronic distribution either filled from the Data Pool or sent to SDSRV (as appropriate)
 - Orders for media distribution sent to PDS
 - Provides a Graphical User Interface (GUI) for monitoring and controlling Order Manager operations

Order Manager
Subsystem
(OMS)



Subsystems and CSCIs: OMS



- Order Manager Subsystem (OMS) (Cont.)
 - Uses several COTS tools: RogueWave class libraries, Sybase Software Developer's Kit (formerly Open Client), Sybase ASE Server

Order Manager
Subsystem
(OMS)





Subsystems and CSCIs: OMS (Cont.)

- **Order Manager Server (OMSRV) CSCI**
 - Receives Product Distribution Requests from the various sources
 - Immediately stores request information in a relational Database Management System (DBMS)
 - Validates the requests for correctness (e.g., request size, media capacity, accessibility, validity of UR)
 - Queues HEG requests and dispatches individual line items to HEG services, which subset the individual line items
 - If the media type or ESDTs of a request are configured for Synergy III processing mode or the order manager server is configured for Synergy III mode, dispatches each validated request to the appropriate ECS order-fulfillment service; e.g., PDS or SDSRV, depending on whether the request is for physical media or electronic distribution



Subsystems and CSCIs: OMS (Cont.)

- Order Manager Server (OMSRV) CSCI (Cont.)
 - Otherwise, stages the order to Data Pool storage (and creates links from staged files to the FtpPull directory in the Data Pool storage if the distribution type is FtpPull), distributes the order to the appropriate service (i.e., Production Module or OMS Ftp Driver) depending on whether distribution type is media or FtpPush, then sends a Distribution Notice to the end user when the order is considered shipped
 - Fills valid electronic distribution requests from DPL or submits valid requests to SDSRV or PDS (as appropriate)
 - Generates Operator Interventions for invalid requests
 - Two major components
 - Order Manager Server - interacts with the Order Manager Database, Order Manager Ftp Push Server, Data Pool, Product Distribution System, and Science Data Server
 - Order Manager ASE Server - COTS database server



Subsystems and CSCIs: OMS (Cont.)

- **Order Manager GUI (OMGUI) CSCI**
 - Based on web standards
 - Communicates directly with the Order Manager Service database (not through a server)
 - Permits monitoring and control of the OMSRV (e.g., view operator alerts, view status of queues, suspend and resume queues, view and modify configuration parameters, monitor statistics)
 - Monitor open Operator Interventions for invalid requests; manage interventions; view closed interventions; view, cancel, suspend, resume, or resubmit distribution requests; view order information and user profile data; view, update, or cancel bundling orders
 - One major component
 - Order Manager GUI - interacts with the Order Manager Database

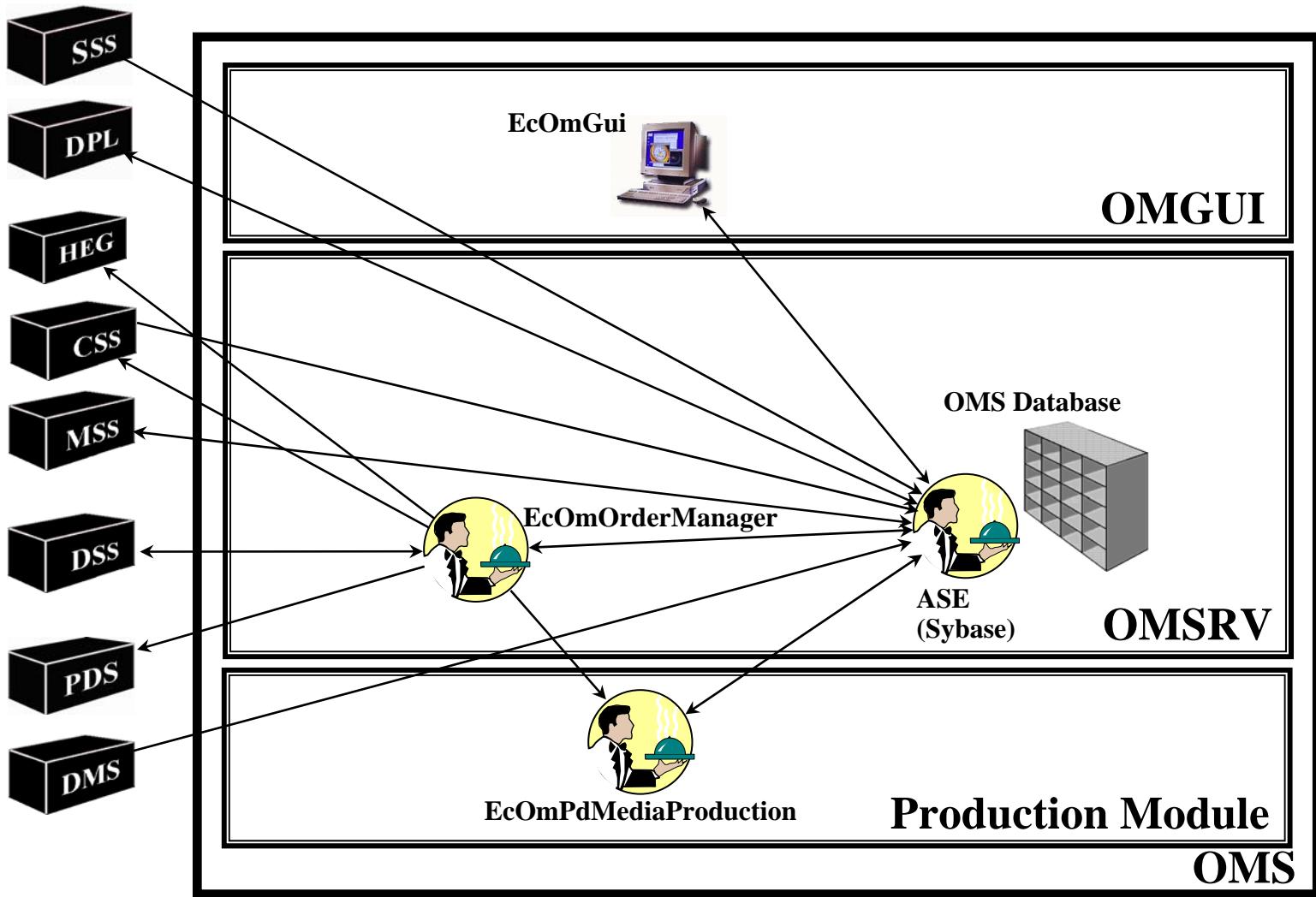


Subsystems and CSCIs: OMS (Cont.)

- Production Module CSCI
 - Processes physical media distribution (PMD) requests (Synergy V feature)
 - One major component
 - **EcOmPdMediaProduction** - processes product distribution requests on physical media

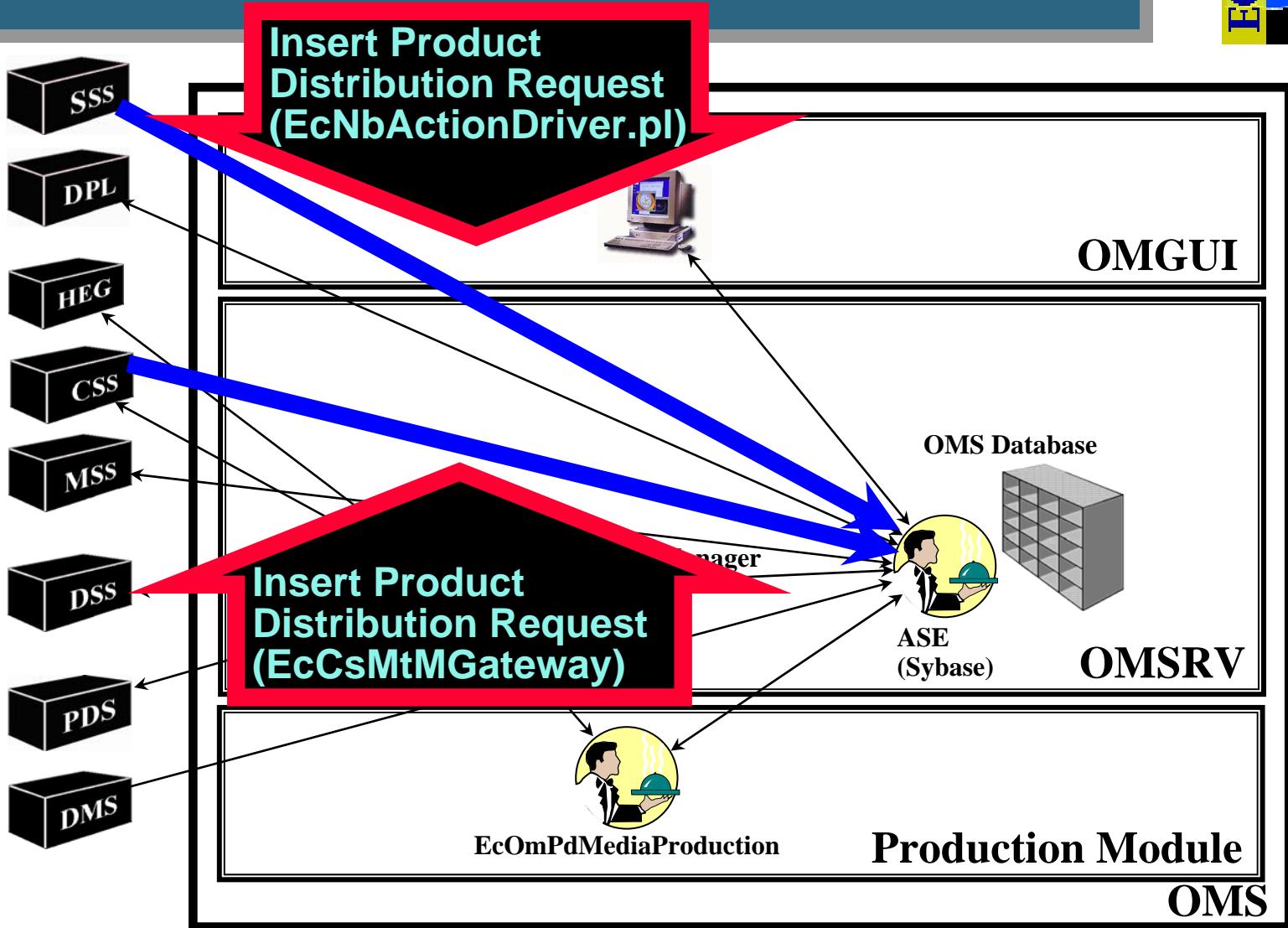
Subsystems and CSCIs: OMS (Cont.)

OMS Architecture and Interface



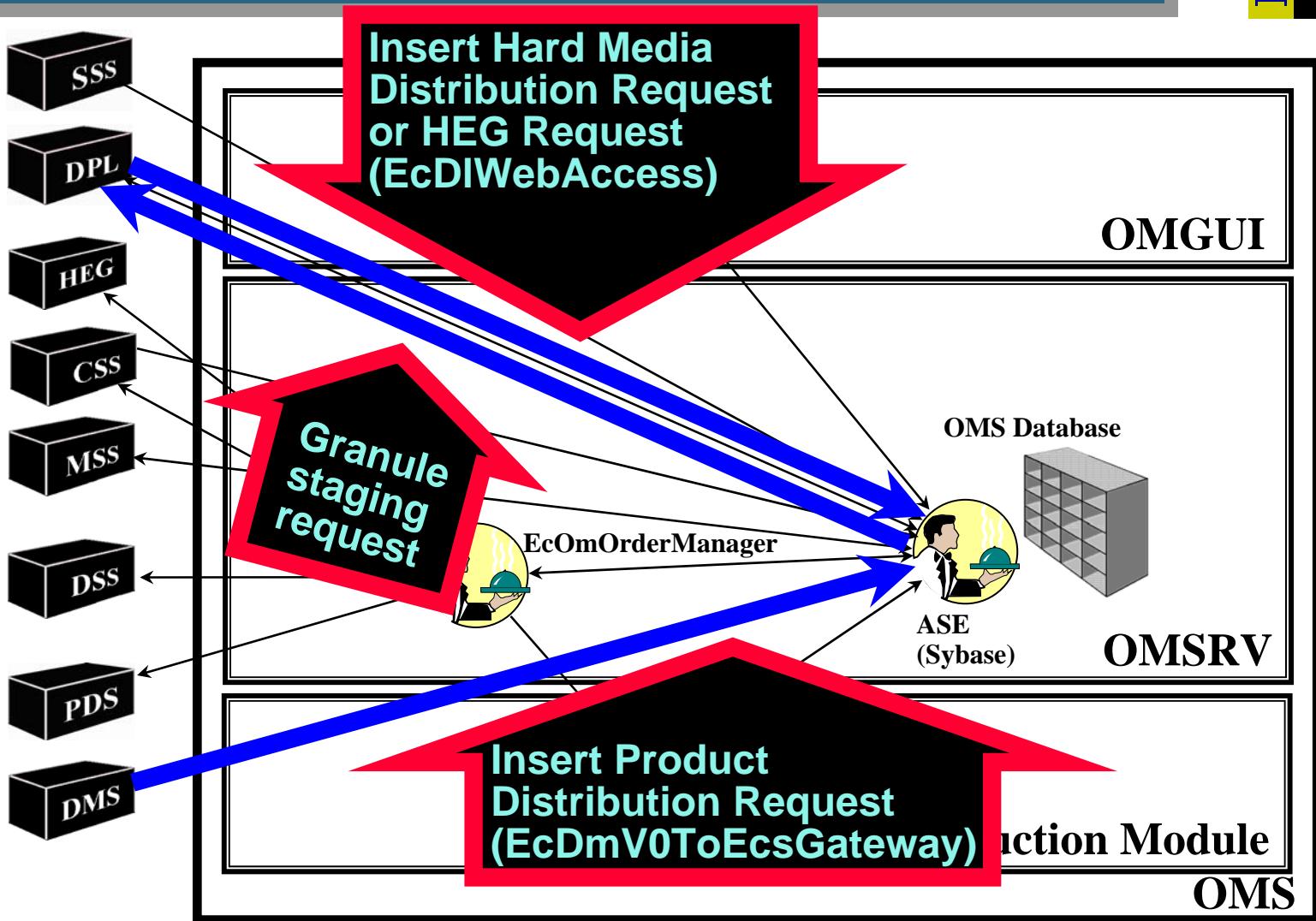
Subsystems and CSCIs: OMS (Cont.)

OMS Architecture and Interface



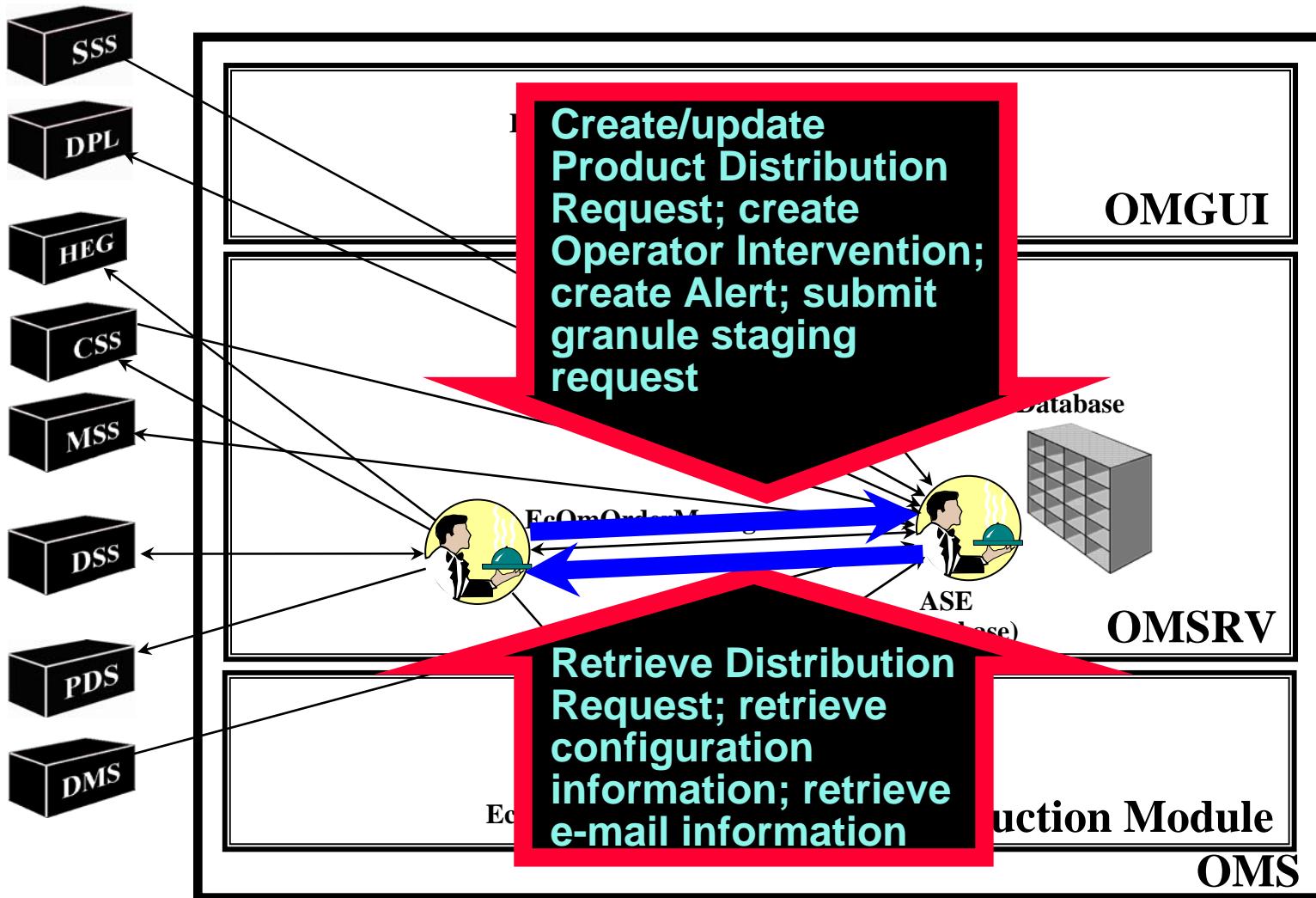
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OMS Architecture and Interface



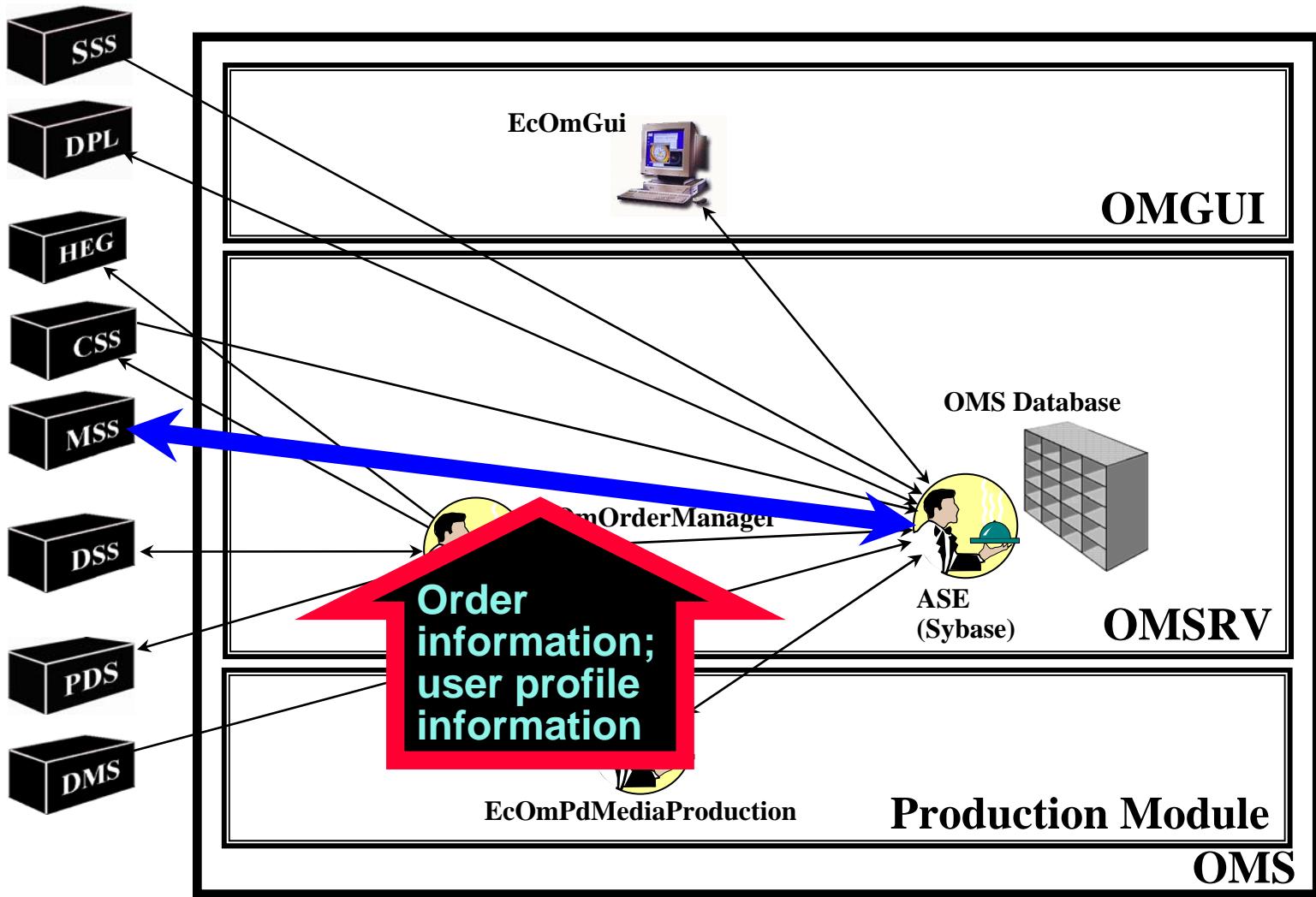
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OMS Architecture and Interface



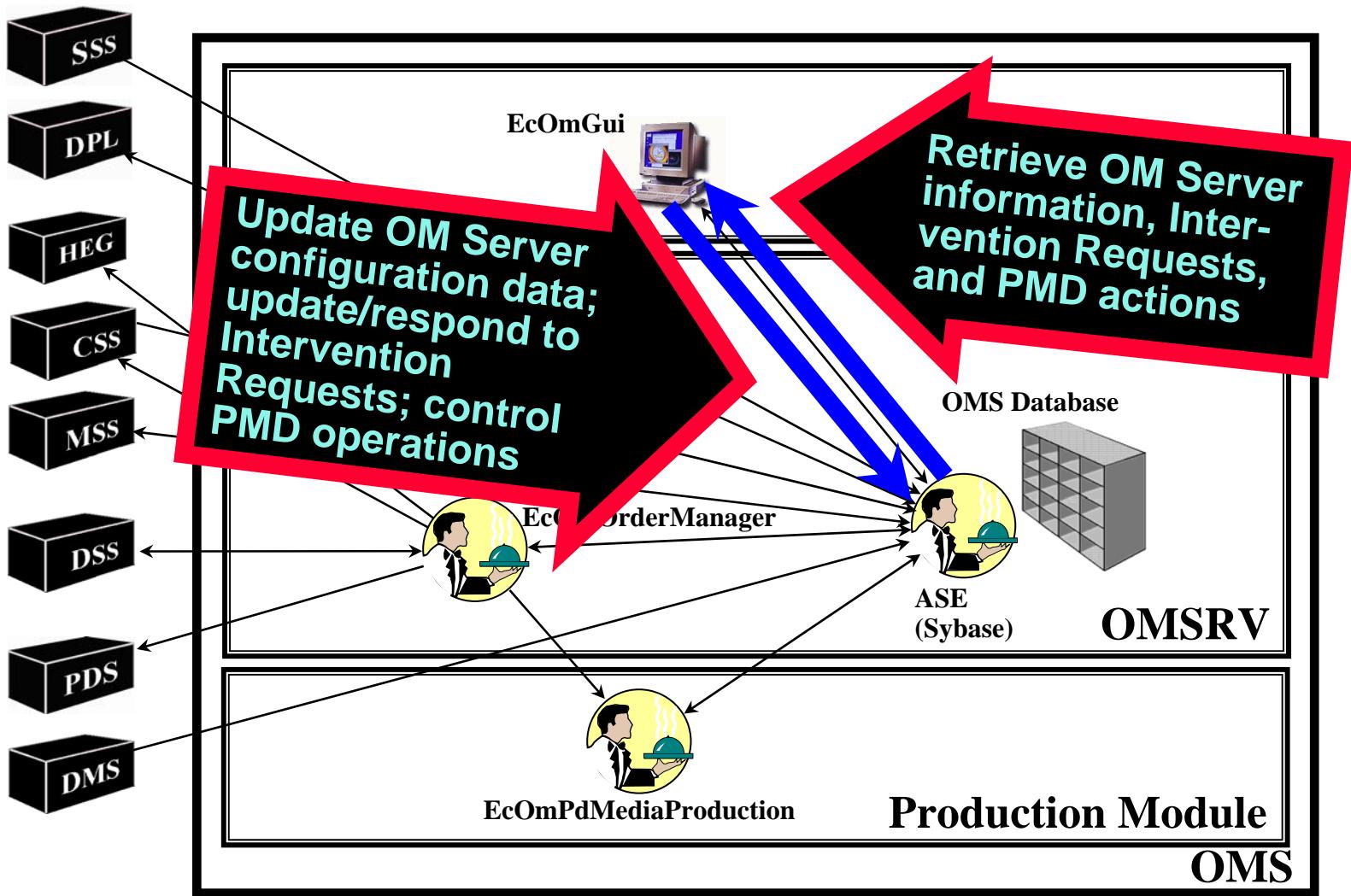
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OMS Architecture and Interface



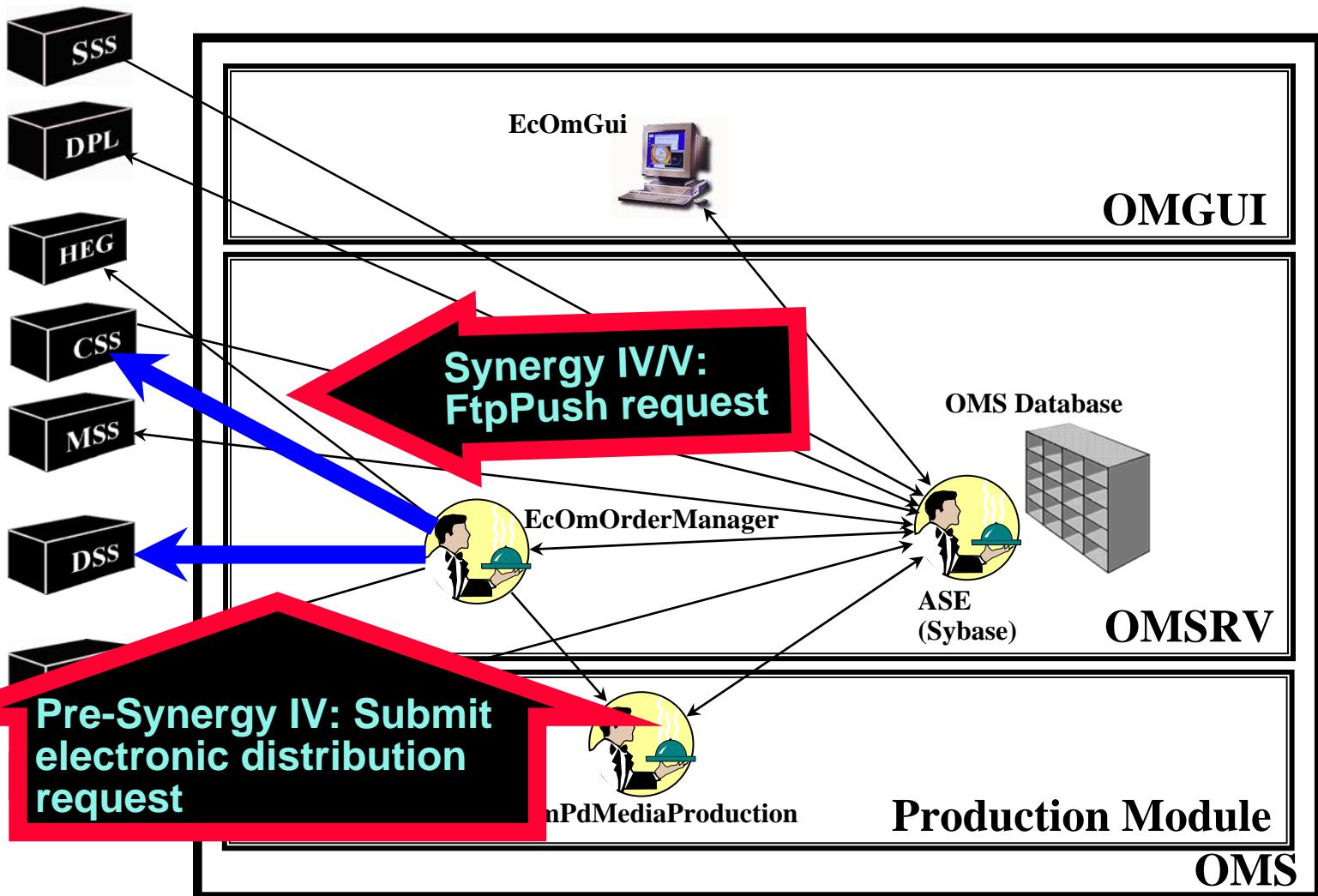
Subsystems and CSCIs: OMS (Cont.)

OMS Architecture and Interface



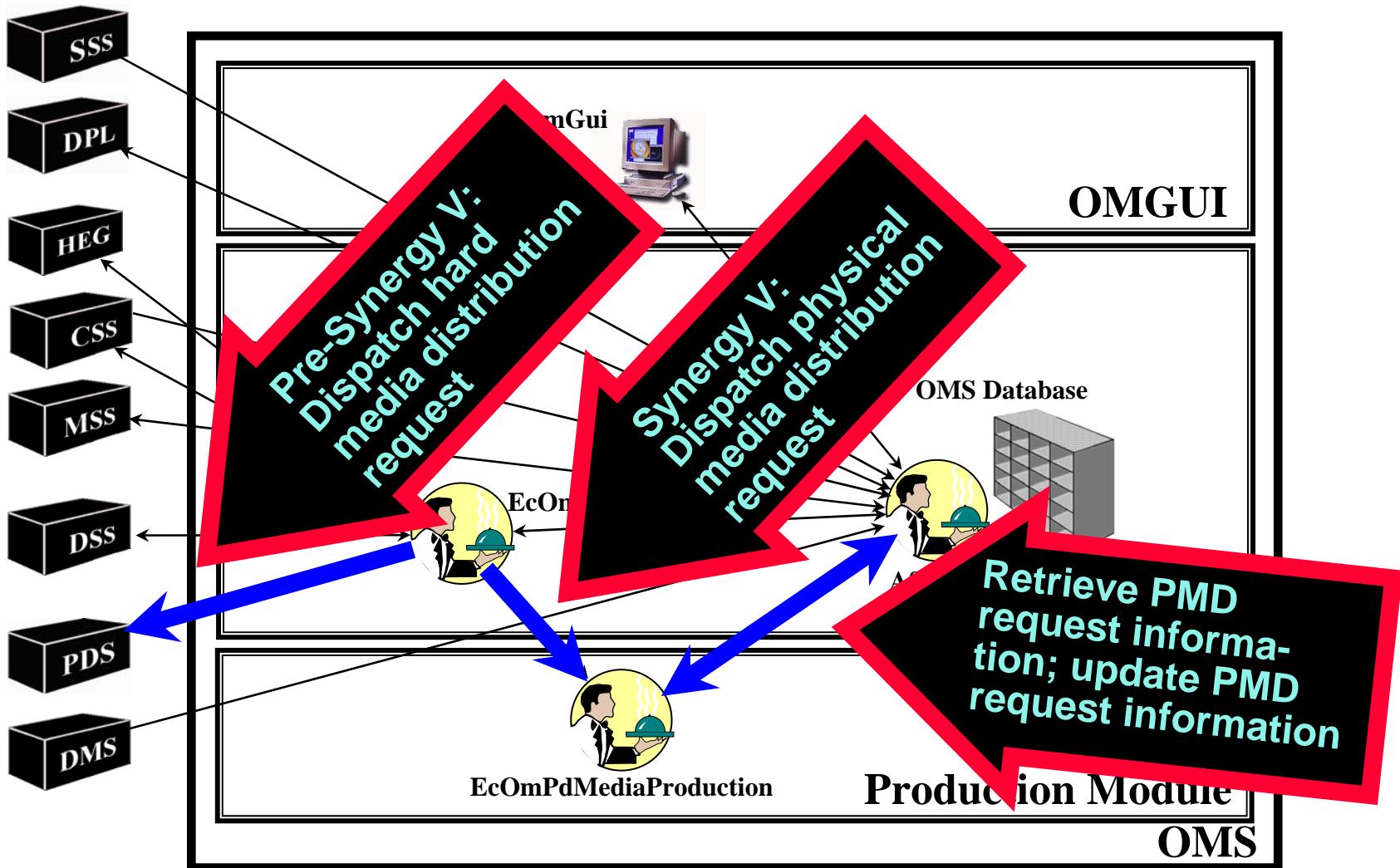
Subsystems and CSCIs: OMS (Cont.)

OMS Architecture and Interface



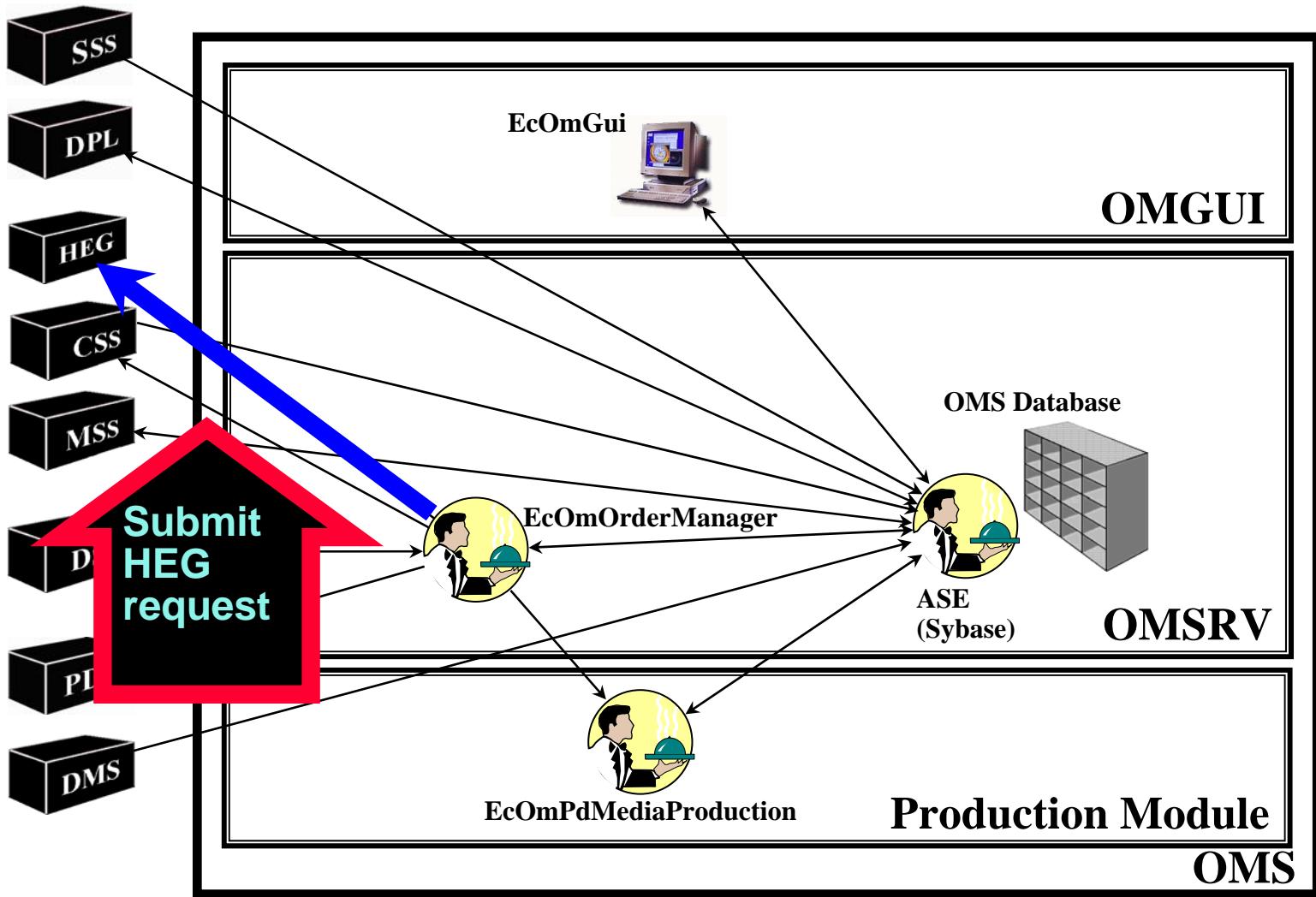
Subsystems and CSCIs: OMS (Cont.)

OMS Architecture and Interface



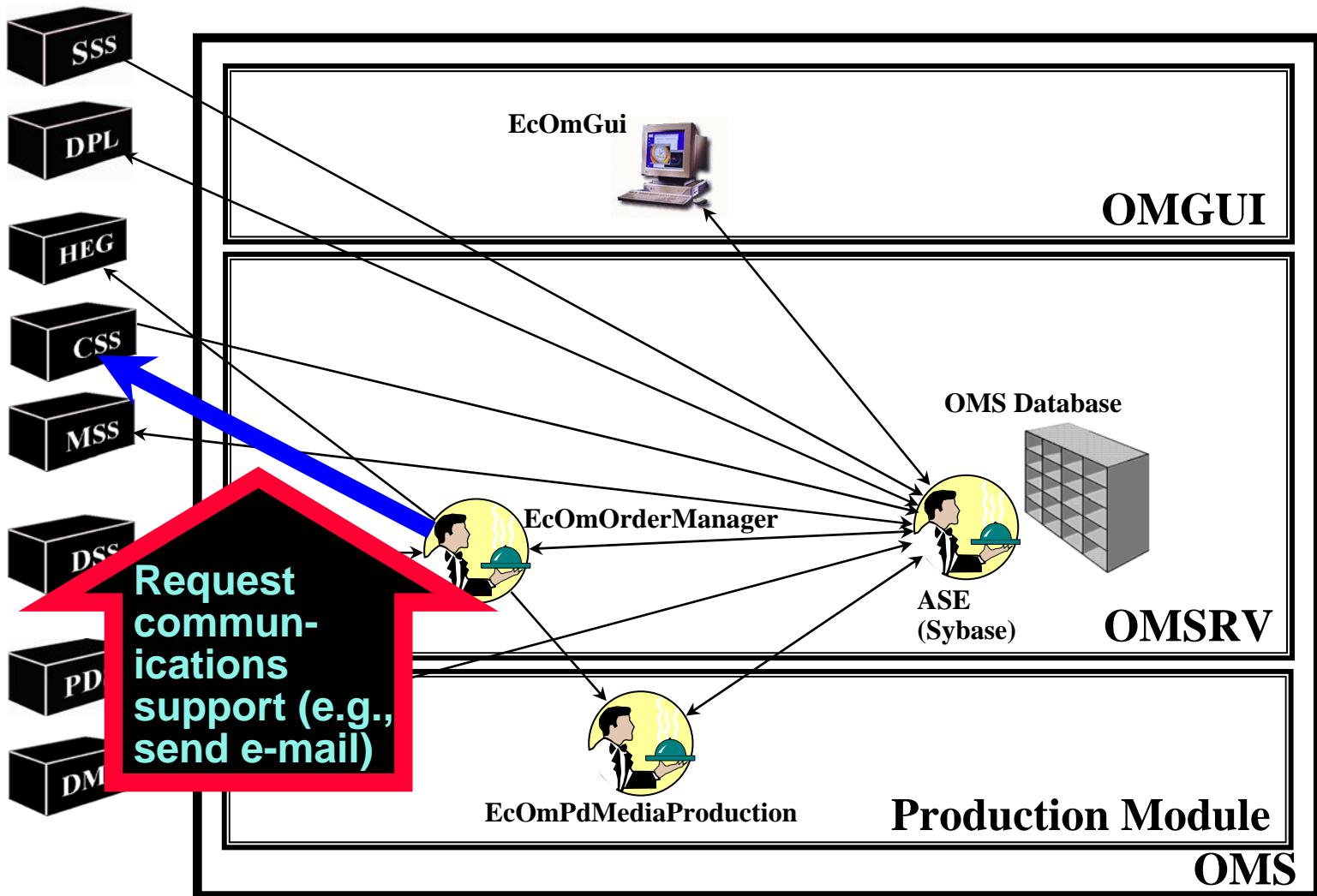
Subsystems and CSCIs: OMS (Cont.)

OMS Architecture and Interface



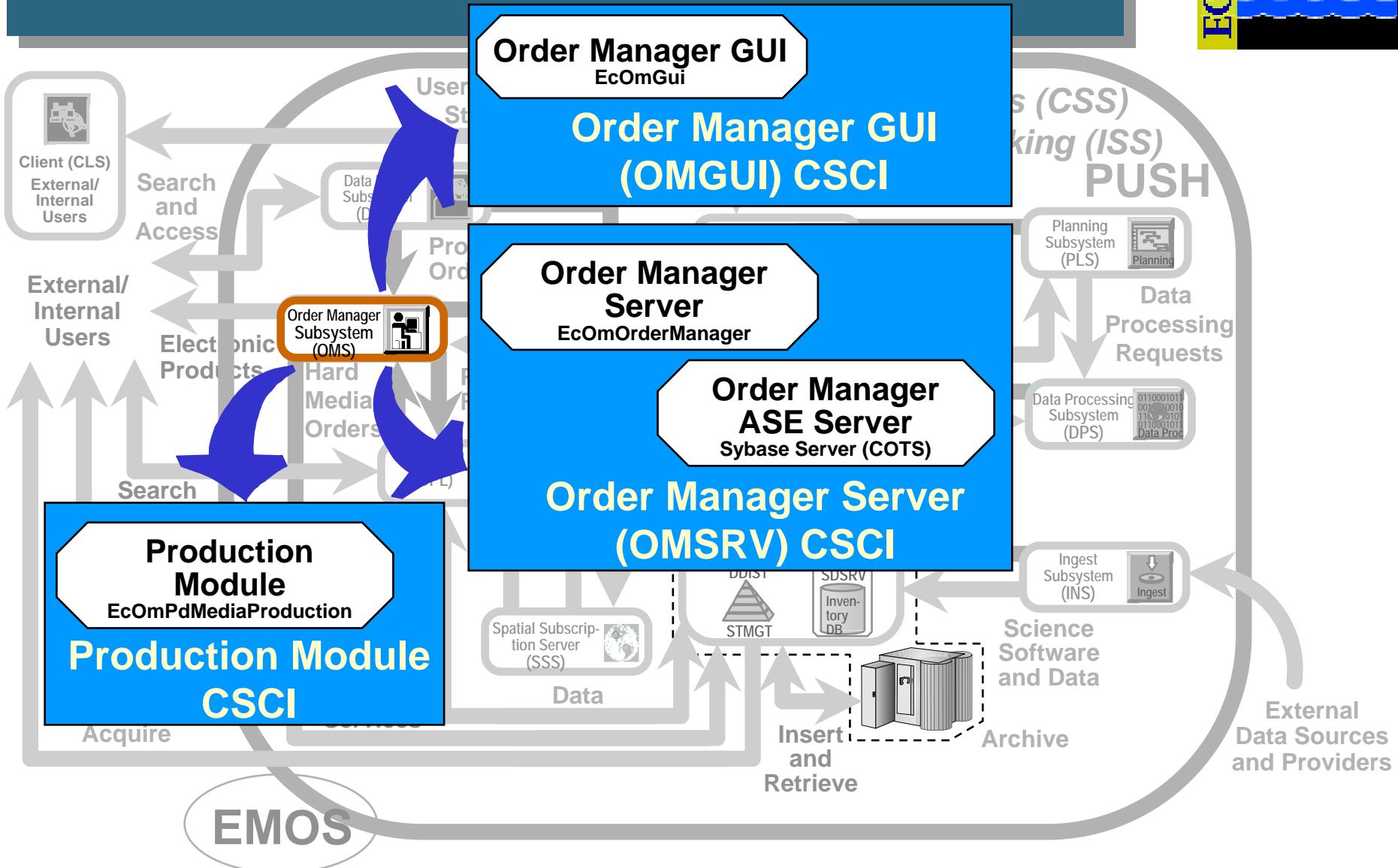
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OMS Architecture and Interface



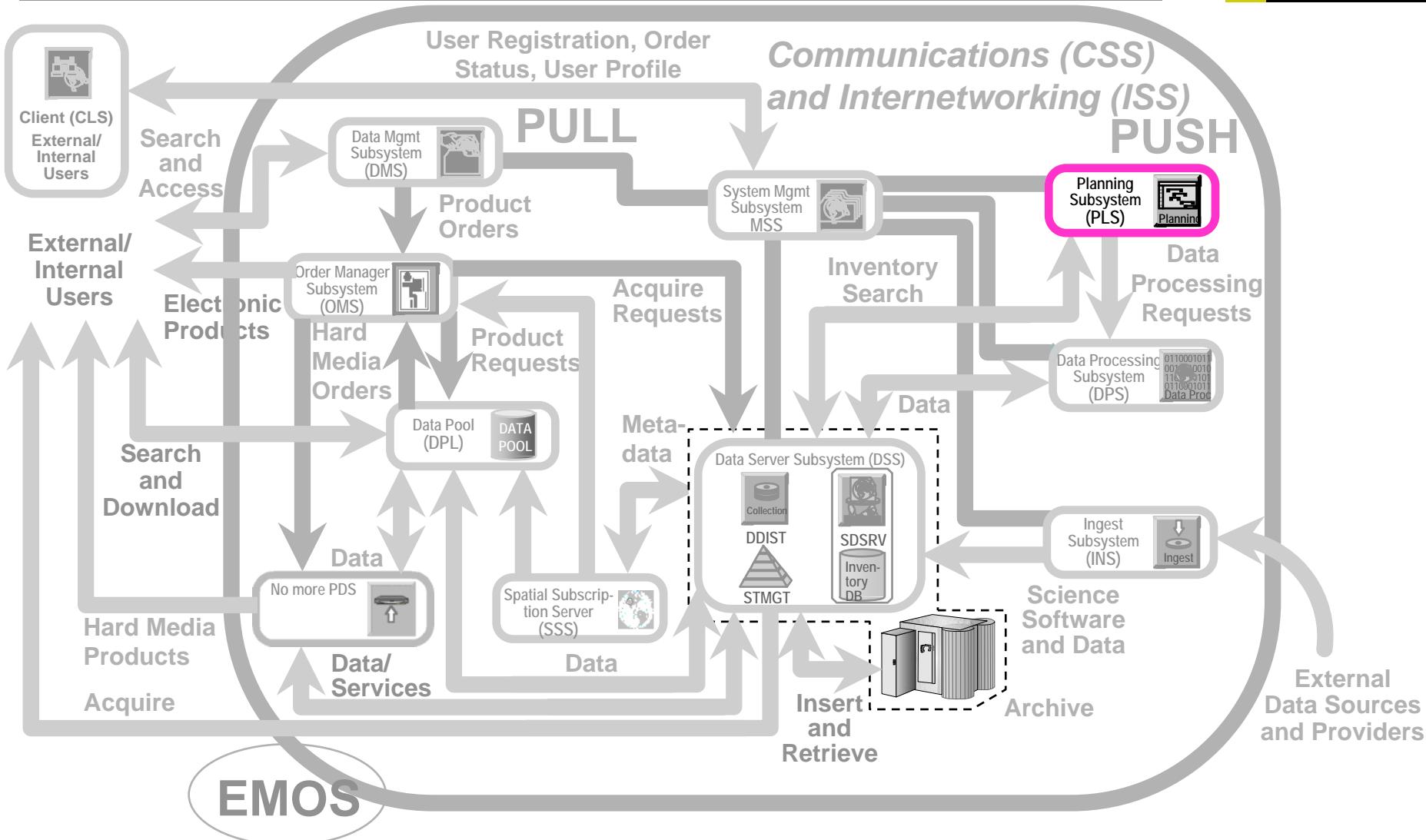


Subsystems and CSCIs: OMS (Cont.)





Subsystems and CSCIs: PLS





Subsystems and CSCIs: PLS

- **Planning Subsystem (PLS)**



- Allows operations staff to define data processing tasks to be performed at a site
- Generates efficient plans for scheduling defined data processing and reprocessing tasks according to production rules that define how a Product Generation Executive (PGE) is to run
- Coordinates production with the Data Server and Data Processing subsystems to achieve a highly automated production system
- Interfaces with the Algorithm Integration and Test Tools CSCI within DPS for information on PGEs
- Permits entry of Production Requests and generates resulting Data Processing Requests (DPRs)
- Uses a set of Raytheon-provided COTS libraries as a basis for its scheduling components (Resource Planning Workbench and Production Planning Workbench)

Subsystems and CSCIs: PLS (Cont.)



- Production Planning (PLANG) CSCI
 - Eight major components
 - Data Store - handles insertion of data for planning and processing activities into the PDPS shared database
 - Resource Planning Workbench - GUIs for preparing a site resource schedule [Resource Editor (EcPIRpRe), Scheduling Interface (EcPIRpSi), Timeline (EcPIRpTi)]
 - Production Request Editor - GUI for submitting production requests that describe the data products to be produced; uses PGE descriptions to generate the DPRs necessary to meet the requests (EcPIPREditor_IF)
 - Production Planning Workbench - GUIs and a script for preparing a site production schedule [Workbench (EcPIWb), Timeline (EcPITI) and Chain Determination (EcPIDetermineChain.pl)]
 - On-Demand Production Request Manager - receives requests for data from the scientist via the EDG web page, generates the necessary Production Request, submits it for processing, and distributes the data to the scientist (EcPIOdMgr)

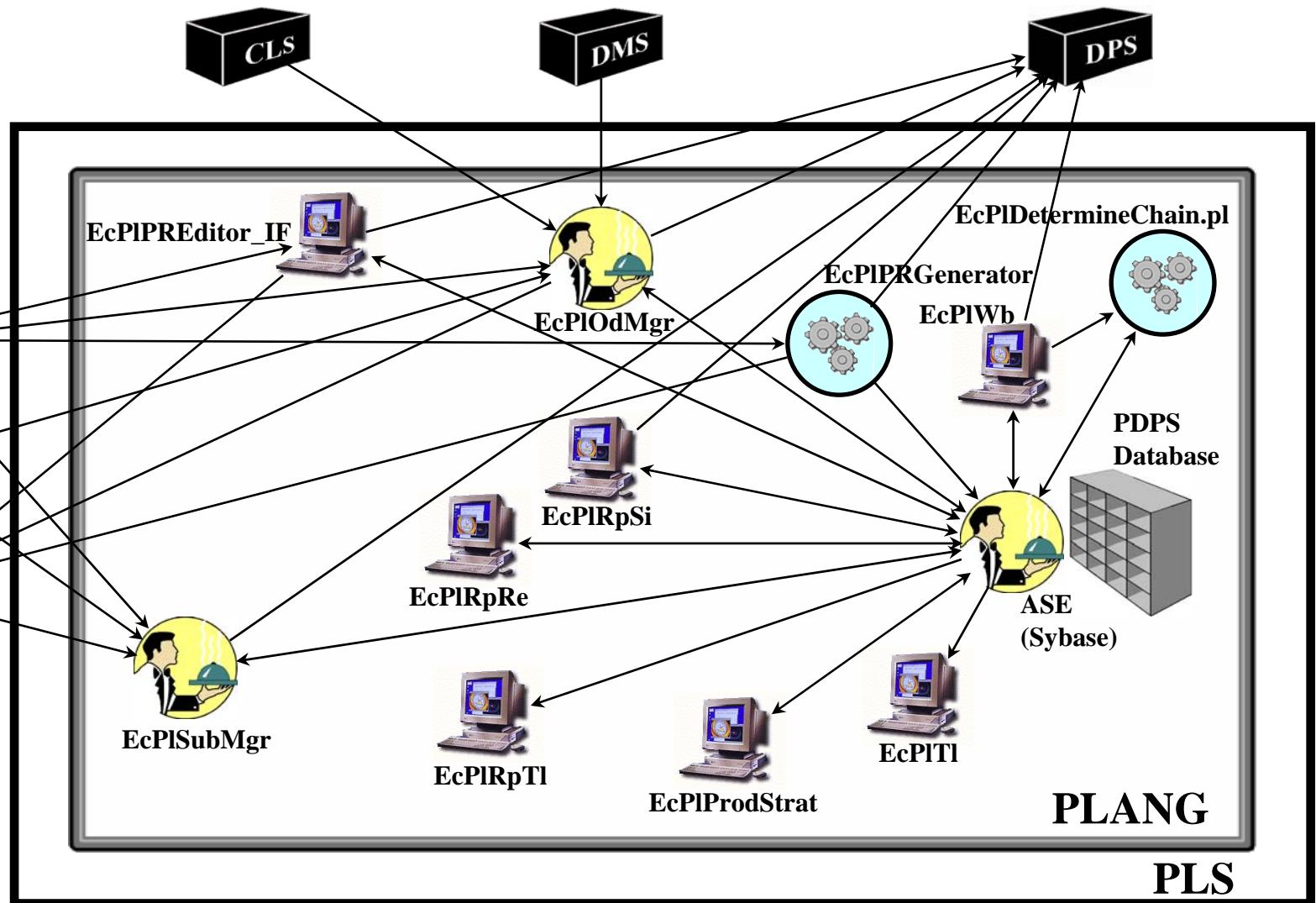
Subsystems and CSCIs: PLS (Cont.)



- Production Planning (PLANG) CSCI (Cont.)
 - Eight major components (Cont.)
 - Production Request Generator - command-line interface for creating production requests (EcPIPRGenerator)
 - Subscription Manager - server to manage receipt of subscription notifications from the Data Server via SBSRV (EcPISubMgr)
 - Production Strategies GUI - used to create a set of planning priorities to be applied to each DPR in a plan (EcPIProdStrat)

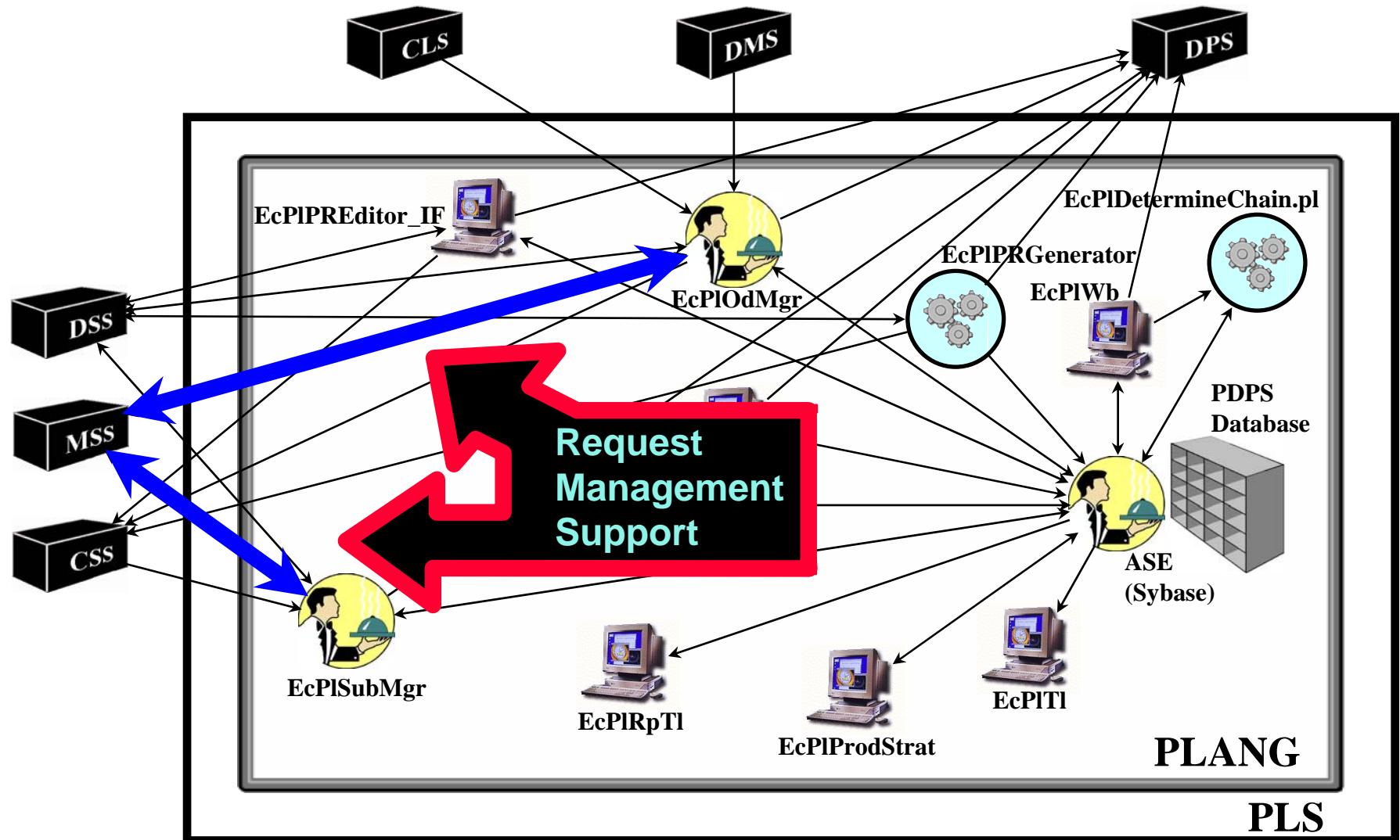
Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces



Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces

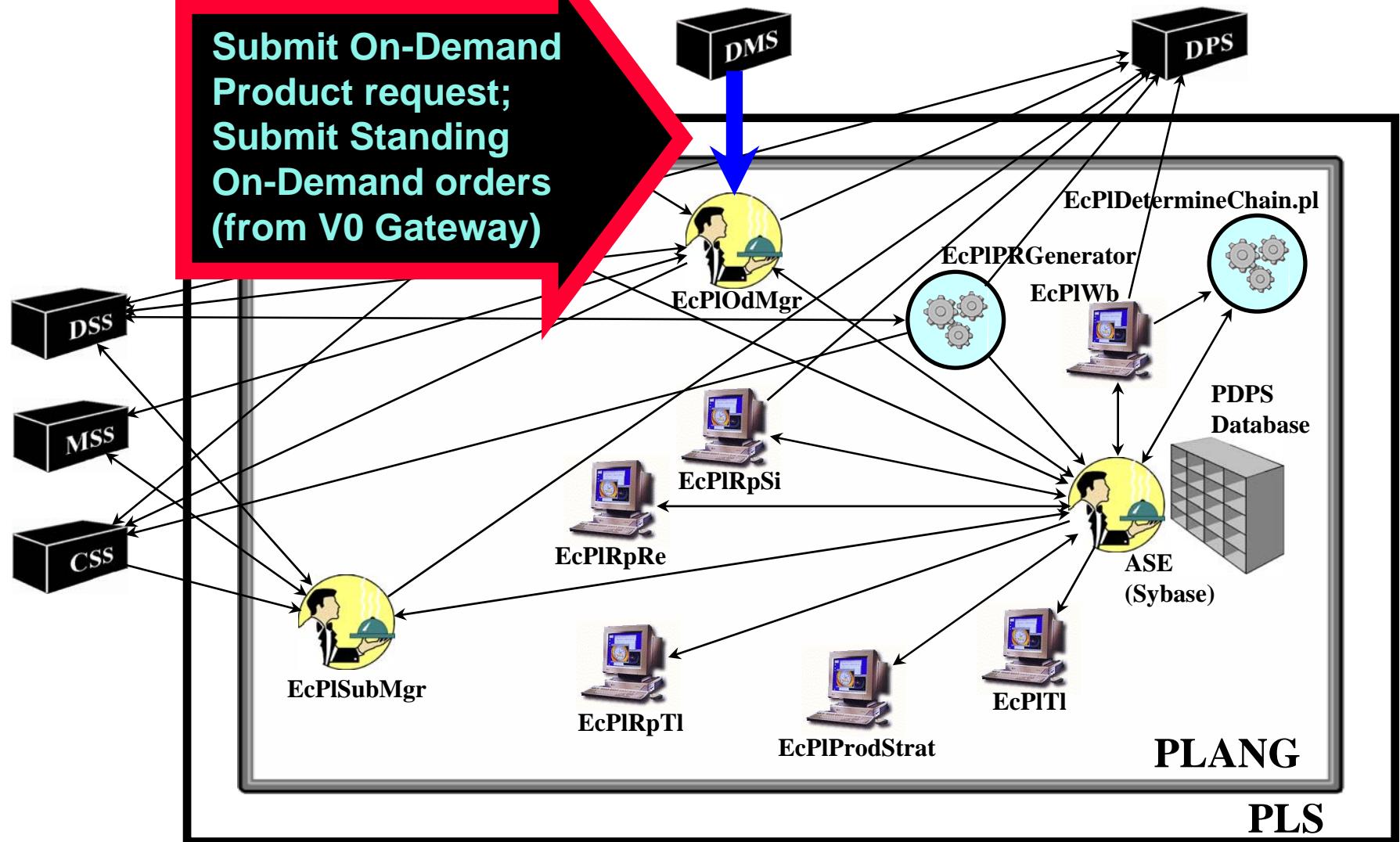


Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces



**Submit On-Demand Product request;
Submit Standing On-Demand orders
(from V0 Gateway)**



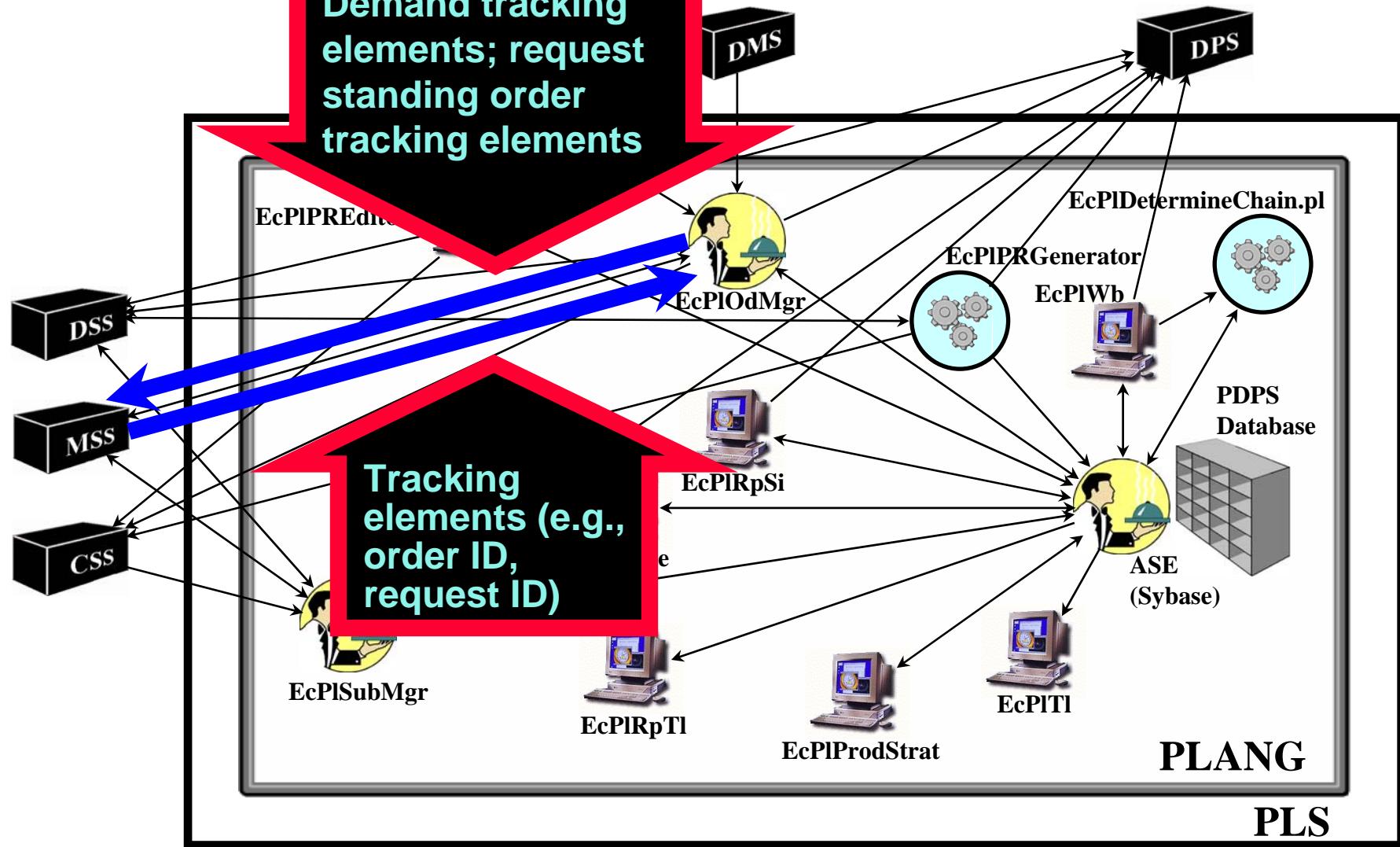
Subsystems and CSCIs: PLS (Cont.)

PLANG Application and Interfaces



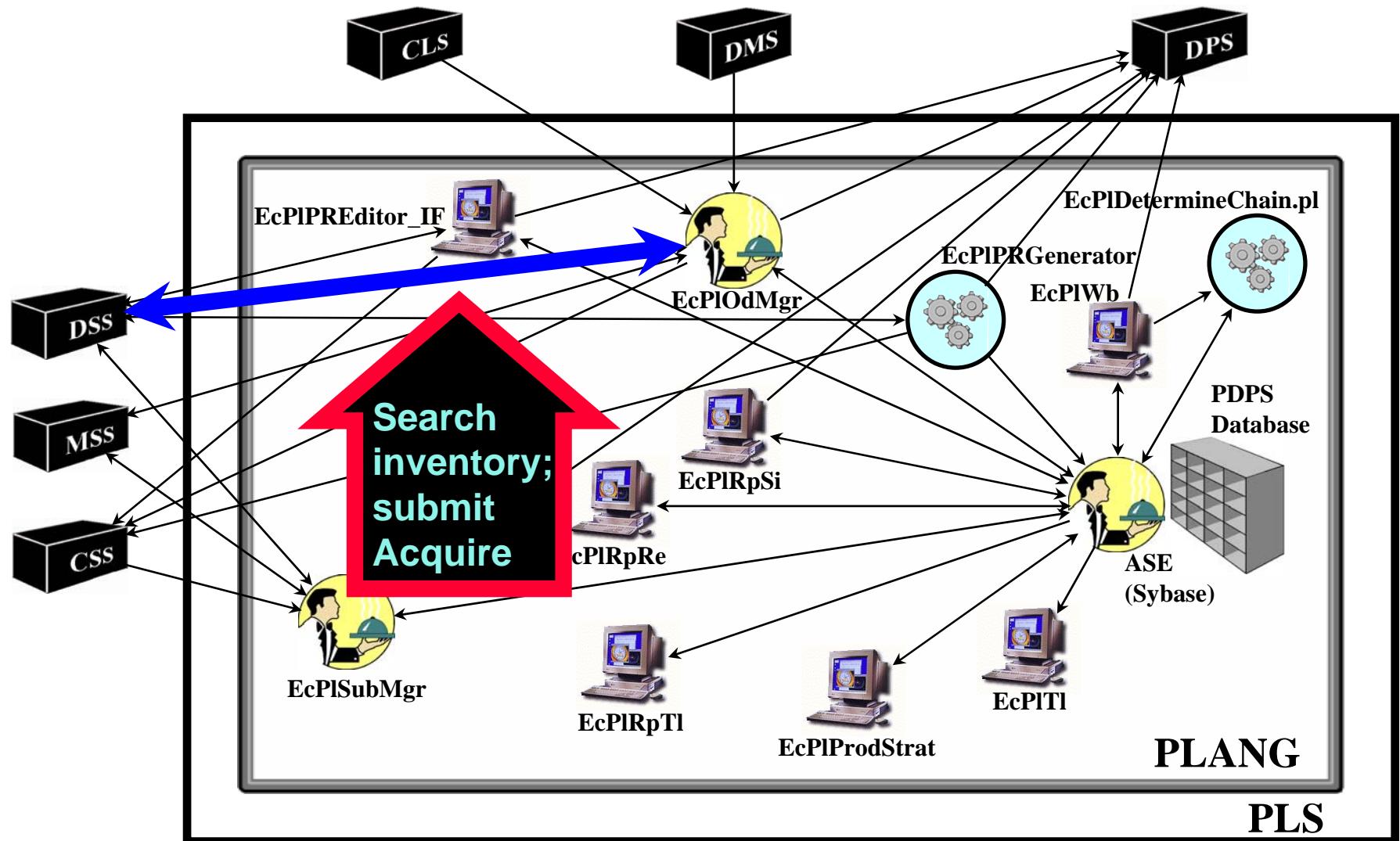
Request On-Demand tracking elements; request standing order tracking elements

Tracking elements (e.g., order ID, request ID)



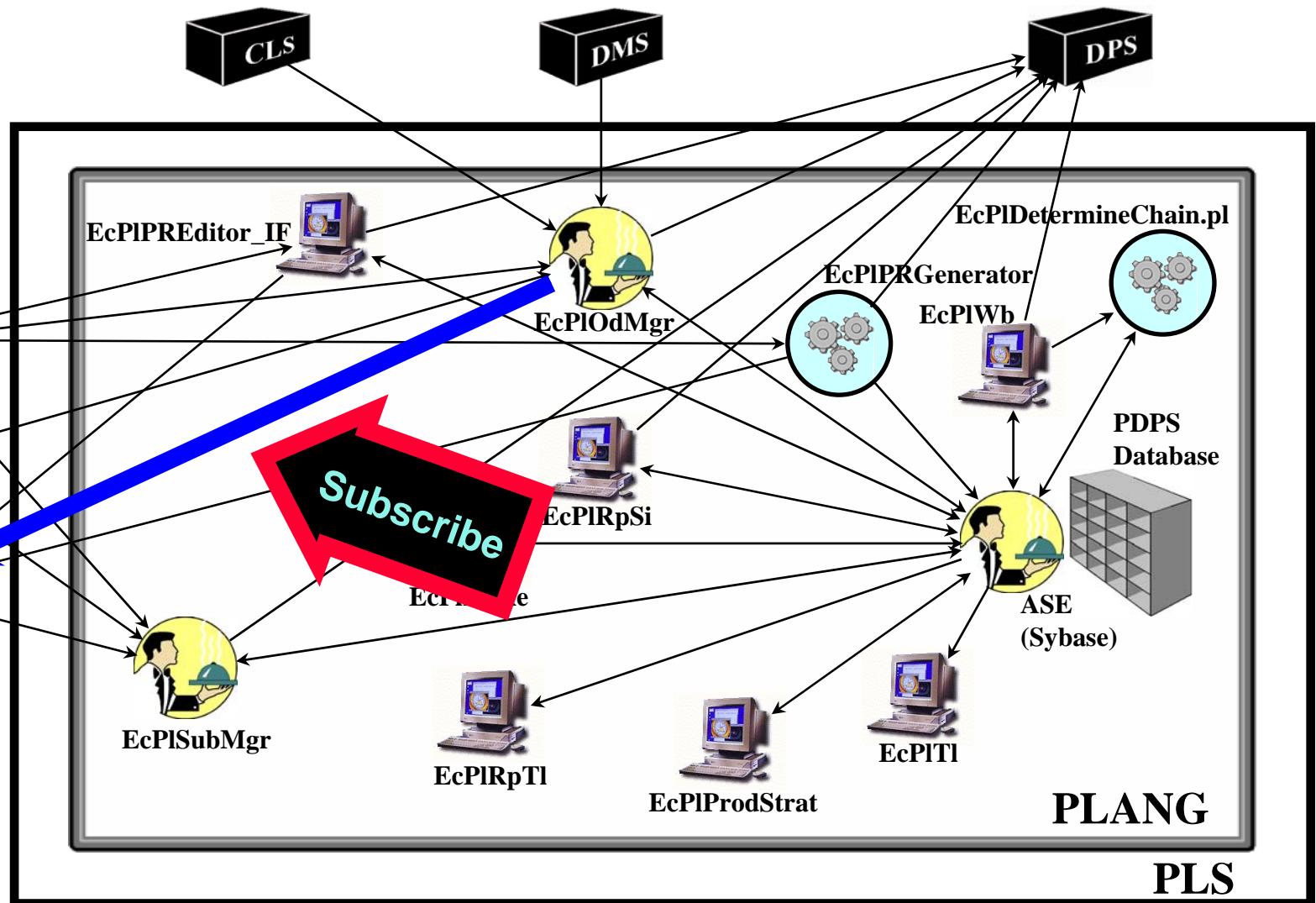
Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces



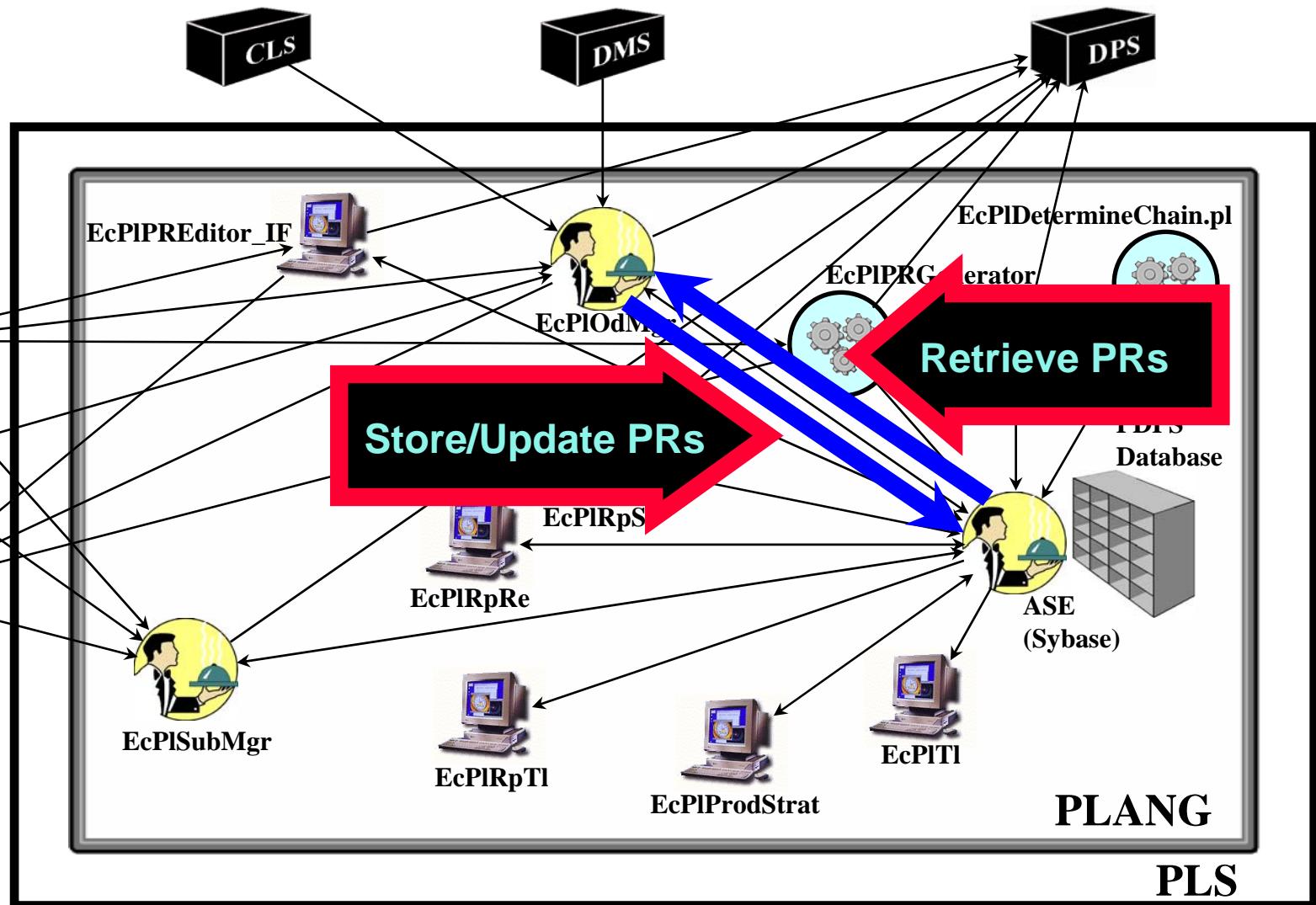
Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces



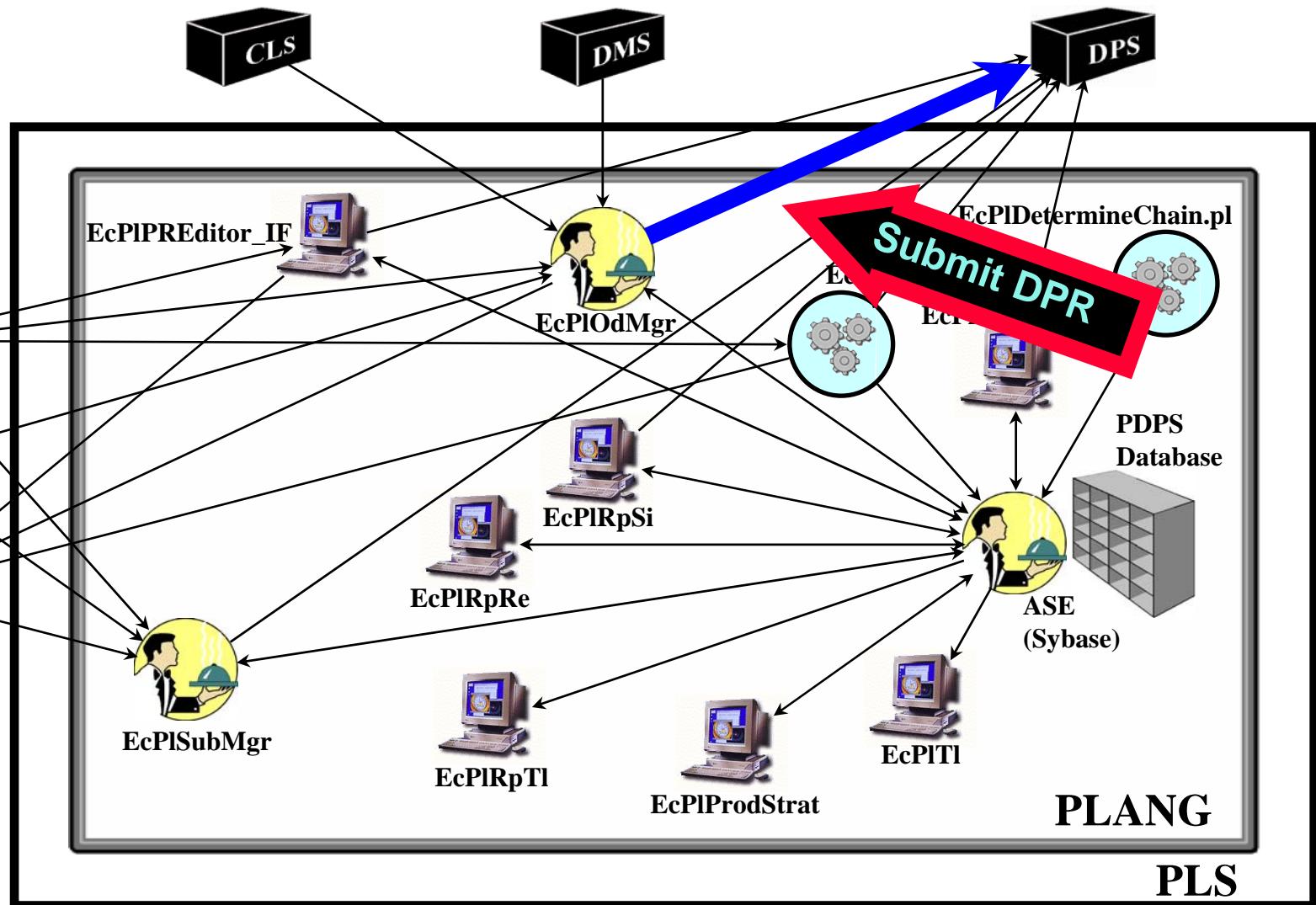
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PLAN^G Architecture and Interfaces



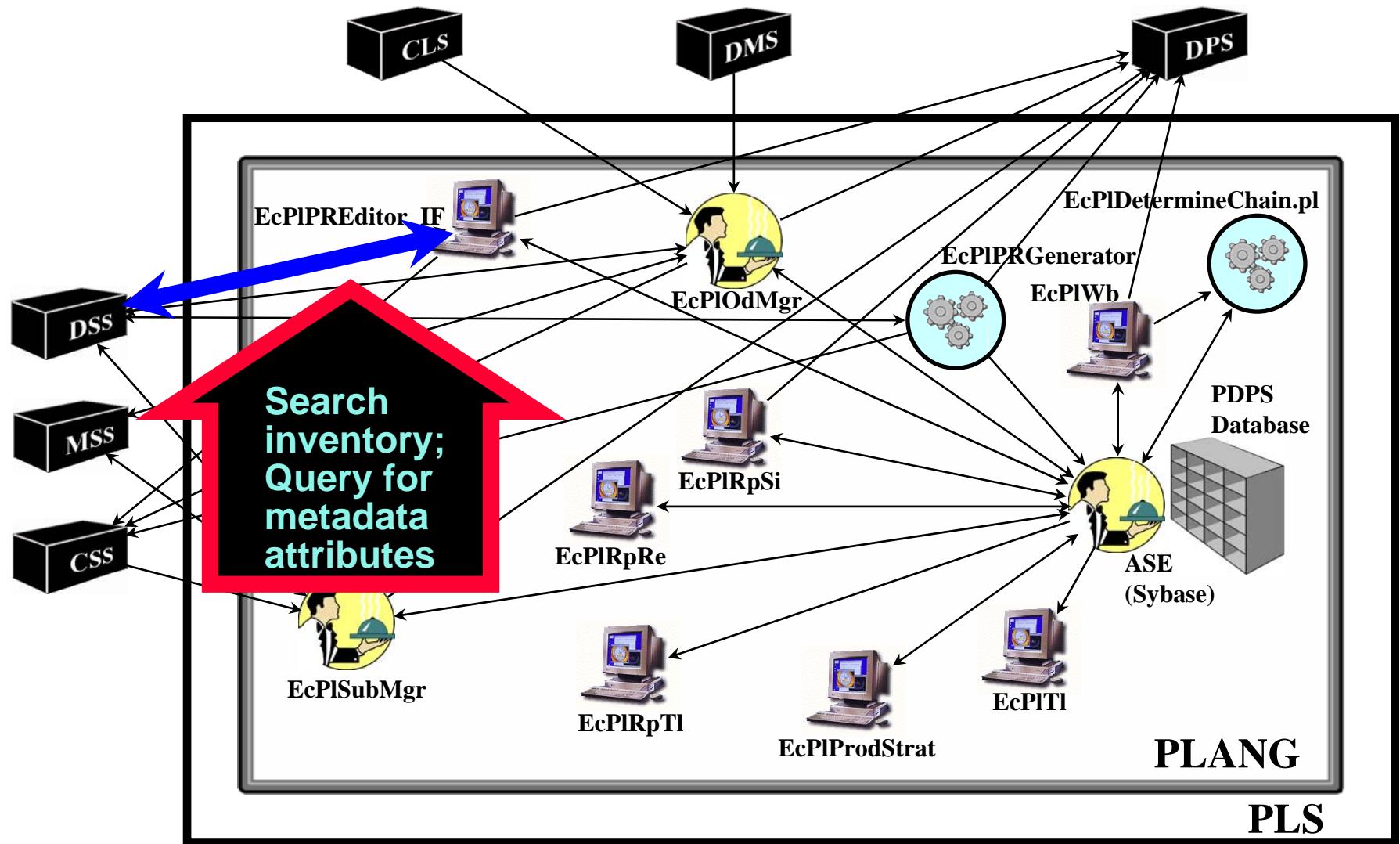
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PLAN^G Architecture and Interfaces



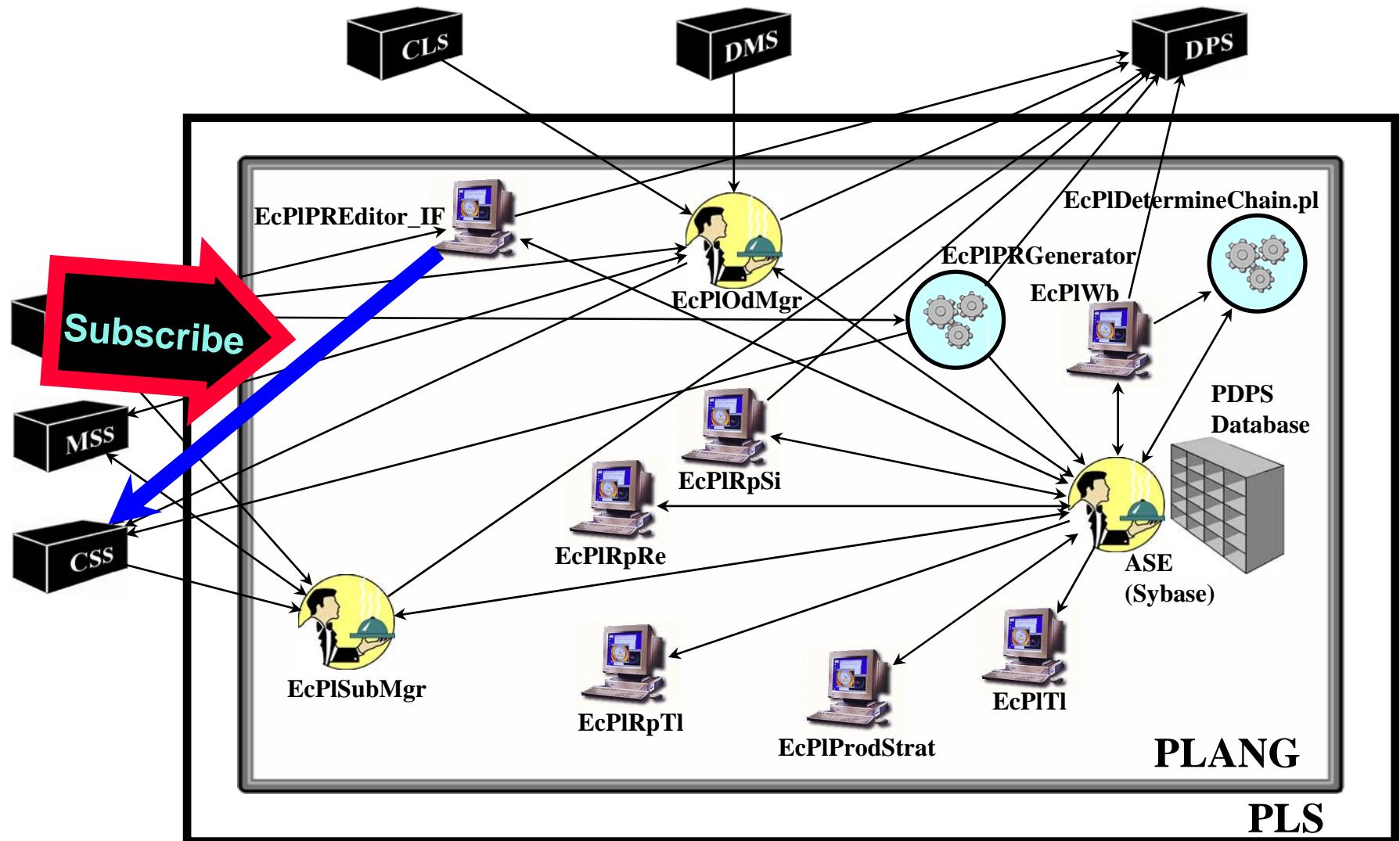
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PLAN^G Architecture and Interfaces



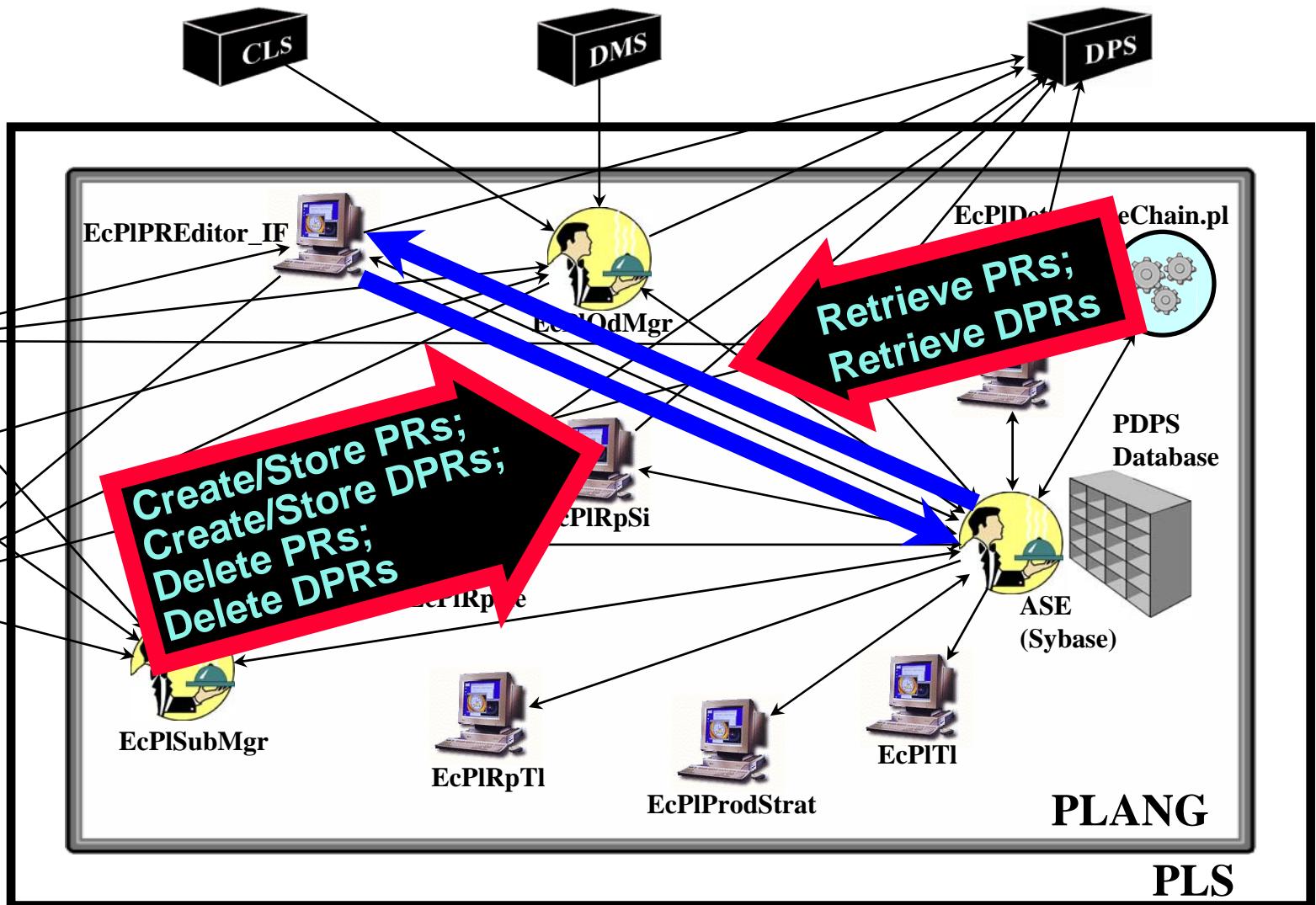
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PLAN^G Architecture and Interfaces



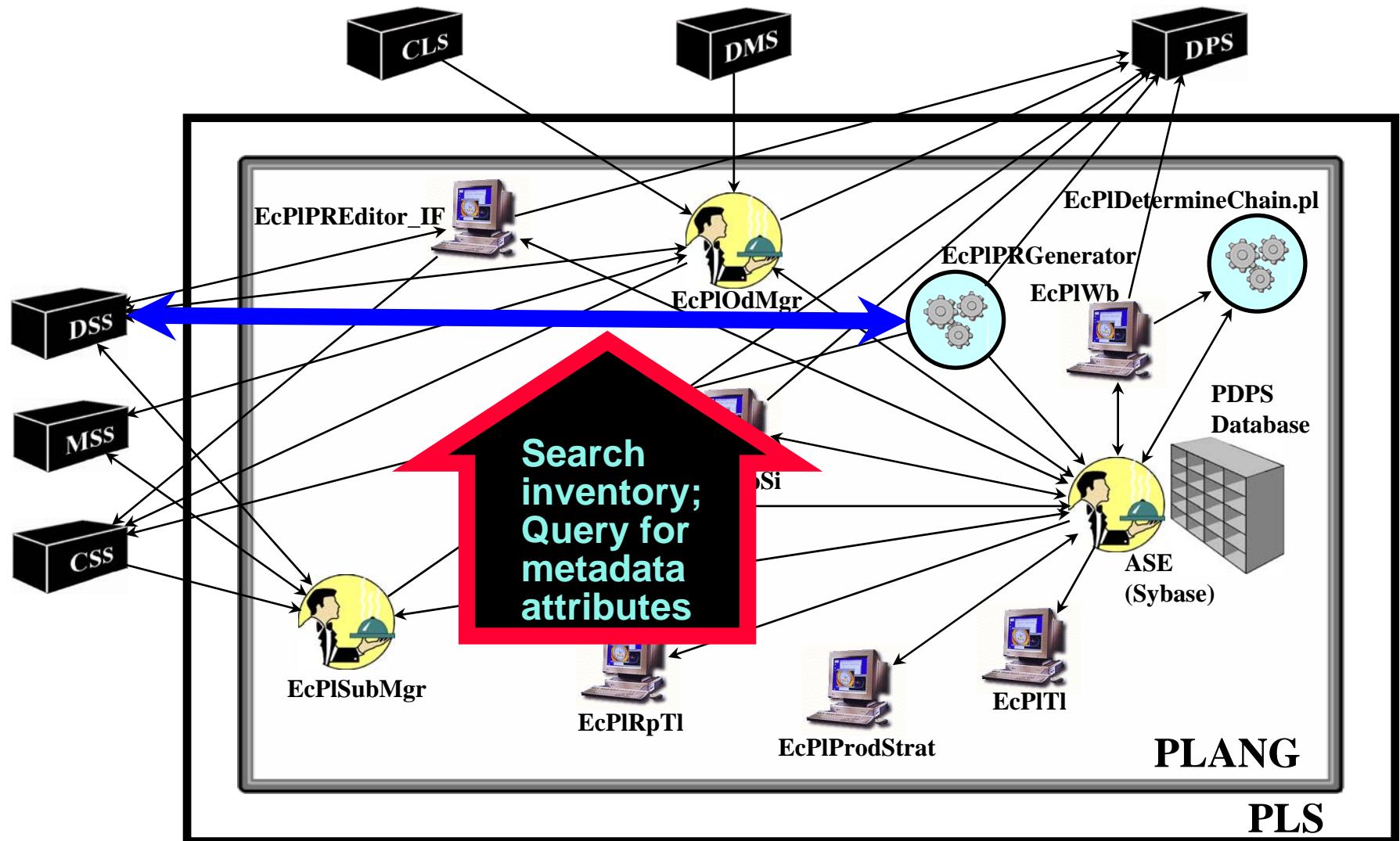
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PLAN^G Architecture and Interfaces



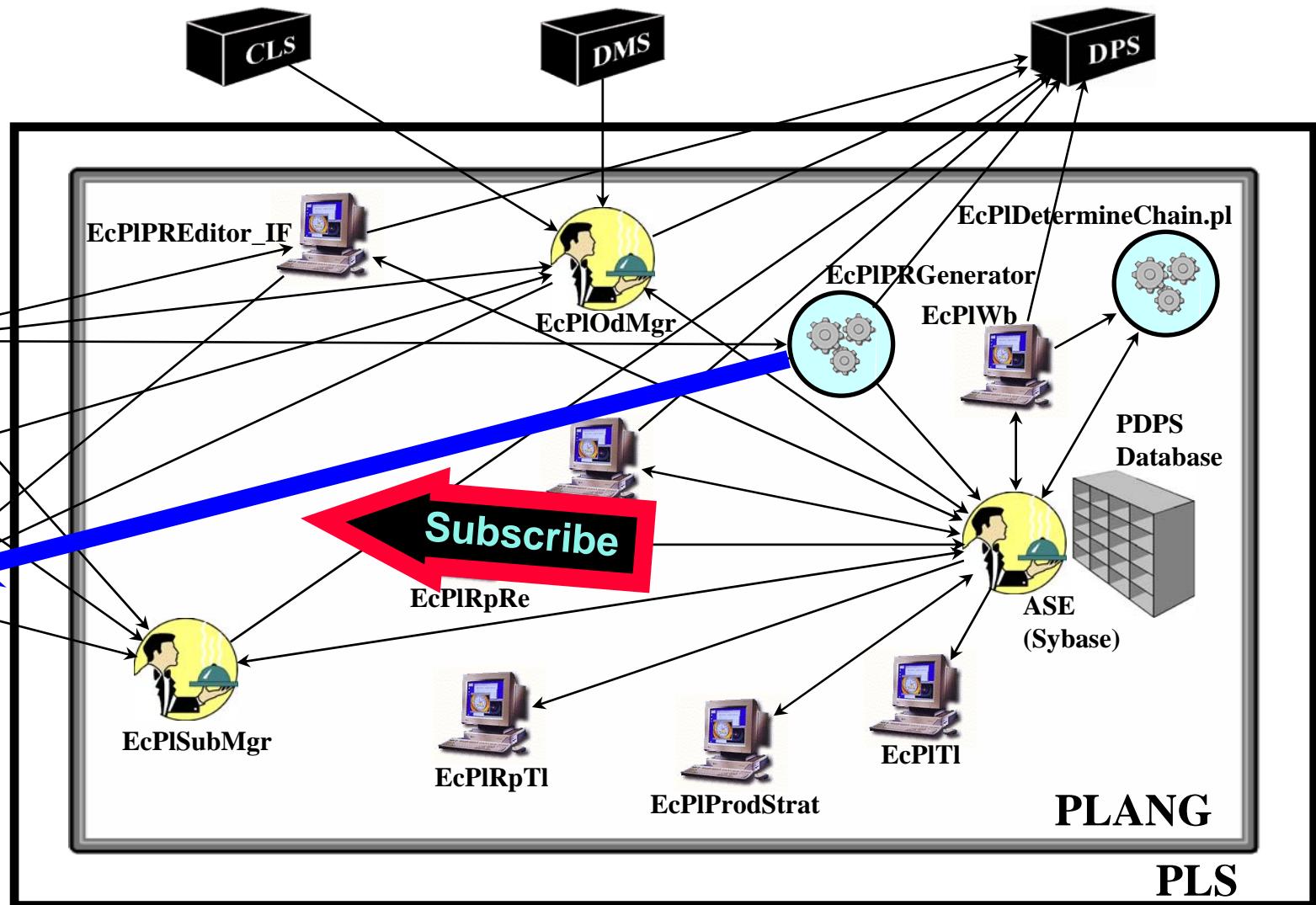
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PLAN^G Architecture and Interfaces



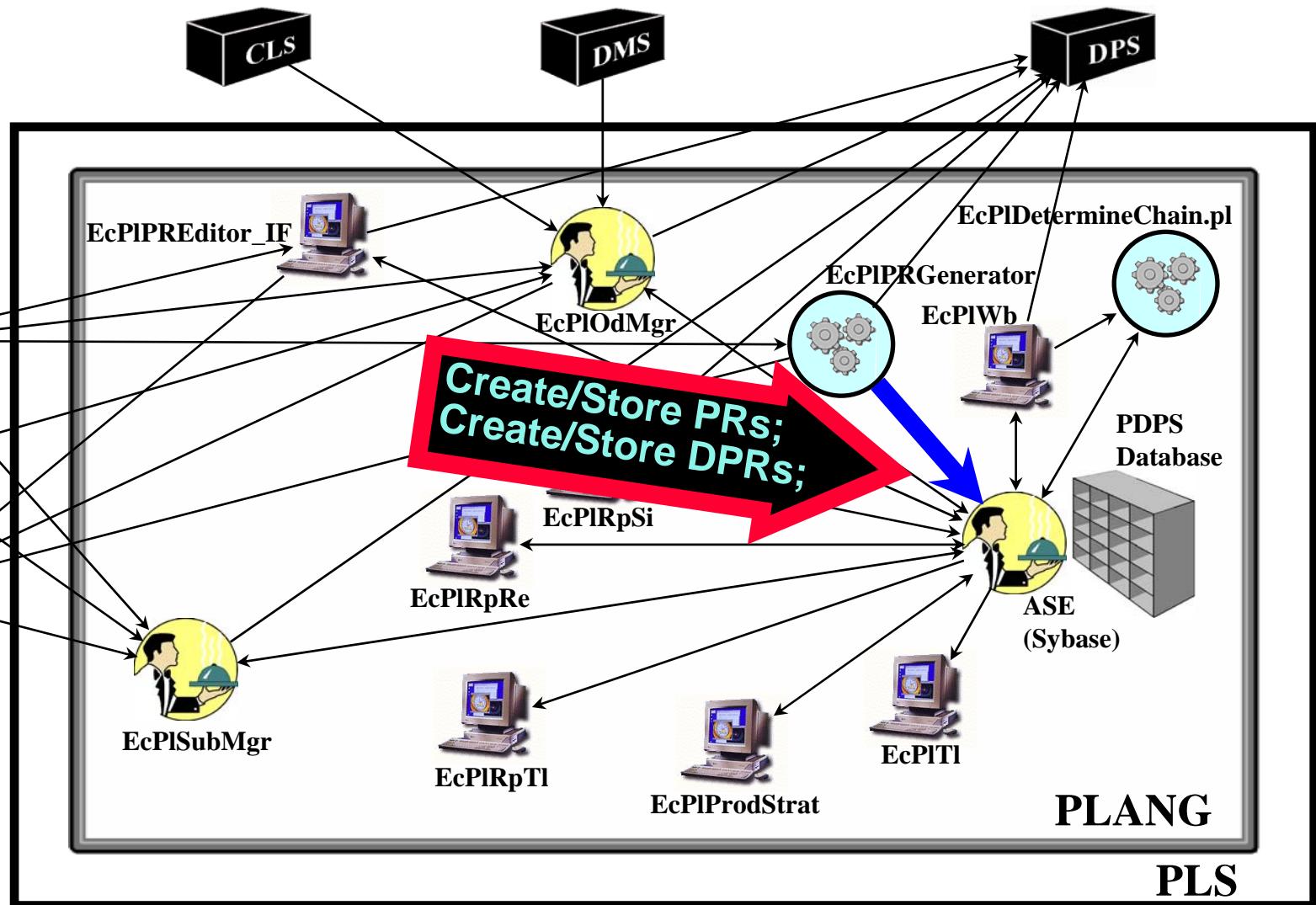
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PLAN^G Architecture and Interfaces



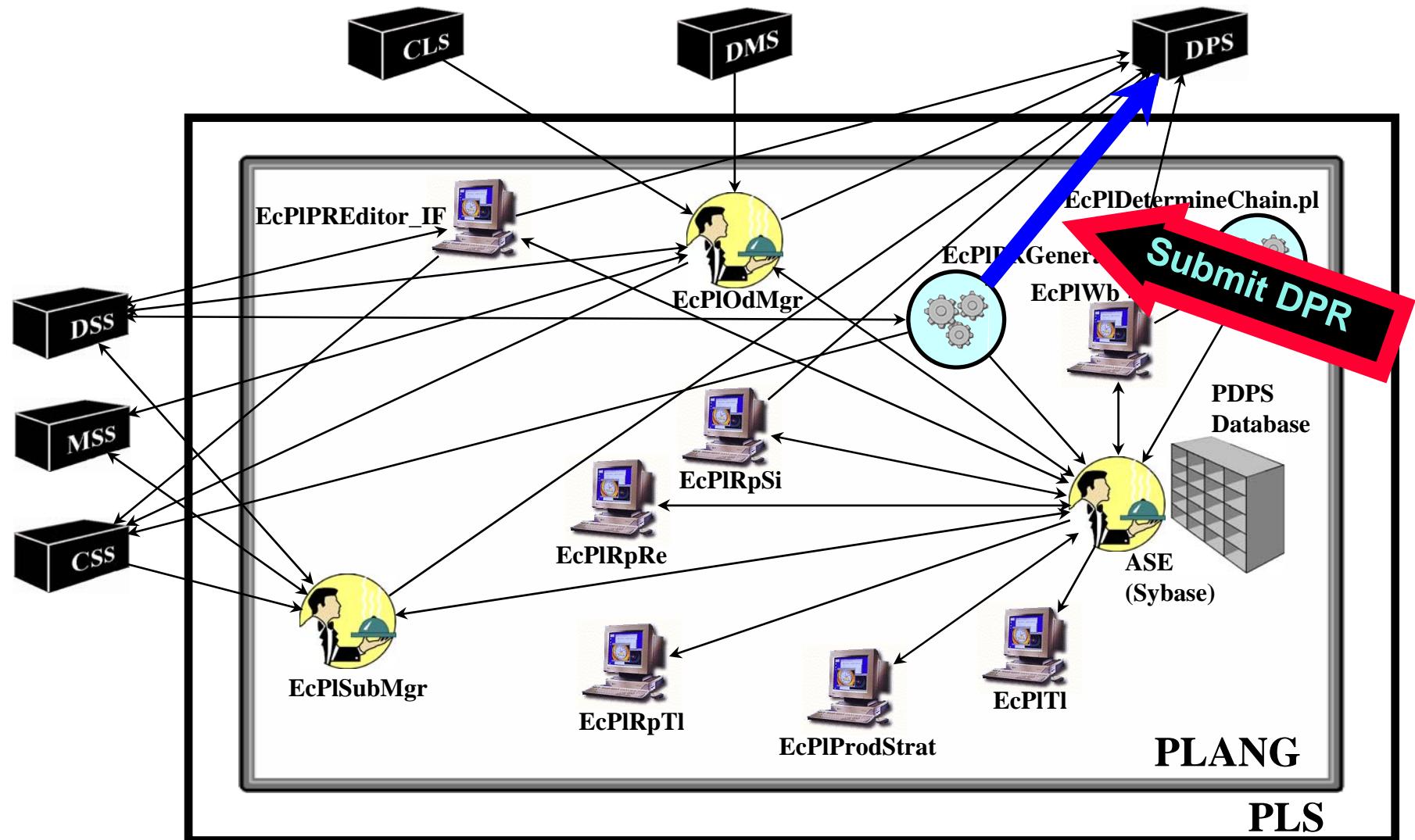
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PLAN^G Architecture and Interfaces



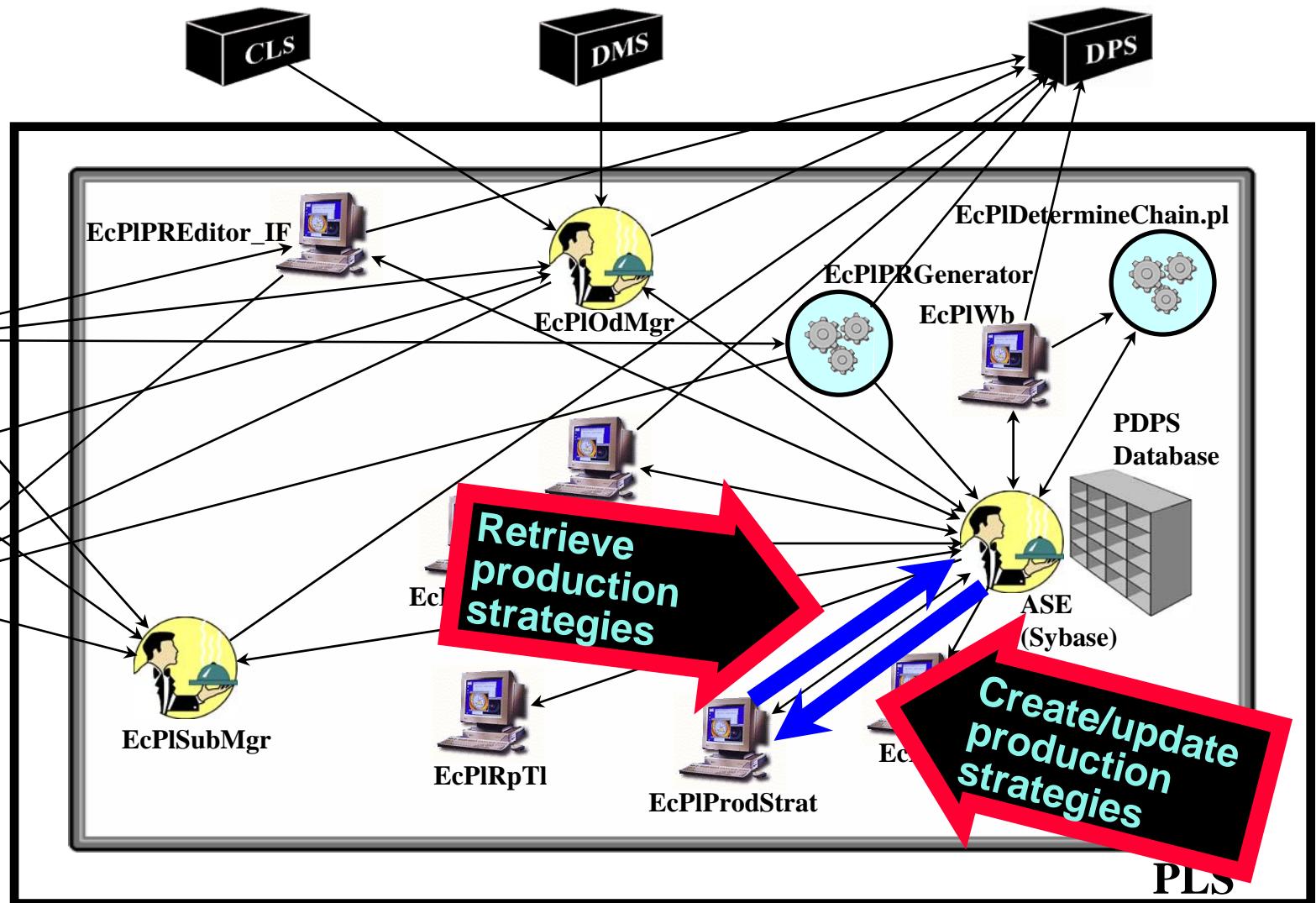
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PLAN^G Architecture and Interfaces



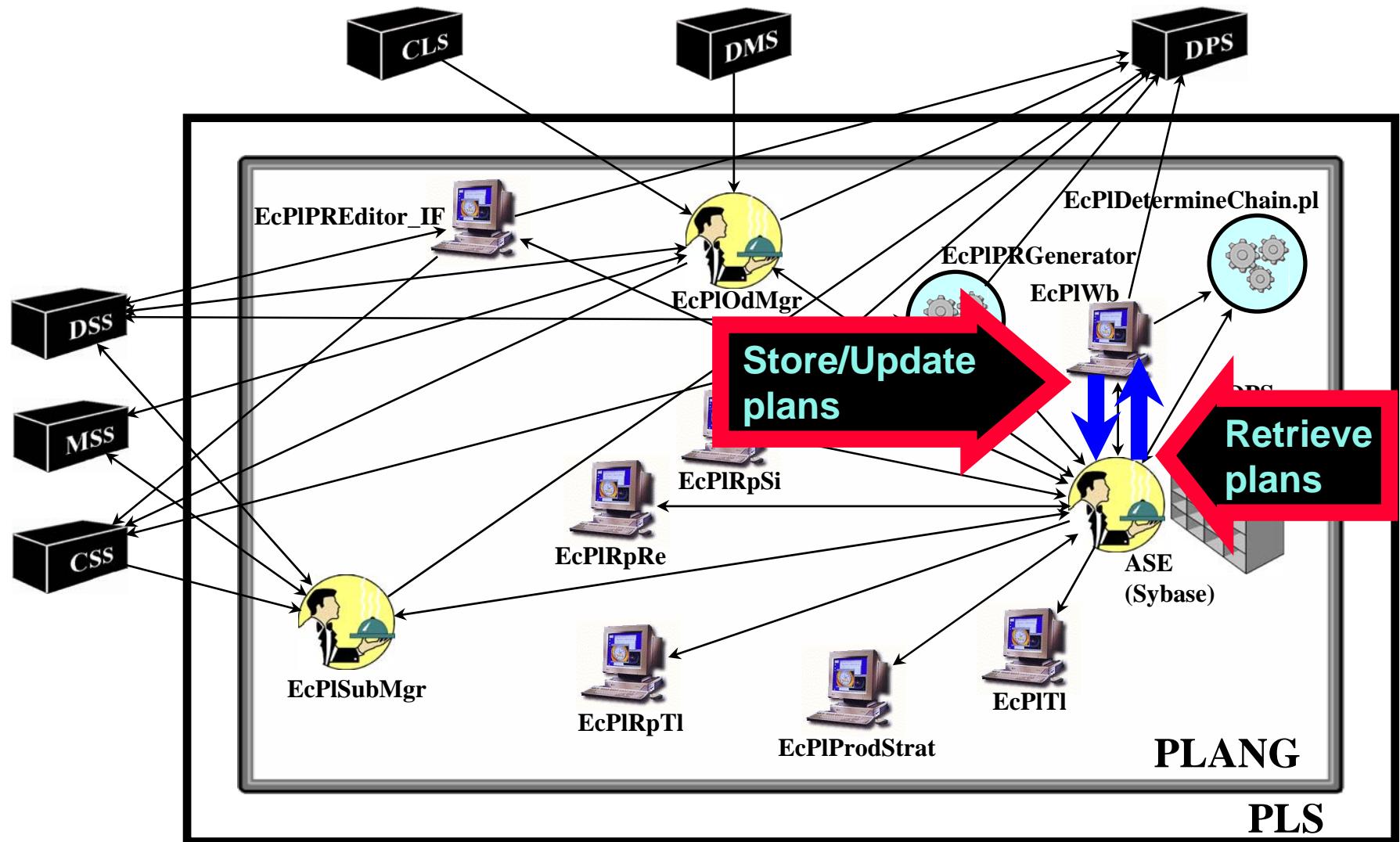
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PLAN^G Architecture and Interfaces



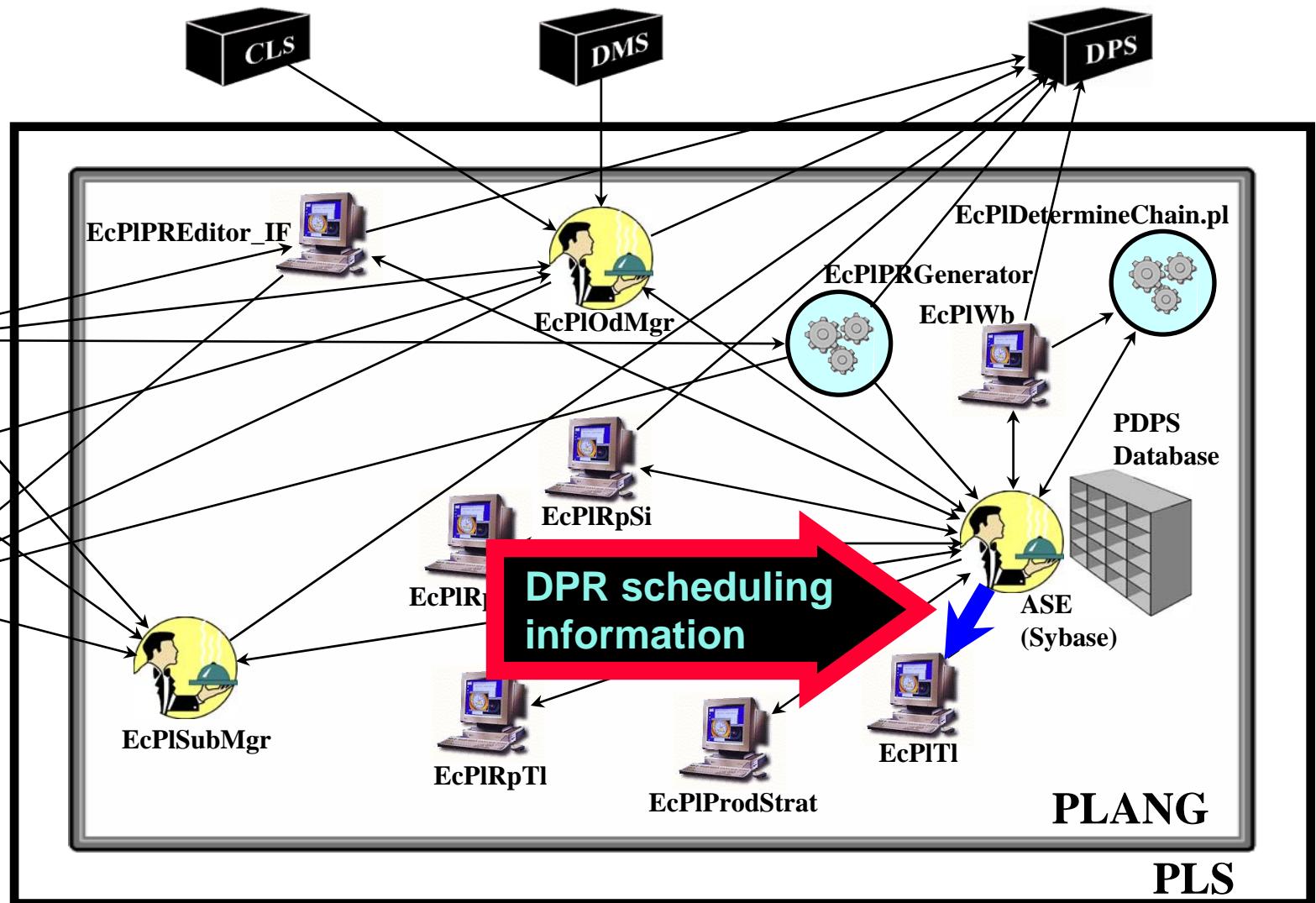
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PLAN^G Architecture and Interfaces



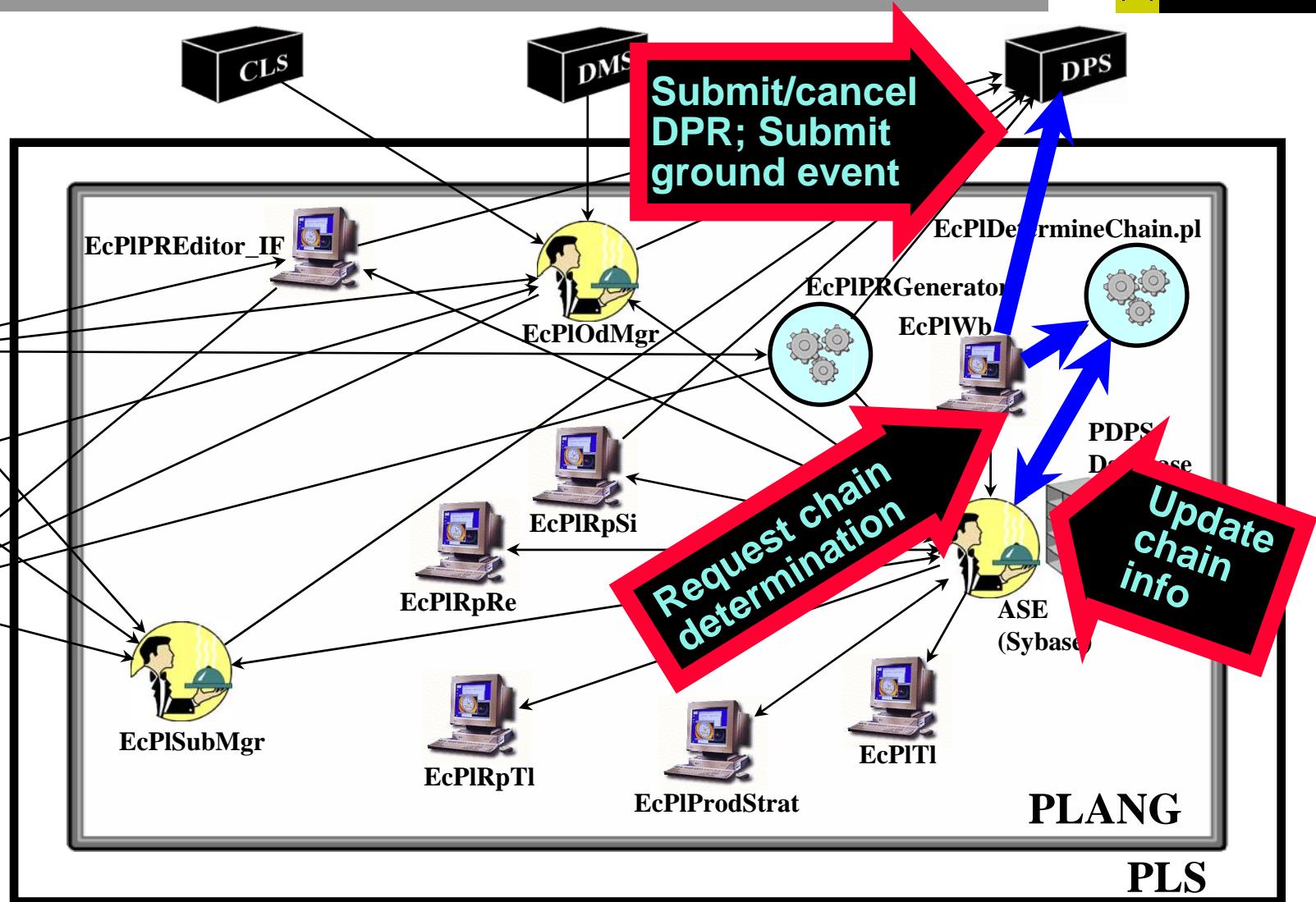
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PLAN^G Architecture and Interfaces



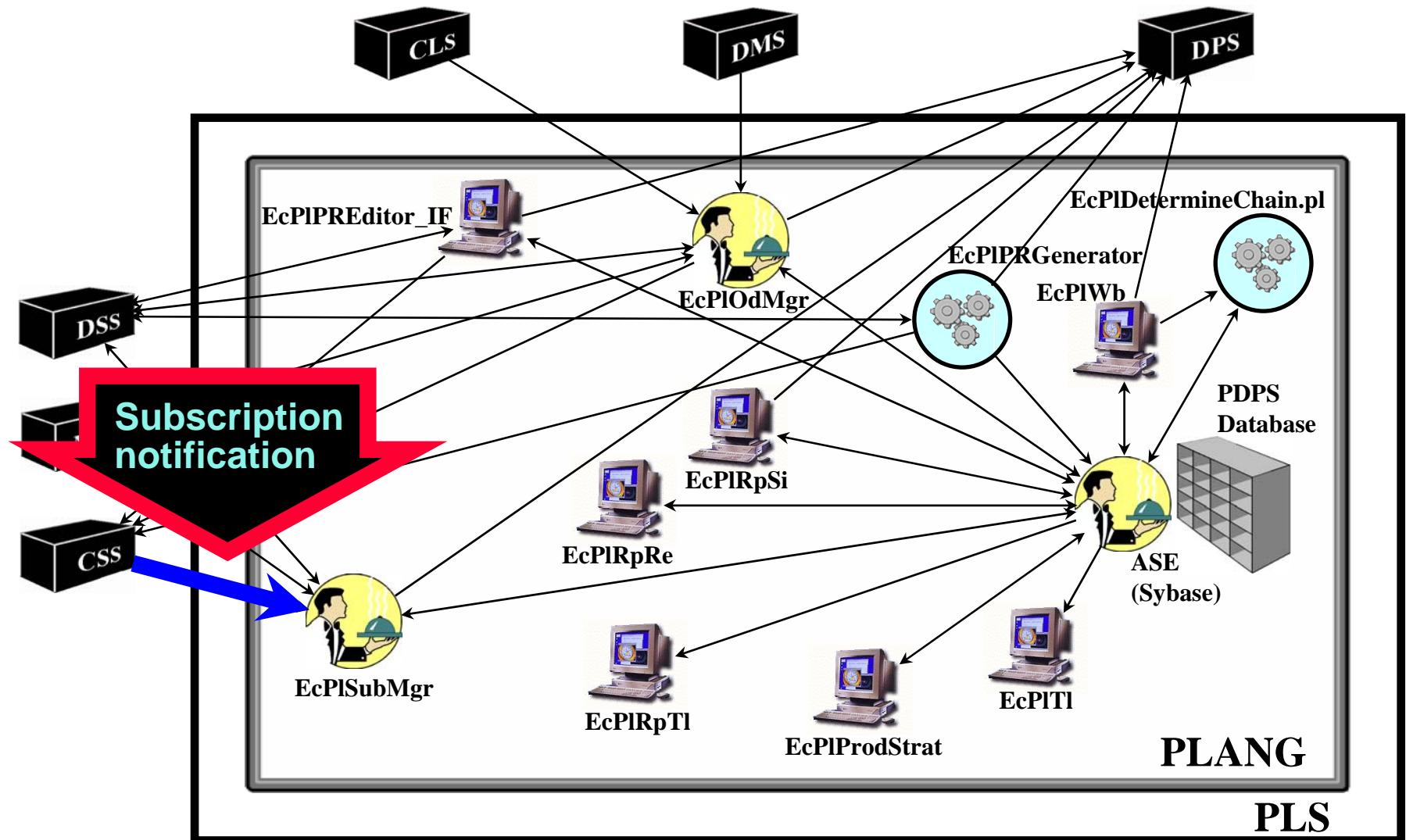
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PLAN^G Architecture and Interfaces



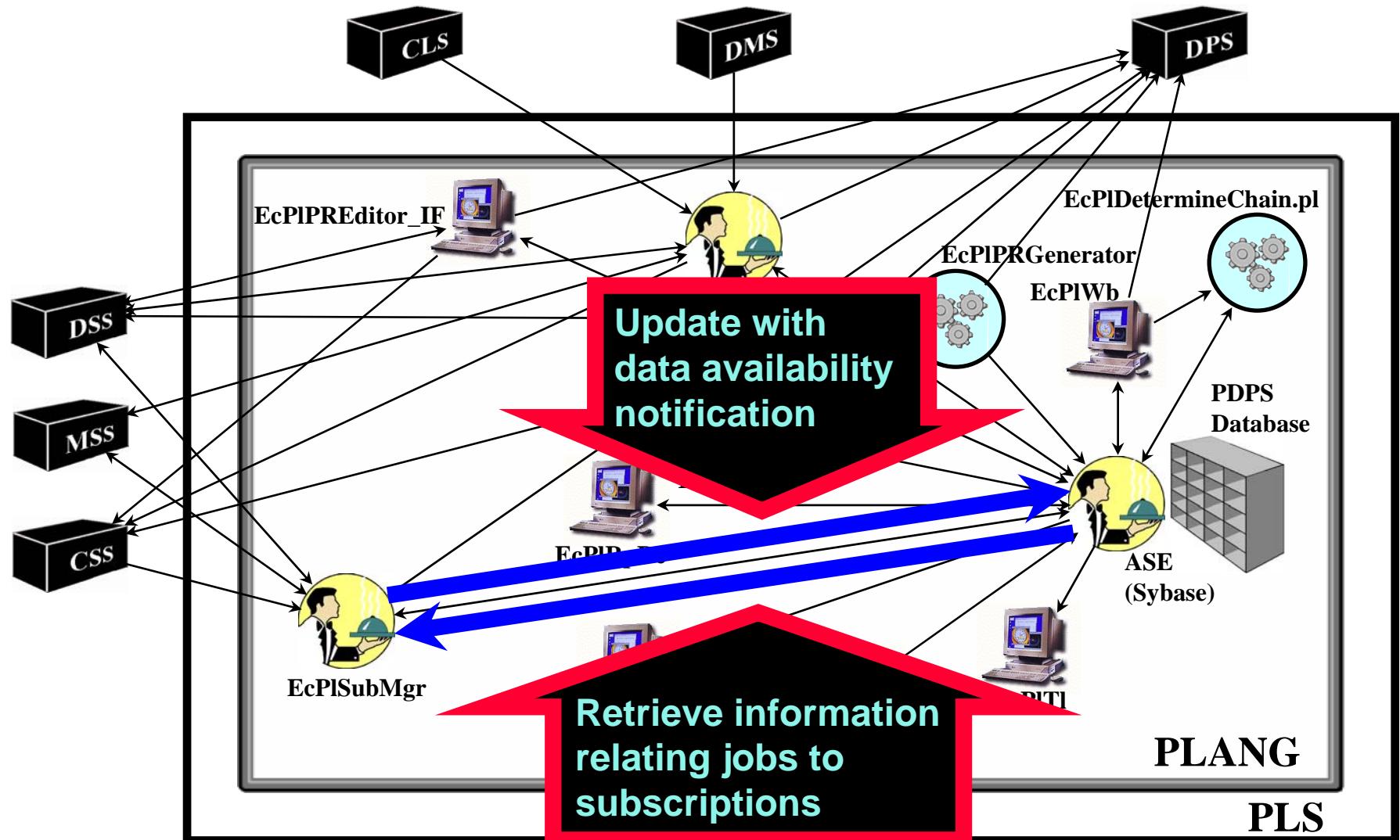
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PLAN^G Architecture and Interfaces



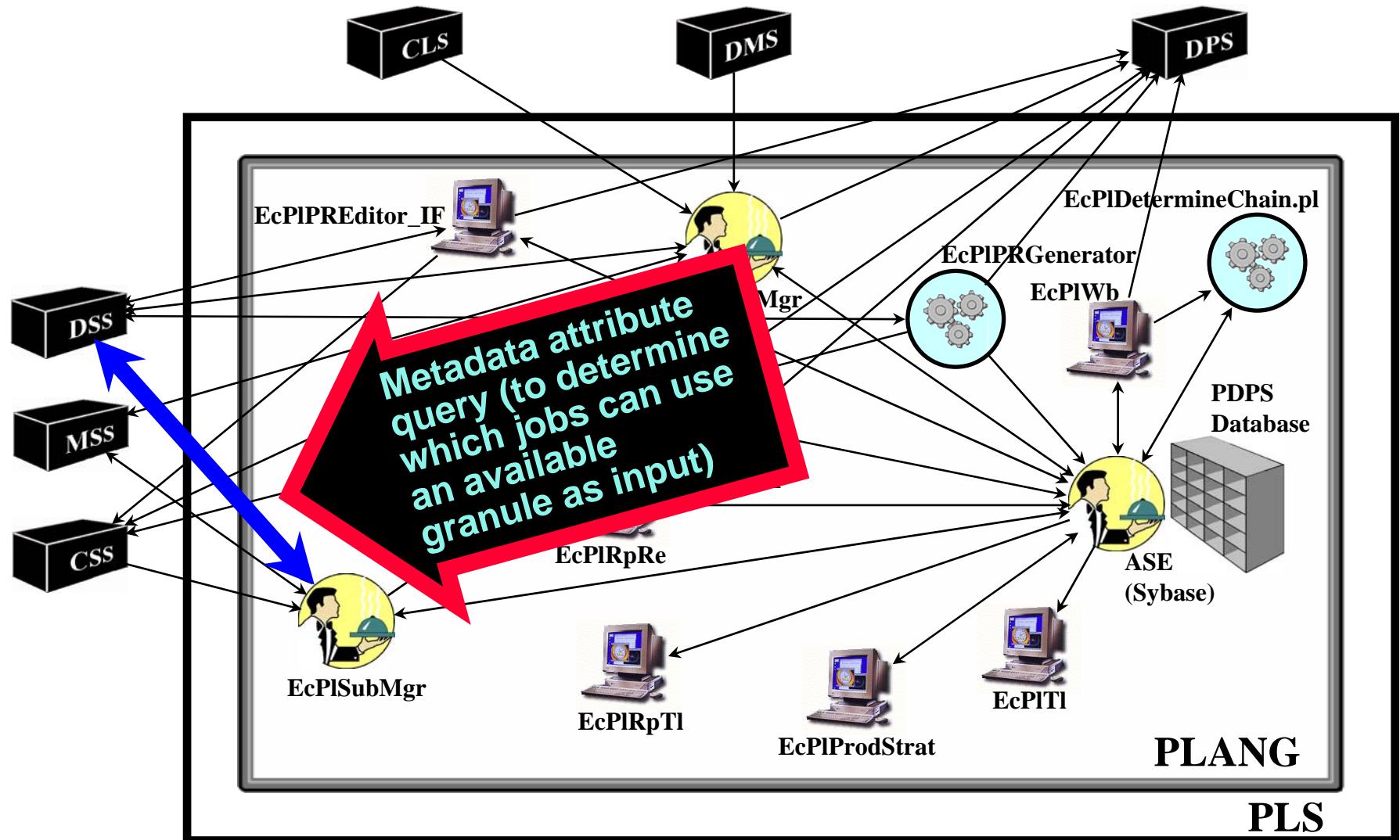
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PLAN^G Architecture and Interfaces



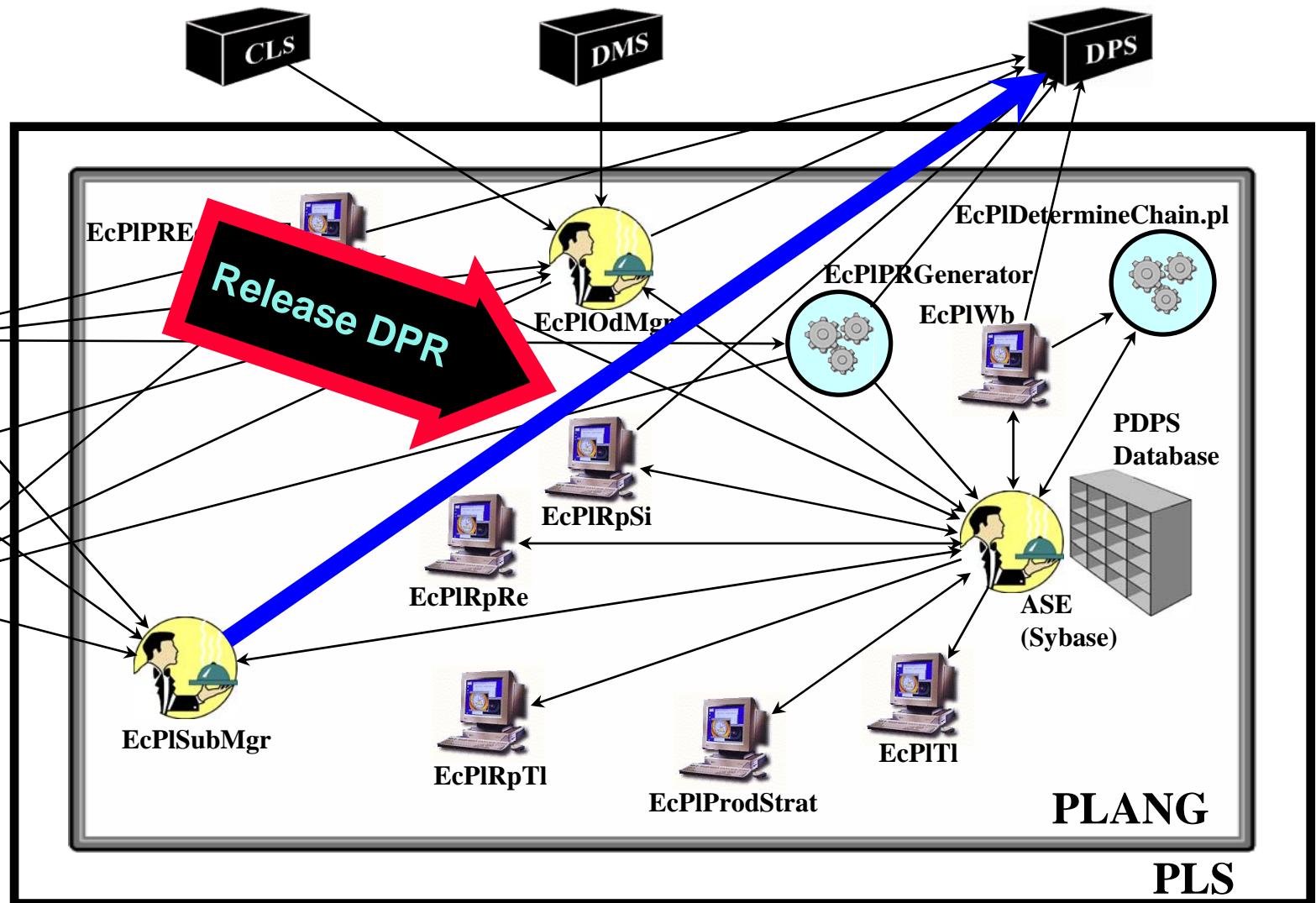
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PLAN^G Architecture and Interfaces



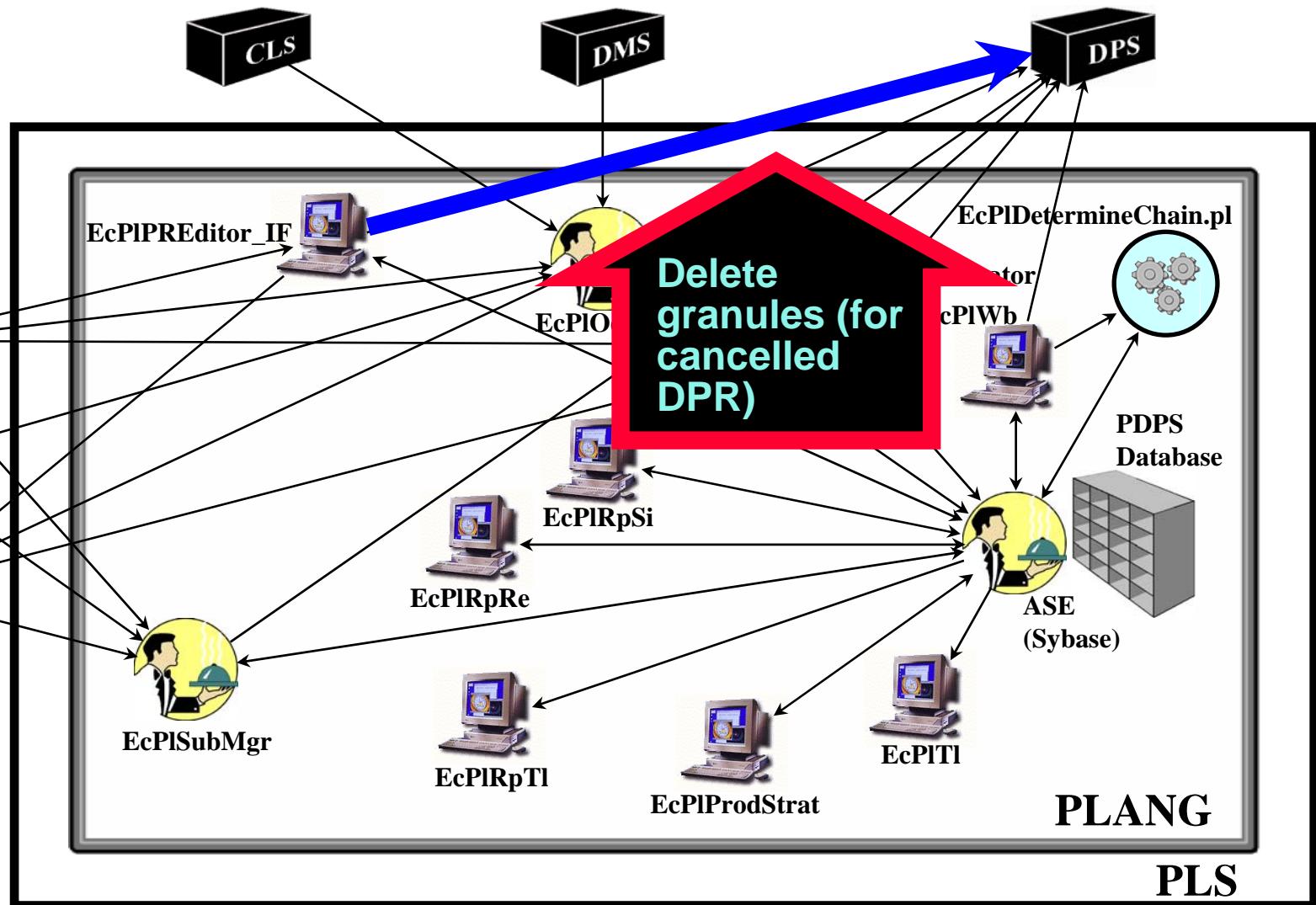
Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces



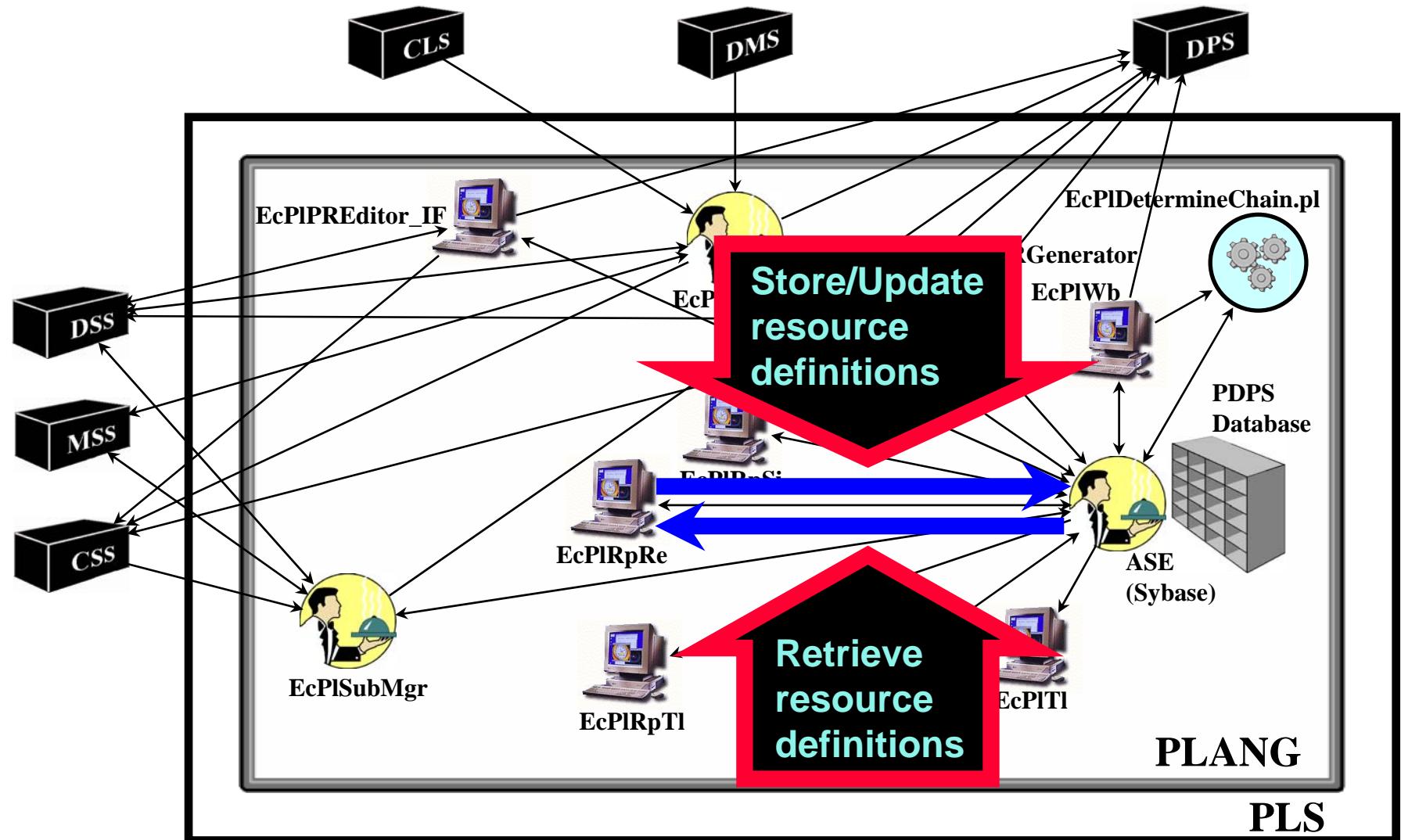
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PLAN^G Architecture and Interfaces



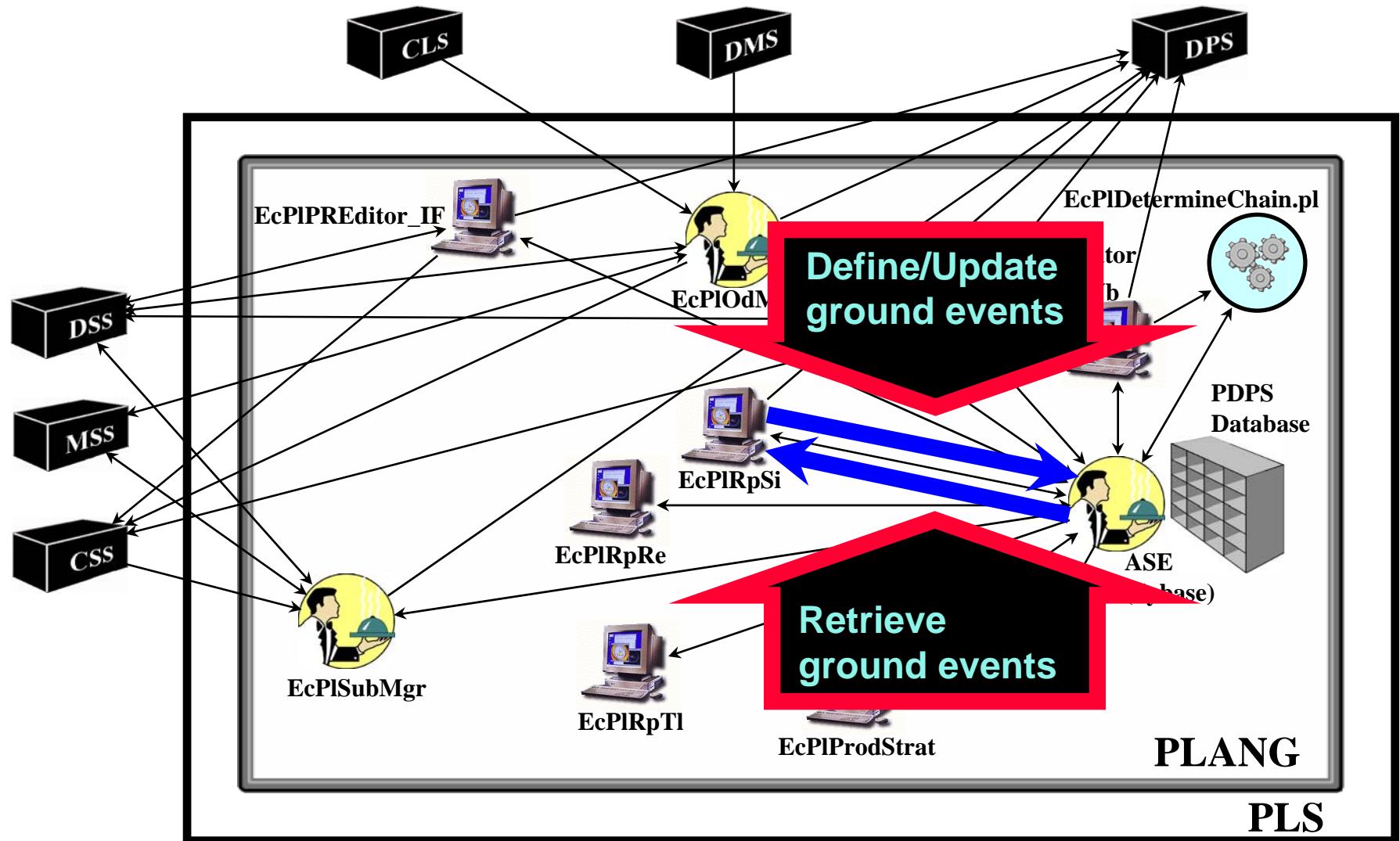
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PLAN^G Architecture and Interfaces



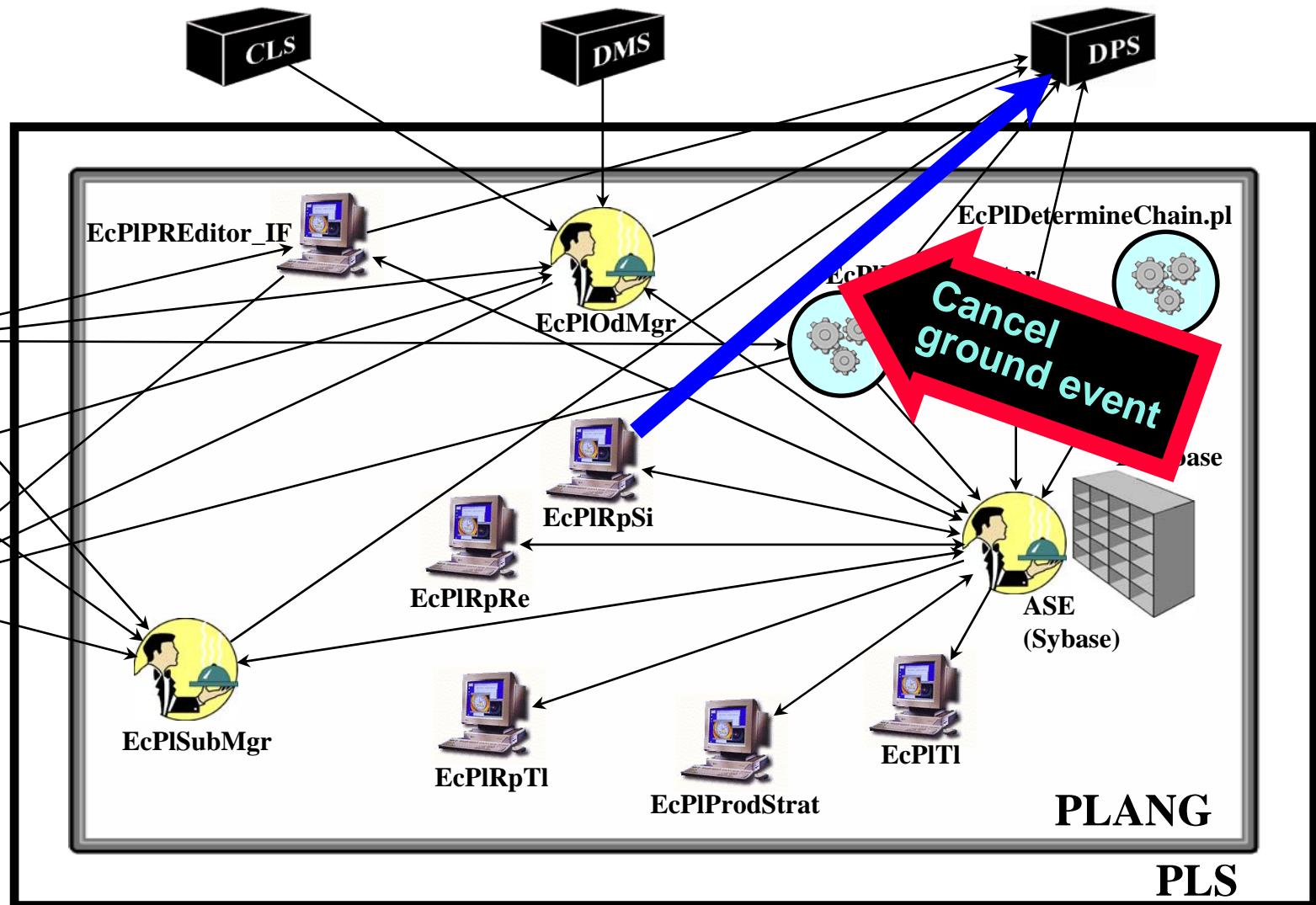
Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces



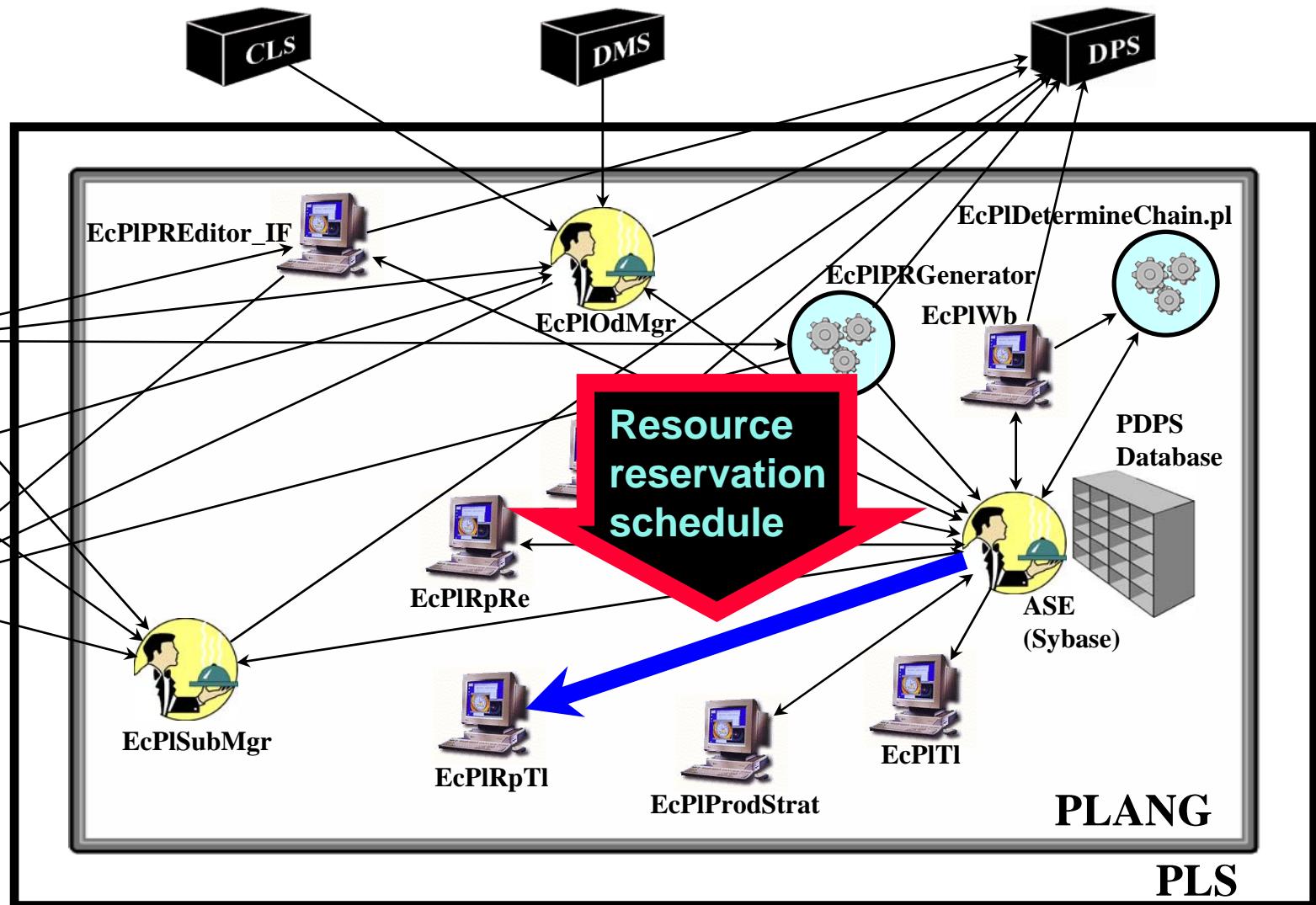
Subsystems and CSCIs: PLS (Cont.)

PLAN^G Architecture and Interfaces

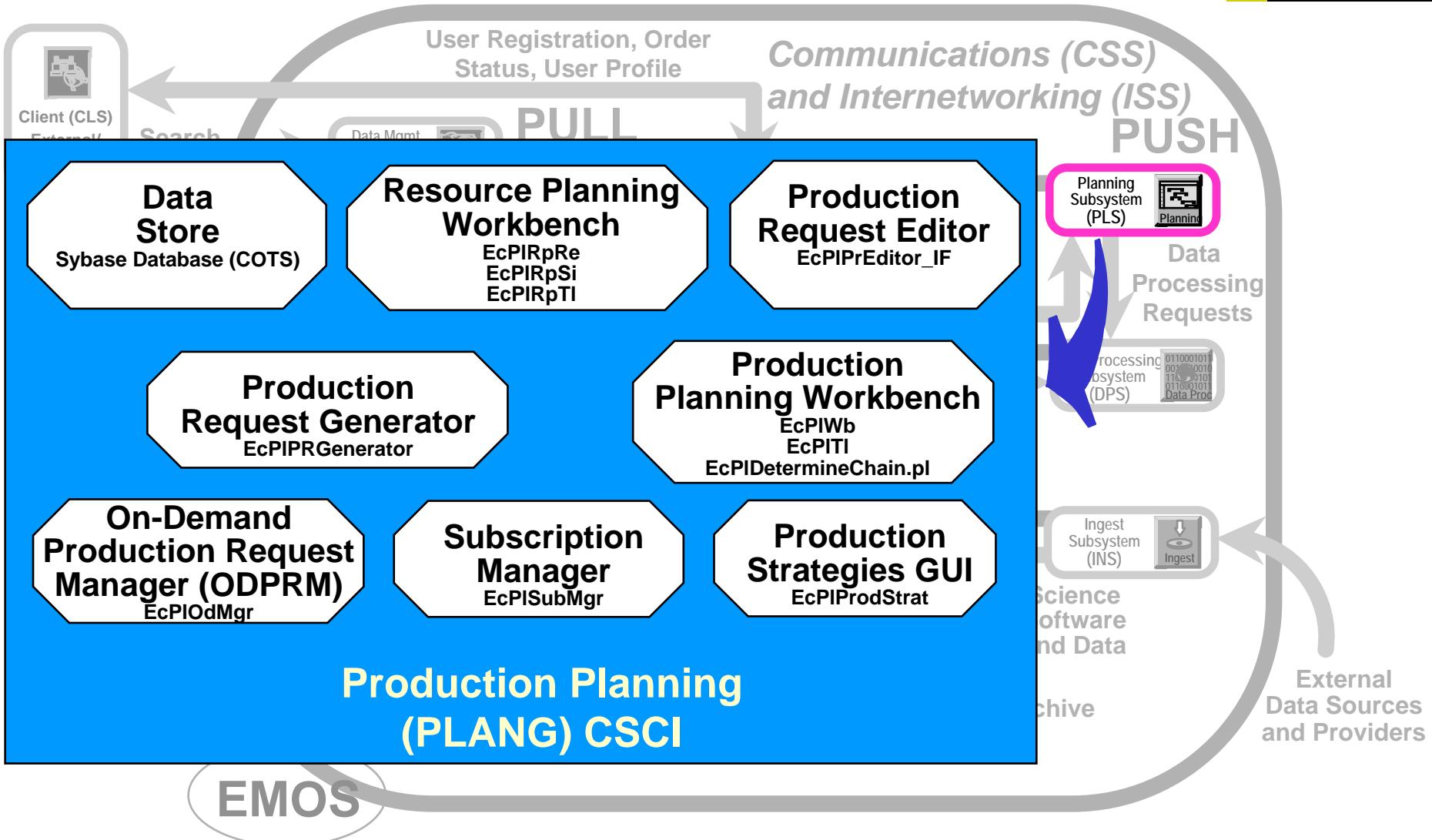


Subsystems and CSCIs: PLS (Cont.)

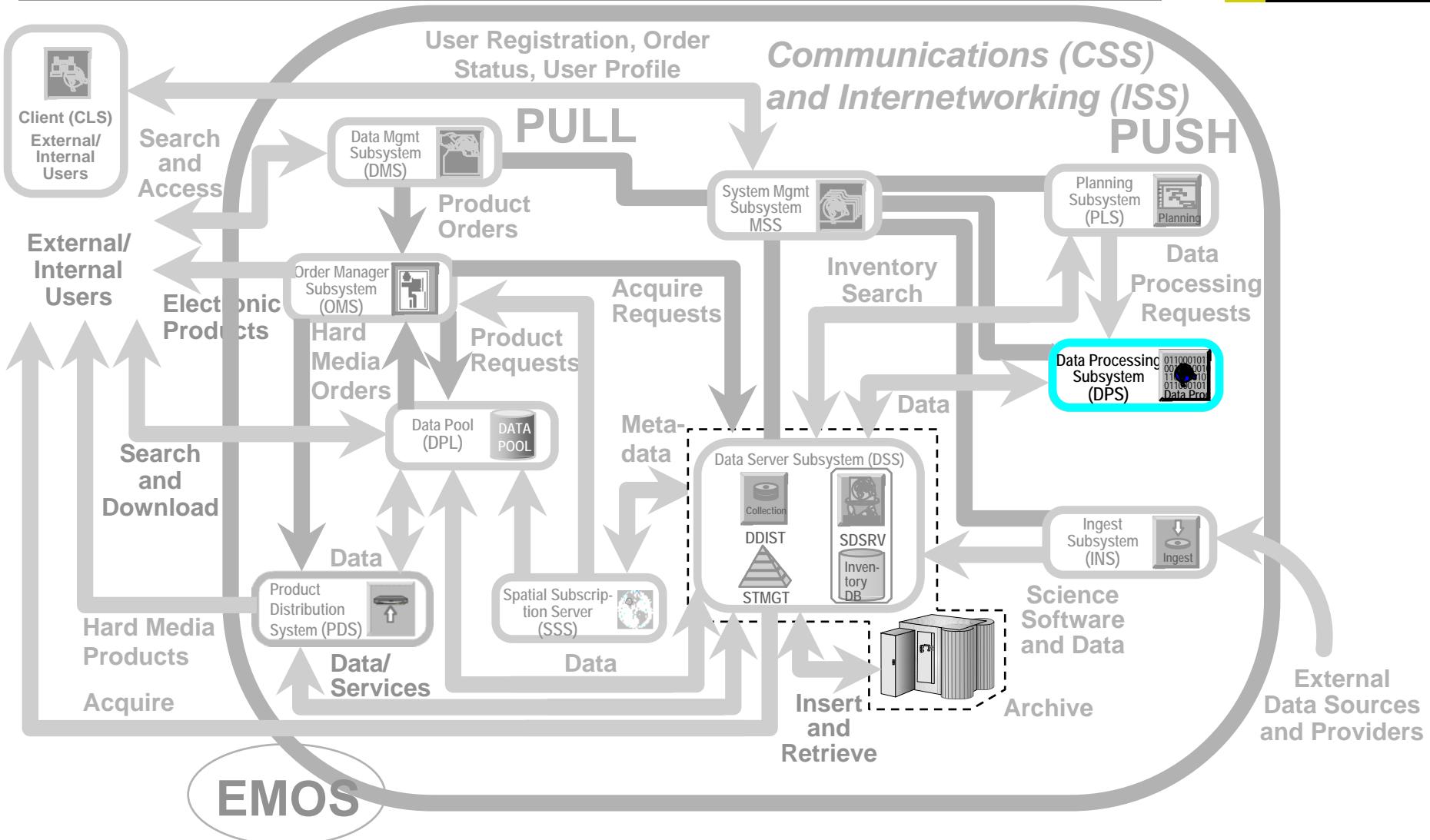
PLAN^G Architecture and Interfaces



Subsystems and CSCIs: PLS (Cont.)



Subsystems and CSCIs: DPS



Subsystems and CSCIs: DPS



- **Data Processing Subsystem (DPS)**
 - Manages allocation and recovery of computer resources (e.g., CPU, disk space) used in processing science data
 - Manages, queues, and executes DPRs
 - Supports execution of science algorithms through the Science Data Processing (SDP) Toolkit
 - Supports preliminary processing of ancillary data sets
 - Provides an Algorithm Integration and Test (AIT) environment for the introduction of science software
 - Provides a Quality Assessment (QA) environment for updating the quality flags in metadata for data products

Subsystems and CSCIs: DPS (Cont.)



- **Data Processing Subsystem (DPS) (Cont.)**
 - **Uses COTS tools**
 - **AutoSys:** a job scheduling software application to automate operations in a distributed UNIX environment
 - **Job Management Web Interfaces:** provide interfaces to monitor and manage the job schedule being processed in AutoSys
 - **Sybase:** ASE server

Subsystems and CSCIs: DPS (Cont.)



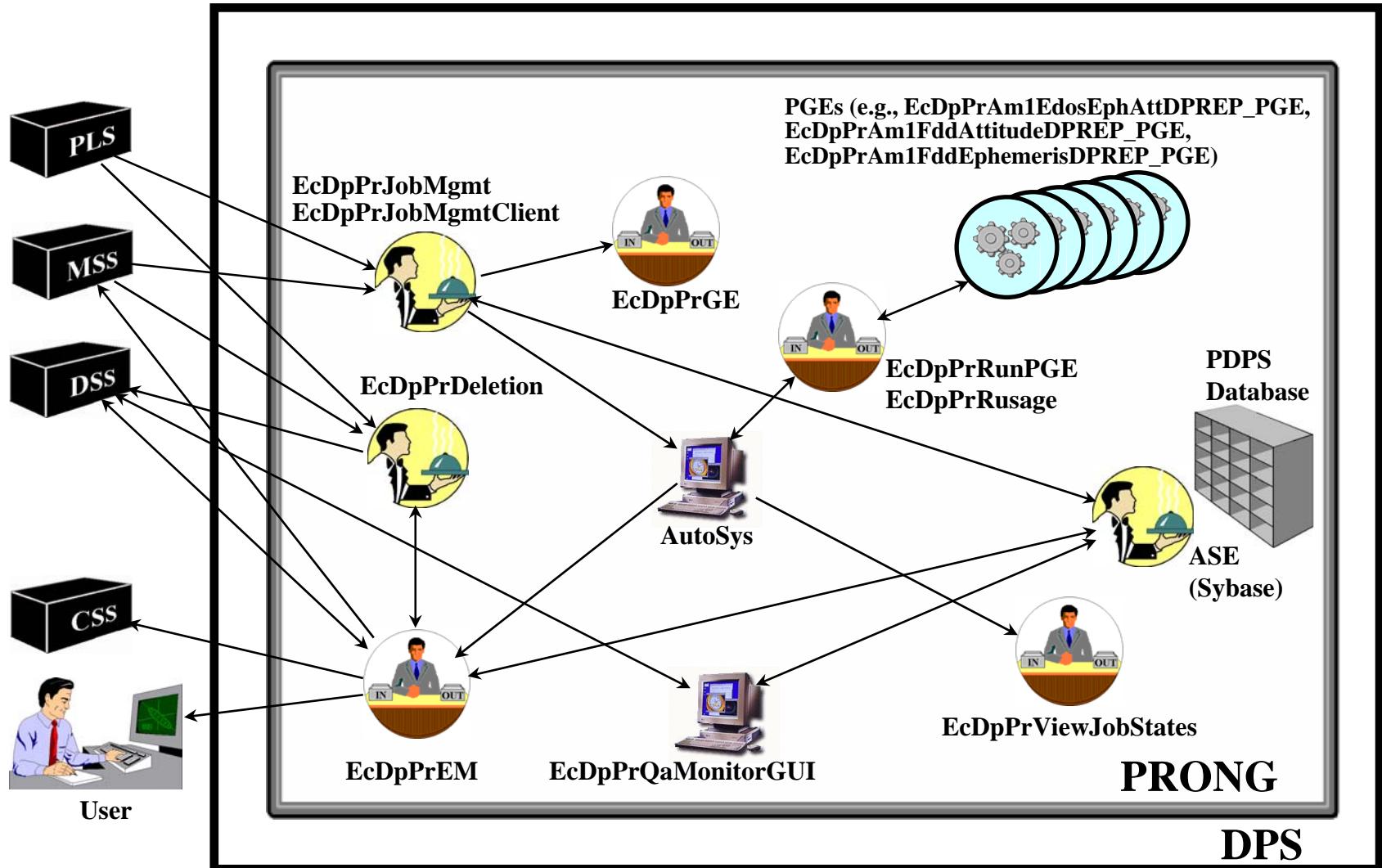
- **Processing (PRONG) CSCI**
 - Provides services required to manage and monitor the Science Data Processing environment, which executes Science Software items (PGEs) and produces data products
 - Nine major components
 - **Job Management** - handles flow of information to the COTS products; also creates and starts Ground Event jobs
 - **Execution Management** - initiates execution of PGEs and performs final activities subsequent to execution of PGEs; handles flow of science data to and from science processing resources (through a data management software library, DpPrDM); also provides status of On-demand Processing requests
 - **PGE Management** - controls and monitors execution of PGEs and the growth of the output products (EcDpPrRunPGE); measures and reports resource use to AutoSys (EcDpPrRusage)

Subsystems and CSCIs: DPS (Cont.)

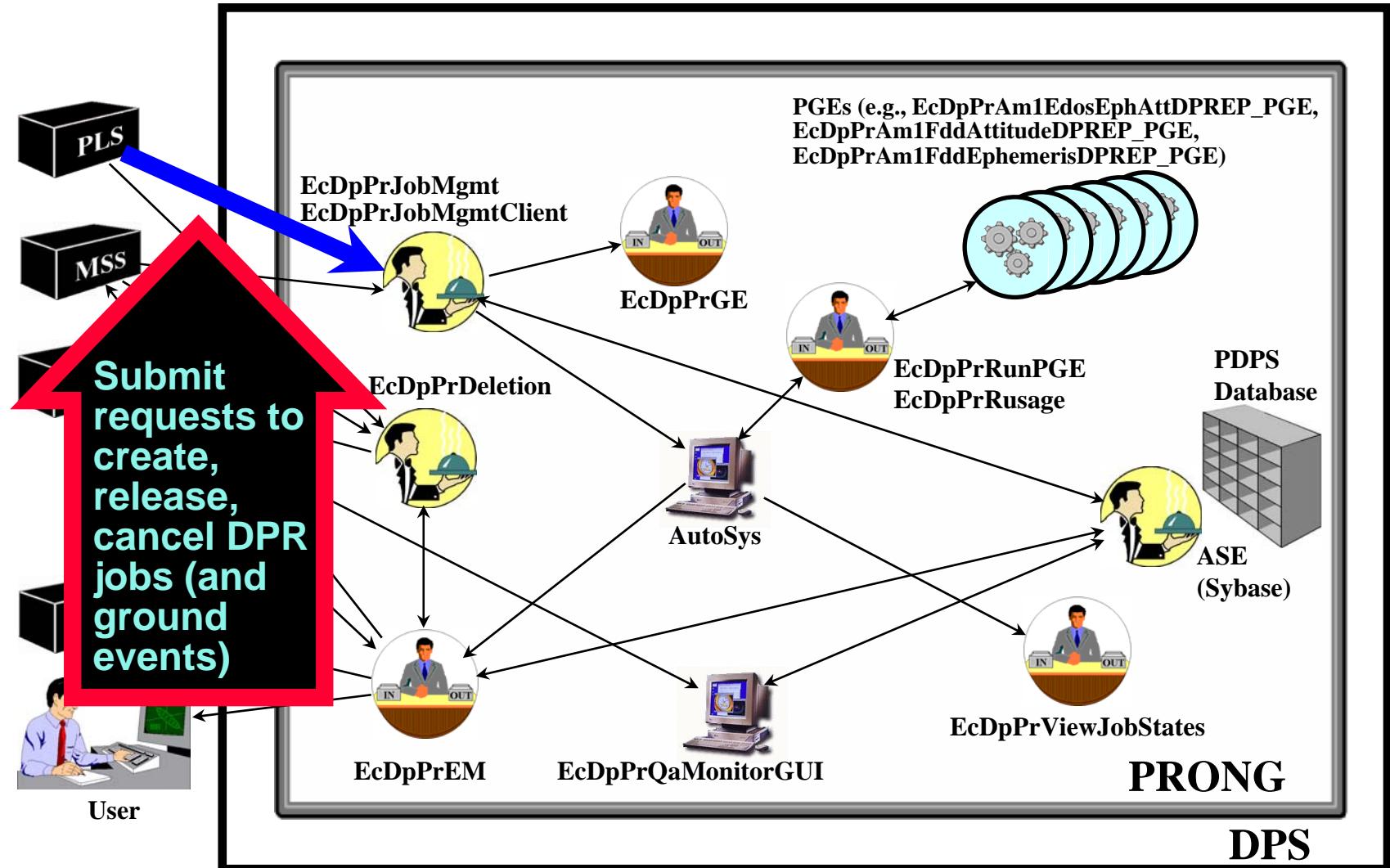


- Processing (PRONG) CSCI (Cont.)
 - Nine major components (Cont.)
 - **Deletion Server** - notifies Science Data Server to remove interim granules that are no longer needed
 - **Quality Assurance Monitor** - supports visualizing science data products and updating QA metadata
 - **Data Preprocessing** - manages preprocessing of ancillary data used as inputs to a PGE
 - **AutoSys** - provides the job scheduling engine (COTS)
 - **Data Store** - handles insertion of data for planning and processing activities into the PDPS shared database
 - **Ground Event Process** - initiated by Job Management upon receipt of a ground event request; sets a computer resource to an off-line state, making it unavailable for PGEs during the request

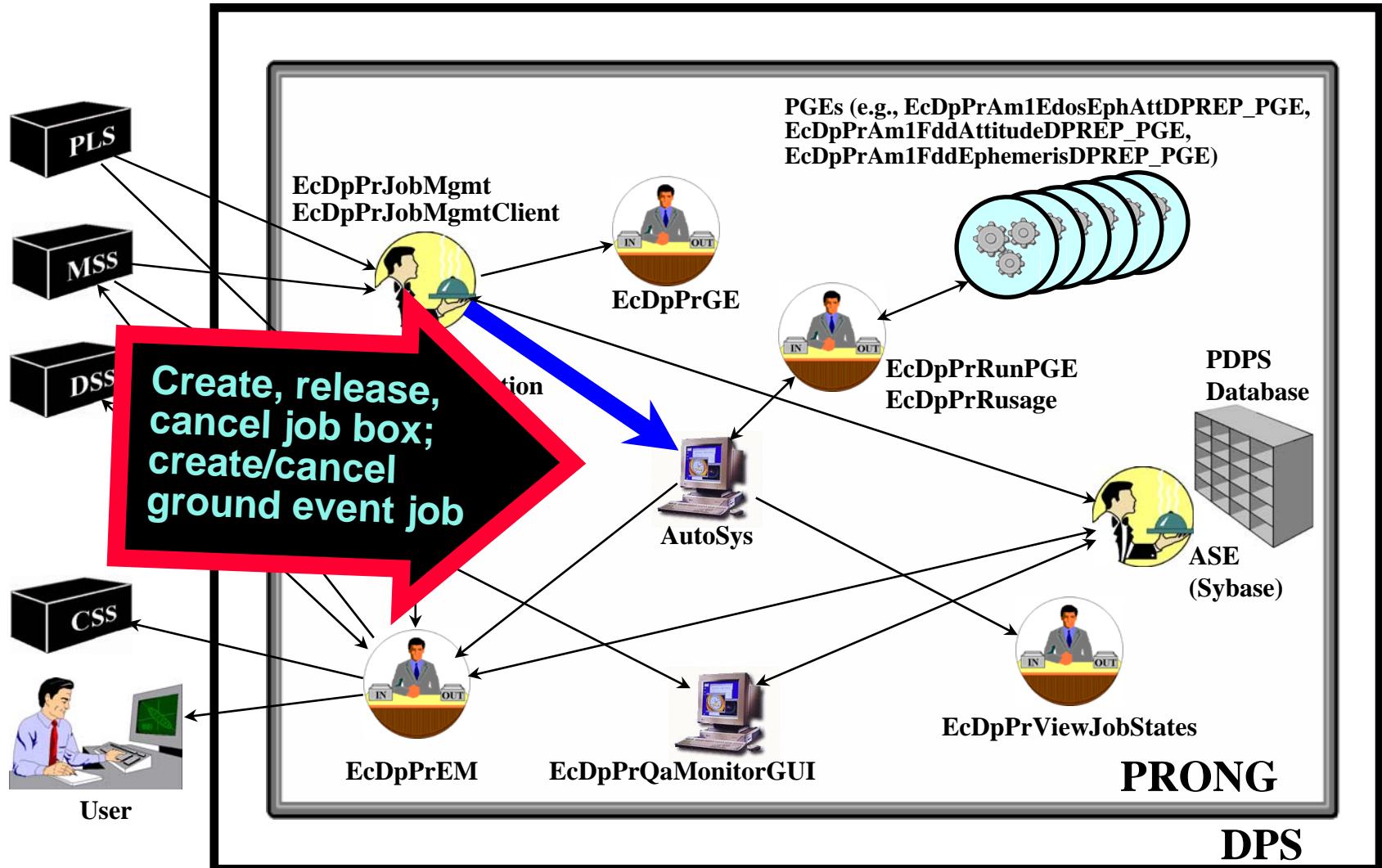
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



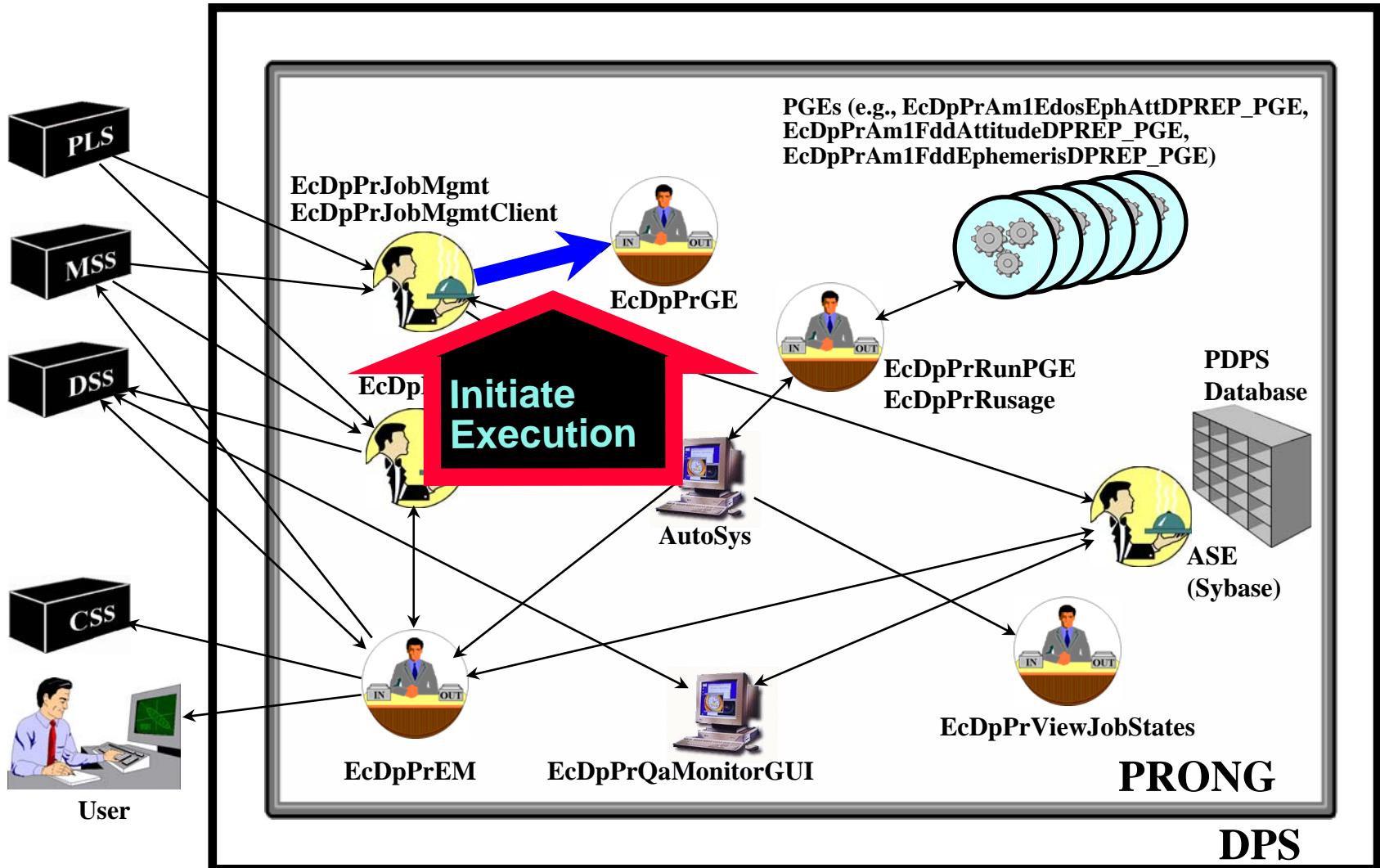
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



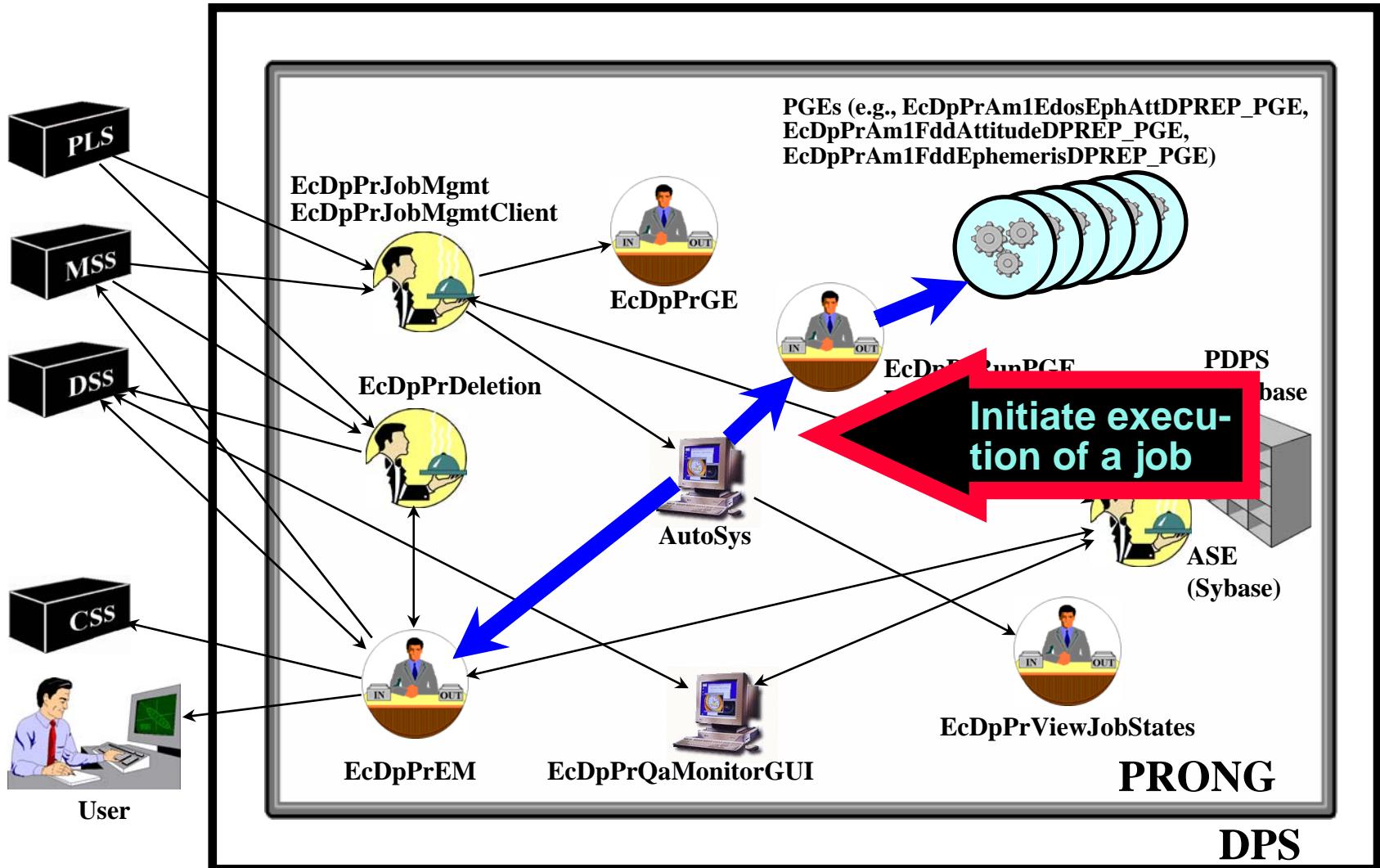
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



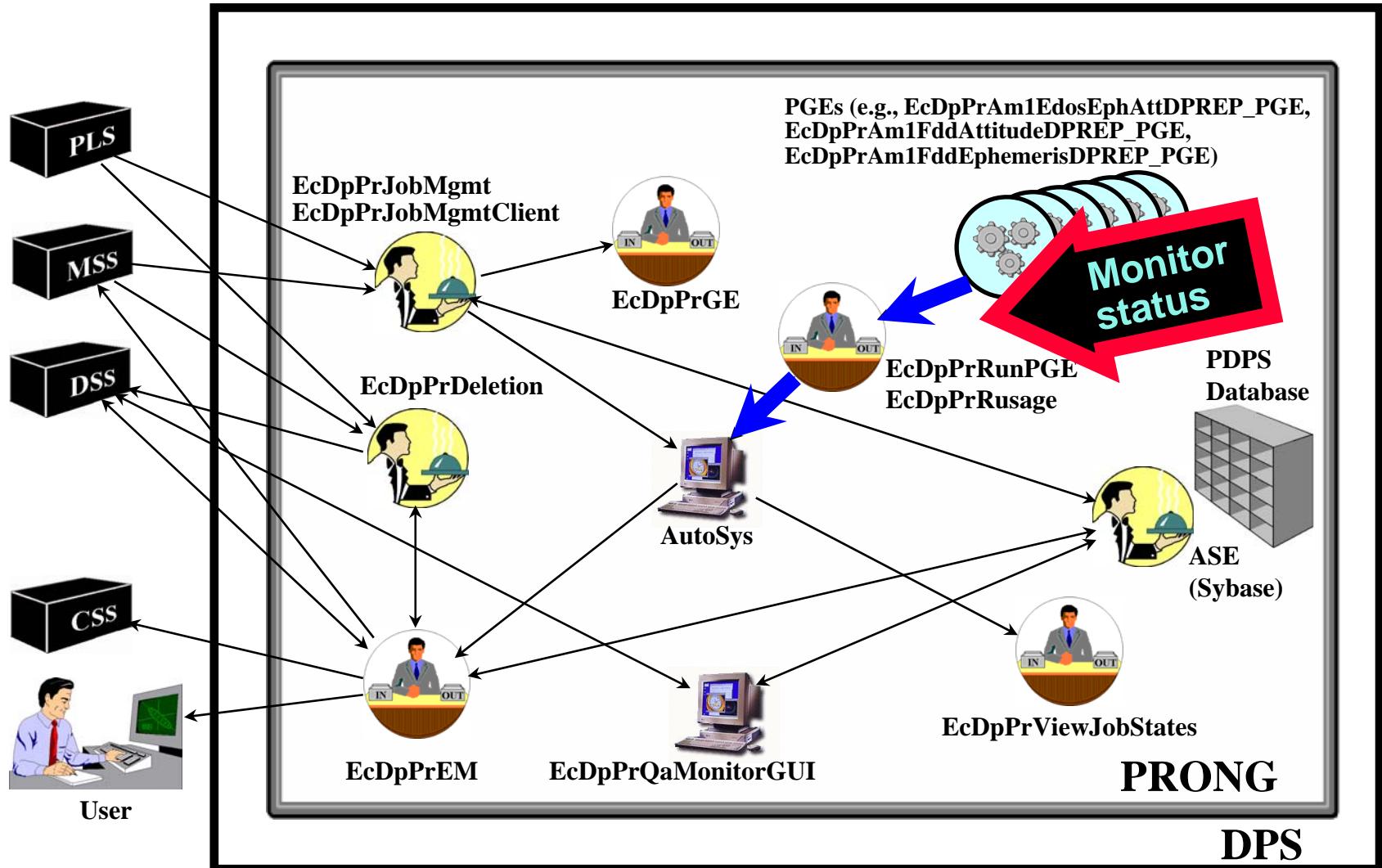
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



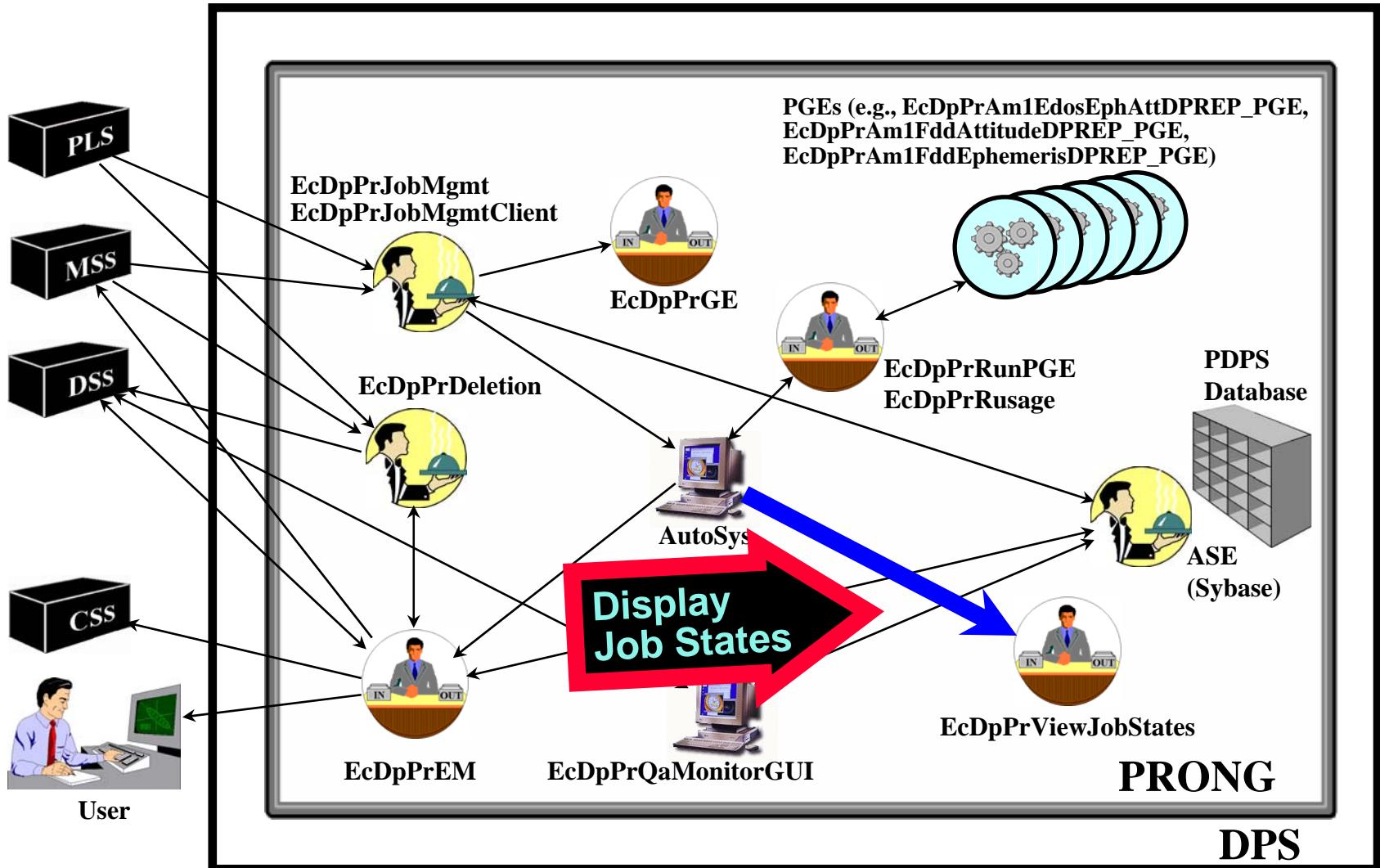
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



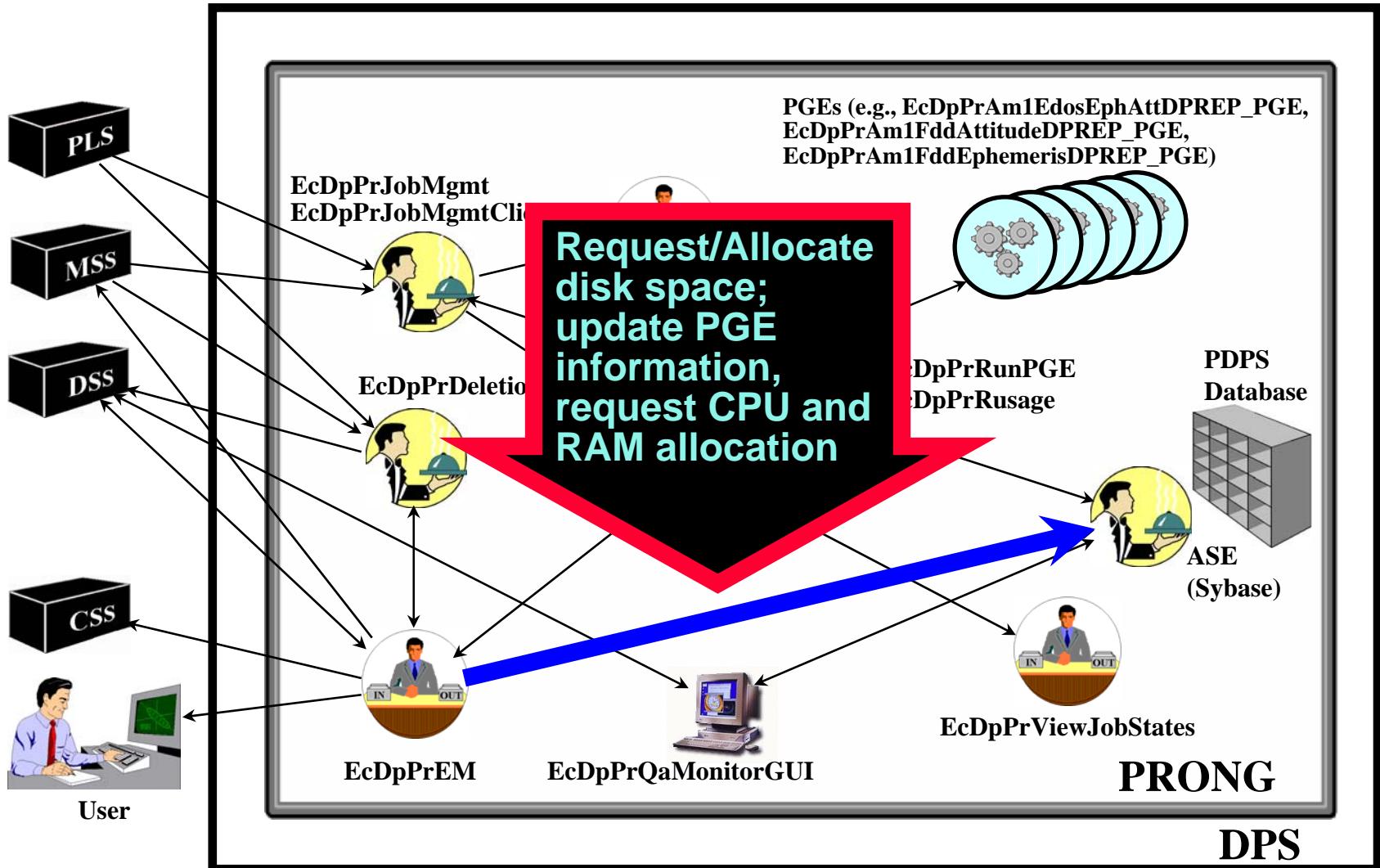
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



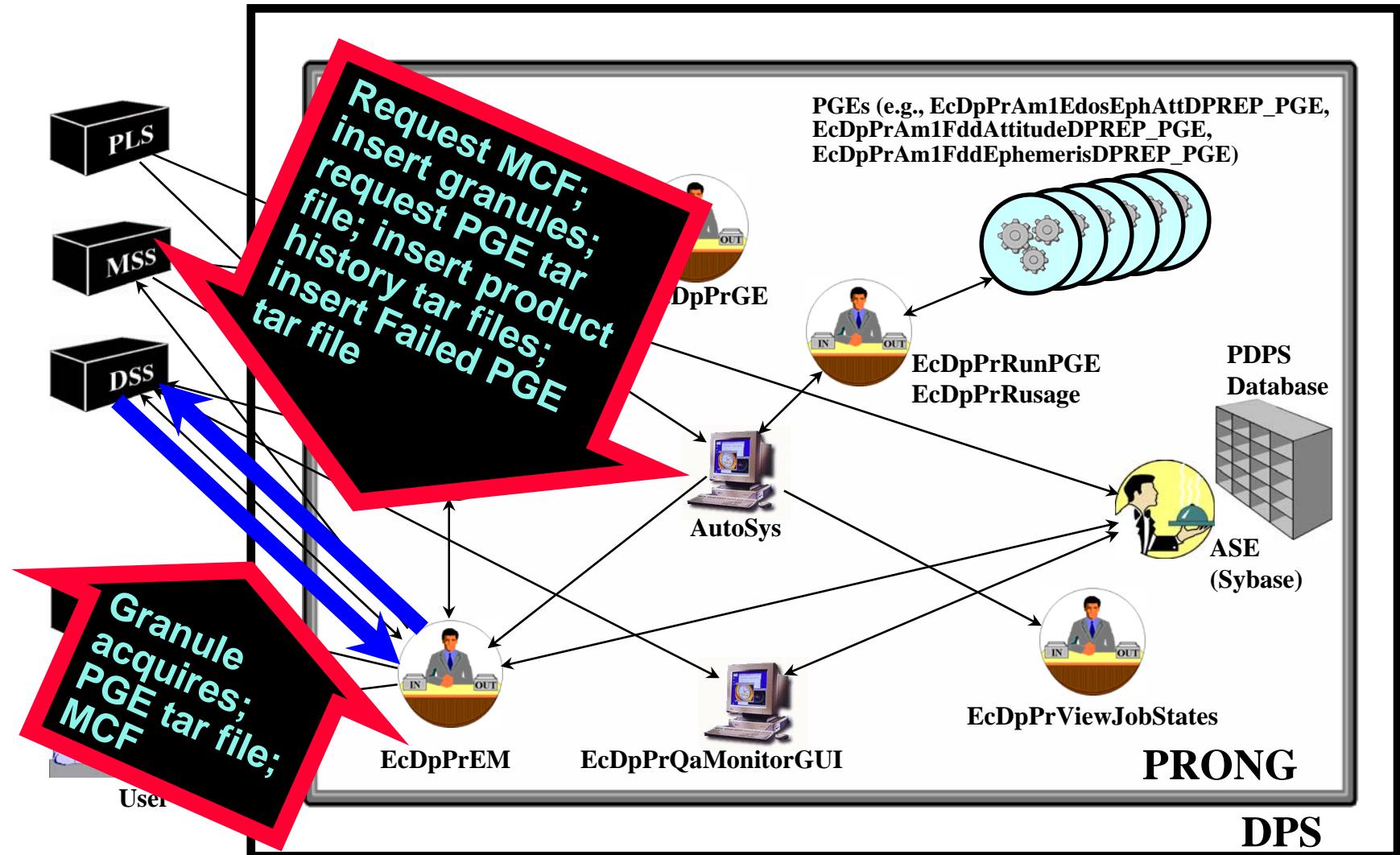
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



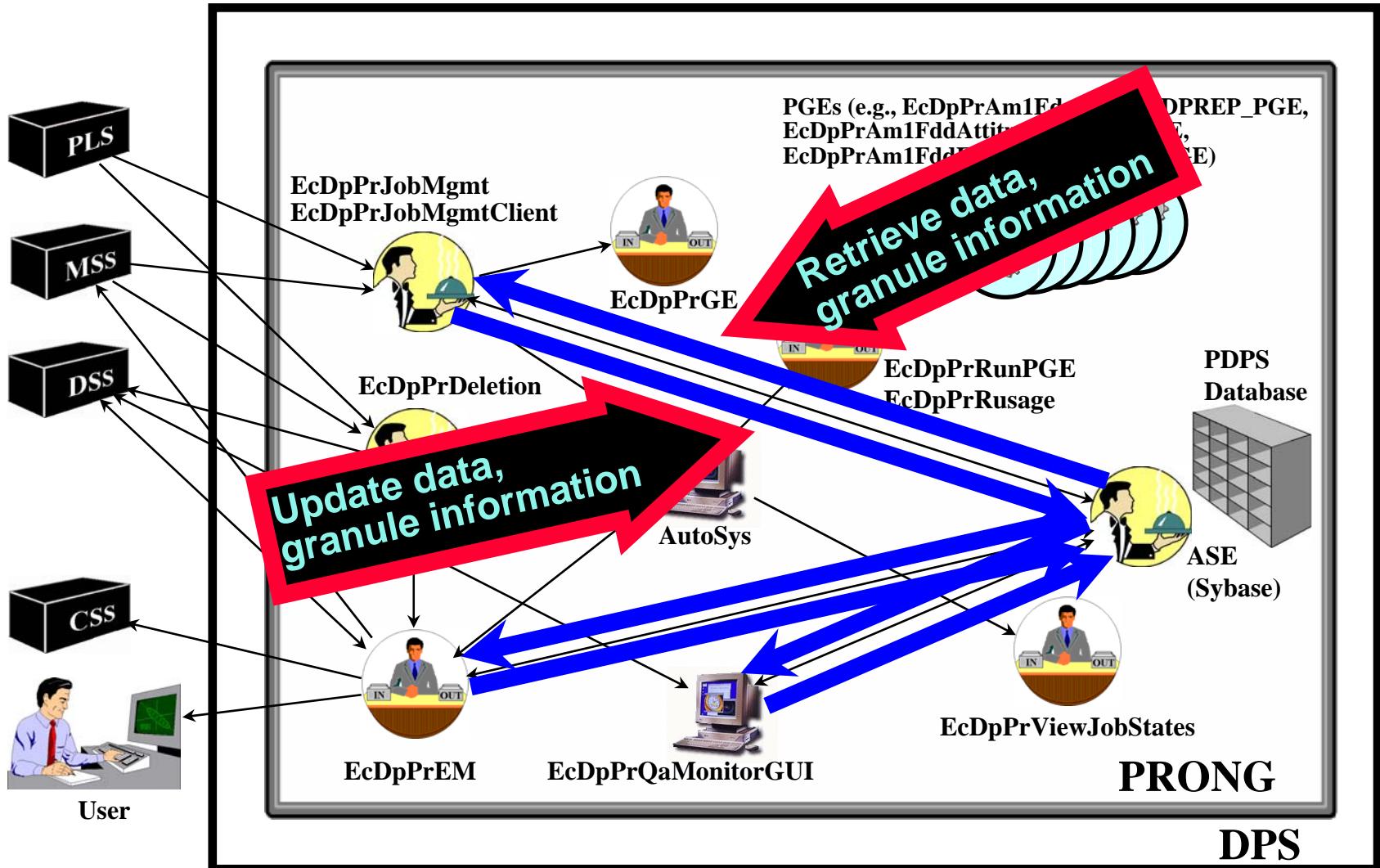
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



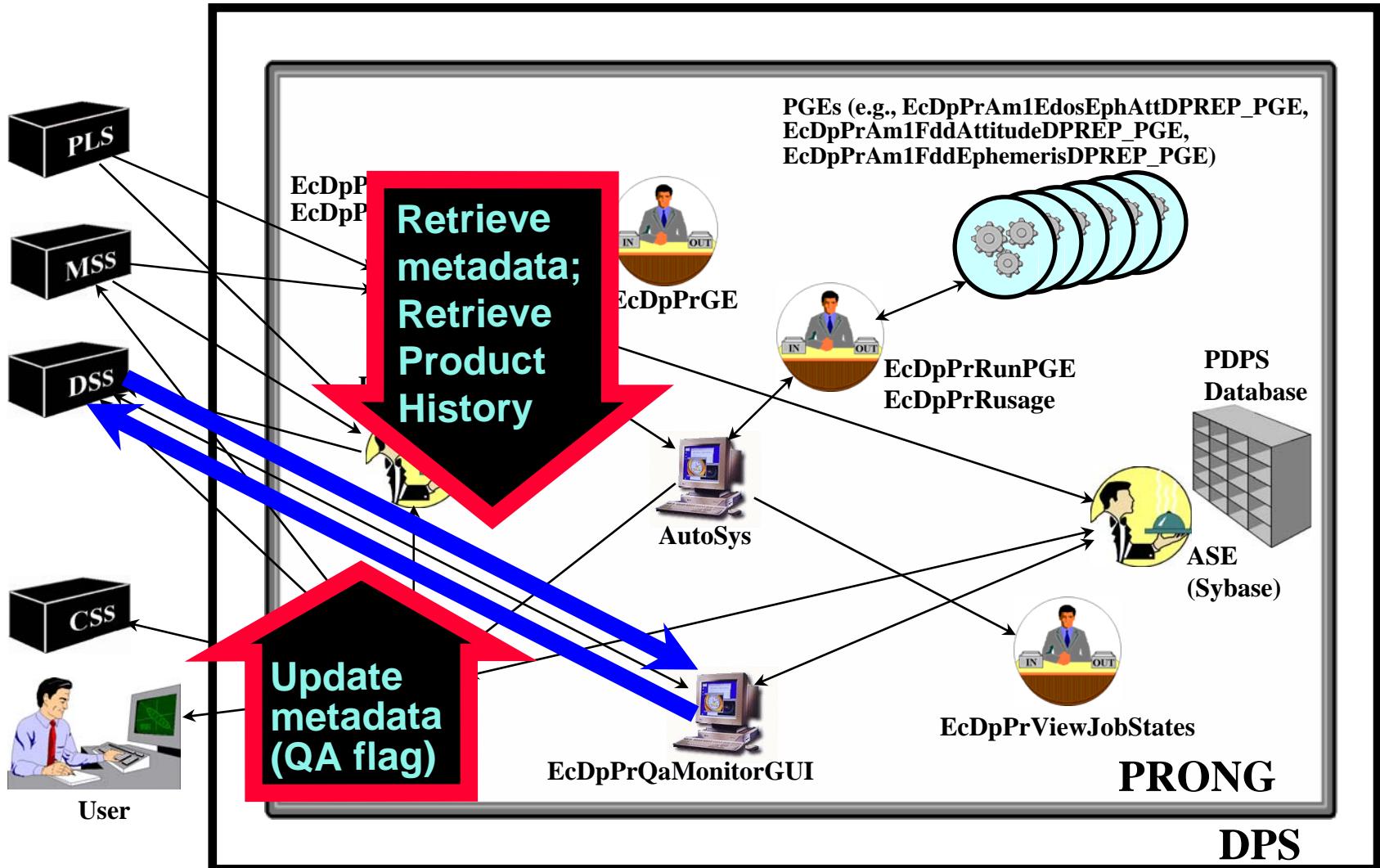
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



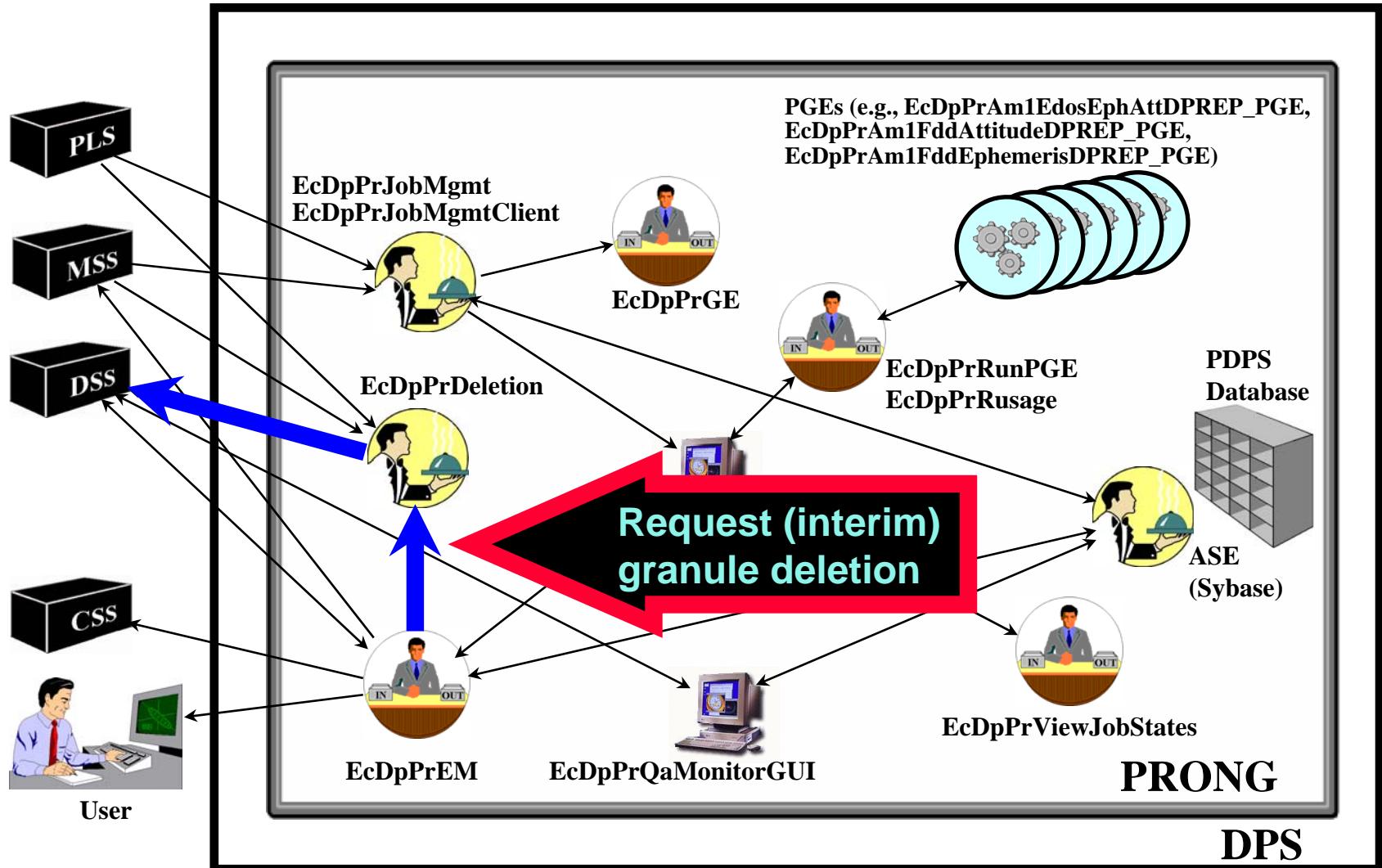
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



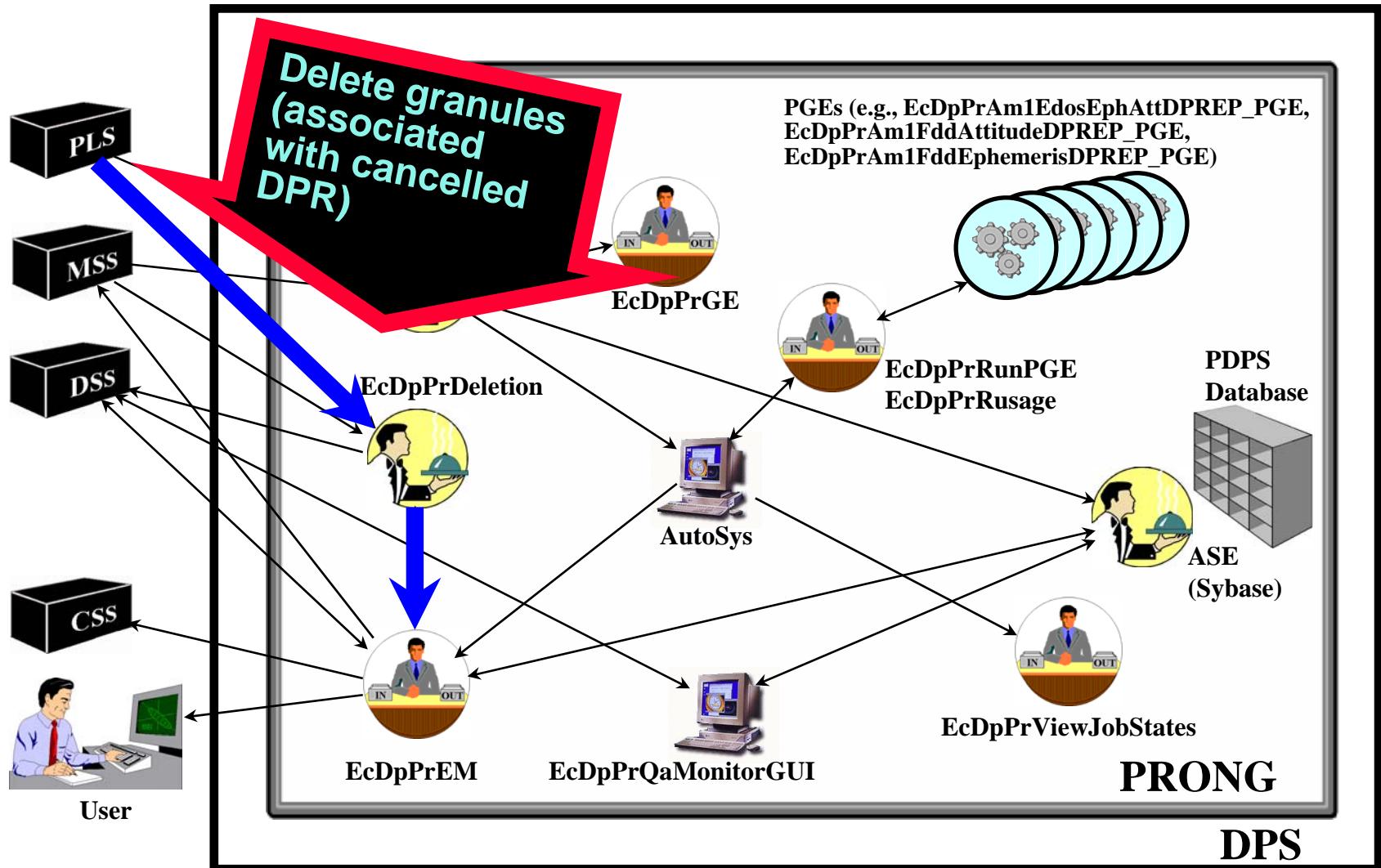
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



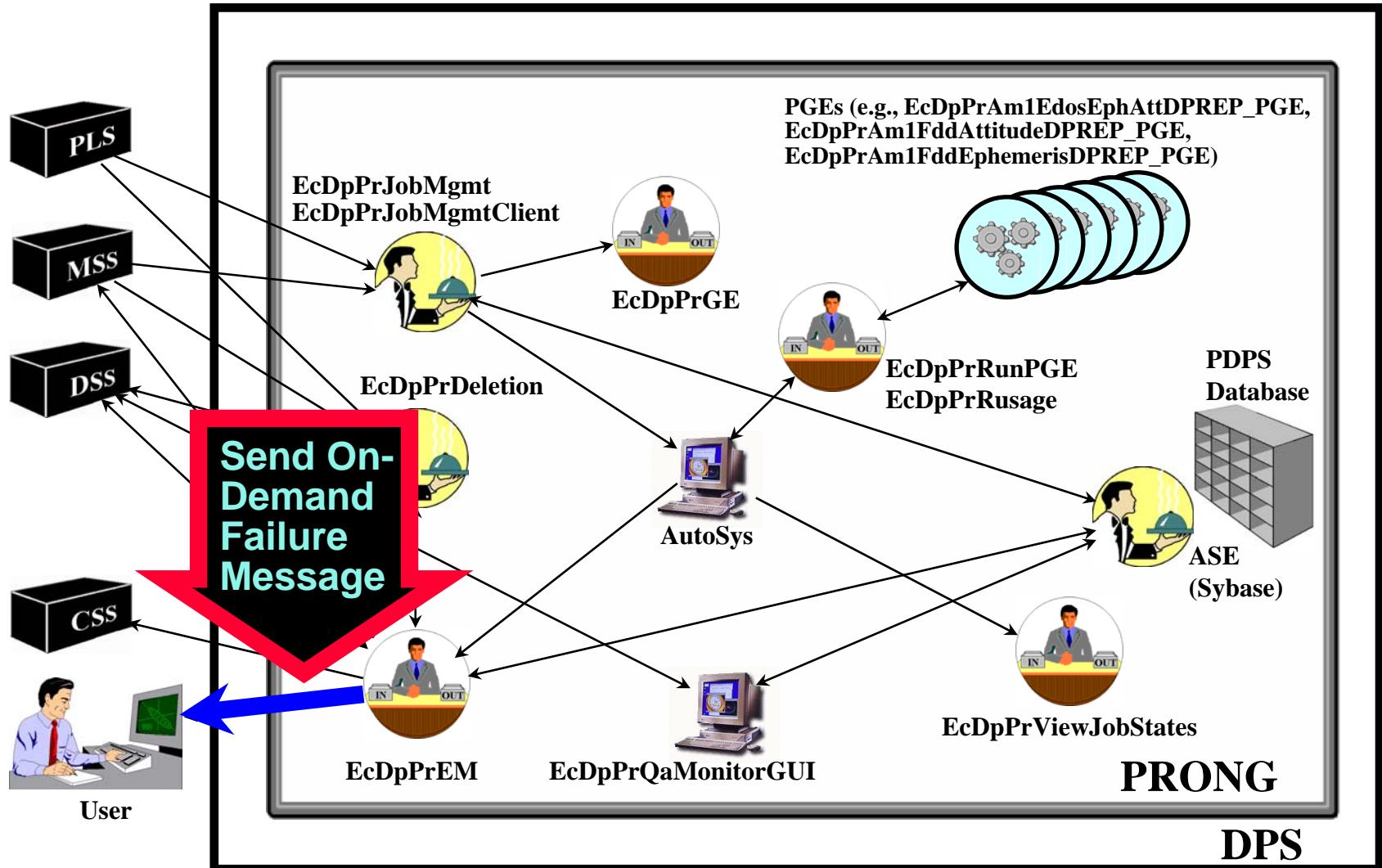
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



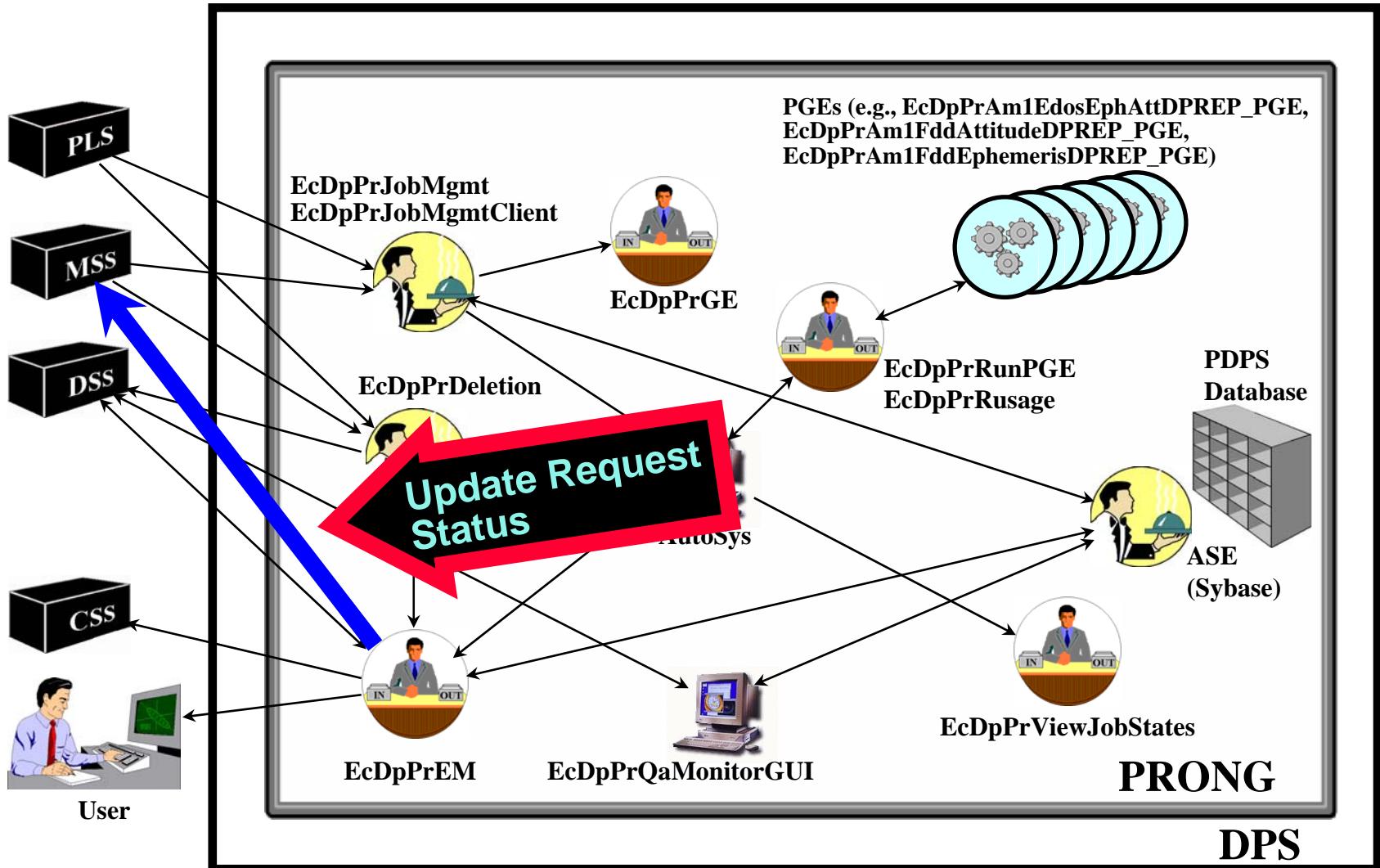
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



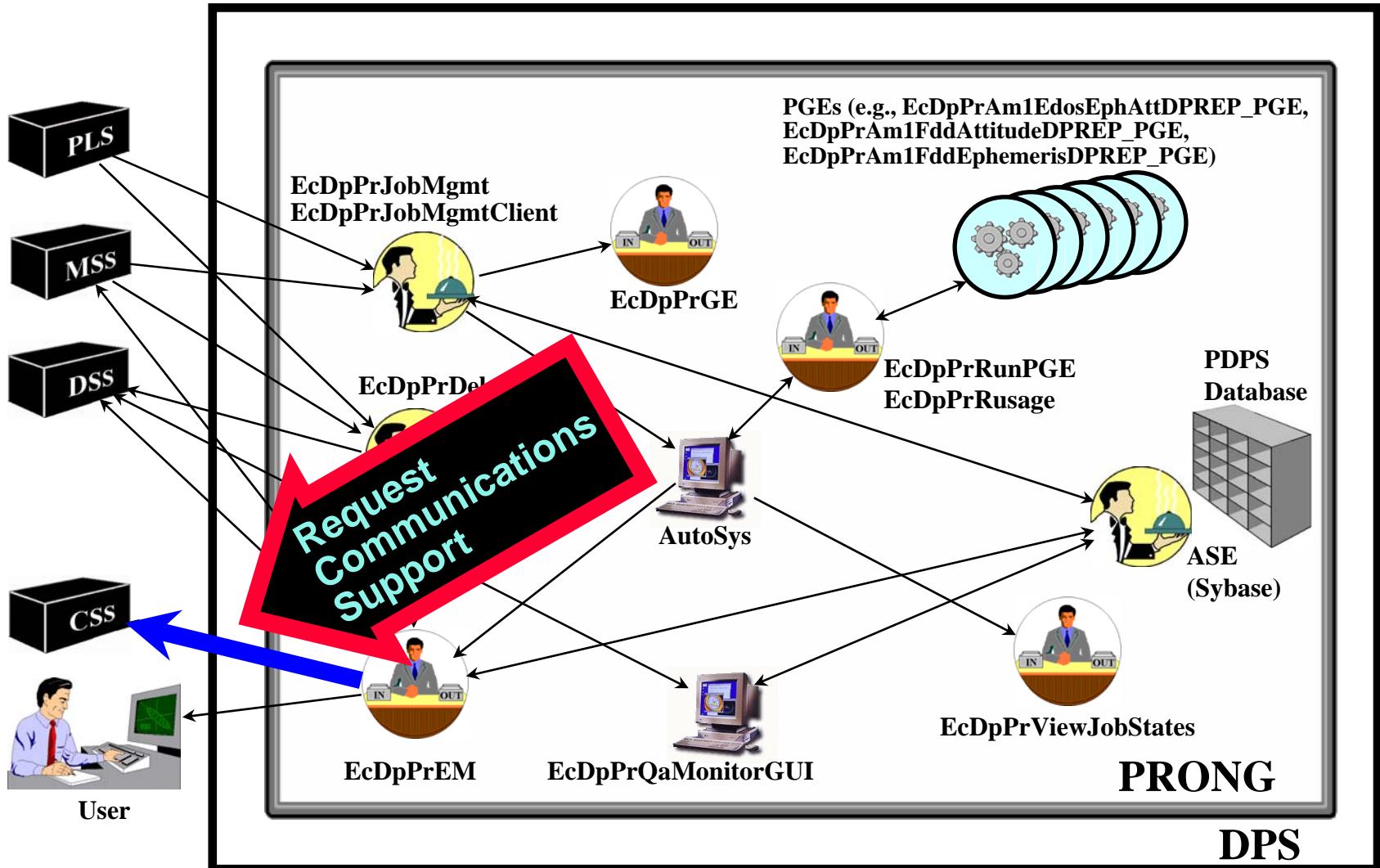
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



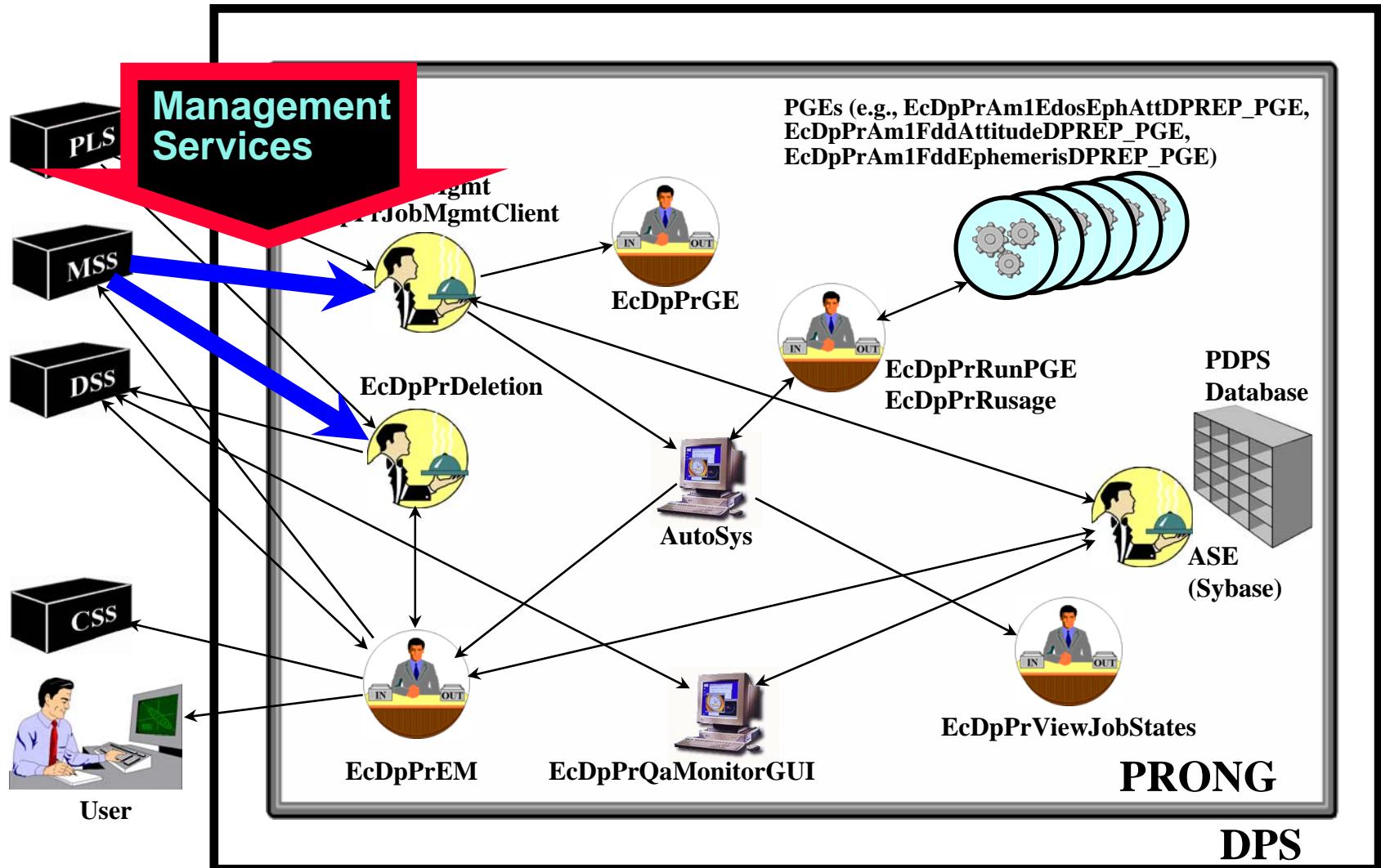
Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



Subsystems and CSCIs: DPS (Cont.) PRONG Architecture and Interfaces



Subsystems and CSCIs: DPS (Cont.)



- **Algorithm Integration and Test Tools (AITTL) CSCI**
 - Provides a set of tools used for testing and integration of new science software, new versions of science software, and user methods into the Science Data Processing operational environment
 - Combines custom-developed code with COTS software
 - Tools are accessed from a centralized application called the Science Software Integration and Test (SSIT) Manager

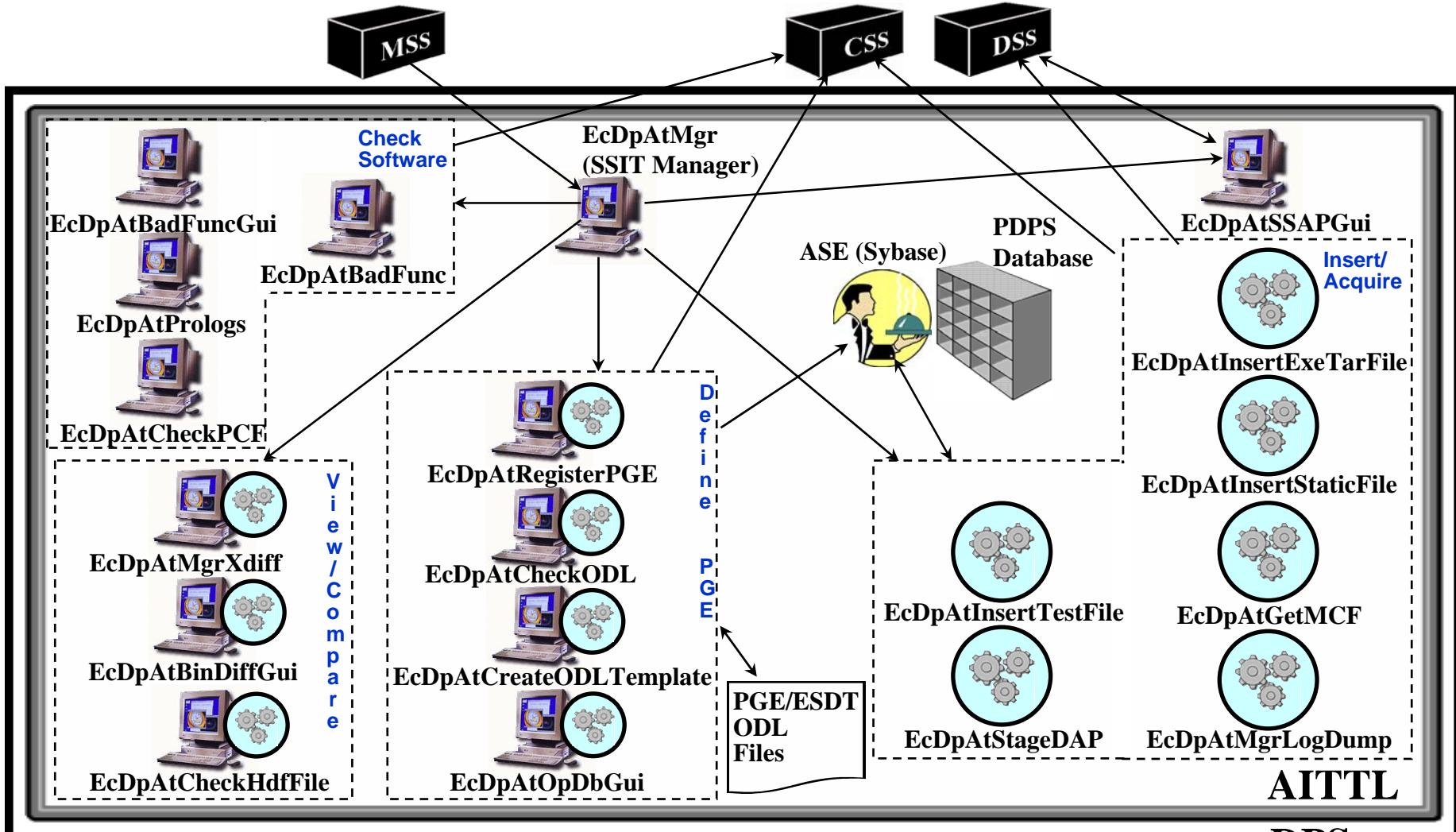
Subsystems and CSCIs: DPS (Cont.)



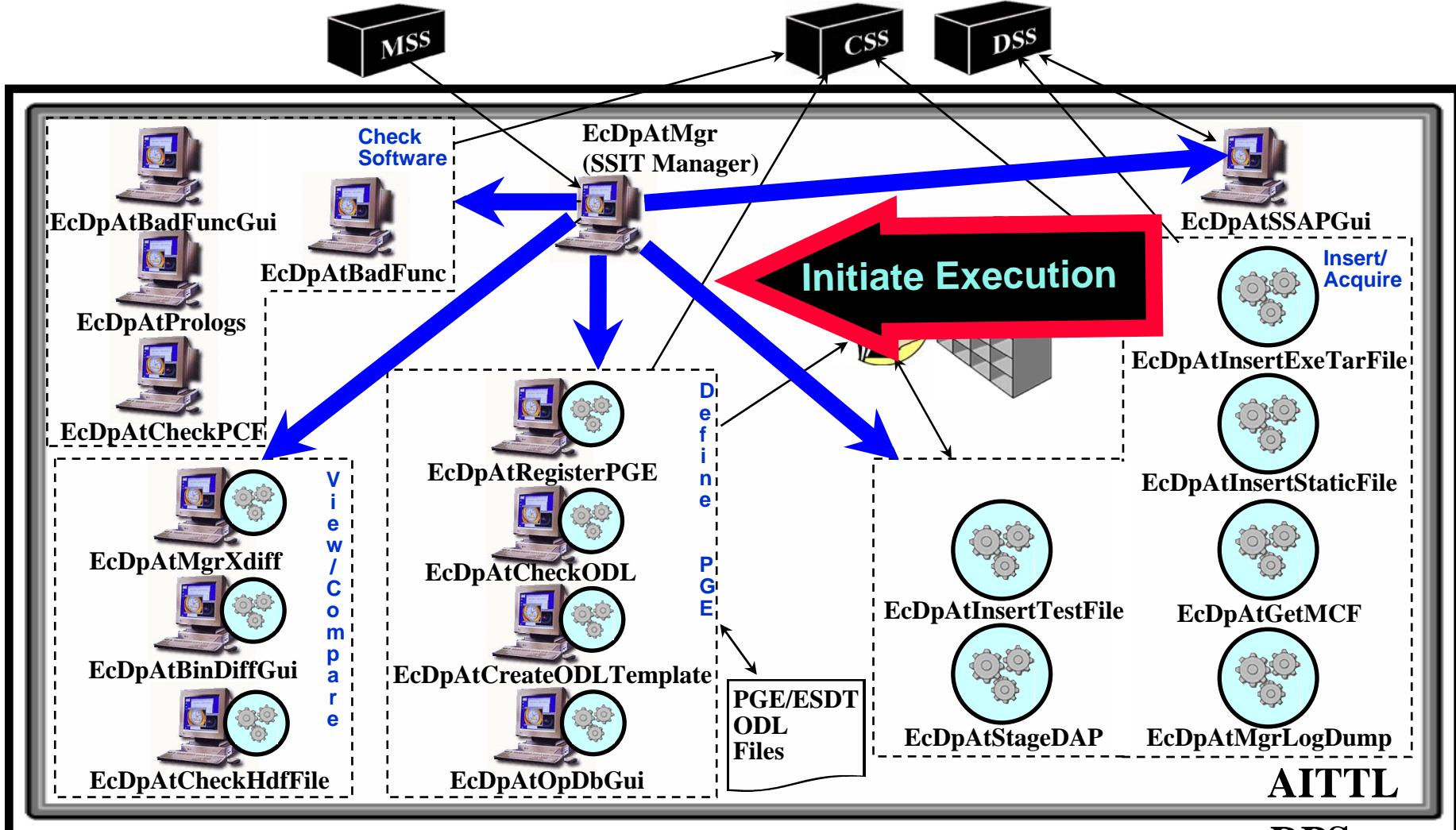
- Algorithm Integration and Test Tools (AITTL) CSCI (Cont.)
 - Six major components
 - **Science Software Archive Package (SSAP) GUI** - allows for the creation, update, and deletion of SSAPs
 - **SSIT Manager** - GUI for SSIT activities; provides menus to launch other SSIT applications and a checklist to mark completion of SSIT functions
 - **Define PGE** - a group of applications to specify a PGE in the PDPS database
 - **View/Compare Tools** - a group of applications for viewing and comparing data files
 - **Check Software Tools** - a group of applications that check the source code for PGEs and their process control files (PCFs) for errors or prohibited functions
 - **Insert/Acquire Tools** - a group of applications that provide mechanisms to insert and acquire data items from Data Server

Subsystems and CSCIs: DPS (Cont.)

AITTL Architecture and Interfaces

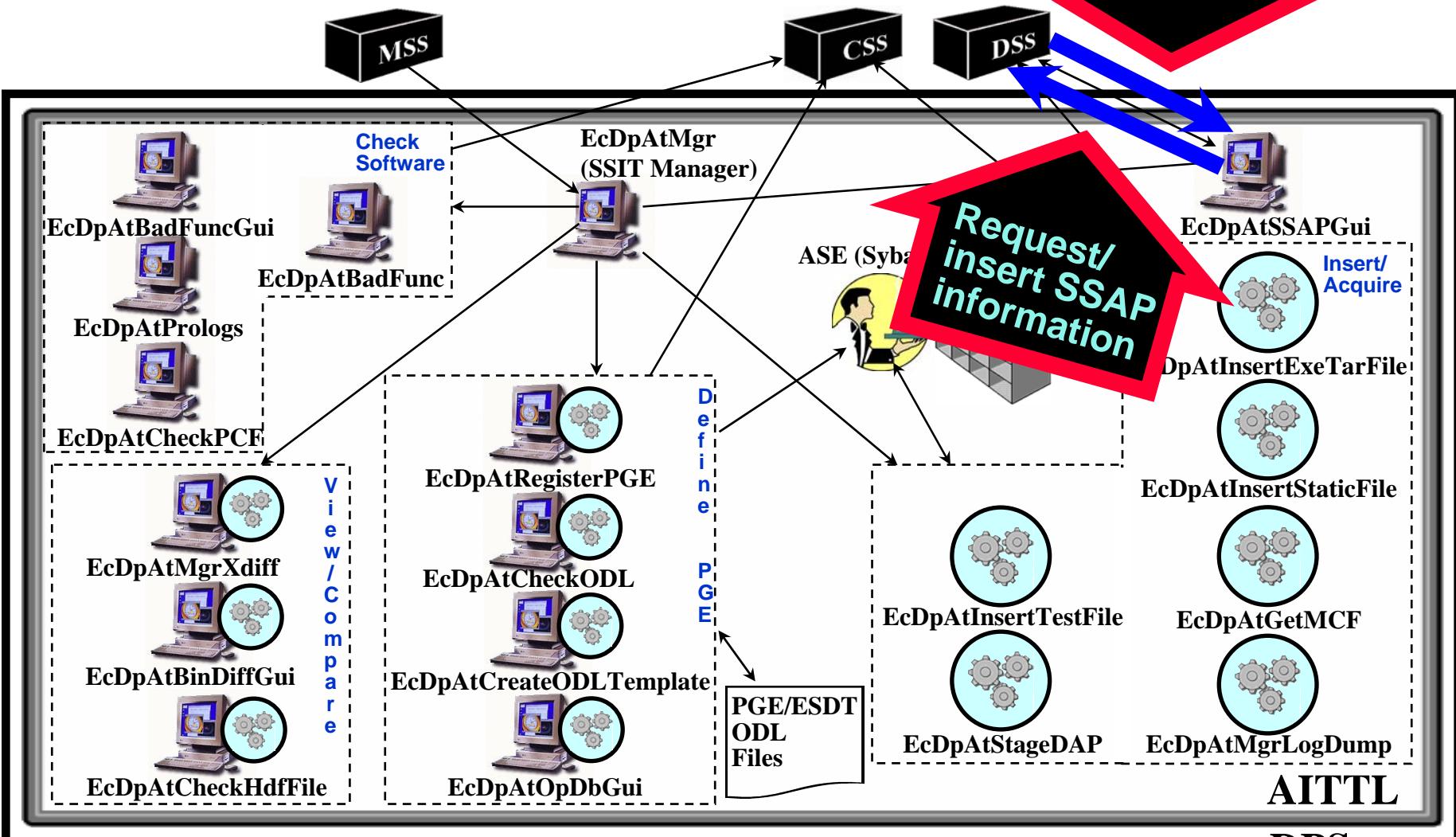


Subsystems and CSCIs: DPS (Cont.) AITTL Architecture and Interfaces



Subsystems and CSCIs: DPS (Cont.)

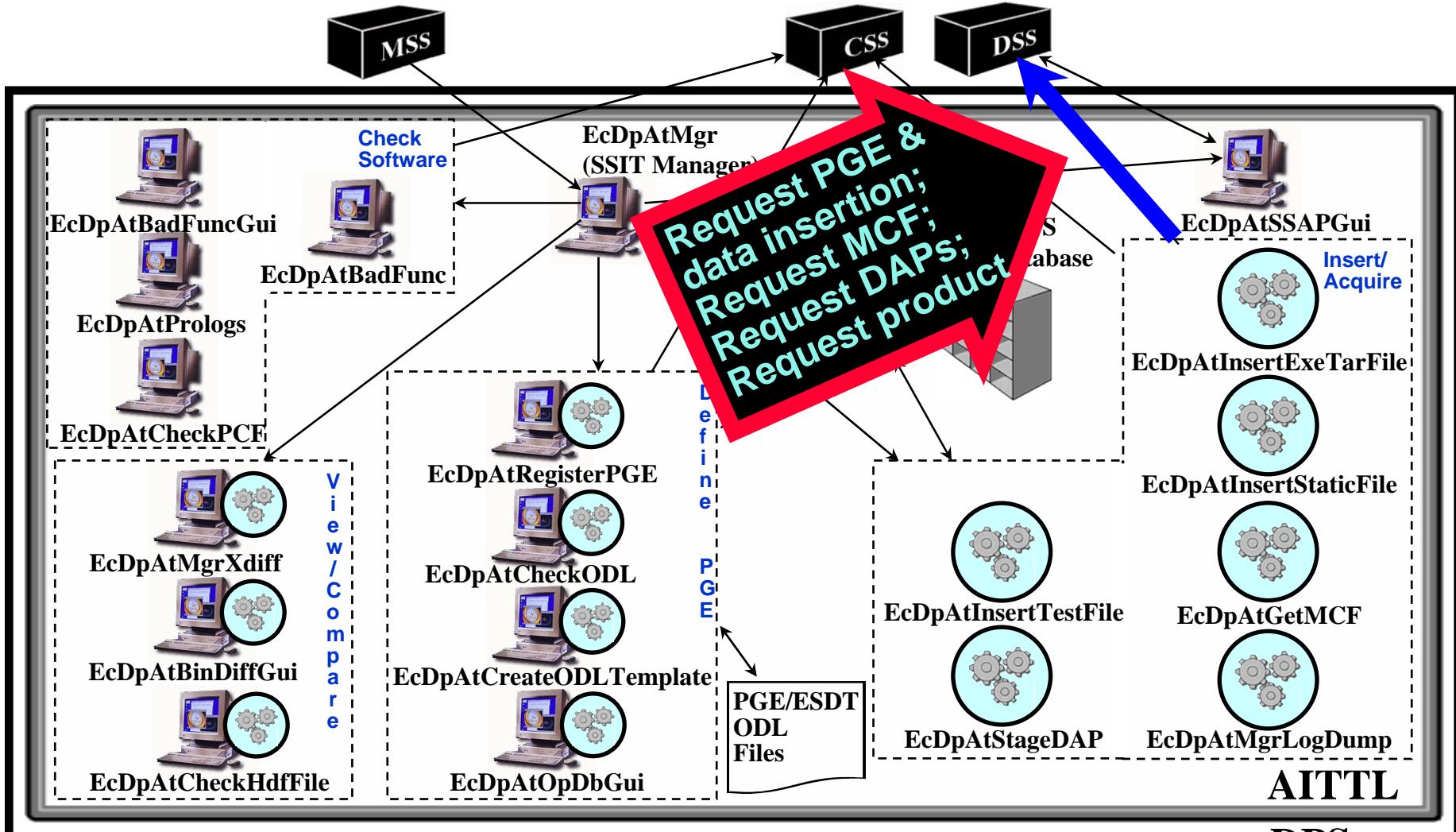
AITTL Architecture and Interface



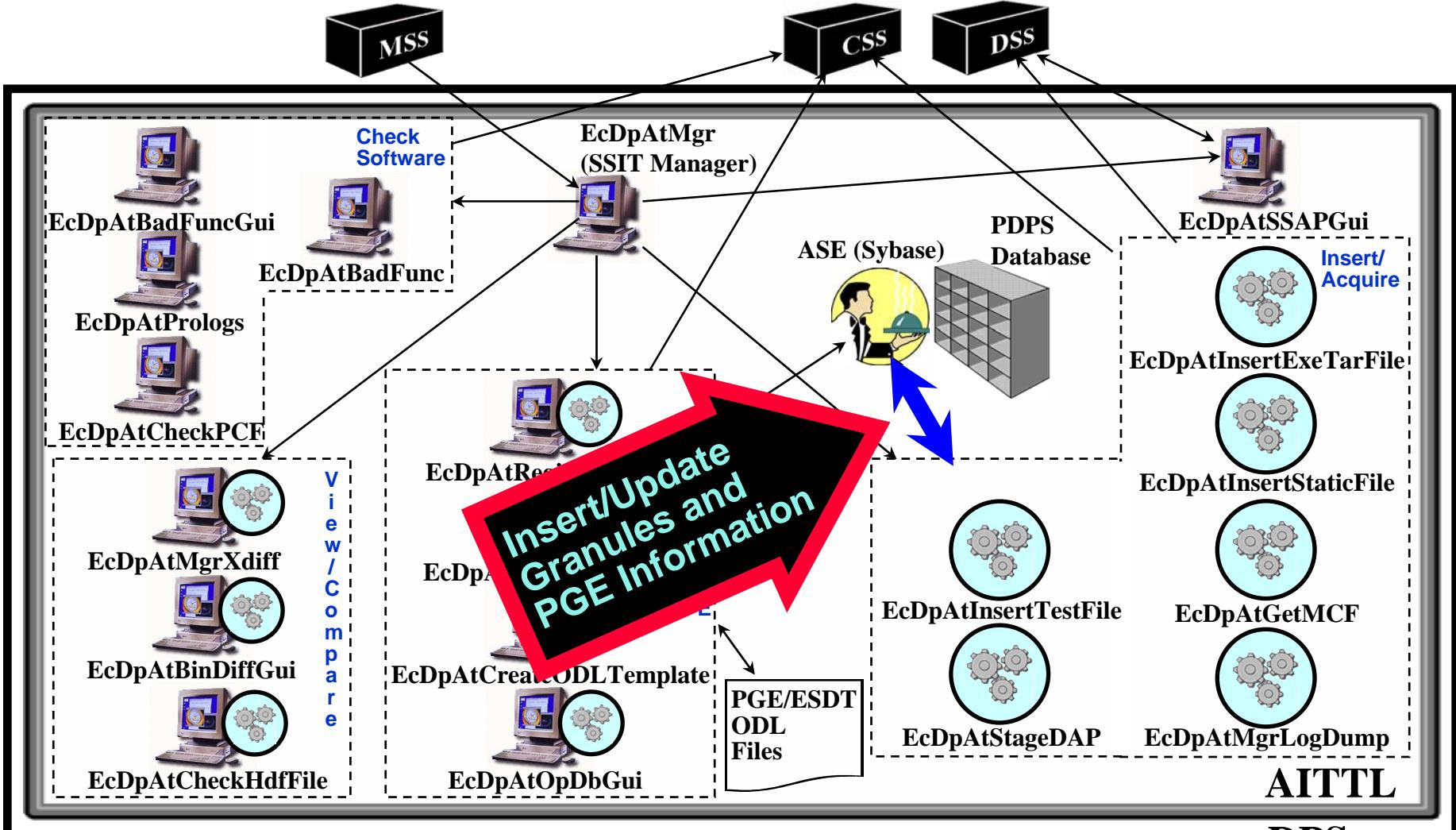
DPS

Subsystems and CSCIs: DPS (Cont.)

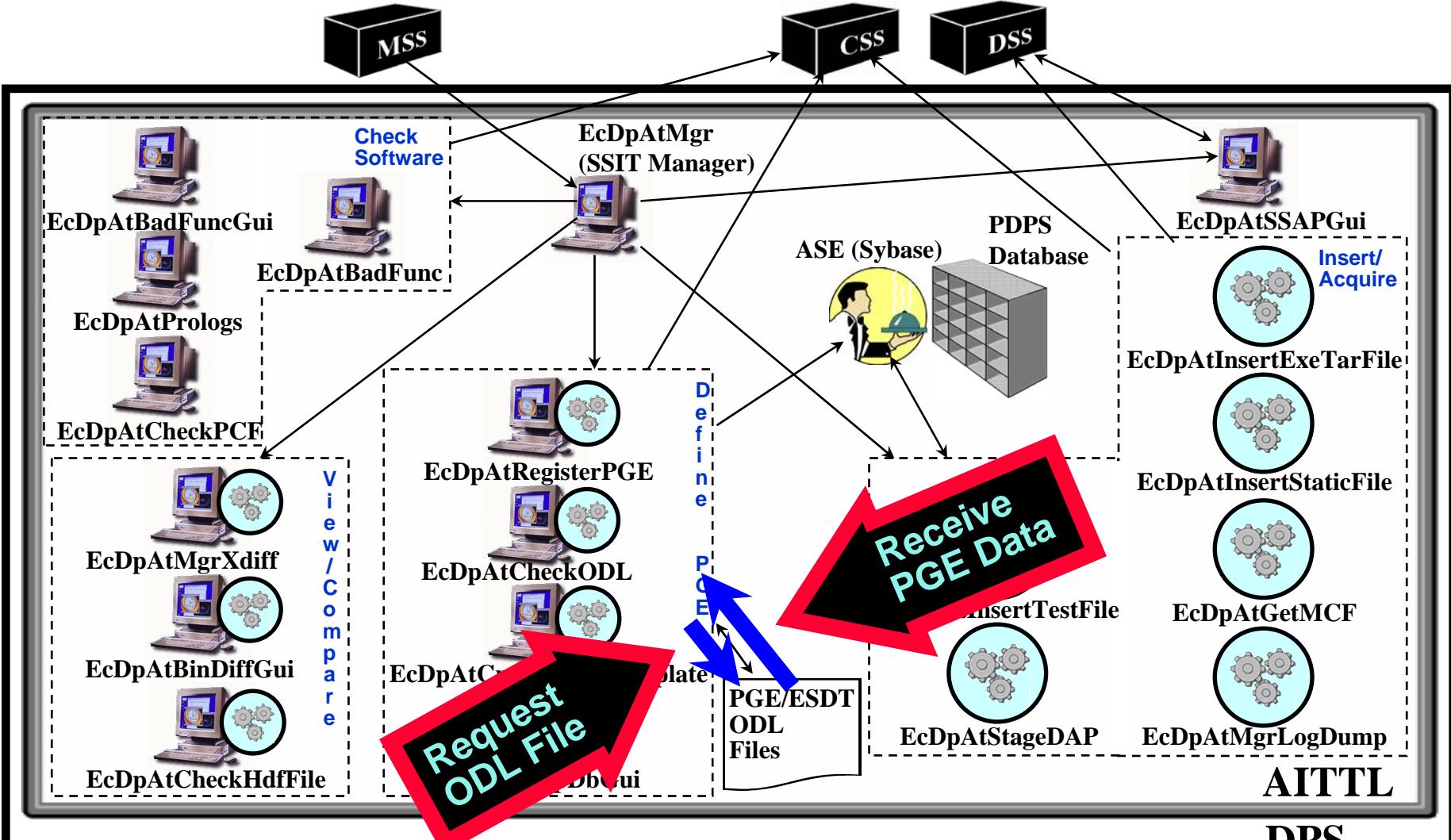
AITTL Architecture and Interfaces



Subsystems and CSCIs: DPS (Cont.) AITTL Architecture and Interfaces

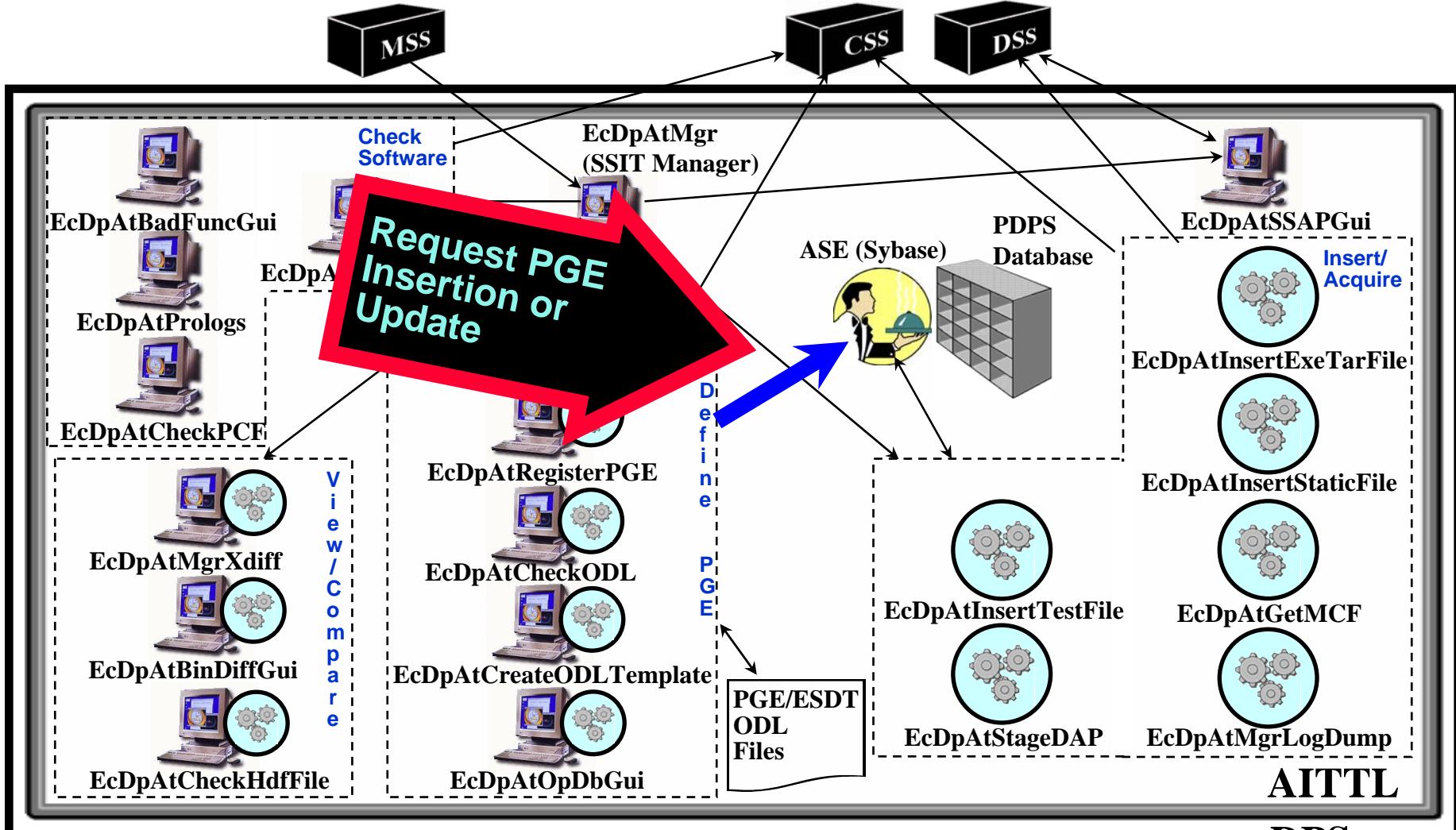


Subsystems and CSCIs: DPS (Cont.) AITTL Architecture and Interfaces



Subsystems and CSCIs: DPS (Cont.)

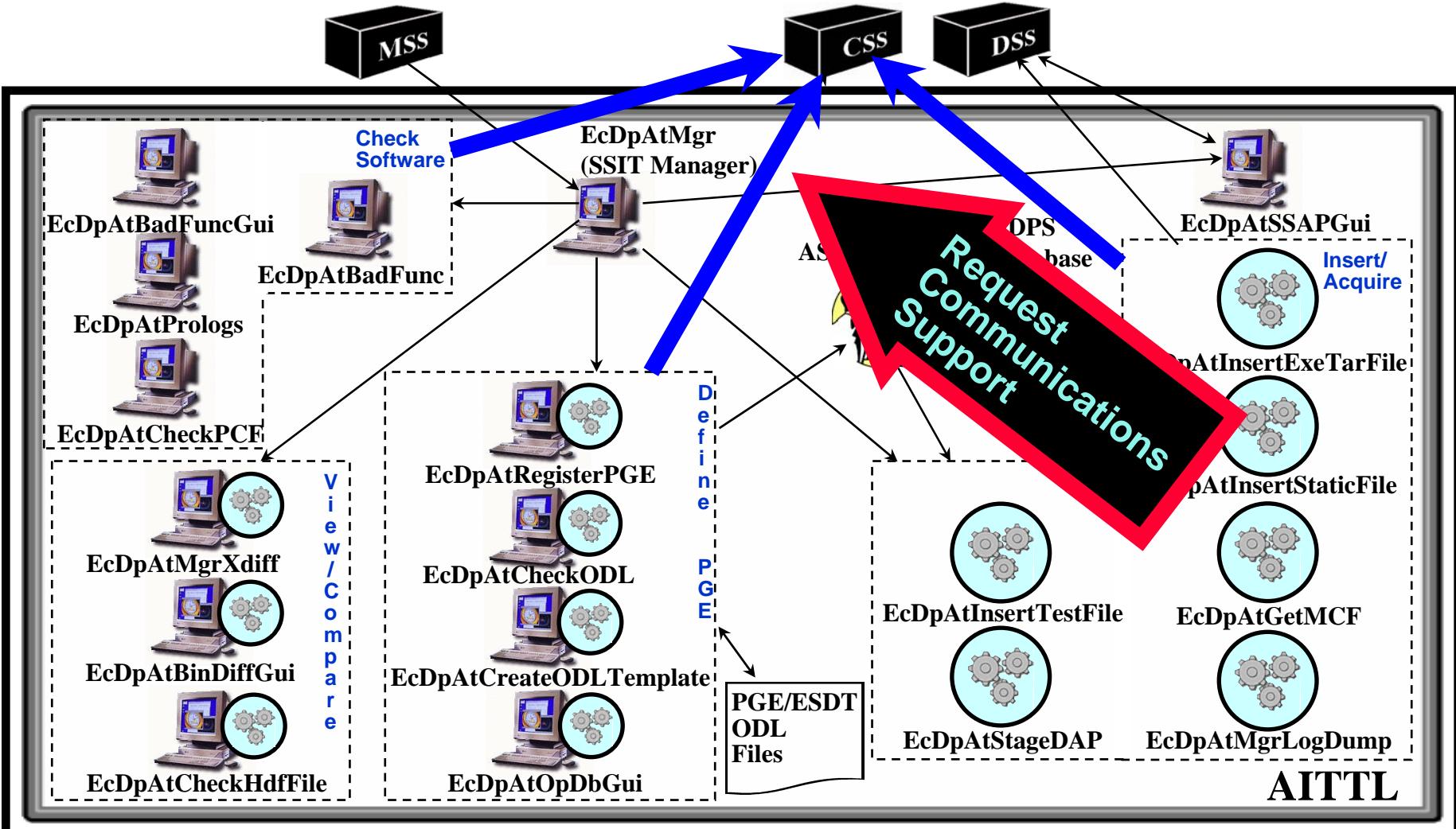
AITTL Architecture and Interfaces



DPS

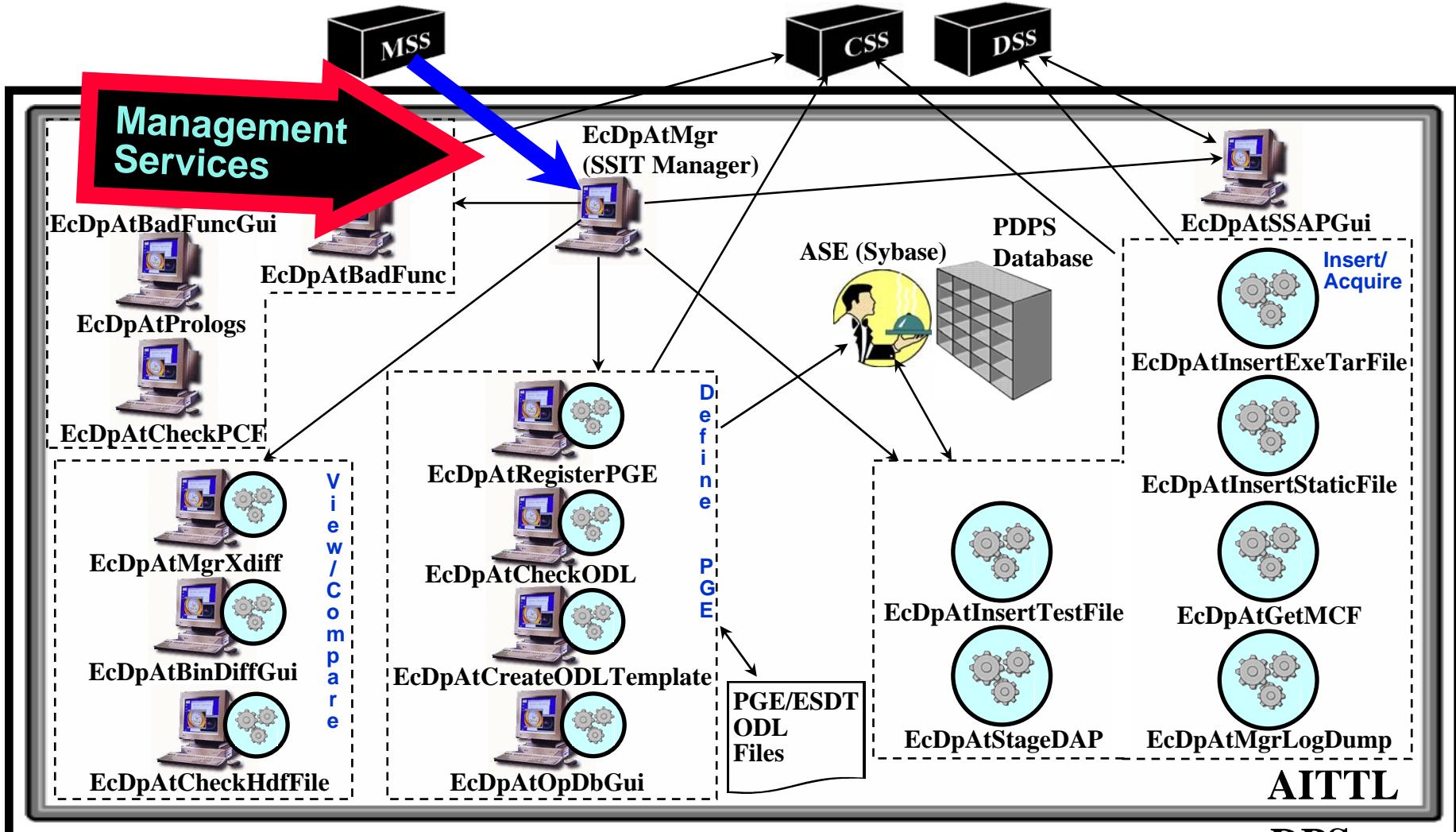
Subsystems and CSCIs: DPS (Cont.)

AITTL Architecture and Interfaces



Subsystems and CSCIs: DPS (Cont.)

AITTL Architecture and Interfaces



DPS

Subsystems and CSCIs: DPS (Cont.)



- **SDP Toolkit (SDPTK) CSCI**
 - Not described in detail in this course
 - Provides a set of software tools used to integrate Science Software into ECS
 - Provides common functionality (e.g., geolocation) required across the ECS community
 - Allows Science Data Processing to support generation of data products in a heterogeneous computer hardware environment
 - Facilitates the smooth transition and integration of science software code into the DAAC by abstracting out science process dependencies on external system architecture
 - Provides an interface between science software and the production system environment
 - Interface is implemented in both the SCF development environments and DAAC production environments

Subsystems and CSCIs: DPS (Cont.)



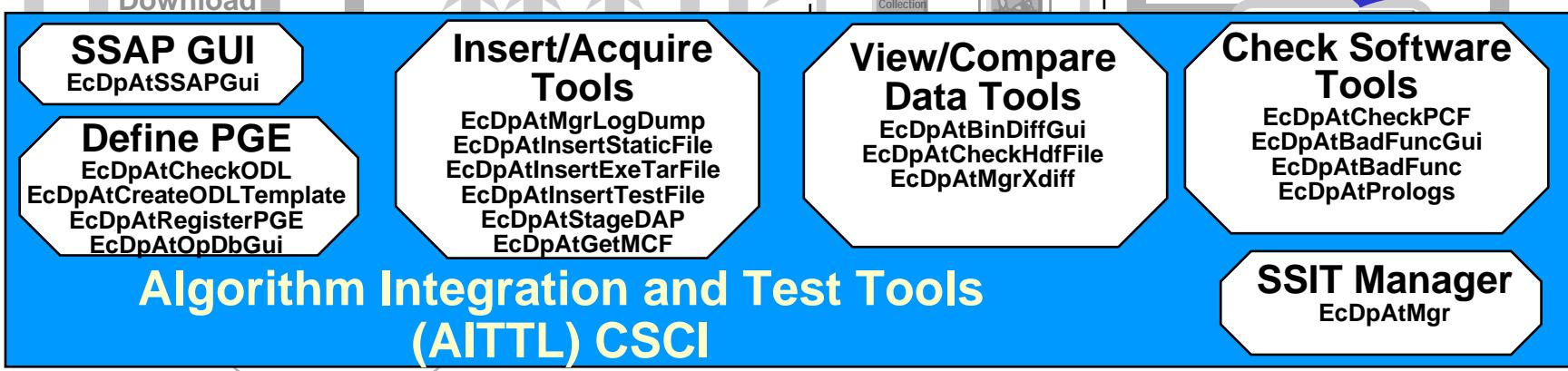
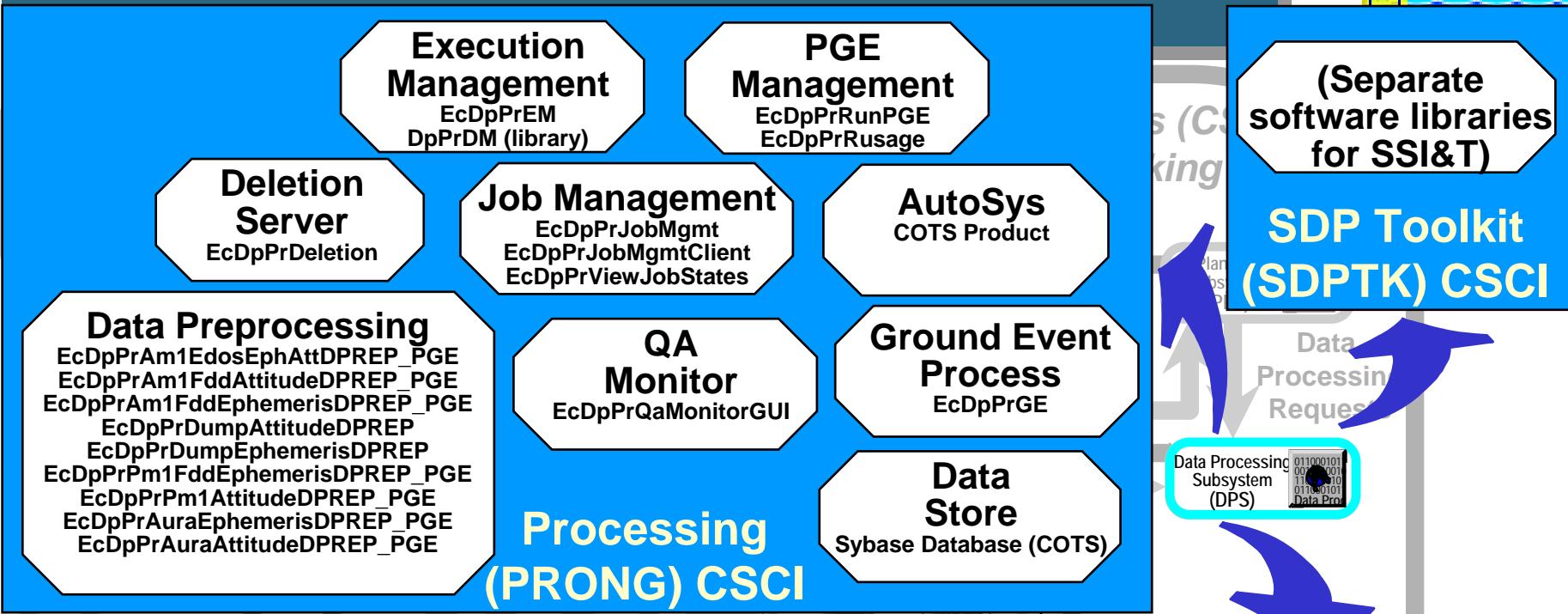
- **SDP Toolkit (SDPTK) CSCI (Cont.)**
 - **Insulates science software from the SDP software and provides a development environment that emulates critical SDP functions**
 - Helps ensure code portability as the algorithm is ported from development hardware, through the DAAC system, and through potential hardware changes as ECS matures
 - Provides for limited access and control to system level resources, including processes, shared memory, and I/O capabilities
 - Where control of system resources is necessary (e.g., shared memory allocation), Toolkit provides a set of routines through which the application must obtain those services
 - Partitioning and layering of operating system services allows Toolkit to work on behalf of DPS in allocating, deallocating, and making use of system-wide shared resources

Subsystems and CSCIs: DPS (Cont.)

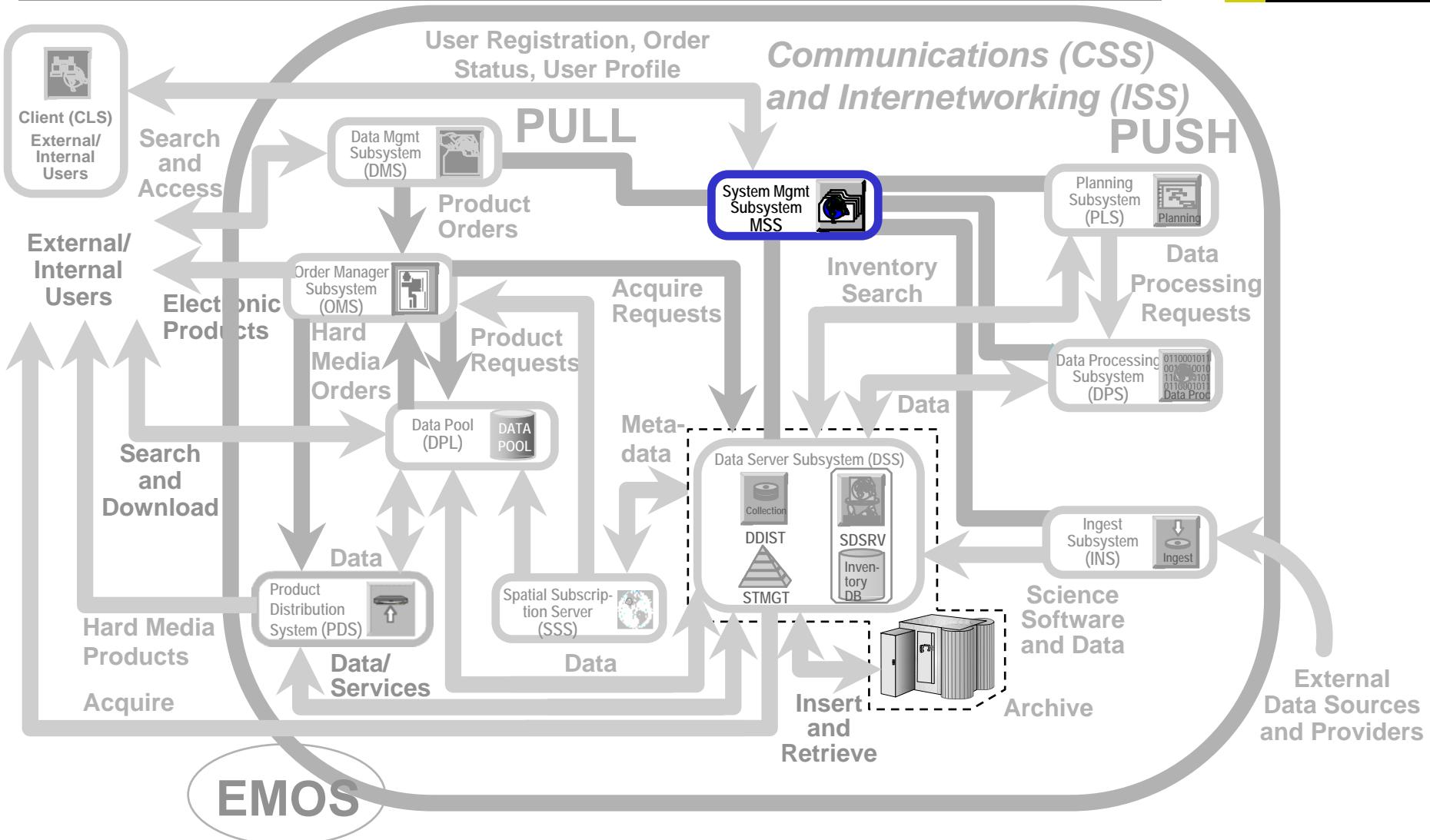


- **SDP Toolkit (SDPTK) CSCI (Cont.)**
 - SDP Toolkit Tools - Mandatory
 - File I/O Tools
 - Error/Status Reporting [Status Message File (SMF) Tools]
 - Process Control Tools
 - Shared Memory Management Tools
 - Bit Manipulation Tools
 - Spacecraft Ephemeris and Attitude Data Access Tools
 - Time and Date Conversion Tools
 - SDP Toolkit Tools - Optional
 - Digital Elevation Model Tools
 - Ancillary Data Tools
 - Celestial Body Position Tools
 - Coordinate System Conversion Tools
 - Geo-Coordinate Transformation Tools
 - Math and Statistical Support Tools
 - Constants and Unit Conversions
 - Dynamic Memory Management Tools
 - Graphics Support Tools

Subsystems and CSCIs: DPS (Cont.)



Subsystems and CSCIs: MSS



Subsystems and CSCIs: MSS



- **System Management Subsystem (MSS)**
 - Provides the set of tools needed by maintenance and operations staff to manage ECS operations
 - Addresses five areas
 - Fault Management
 - Configuration Management
 - Accountability Management
 - Performance Management
 - Security Management
 - Installed locally at each DAAC and at System Monitoring and Coordination Center (SMC)
 - Uses COTS applications extensively, including Sybase Replication Server
 - Includes **ECS Assistant**, a GUI that runs an extensive array of UNIX scripts for system installation, monitoring, and administration



Subsystems and CSCIs: MSS (Cont.)



- **Management CSCI (MCI)**
 - Primarily COTS-based, with some custom software
 - Provides services for monitoring and coordinating ECS
 - **Network and Enterprise Management Framework component**
 - Whazzup???
 - Monitors server status
 - Monitors host resource usage
 - WhatsUp Gold
 - Network monitoring
 - Fault detection
 - **Security Service component**
 - Various freeware or public domain packages
 - Monitor and evaluate security and report status

Subsystems and CSCIs: MSS (Cont.)



- Management CSCI (MCI) (Cont.)
 - Accountability Management Service (AMS) component
 - Custom software
 - Account Management Tool (for User Registration and User Profile updates)
 - Order Tracking Tool
 - Sybase ASE Server/Sybase Replication Server

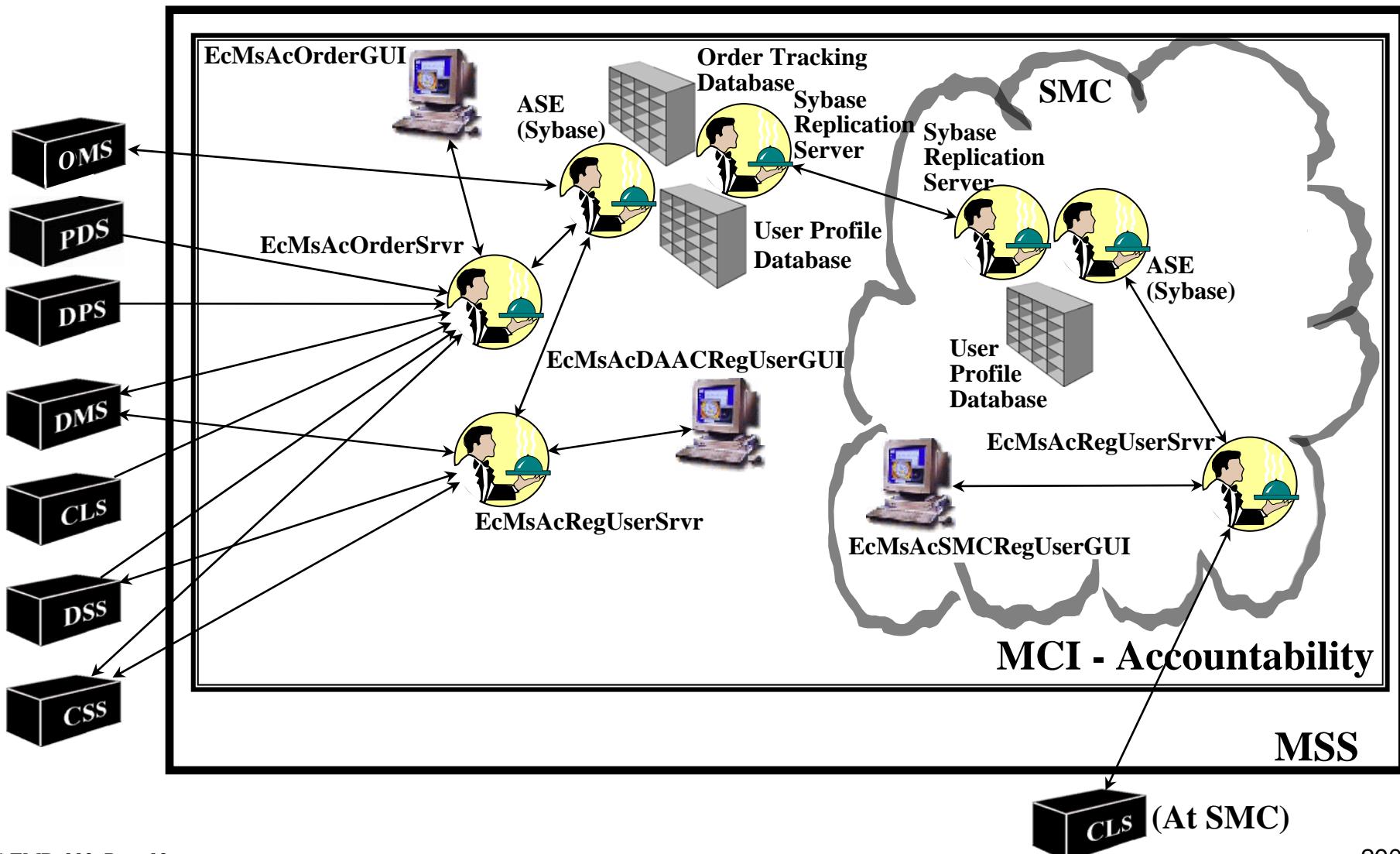
Subsystems and CSCIs: MSS (Cont.)



- Management CSCI (MCI) (Cont.)
 - Trouble Ticketing component
 - Custom-configured COTS software: Remedy Action Request System
 - Network Backup/Restore component
 - COTS software: Legato Networker
 - ASTER E-Mail Header Handler component
 - Custom scripts work with COTS e-mail to add a formatted header to all e-mail exchanges between the ASTER Ground Data System and ECS

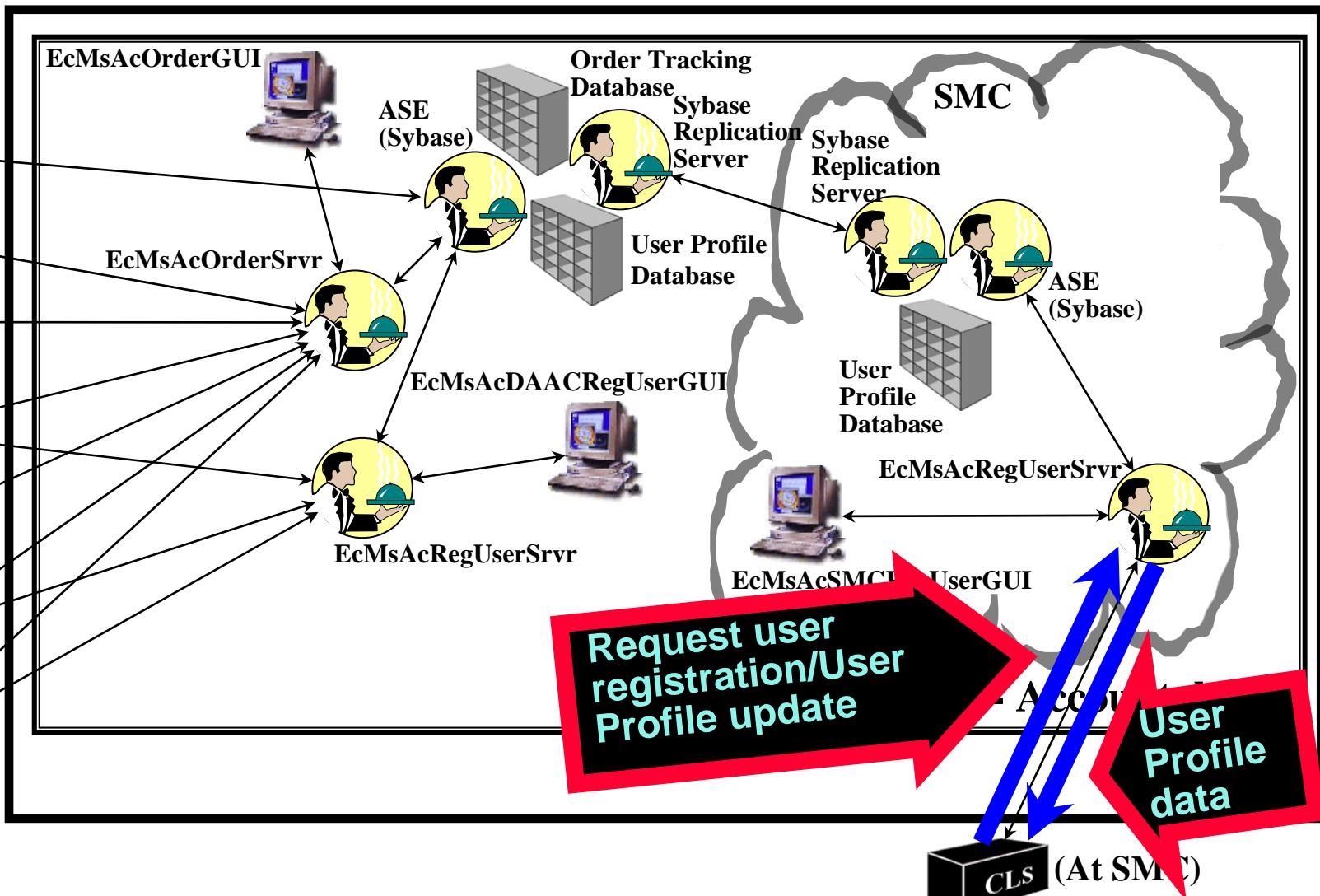
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



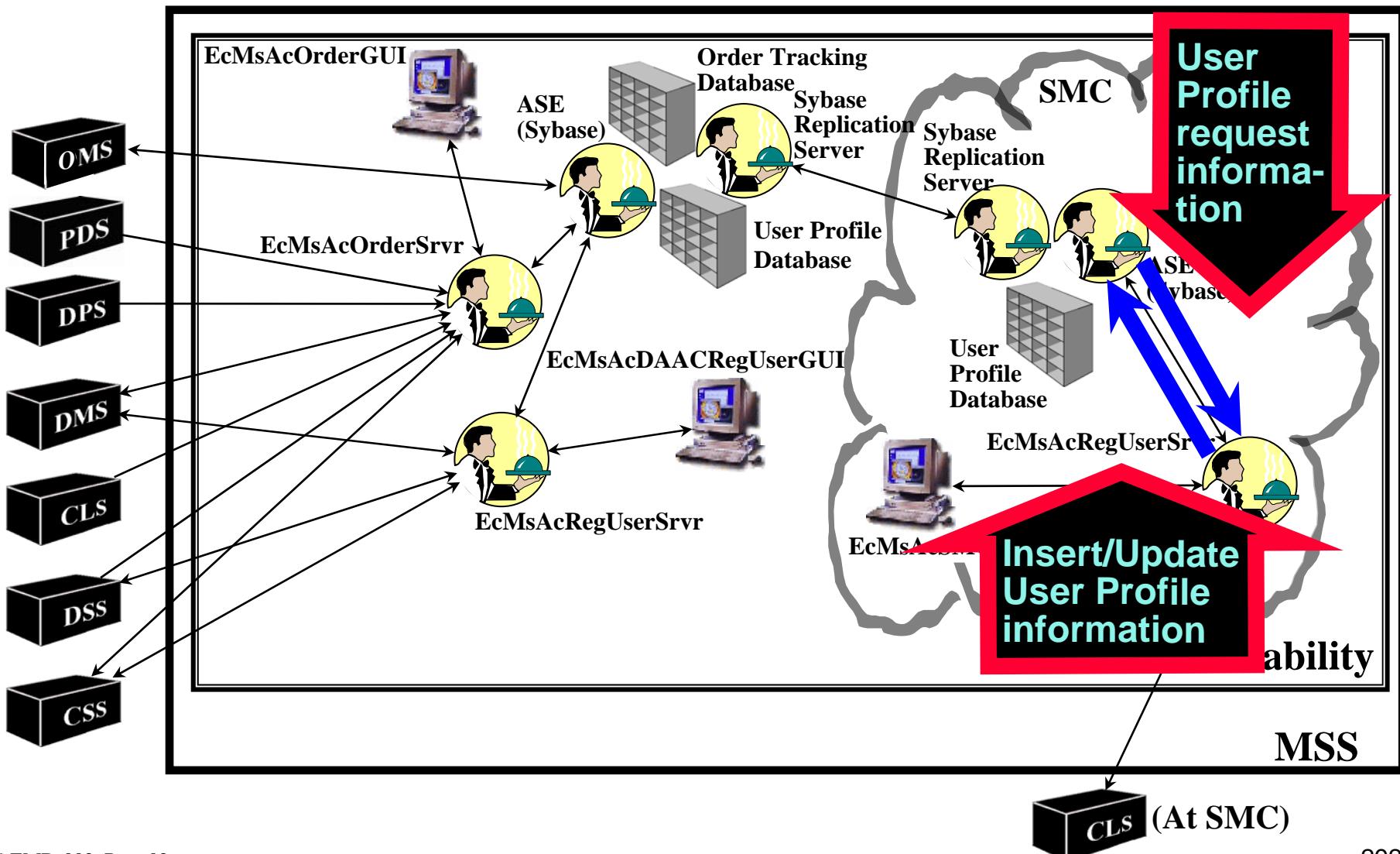
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



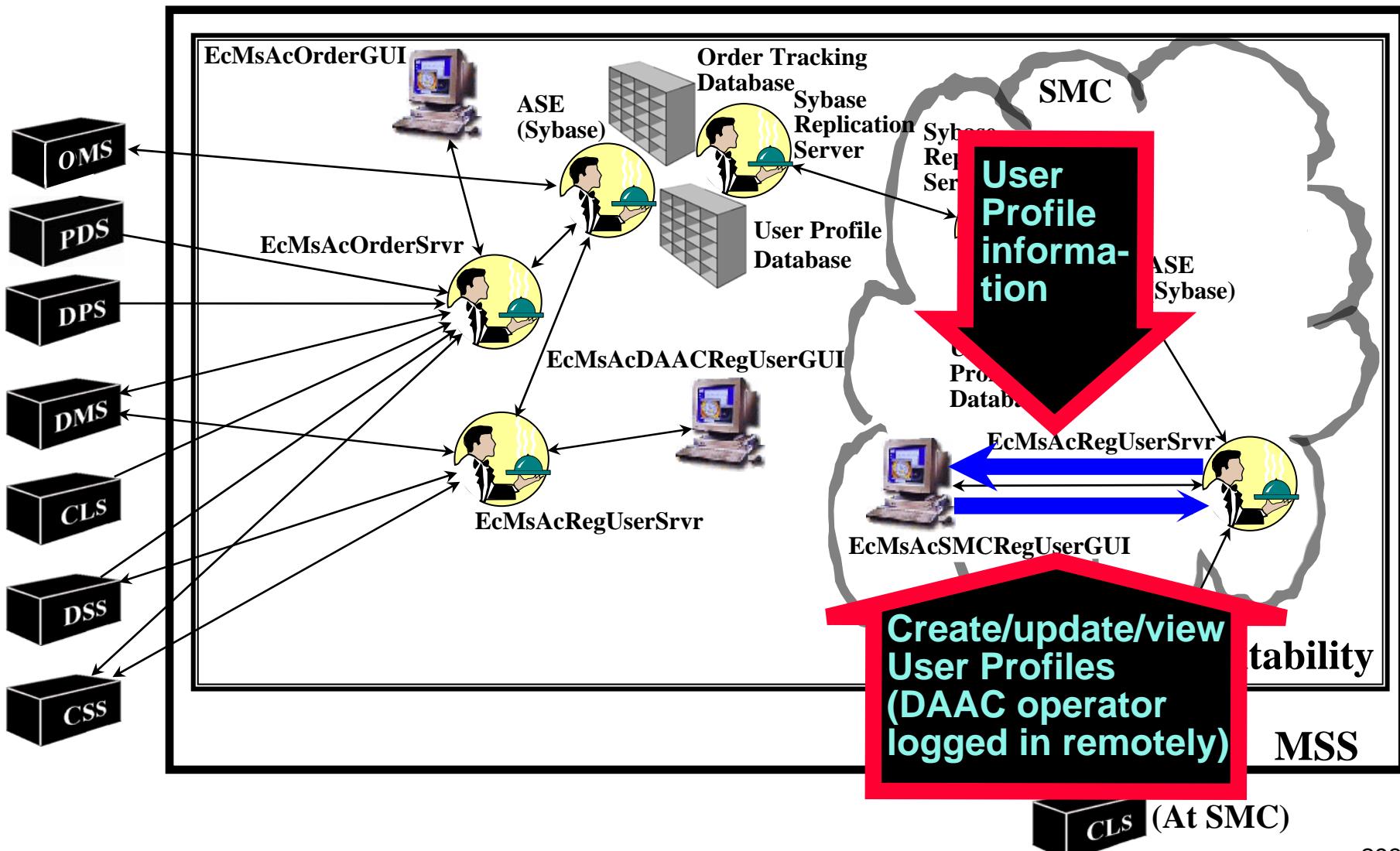
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



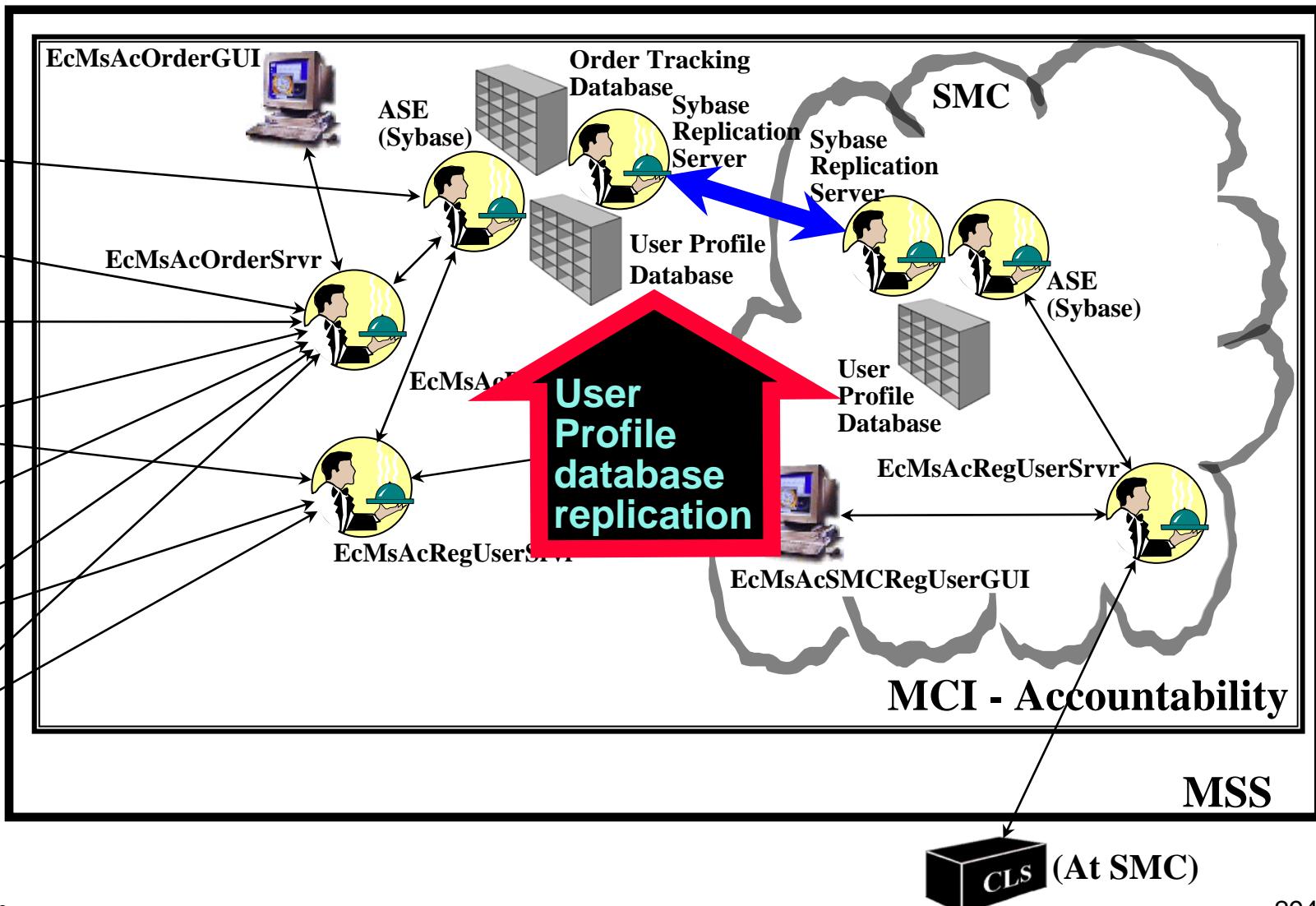
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



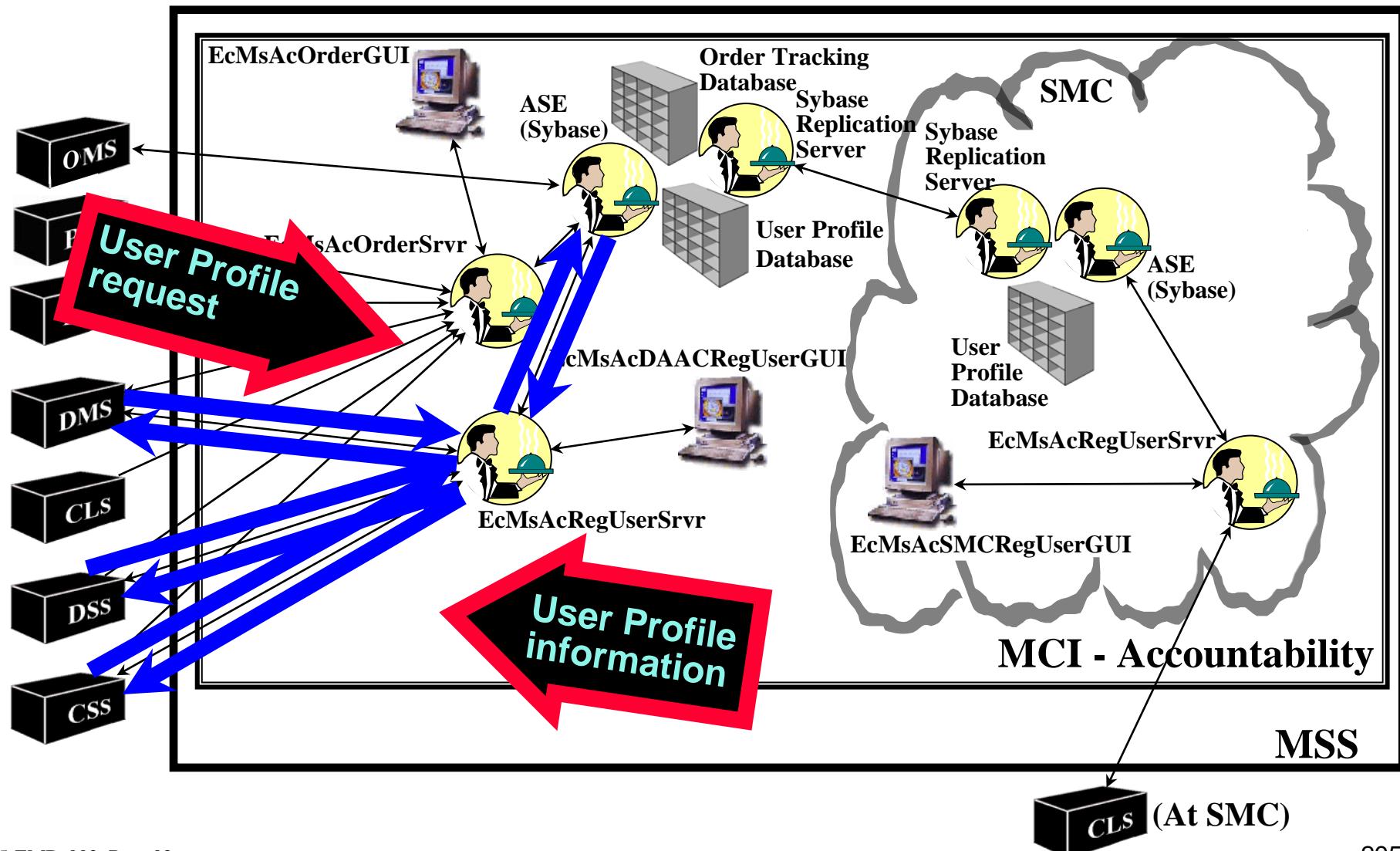
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



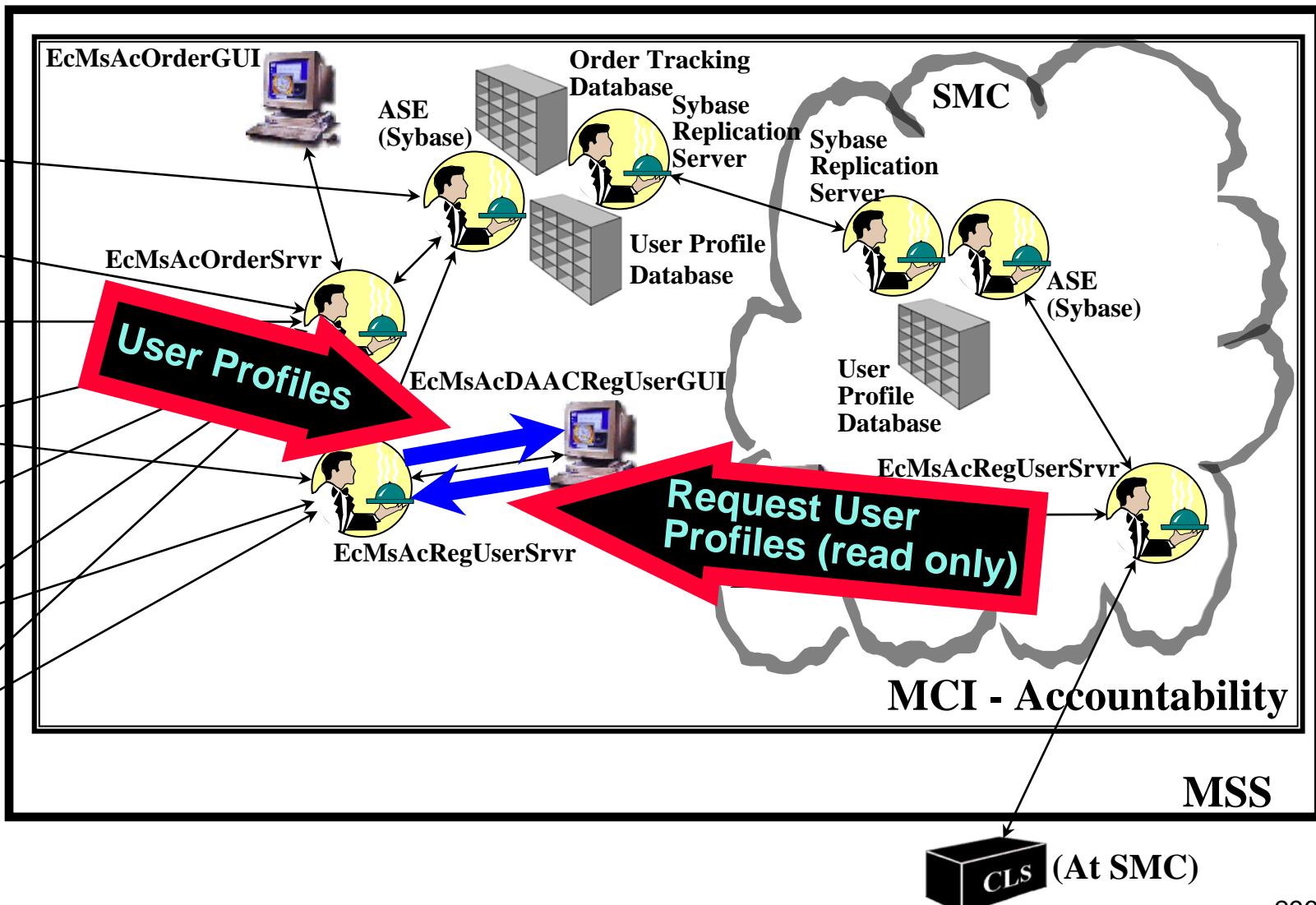
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



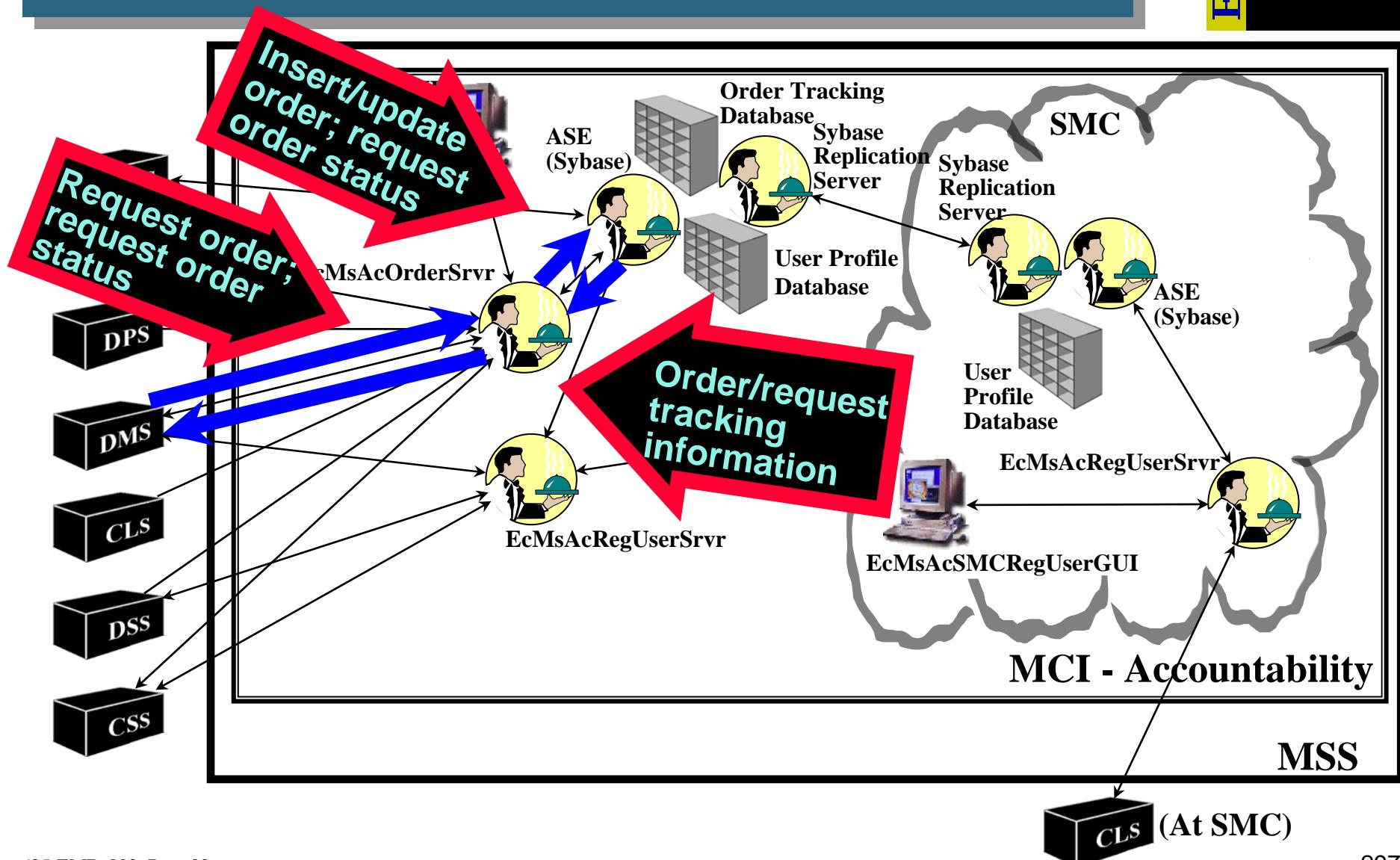
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



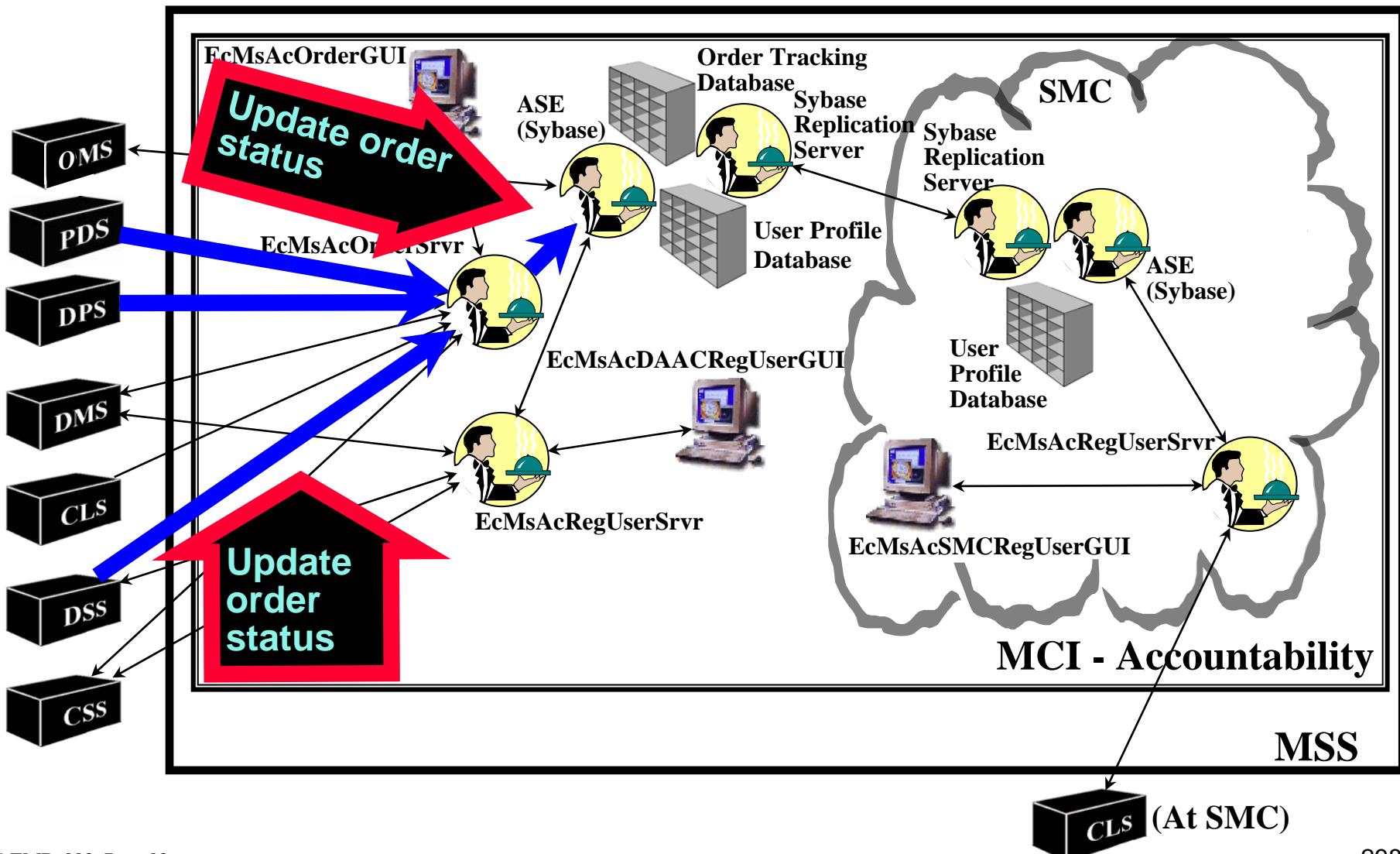
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



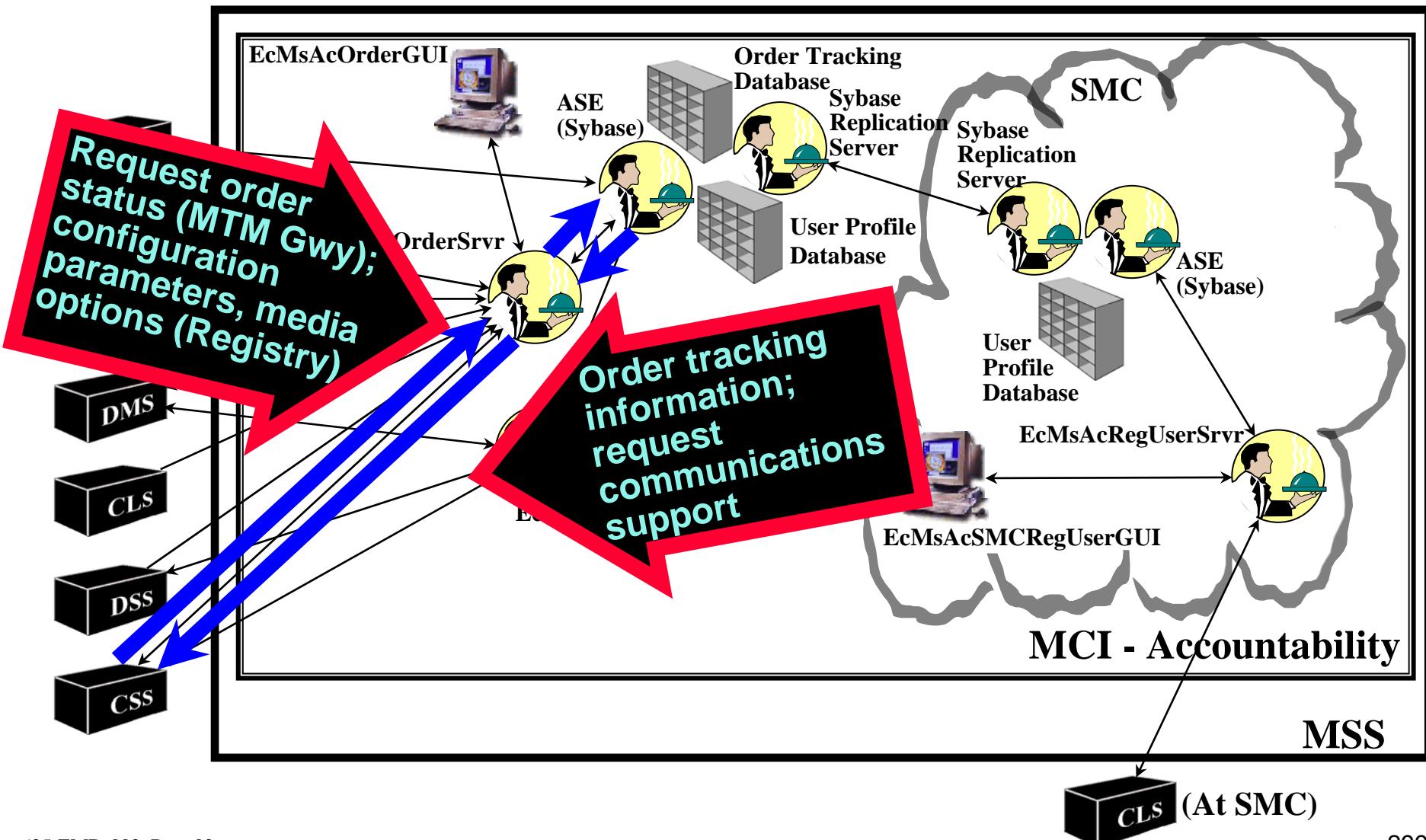
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



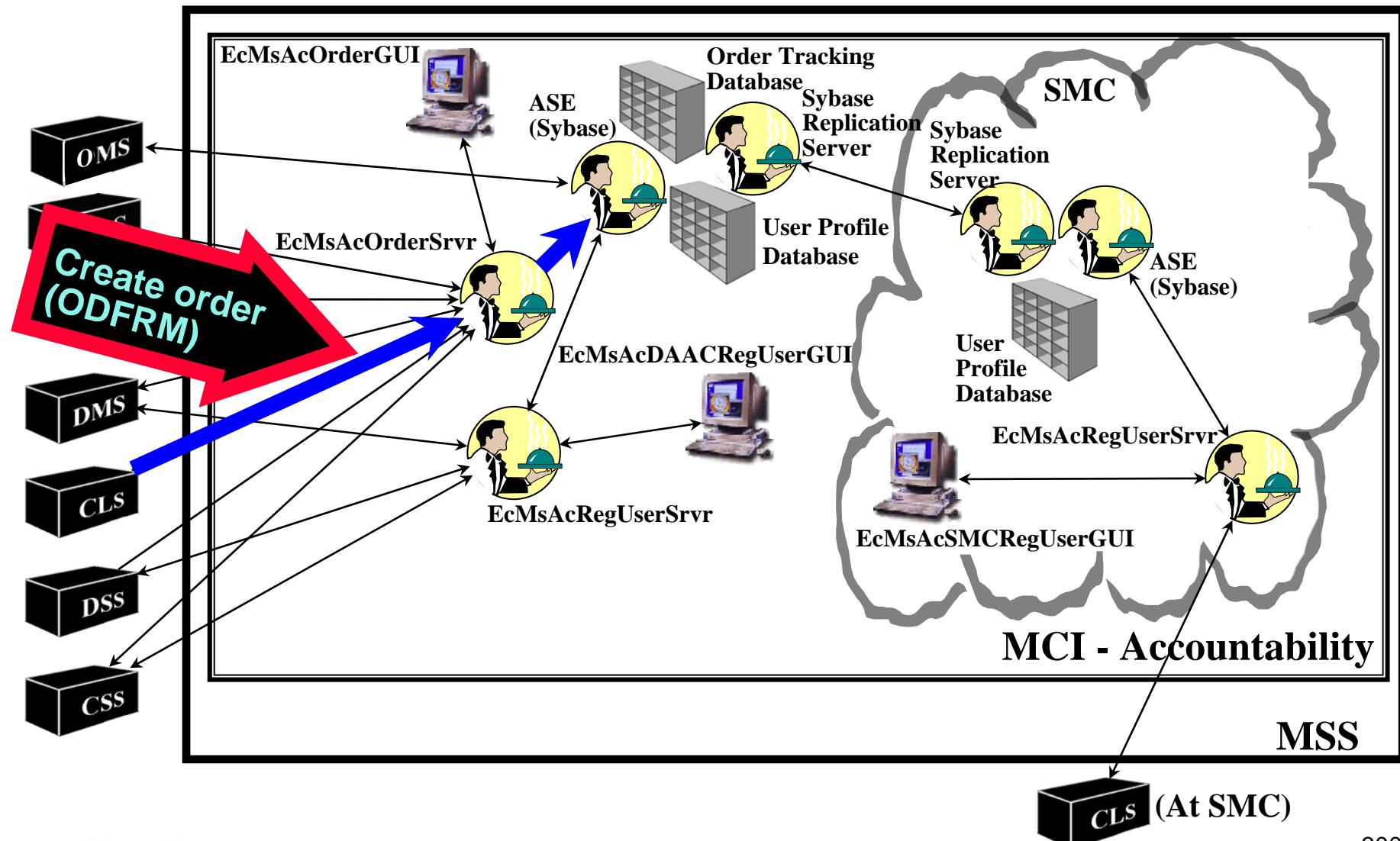
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



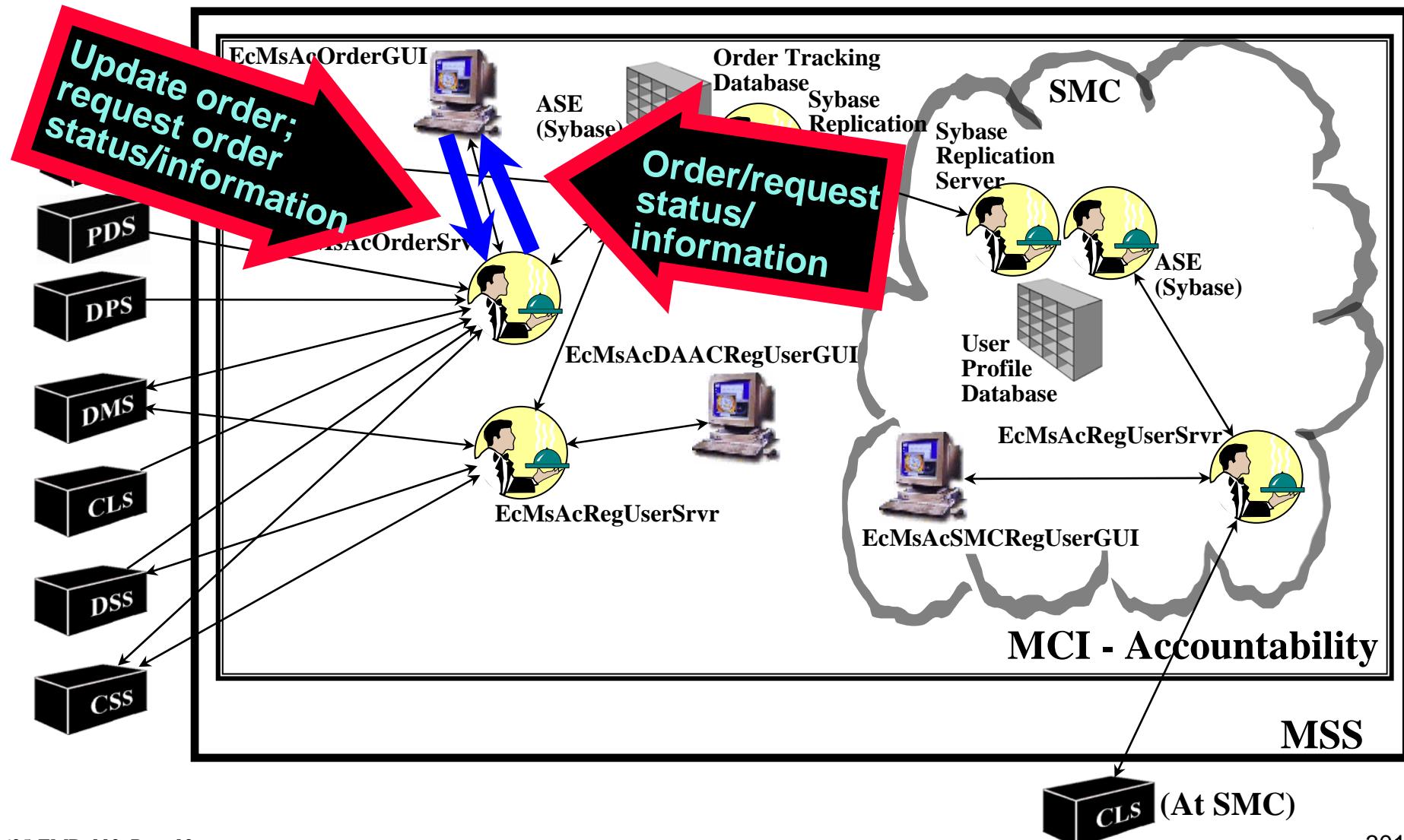
Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces

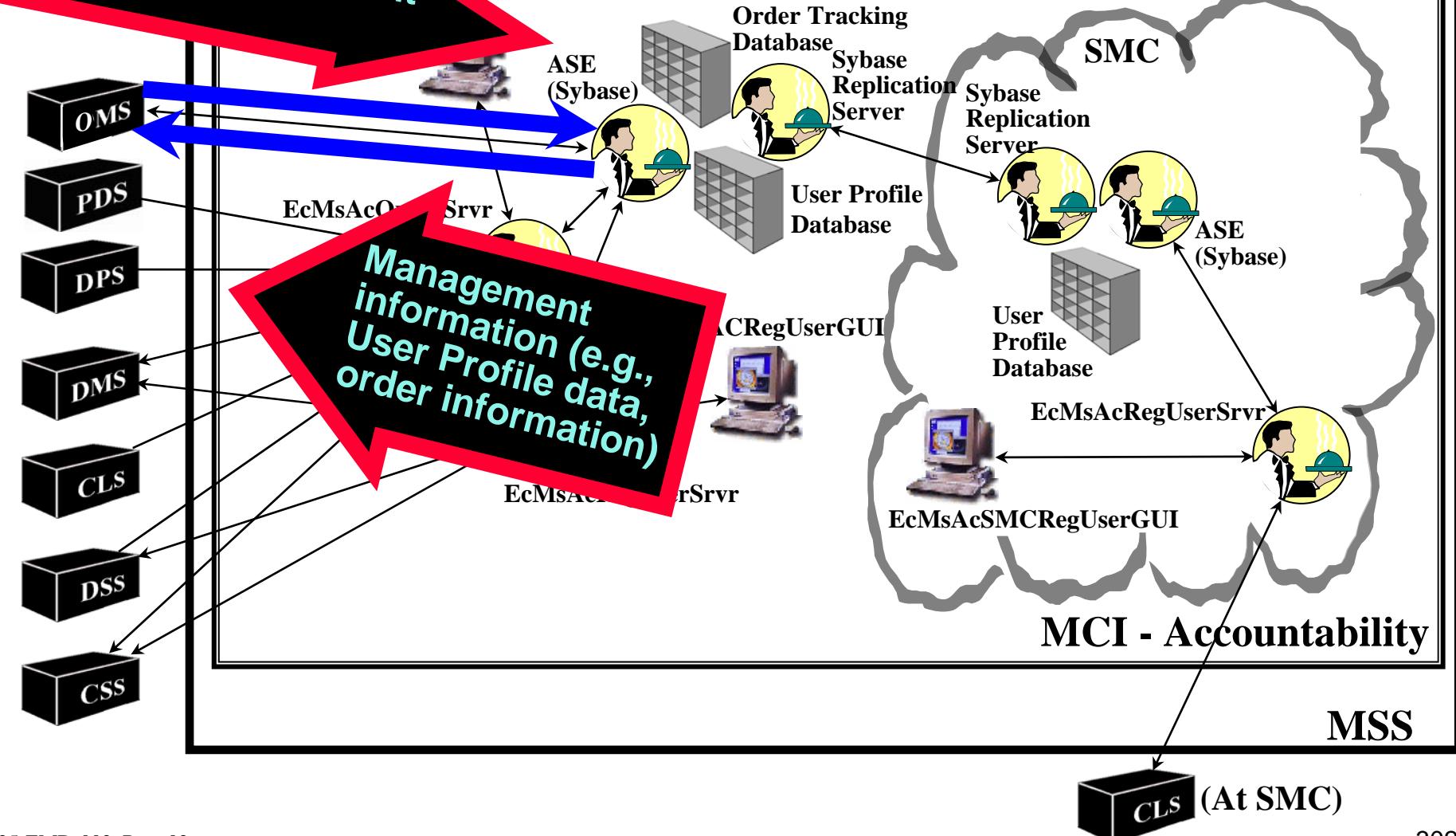


Subsystems and CSCIs: MSS (Cont.)

AMS Architecture and Interfaces



Request management services



Subsystems and CSCIs: MSS (Cont.)



- **Management Logistics CSCI (MLCI)**
 - Implements Configuration Management services
 - **Inventory/Logistics/Maintenance (ILM) Manager component**
 - Customized COTS software: a Remedy application
 - Tracks and maintains key data on ECS contract-purchased equipment, hardware, COTS software, COTS documentation (hardware and software), spares and consumable items, and Government Furnished Equipment (GFE)
 - Stores and maintains detailed maintenance data on hardware to the component level, including corrective maintenance

Subsystems and CSCIs: MSS (Cont.)



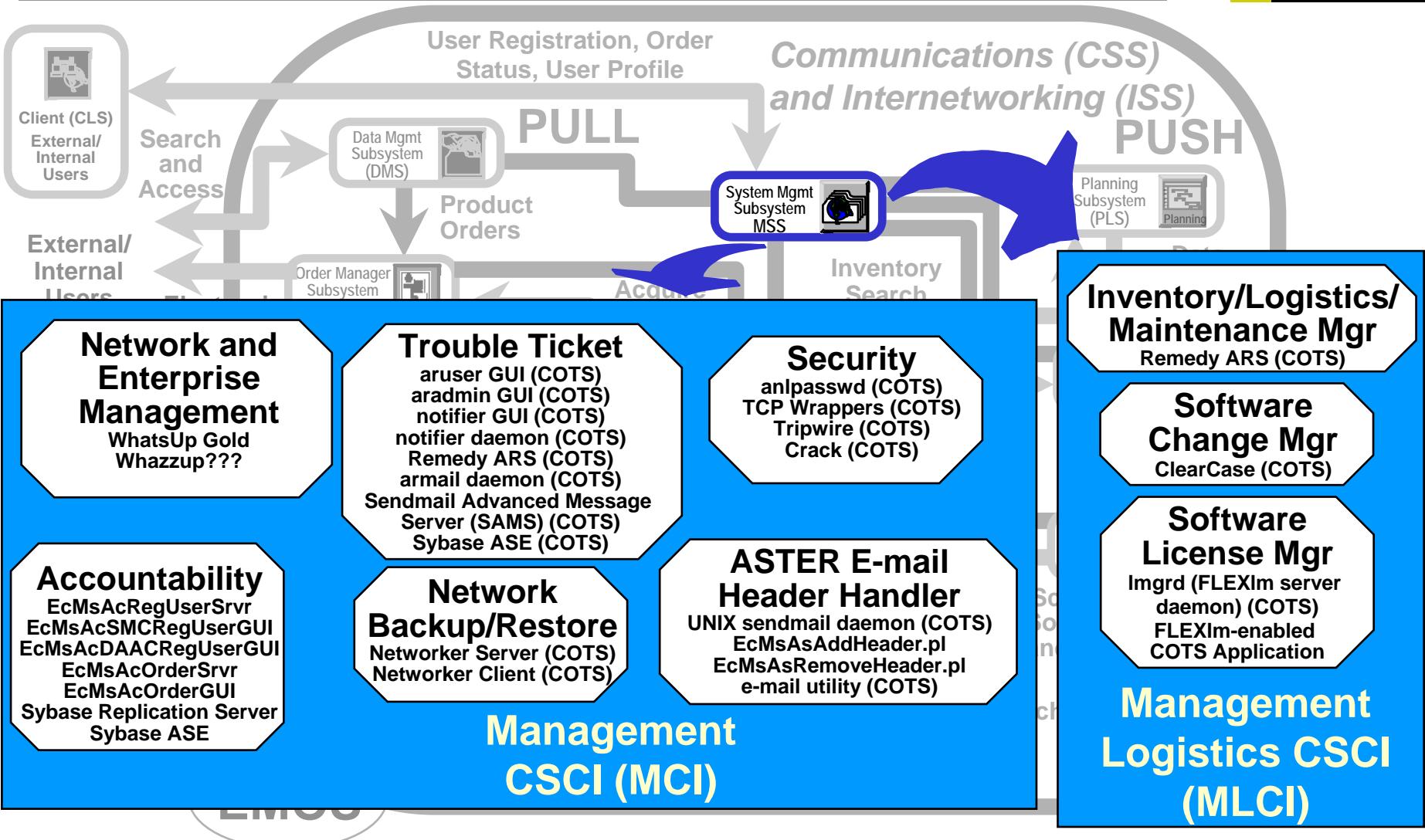
- Management Logistics CSCI (MLCI) (Cont.)
 - Software Change Manager component
 - Consists of COTS and custom software
 - ClearCase (with some customization)
 - Supporting UNIX scripts
 - Helps organize and partition software, control software changes and versions, and assemble sets of software for release

Subsystems and CSCIs: MSS (Cont.)

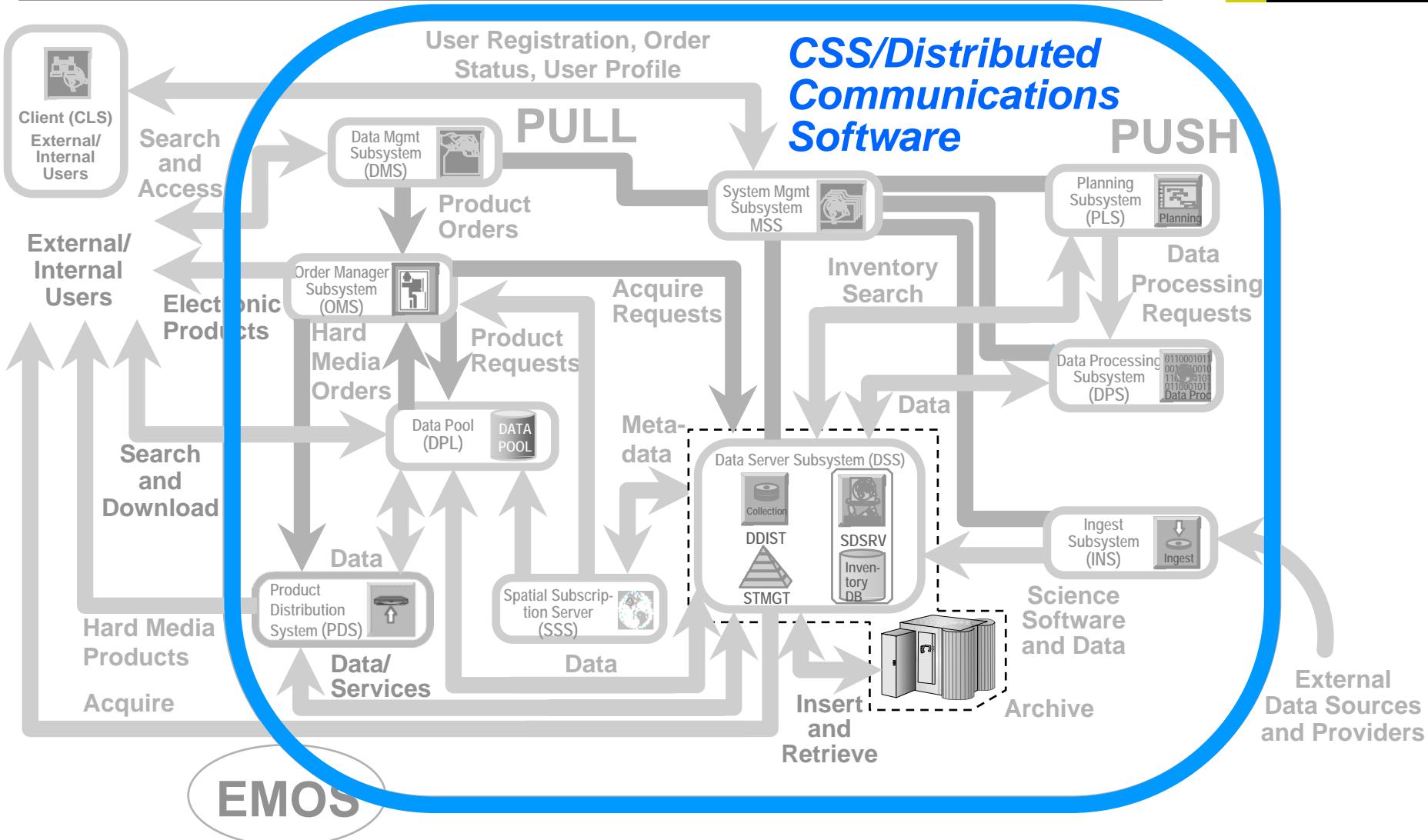


- Management Logistics CSCI (MLCI) (Cont.)
 - Software License Manager component
 - COTS software
 - FLEXIm server daemon (lmgrd) with its associated command line utilities
 - FLEXIm-enabled COTS Application - client software within vendor products communicates with FLEXIm's license server and vendor daemons to request licenses for product users to run
 - Manages network licensing activities associated with using COTS products; maintains information about license provisions, meters use of installed licenses, and reports on licensing events and statistics

Subsystems and CSCIs: MSS (Cont.)



Subsystems and CSCIs: CSS



Subsystems and CSCIs: CSS (Cont.)



CSS/Distributed Communications Software

- **Communications Subsystem (CSS)**
 - Provides for interconnection of users and service providers and transfer of information within ECS and between ECS and other EOSDIS components, including a machine-to-machine gateway for SIPS access to ECS data
 - Supports and interacts with the System Management Subsystem (MSS), ECS Mission Operations Segment (EMOS), and all other subsystems
 - Uses several COTS tools: RogueWave class libraries, Builder Xcessory (GUI Builder tool), Sybase ASE Server (for Subscription Server insert, search, and update), UNIX Network Services

Subsystems and CSCIs: CSS (Cont.)



- **Distributed Computing Configuration Item (DCCI)**
 - **Subscription Server (SBSRV) and GUI components**
 - Detects previously defined events
 - Performs specified actions for clients that have previously subscribed to those events (e.g., science granule insertion, metadata update, science granule deletion)
 - Being replaced by Spatial Subscription Server (NBSRV)
 - **ASTER DAR Gateway Server** (hosted at the LP DAAC)
 - Provides interoperability between ASTER DAR Client GUI tool and the DAR API which interfaces to the ASTER servers
 - **ASTER E-Mail Parser Gateway Server**
 - Support for automated delivery of ASTER Expedited Data Sets (EDS) from ECS to ASTER Ground Data System (GDS)
 - **Message-Oriented Java Object (MOJO) Gateway Server**
 - Gateway for access by the ASTER DAR Tool to all ECS Services; directs DARs to GDS via ASTER DAR Gateway

Subsystems and CSCIs: CSS (Cont.)



- **Distributed Computing Configuration Item (DCCI) (Cont.)**
 - **Configuration Registry Server**
 - Provides a single interface to retrieve configuration attribute-value pairs for ECS servers from the Configuration Registry Database, via Sybase Server
 - Provides an interface to retrieve distribution options for ECS Servers from the Configuration Registry Database
 - **Machine-to-Machine Gateway Server**
 - Provides an automated search and order capability to allow the Science Investigator-Led Processing Systems (SIPS) to reprocess data externally from the ECS
 - **CCS Middleware Support Group**
 - CCS Name Server enables clients to locate and communicate with the various ECS servers

Subsystems and CSCIs: CSS (Cont.)



- Distributed Computing Configuration Item (DCCI) (Cont.)
 - File Transfer Protocol (FTP) component (Remote File Access Group)
 - Standard application for file transfers (standard UNIX utility with CSS wrapper classes applied)
 - FTP Notification component (Remote File Access Group)
 - Provides notification of successful FTP pulls from a pull area
 - Bulk Data Server (BDS) component (Remote File Access Group)
 - COTS product (BDSpro) that permits fast file transfer over high-speed networks (such as Gigabit Ethernet)
 - Network File System (NFS) component (Remote File Access Group)
 - COTS product that provides a file-sharing system among computers

Subsystems and CSCIs: CSS (Cont.)



- **Distributed Computing Configuration Item (DCCI) (Cont.)**
 - **Filecopy component (Remote File Access Group)**
 - A simple utility to copy large files from a specified source to a specified destination, with compression options
 - **Mail Support Group**
 - Custom and COTS software that provides electronic mail, with an interactive interface and an object-oriented application program interface
 - **Virtual Terminal component**
 - COTS software (Telnet) that provides ECS Operations personnel with the capability for remote logon from one ECS machine to another

Subsystems and CSCIs: CSS (Cont.)



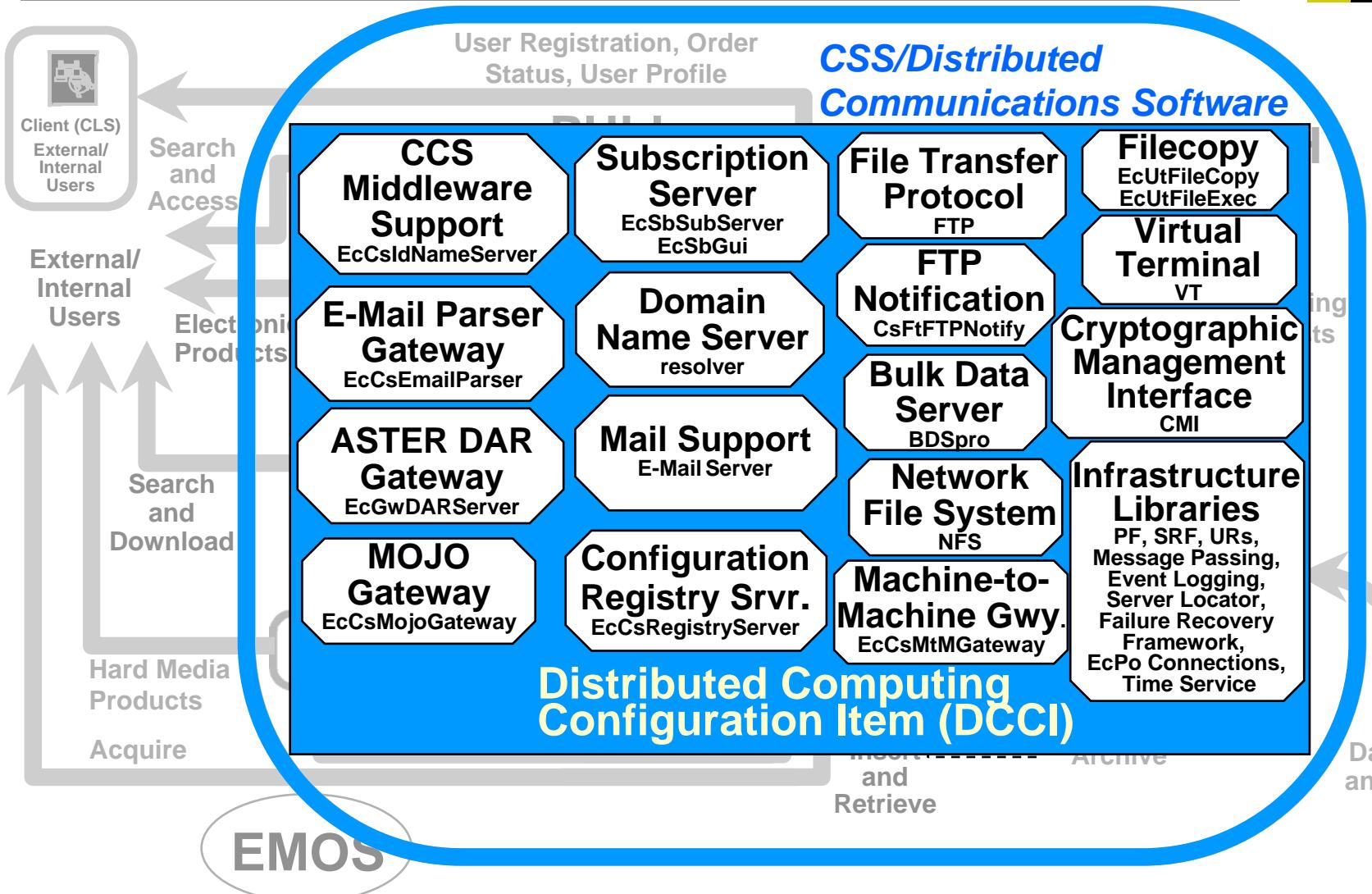
- Distributed Computing Configuration Item (DCCI) (Cont.)
 - Cryptographic Management Interface (CMI)
 - CMI classes provide the requesting process with a server account and a randomly generated password so the server can access security required services (i.e., Sybase ASE)
 - Passwords (and optionally login names) are generated dynamically based on a pseudo-random number used as the seed for the password
 - Domain Name Server (DNS)
 - COTS product that provides information about host names and addresses on a network by querying and answering queries
 - Performs naming between hosts within the local administrative domain and across domain boundaries
 - Note: The external DNS is located on the Firewall in ISS

Subsystems and CSCIs: CSS (Cont.)

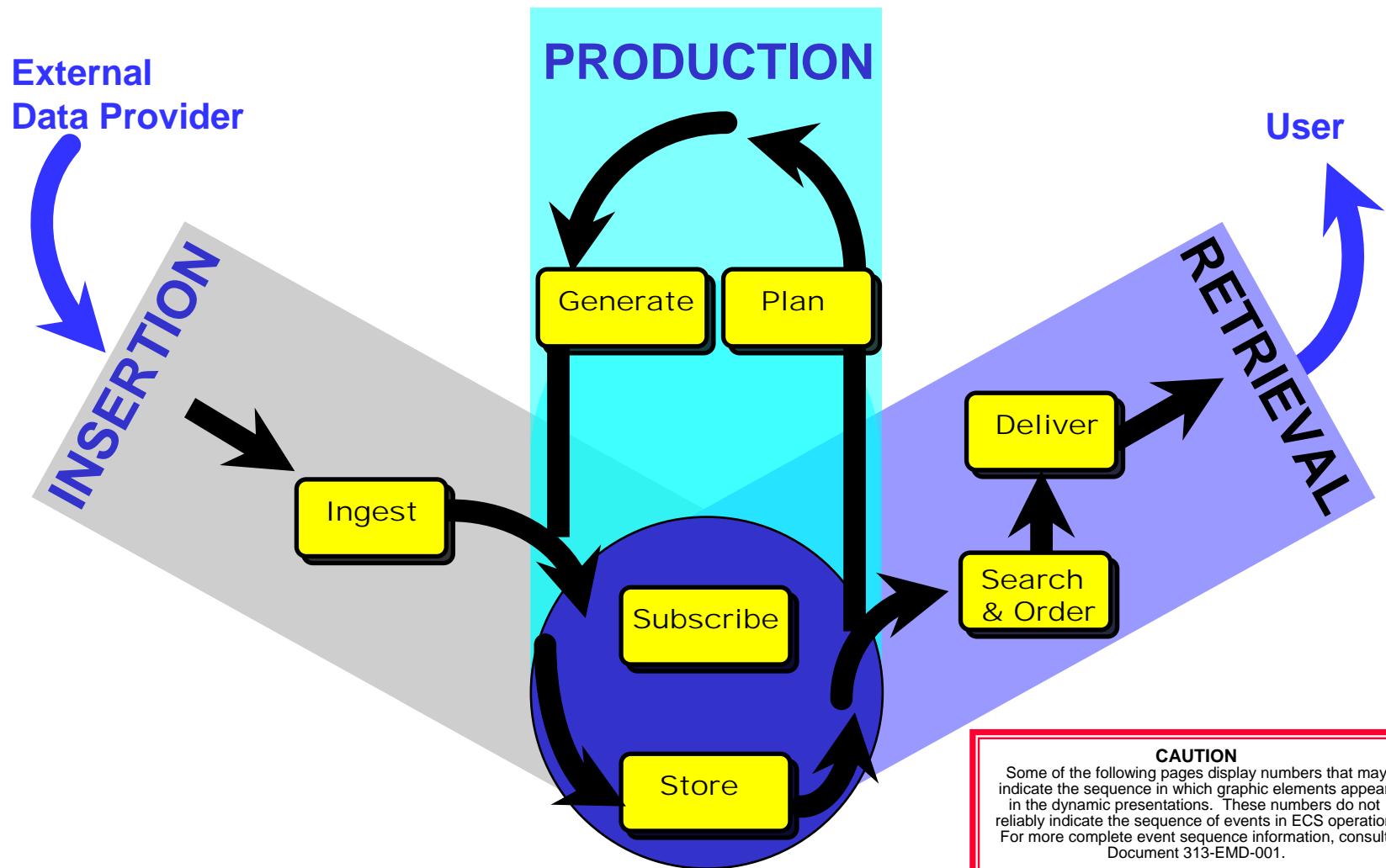


- **Distributed Computing Configuration Item (DCCI) (Cont.)**
 - **Infrastructure Libraries Group**
 - Provides a set of services to facilitate the implementation of client-server applications; includes ...
 - Process Framework (PF)
 - Service Request Framework (SRF)
 - Message Passing
 - Universal References (URs)
 - Event Logging
 - Server Locator
 - Failure Recovery Framework
 - EcPo Connections
 - Time Service

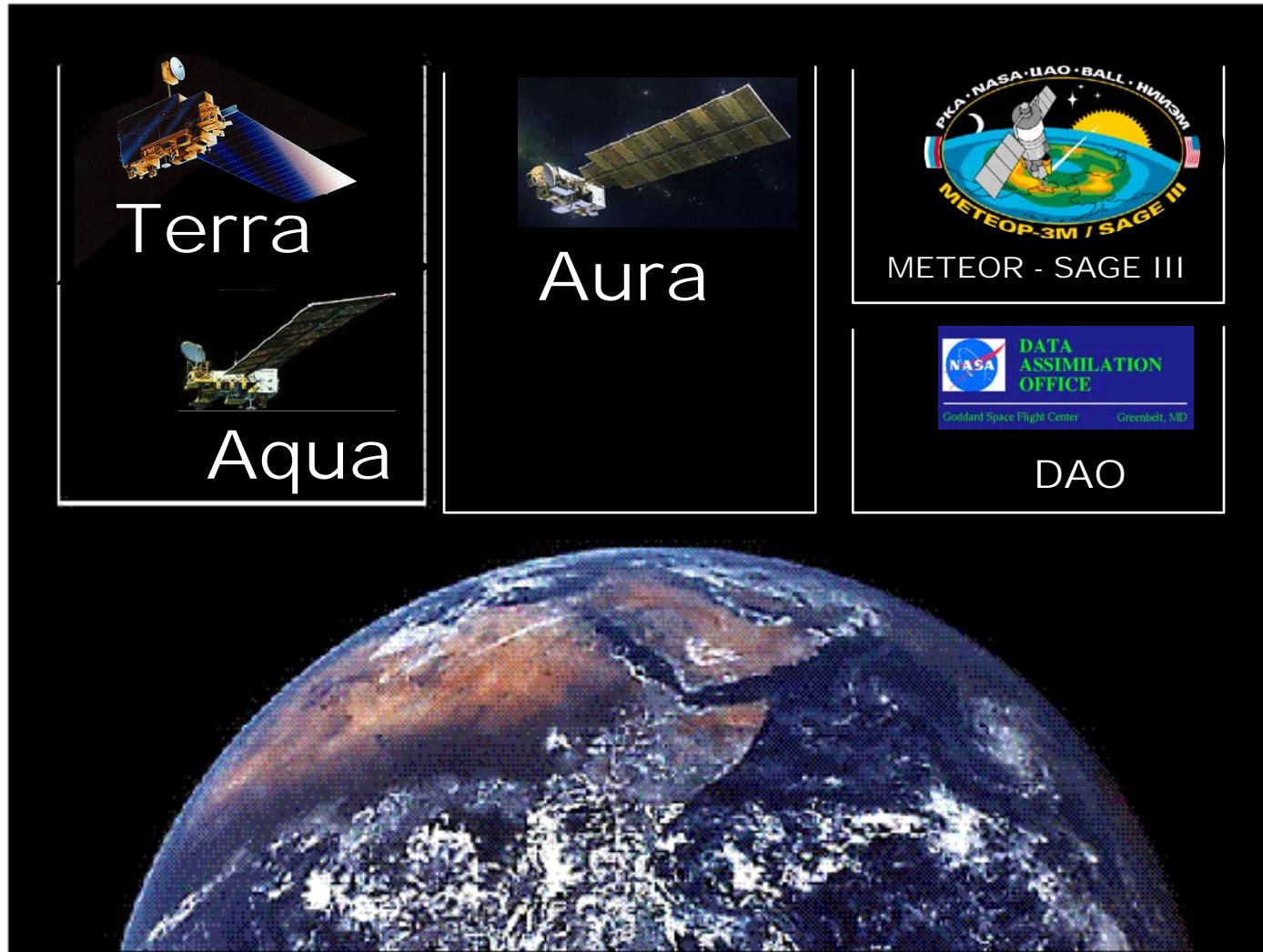
Subsystems and CSCIs: CSS (Cont.)



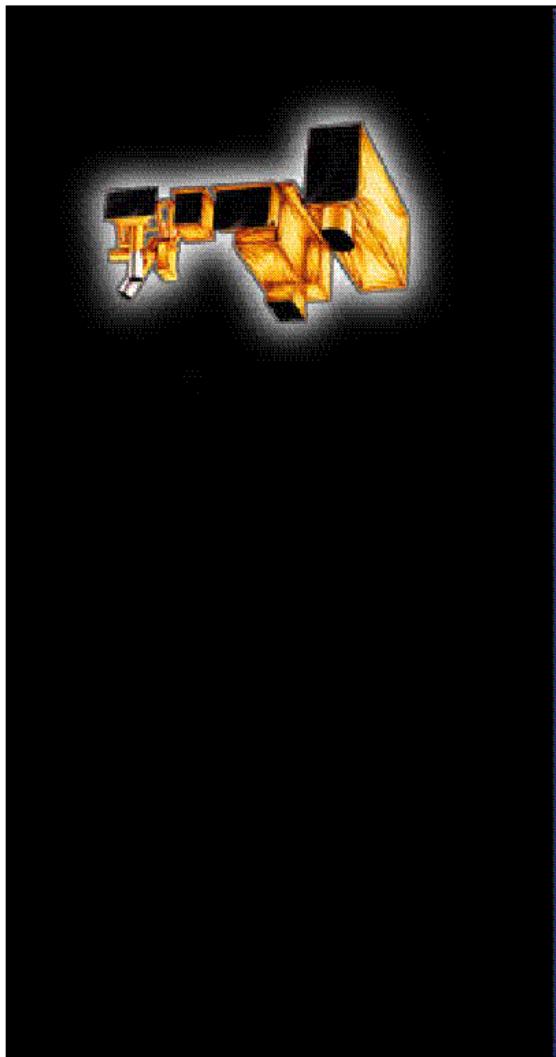
ECS Operational Functioning



ECS Release 7 Focus



ASTER Scenario



ASTER

- 1 DAR Support**
- 2 Chaining**
- 3 Expedited Data**

ASTER Goals

- ASTER DAR Tool Usage
- On-Demand Processing and Chaining
- SCF QA Metadata Update Workaround
- Simplified ASTER Expedited Data Support
- Data Tape Ingest

ASTER Preconditions

ASTER ESDTs Inserted into ECS

- AST_ANC, AST_EXP, AST_L1A, AST_L1BT,
- AST_09T, AST_04, AST_05, AST_08, GDAS0ZFH

ASTER PGEs passed SSI&T and installed

- ACT, ETS, BTS

Ancillary data inserted into Data Server

ASTER Scenario: DAR Support



External
Data Provider

DAR Submission
Data Subscription
On-Demand Request

PRODUCTION

Generate Plan

Ingest

Deliver

Search & Order

Subscribe

Store

User

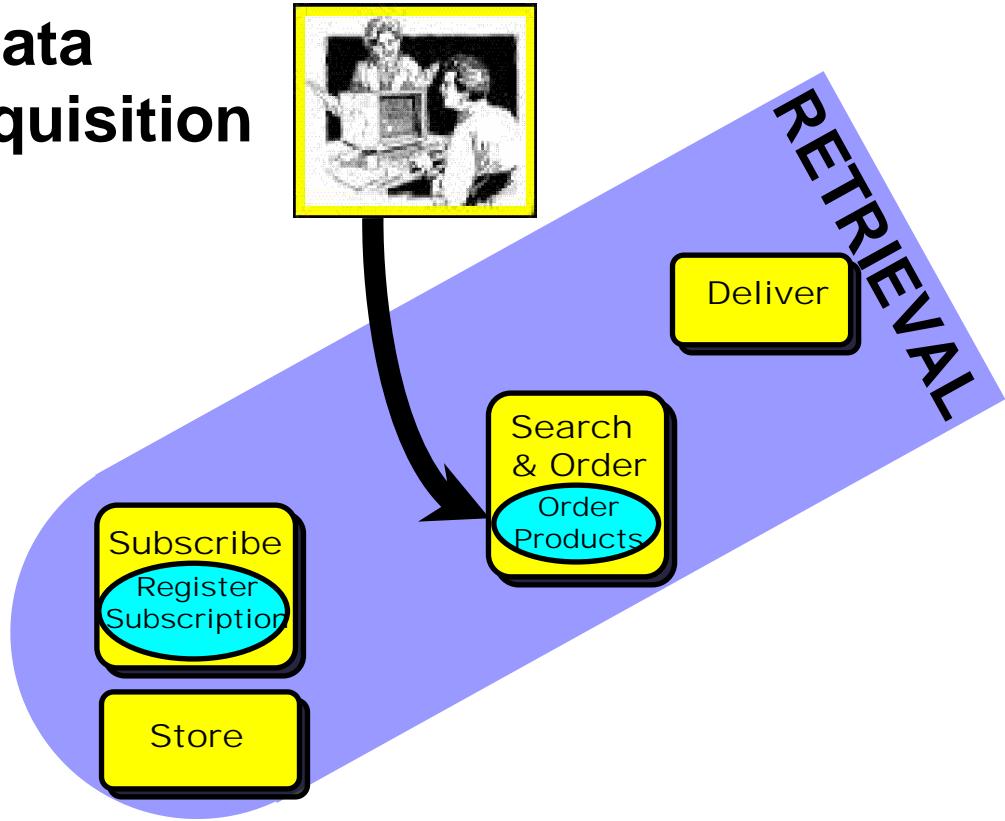
INSERTION

RETRIEVAL

DAR Support



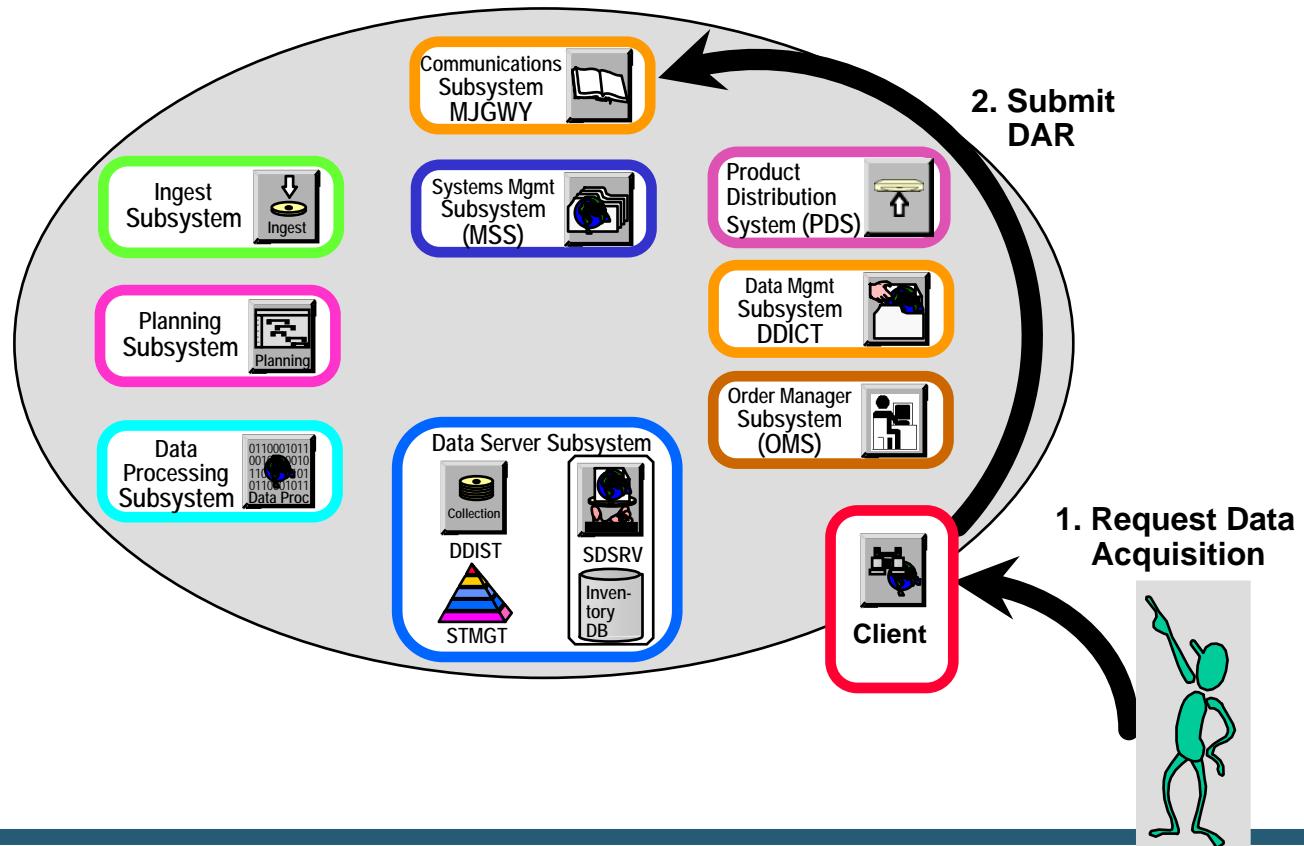
**ASTER Scientist decides
to request ASTER data
requiring a Data Acquisition
Request**



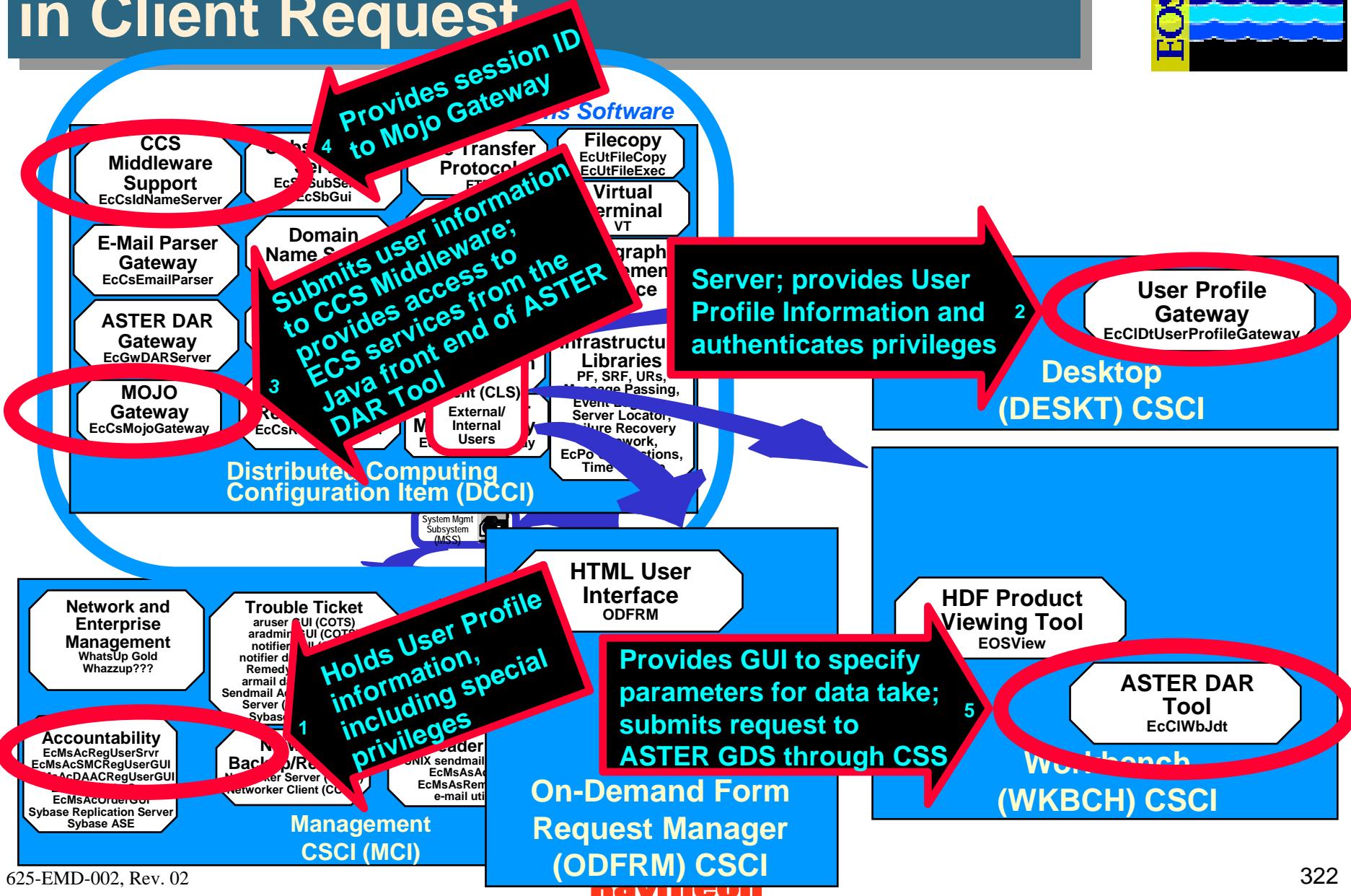
ASTER: Client Request Process



ASTER Scientist determines an area of interest. The scientist decides to request an ASTER data take over that area, using the ASTER DAR Tool.



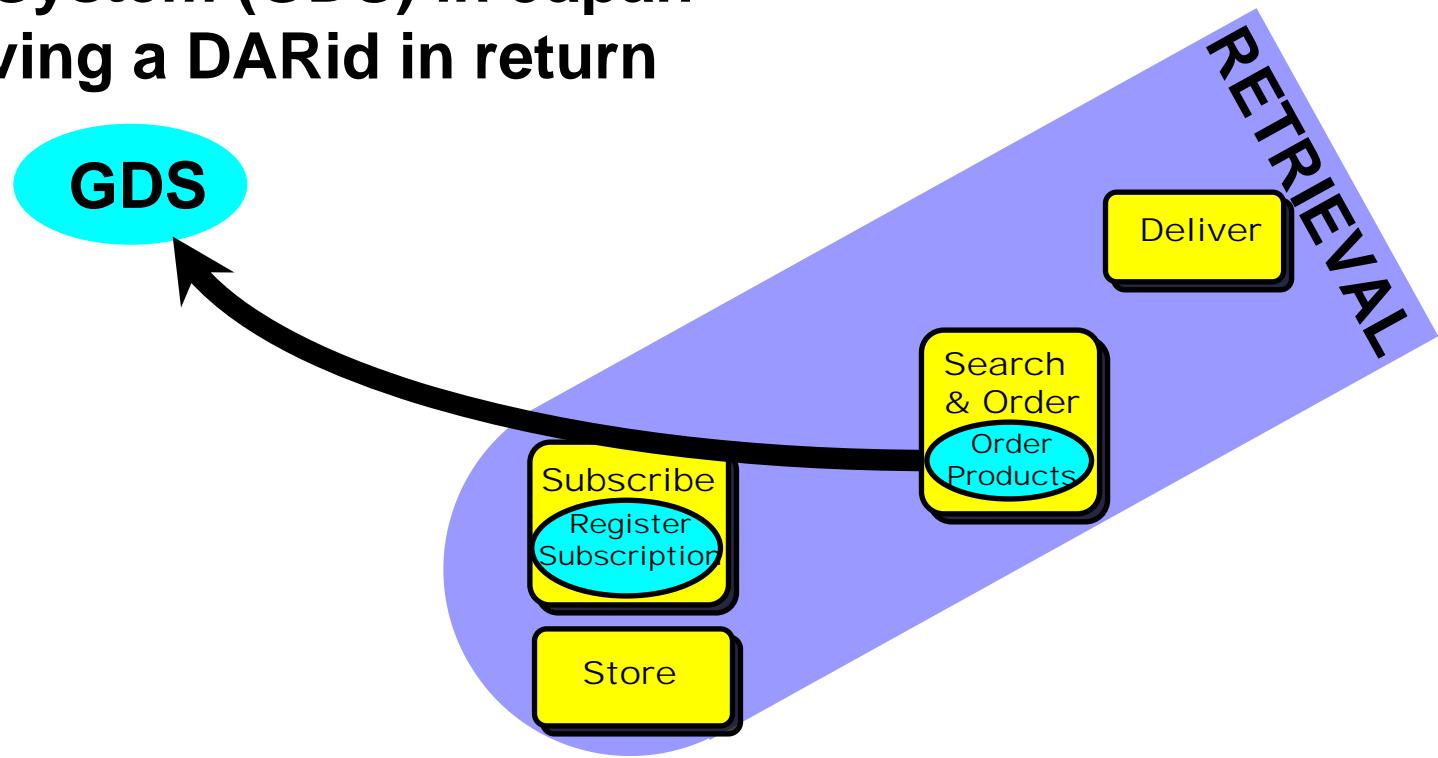
ASTER: CSCI/Component Role in Client Request





DAR Support (Cont.)

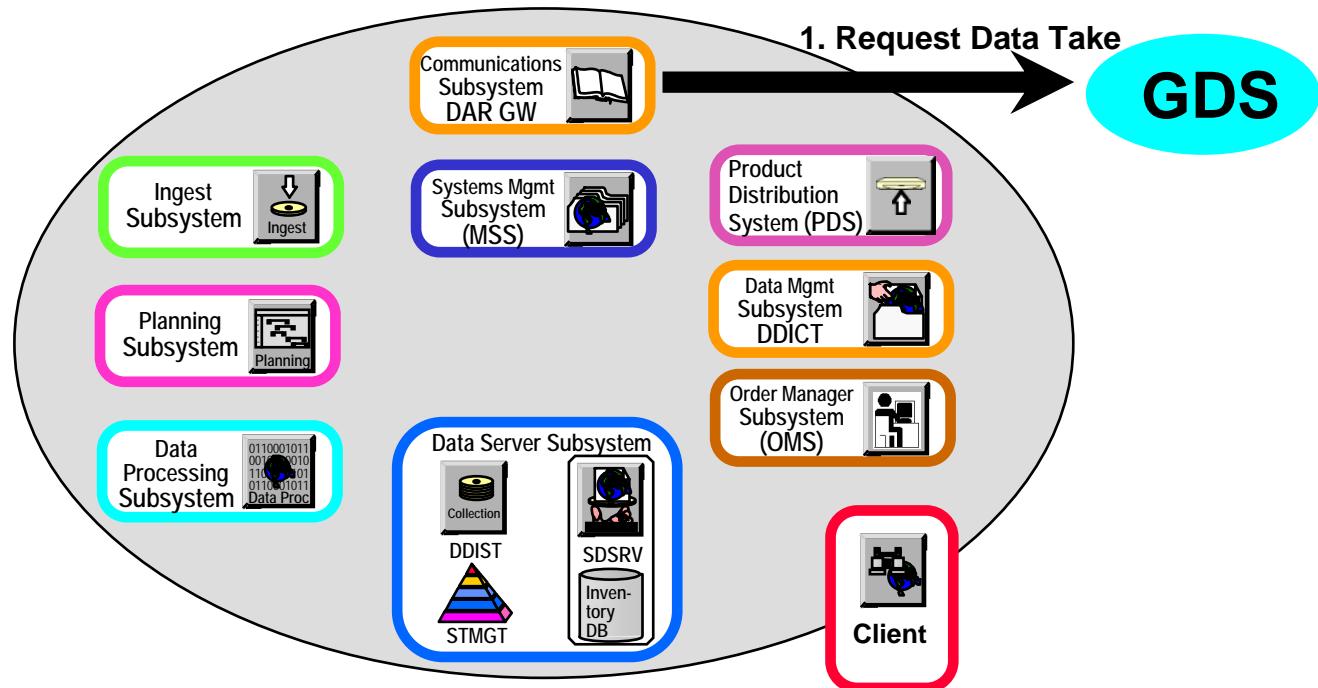
ECS submits DAR to ASTER Ground Data System (GDS) in Japan receiving a DARid in return



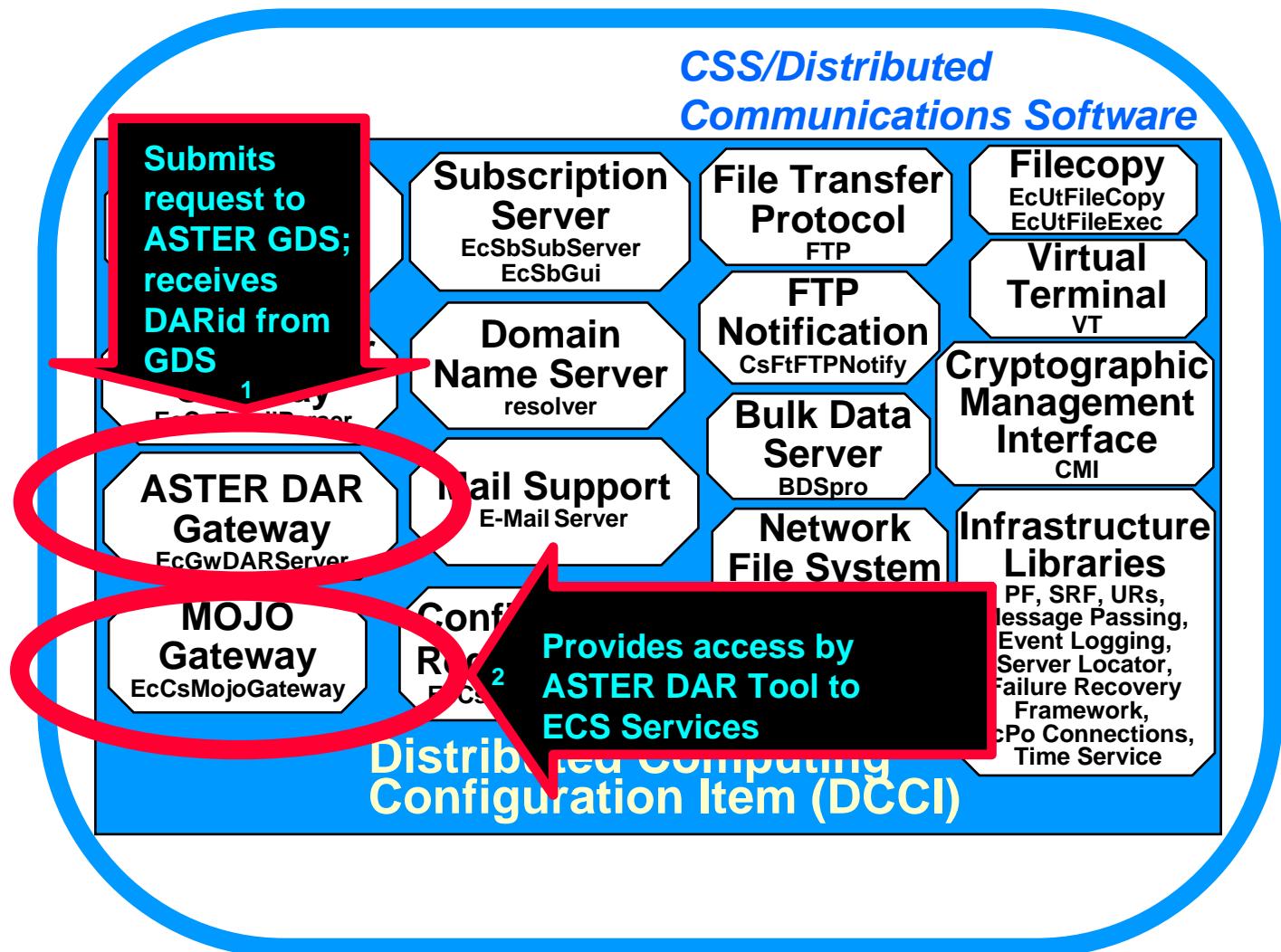
ASTER: Request Data Take Process



ASTER DAR Gateway submits a request for a data take over the area of interest. GDS responds with a DARid.



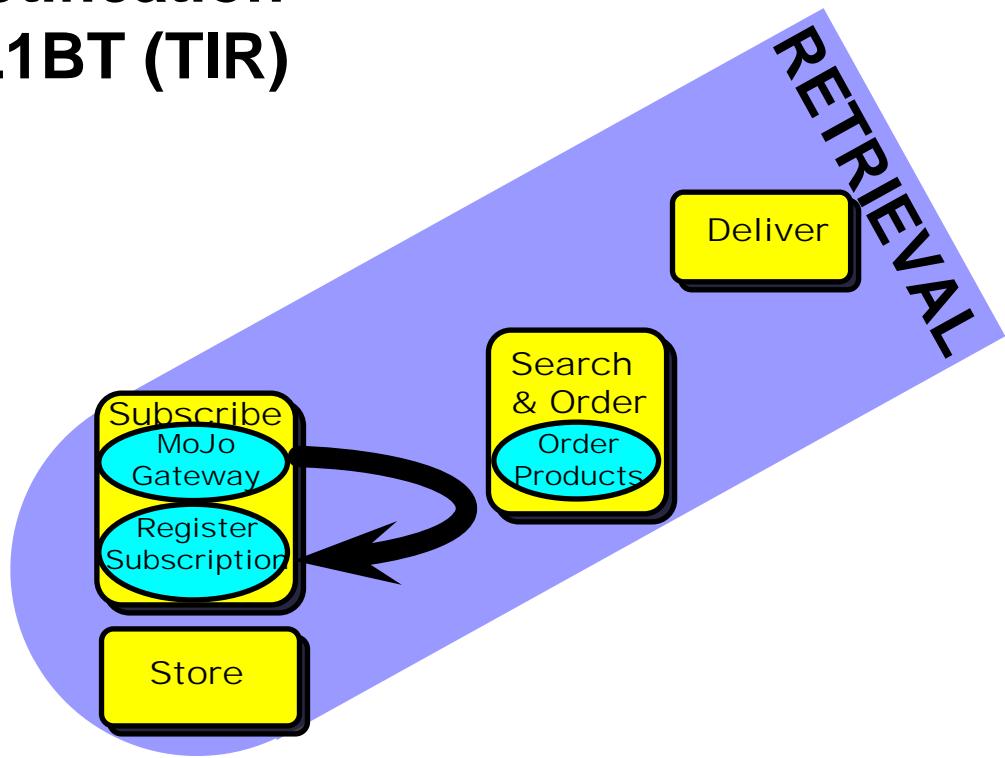
ASTER: CSCI/Component Role in Data Take Request





DAR Support (Cont.)

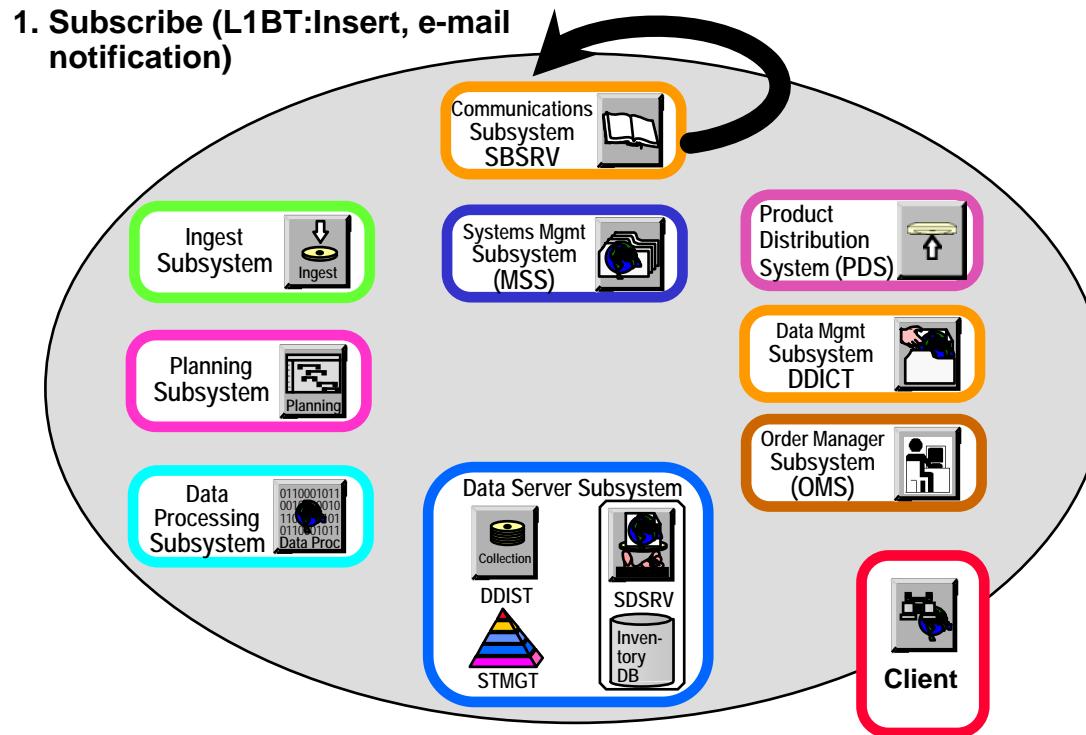
Subscription is submitted on behalf of user for notification on receipt of AST_L1BT (TIR) data



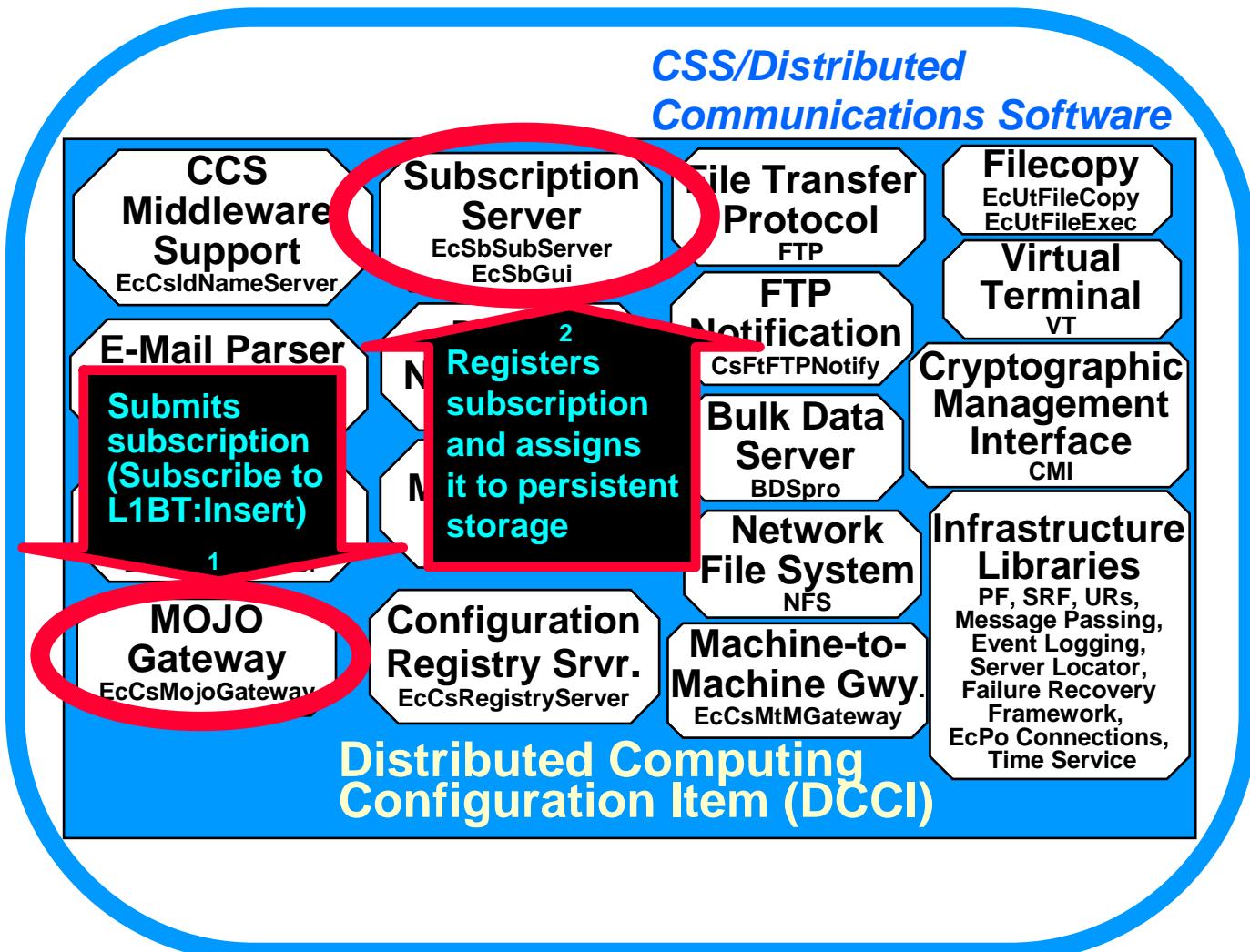
ASTER: Submit Subscription Process



MoJo Gateway submits subscription for notification on the occurrence of AST_L1BT:Insert event, qualified with the DARid.



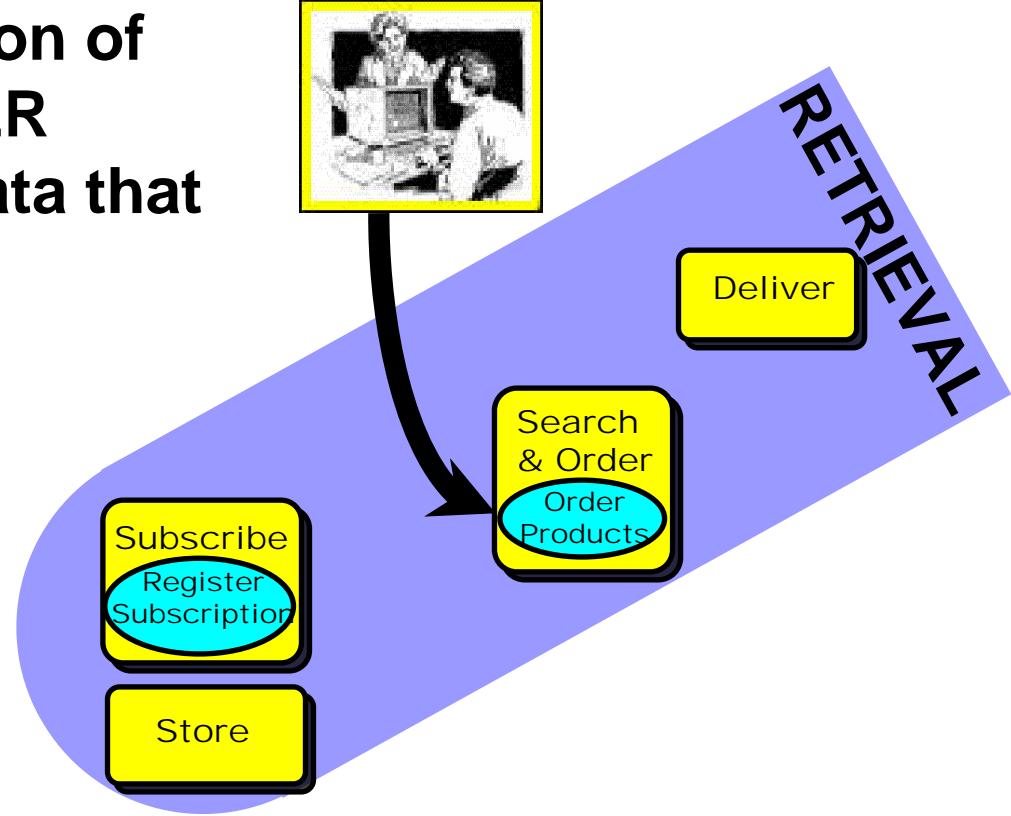
ASTER: CSCI/Component Role in Subscription Submission





DAR Support (Cont.)

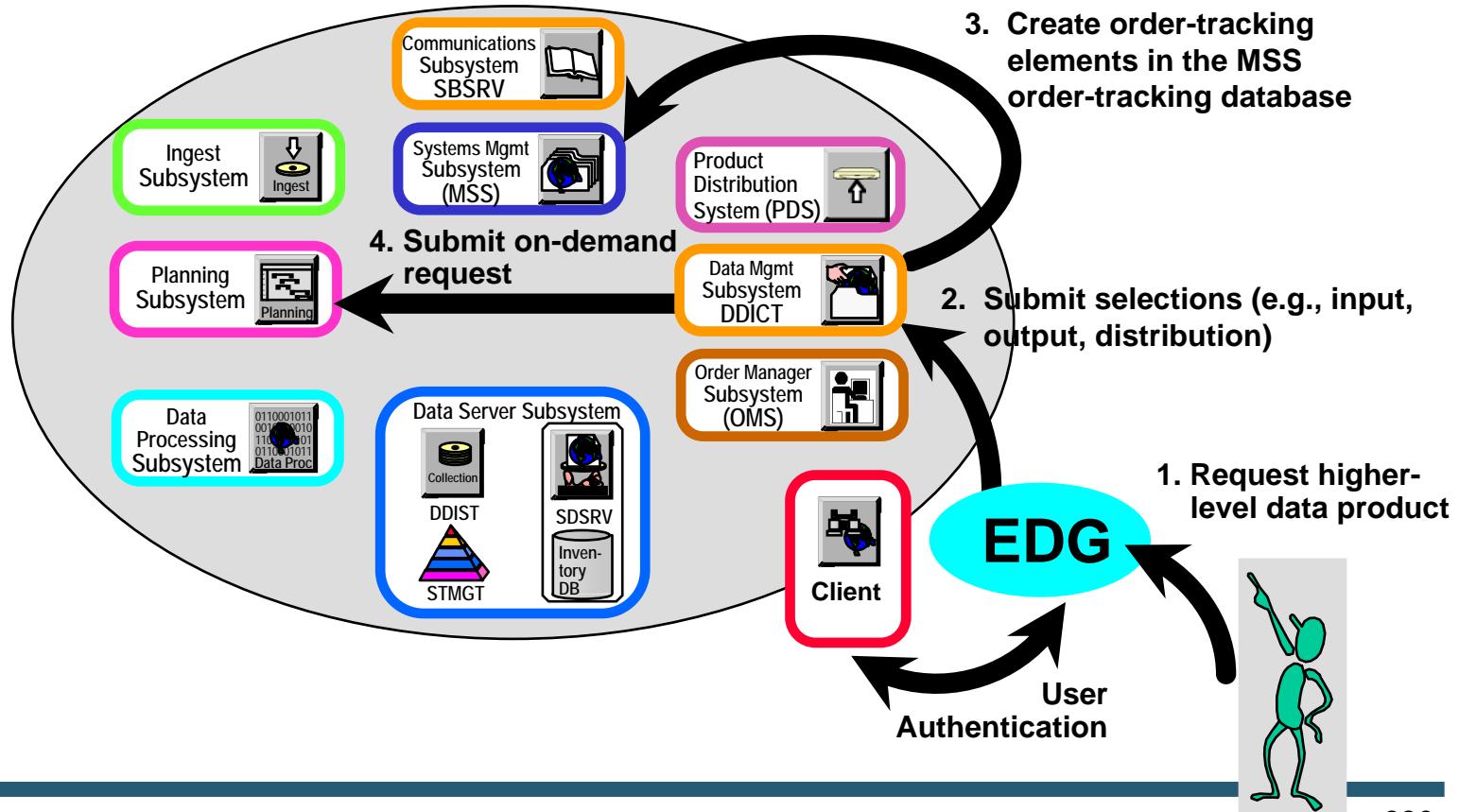
ASTER Scientist decides to request production of a higher level ASTER product from the data that are to be collected



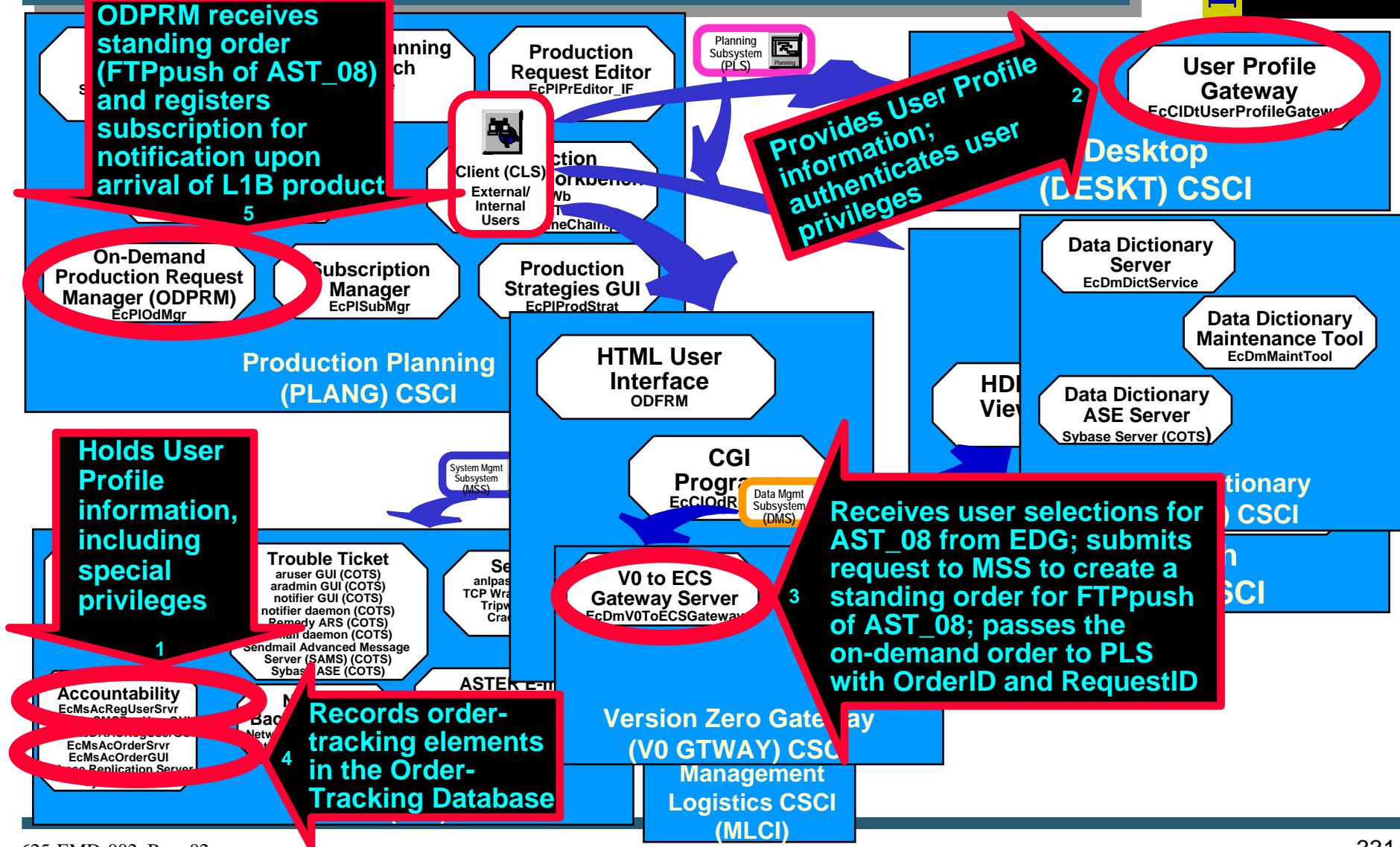
ASTER: On-Demand Data Processing Request Process



ASTER Scientist wants AST_08 (L2 Surface Temperature product) based on the AST_L1BT (TIR - Thermal InfraRed - product) resulting from GDS initial processing of the data collected for the DAR, and uses the EOS Data Gateway (EDG) Web Client to submit the request.



ASTER: CSCI/Component Role in On-Demand Request



ASTER Scenario: Chaining and On-Demand Production

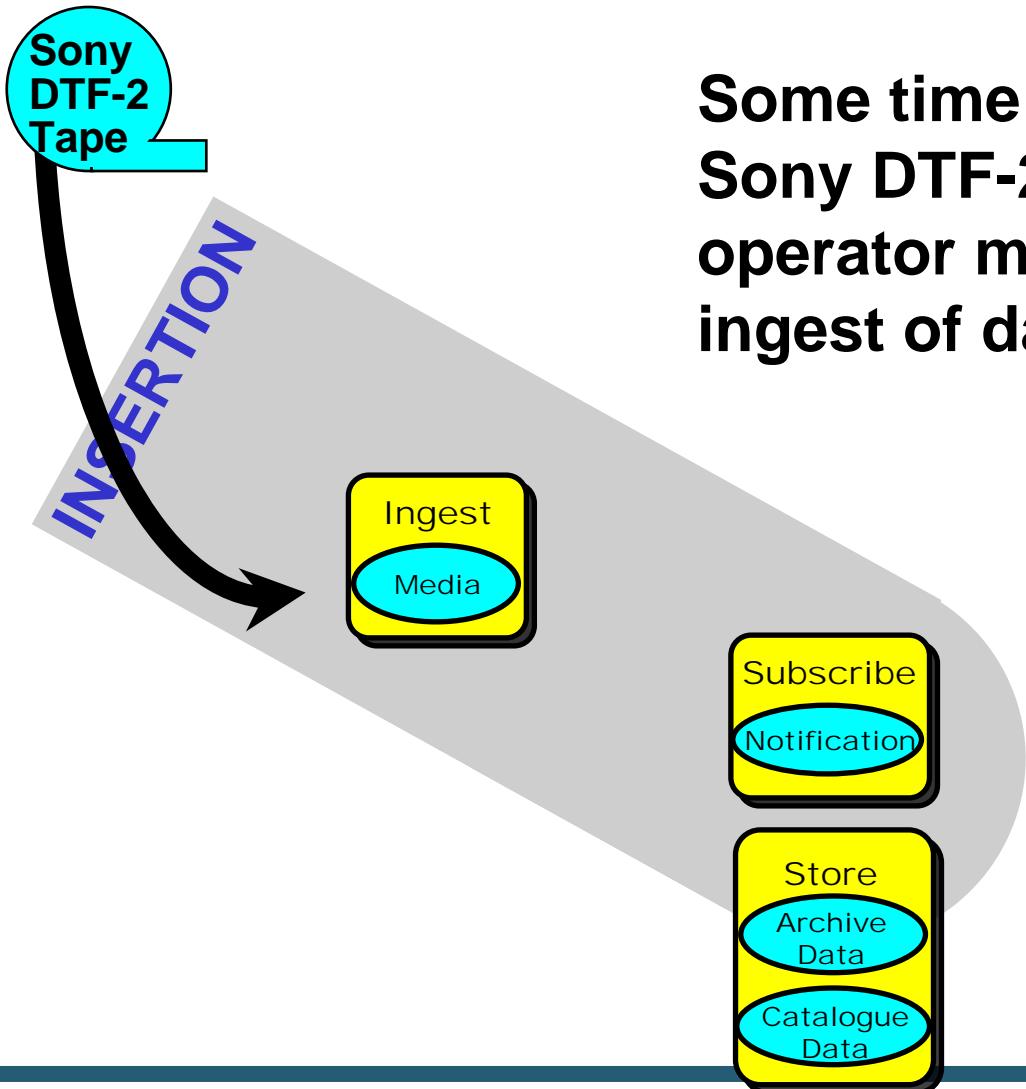


External
Data Provider

Data Insertion
Data Notification
On-demand Production
Standing Order Delivery
QA Update



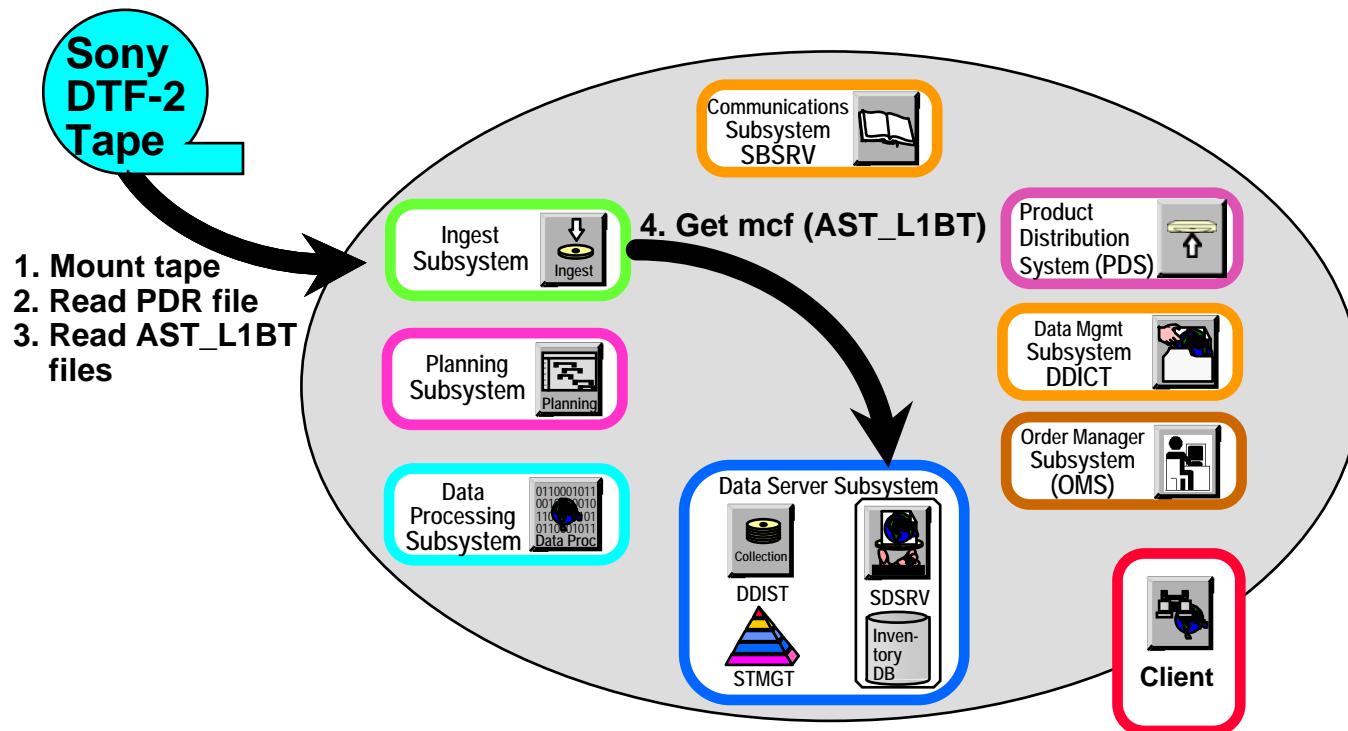
Chaining and On-Demand Production (Cont.)



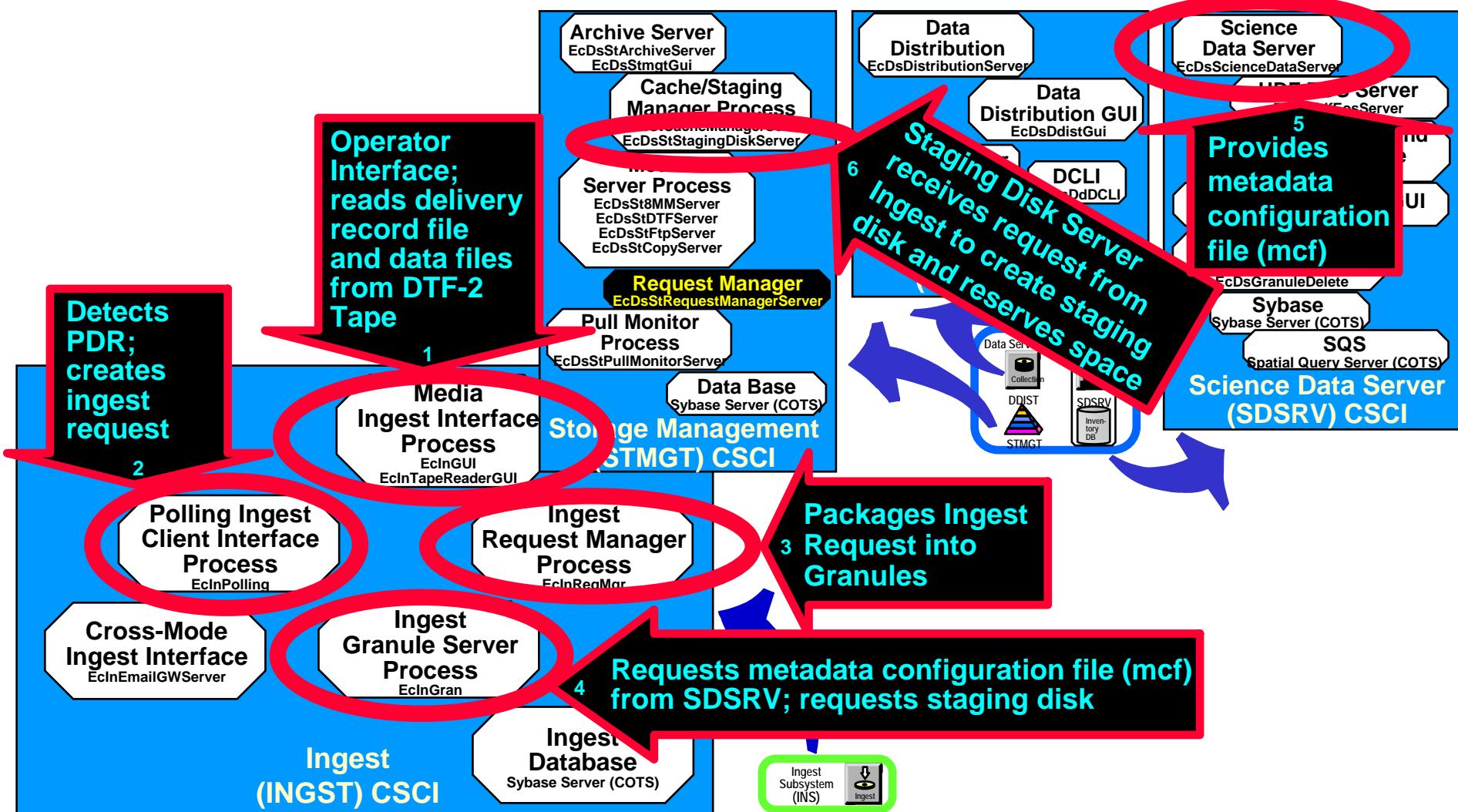
Some time later, after receiving Sony DTF-2 tape from GDS, operator mounts tape and begins ingest of data

ASTER: DTF-2 Tape Ingest Process

After receiving Sony DTF-2 tape in a shipment, DAAC Operator mounts tape and begins ingest activities.
 Tape contains AST_L1BT (L1B TIR) data.



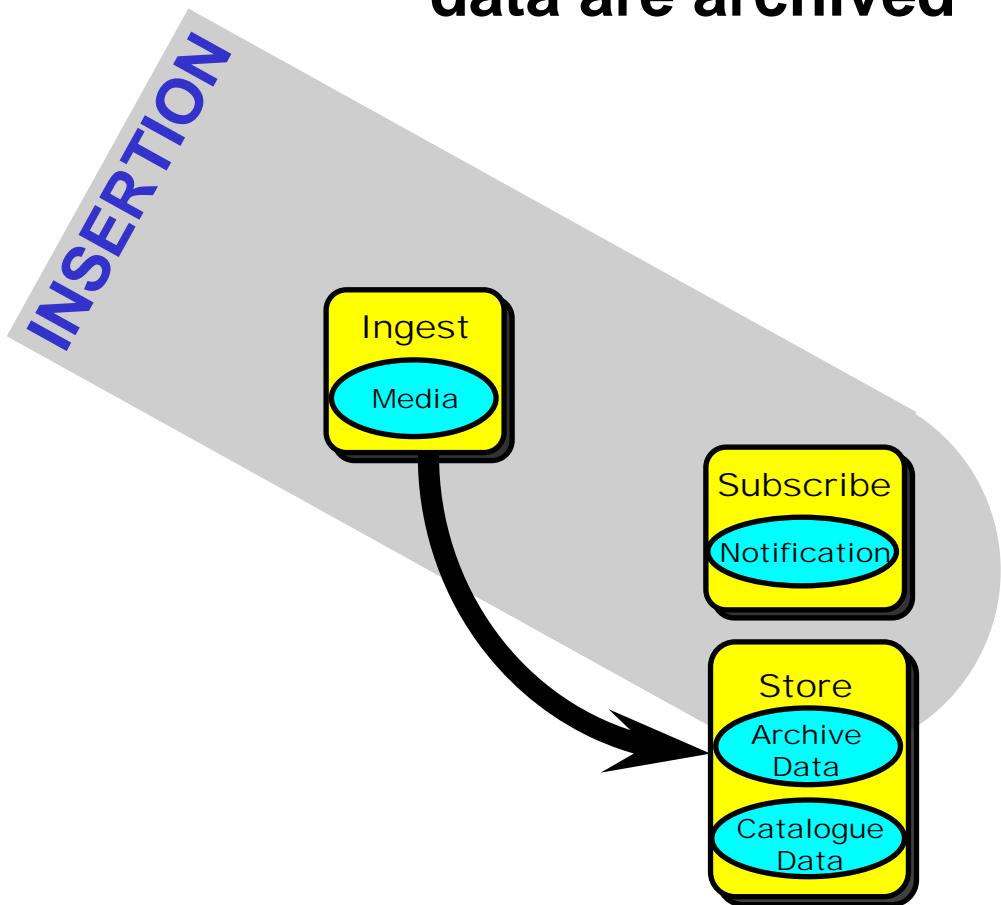
ASTER: CSCI/Component Role in Ingest DTF-2 Tape Operations



Chaining and On-Demand Production (Cont.)



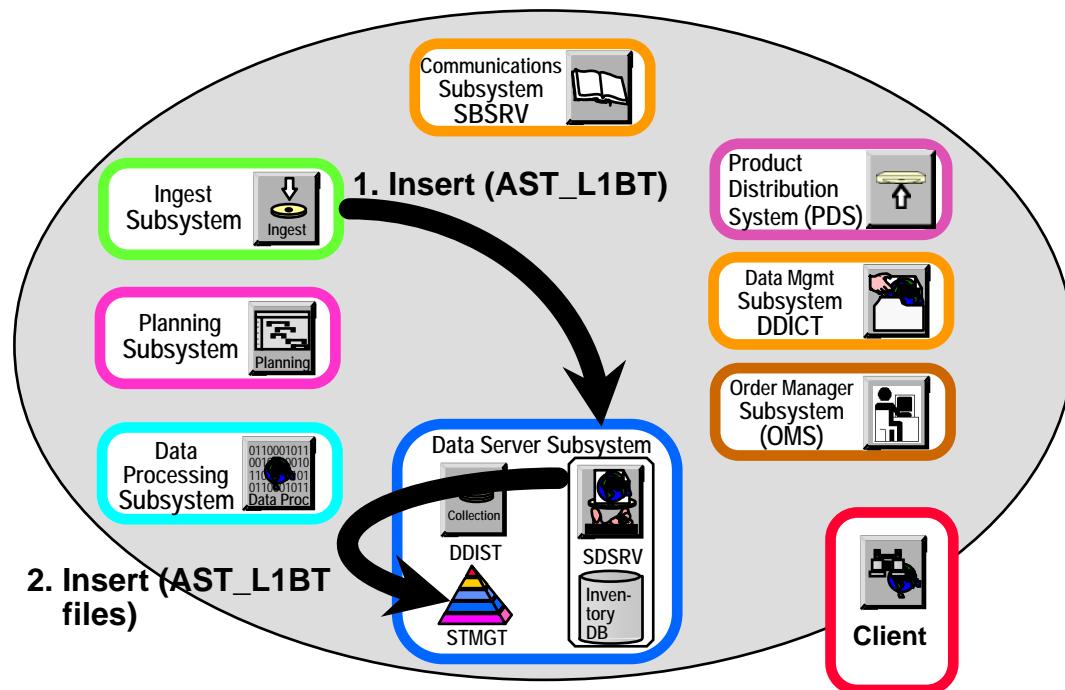
Ingested AST_L1BT
data are archived



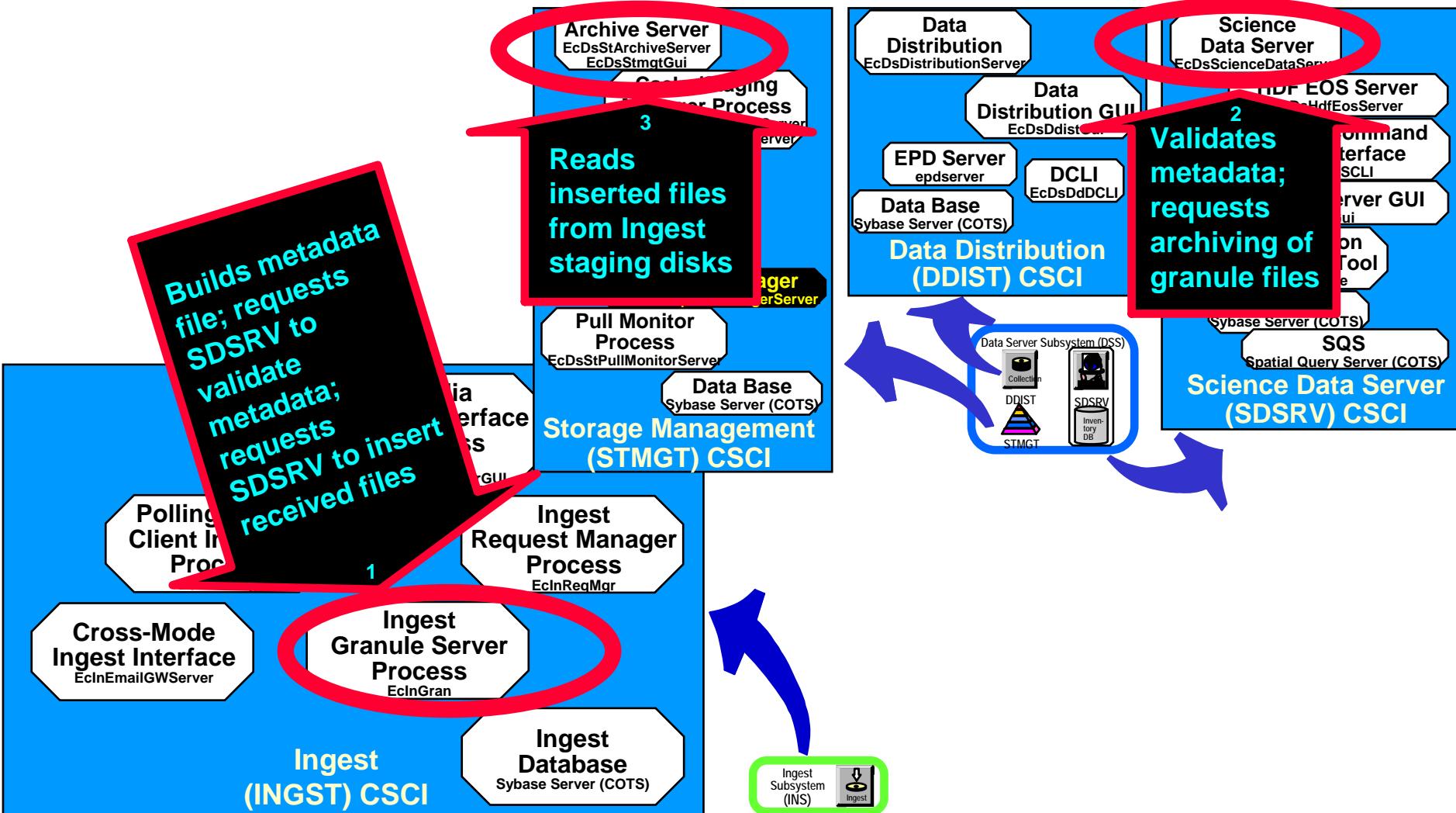
ASTER: Ingest Archive Insertion Process



Archive AST_L1BT (L1B TIR) data granules.



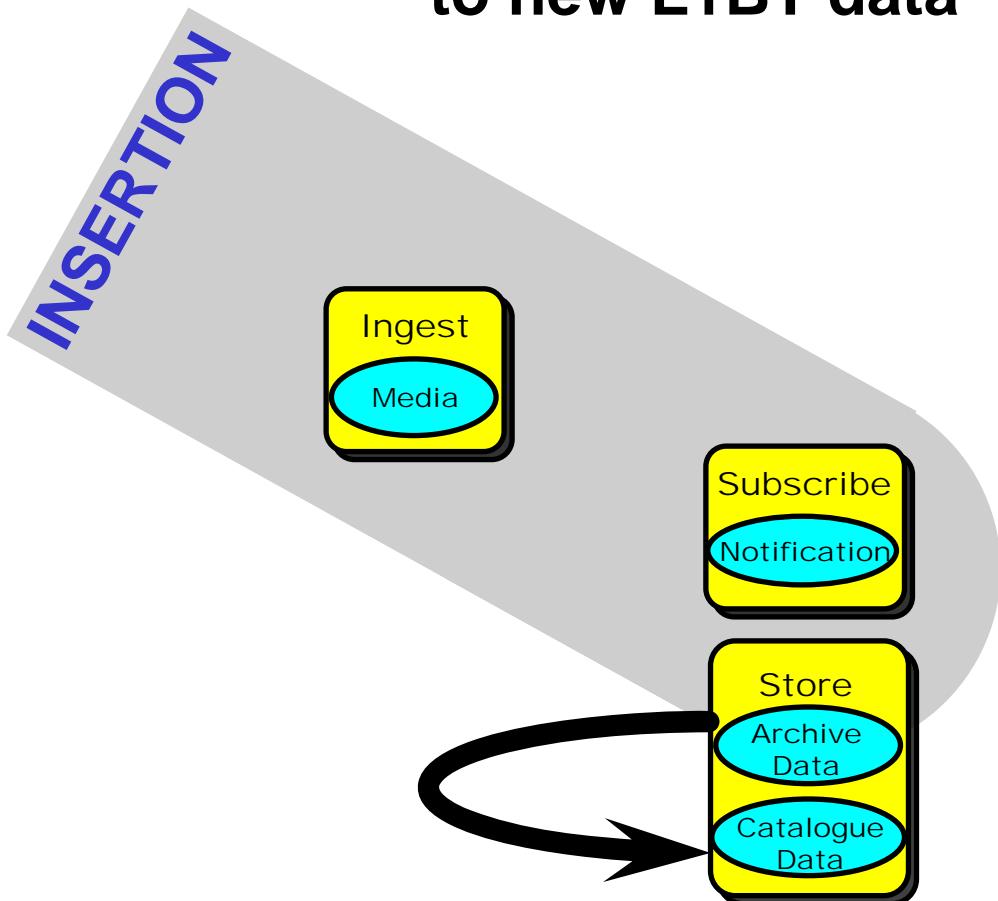
ASTER: CSCI/Component Role in Ingest Archive Insertion



Chaining and On-Demand Production (Cont.)



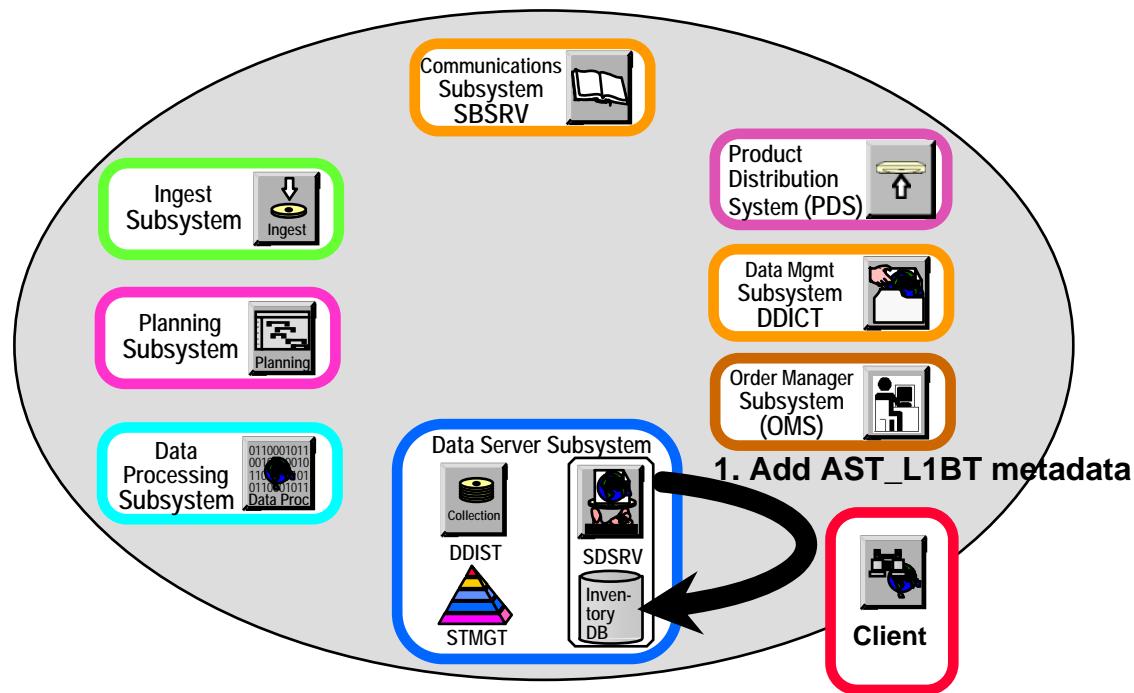
Update catalogue with reference
to new L1BT data



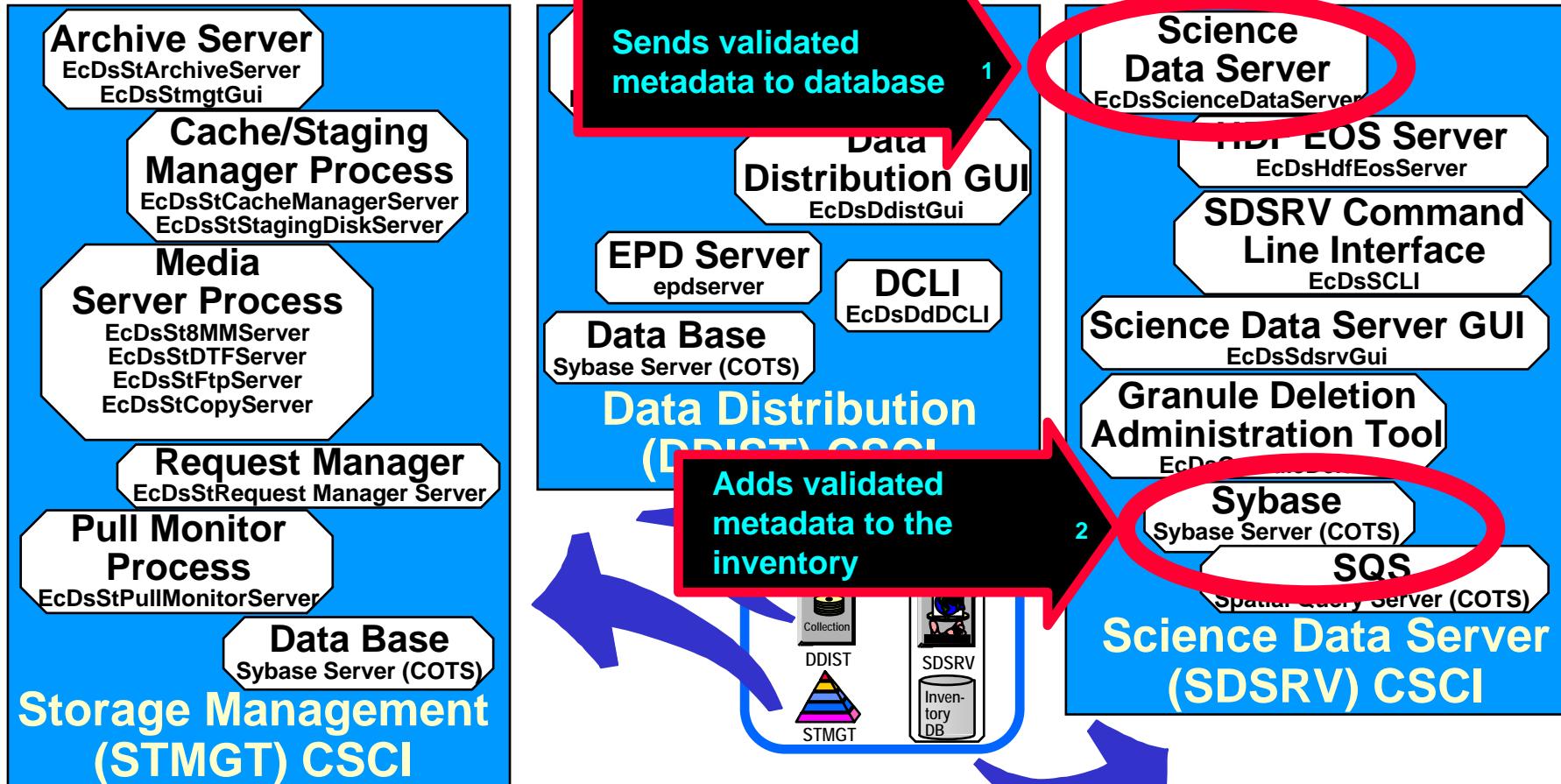
ASTER: Inventory (Metadata) Update Process



Add metadata for AST_L1BT (L1B TIR) data granules to the Sybase/SQS database.



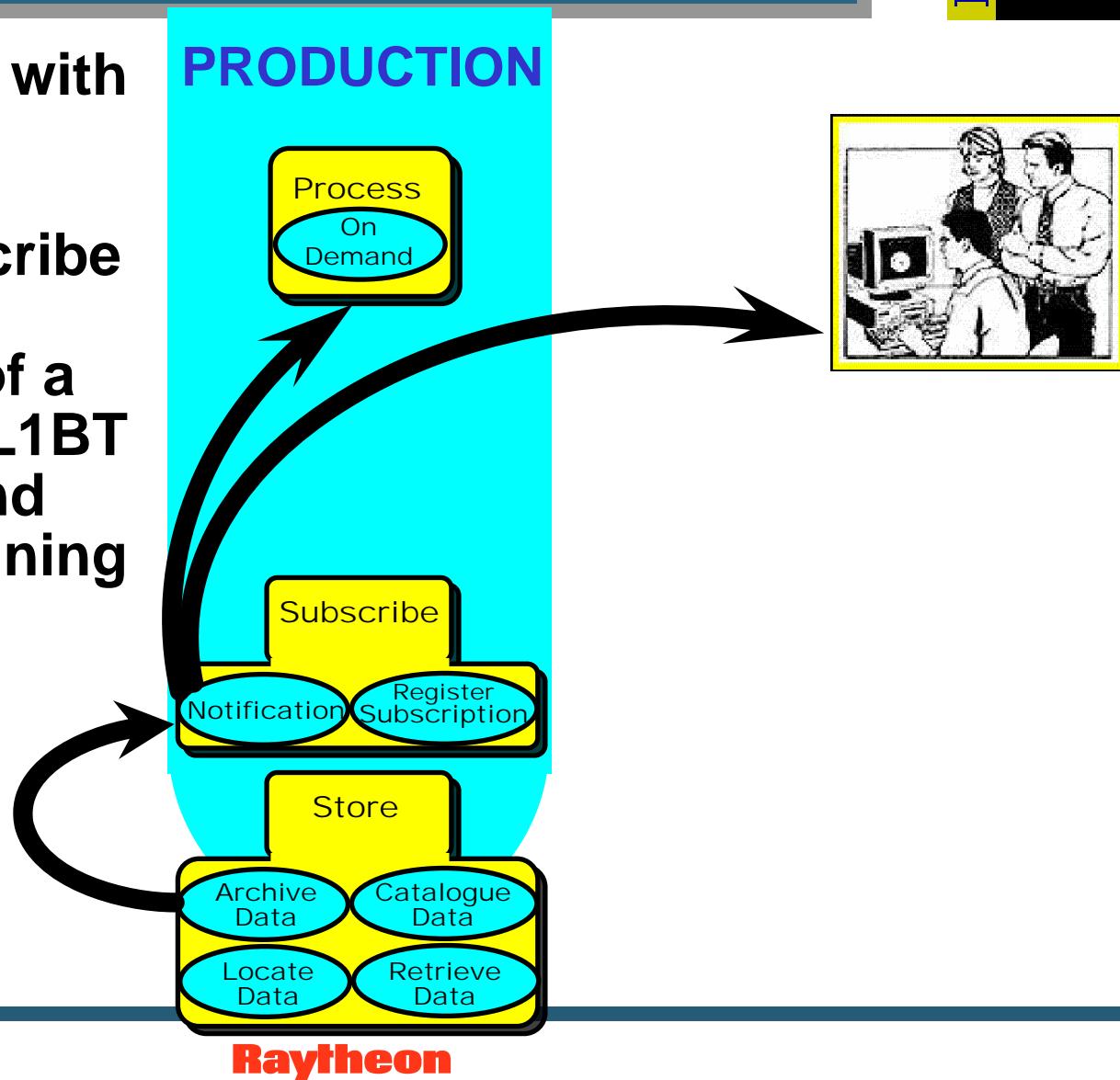
ASTER: CSCI/Component Role in Inventory (Metadata) Update



Chaining and On-Demand Production (Cont.)



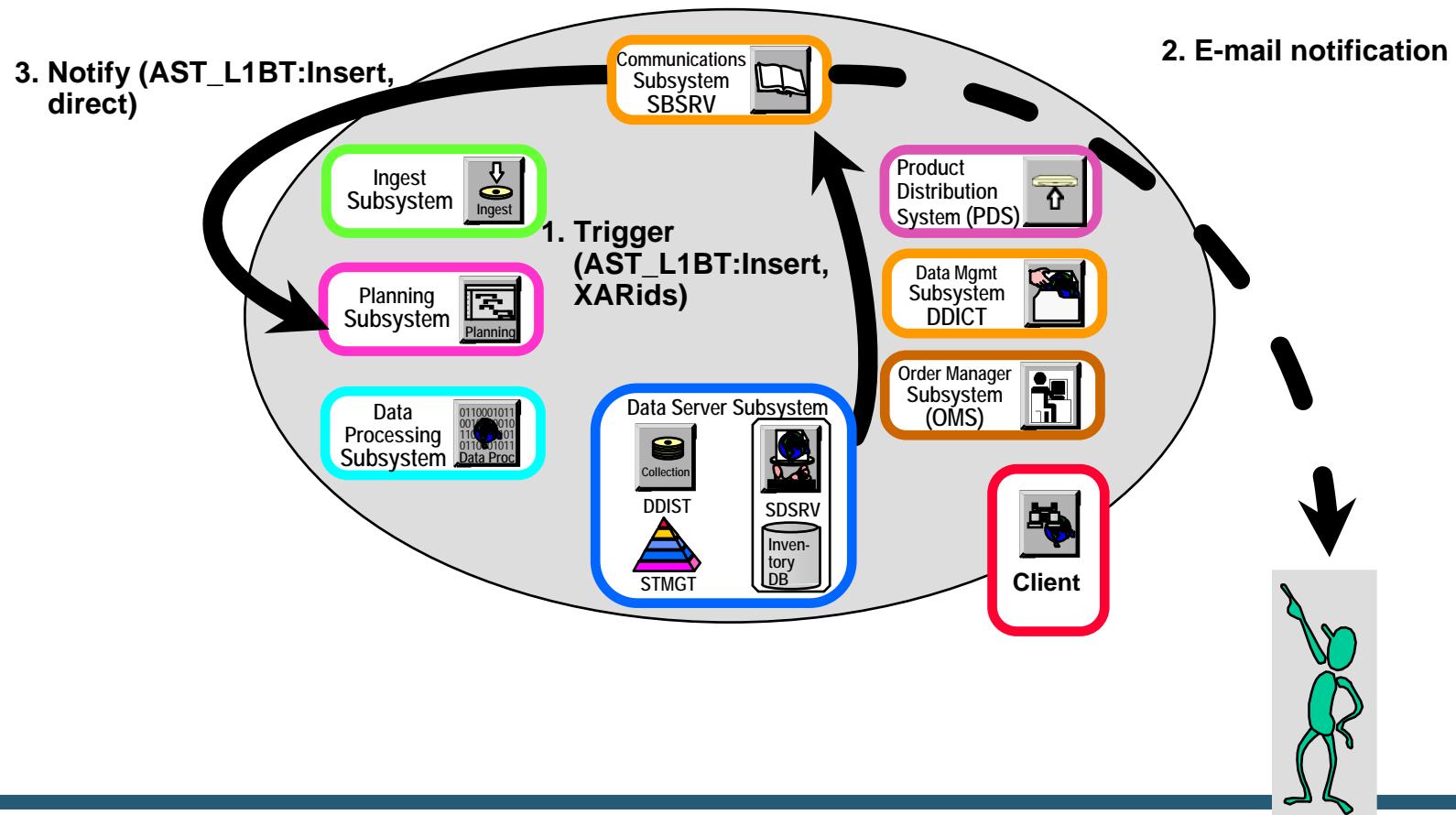
Insert terminates with an insert event notification to Subscribe. Subscribe e-mails ASTER Scientist notice of a completed AST_L1BT granule insert, and also notifies Planning



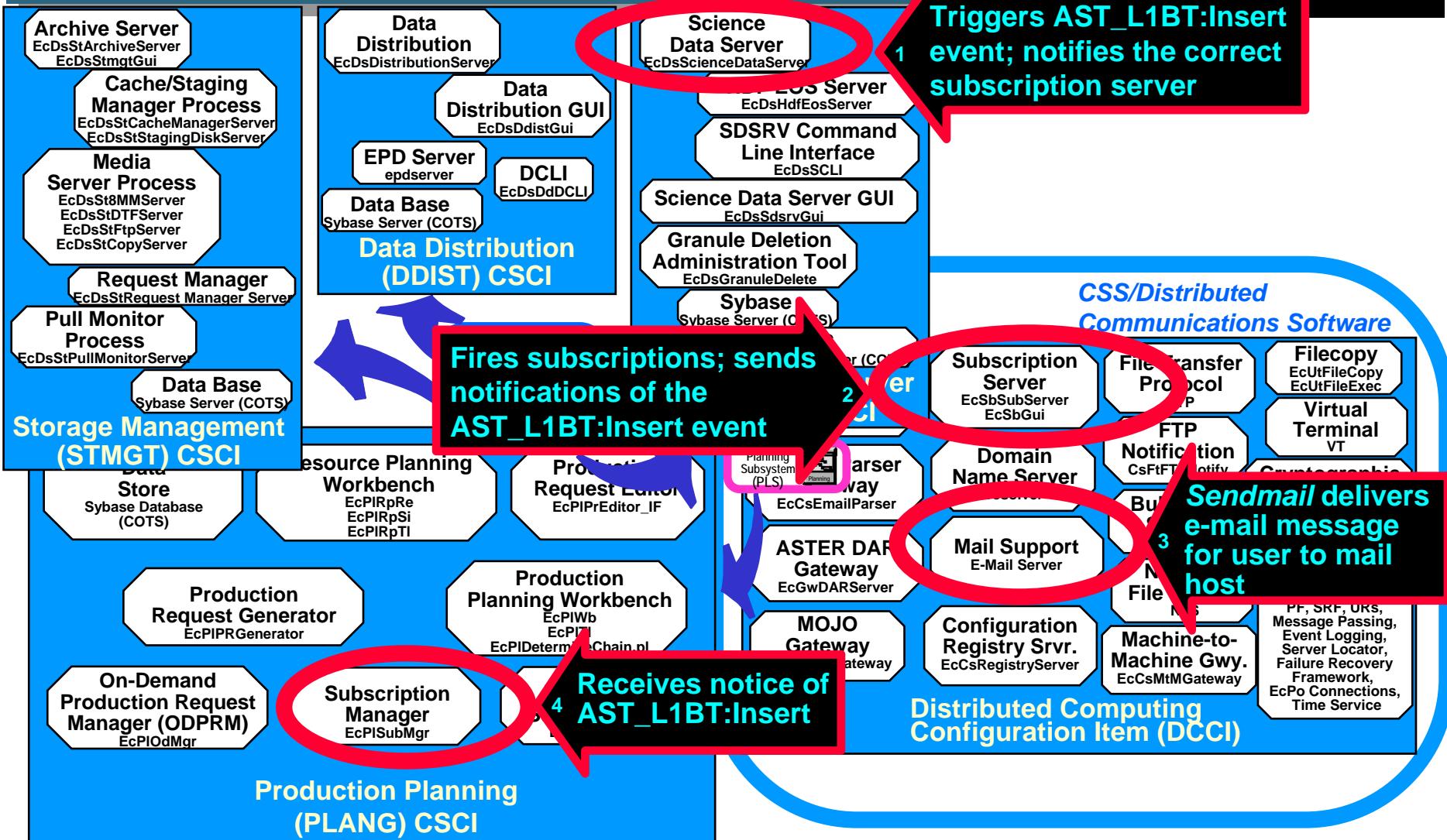
ASTER: Event Notification Process



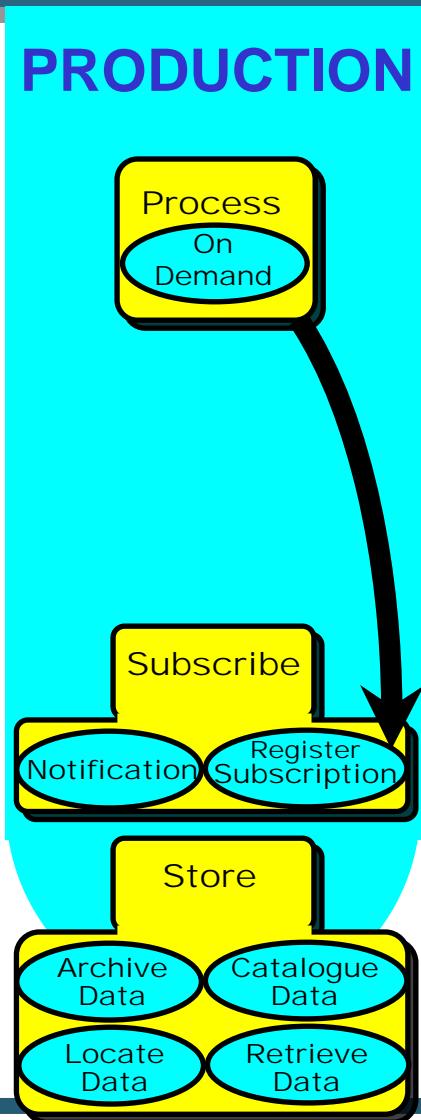
Notify all AST_L1BT:Insert event subscribers whose DARid numbers are matched with the ingested granules.



ASTER: CSCI/Component Role in Event Notification

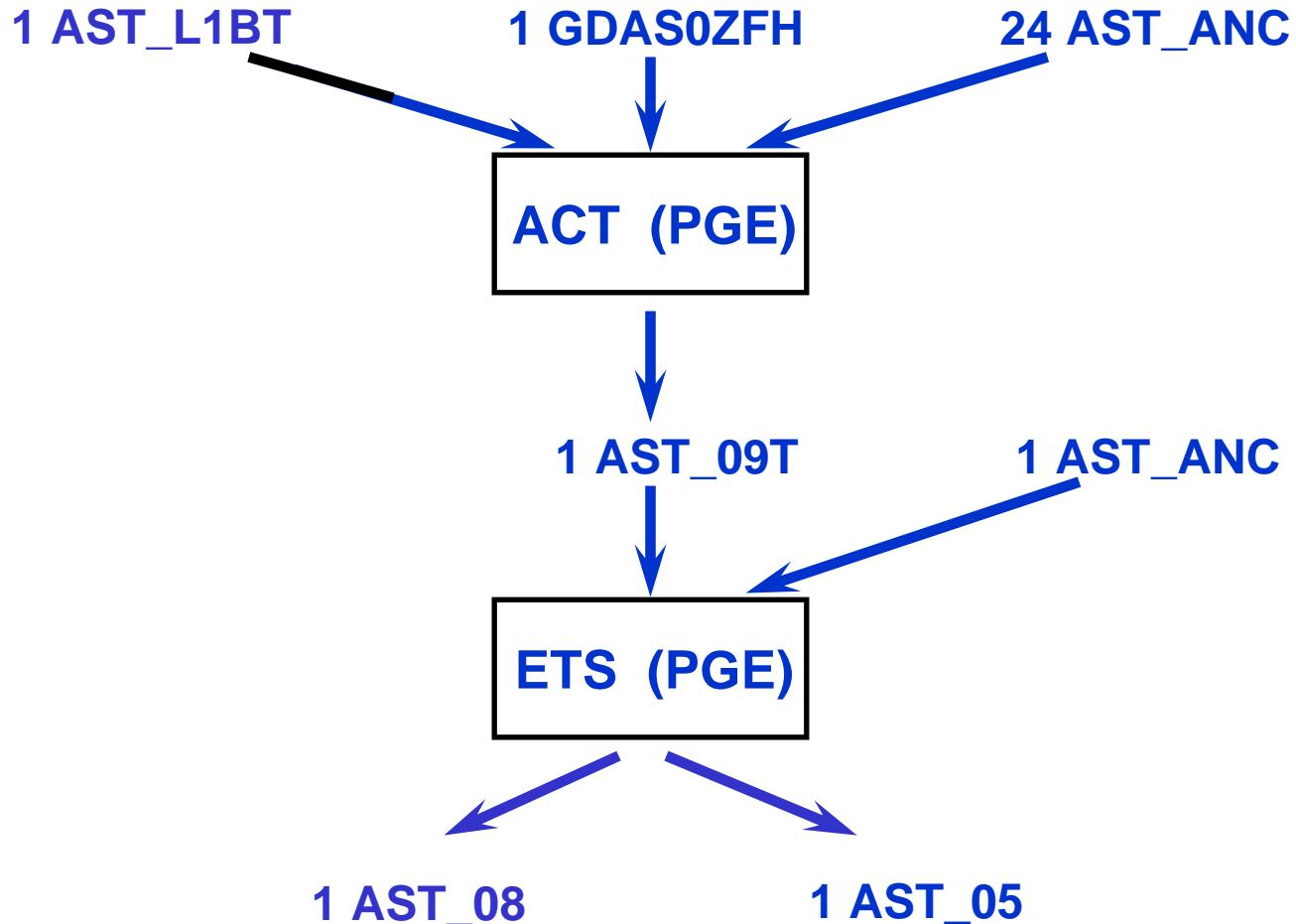


Chaining and On-Demand Production (Cont.)



Planning recognizes the need to run ACT PGE before ETS. Creates data processing requests (DPRs) for ACT and ETS, and registers subscriptions for input products that are not available in the archive.

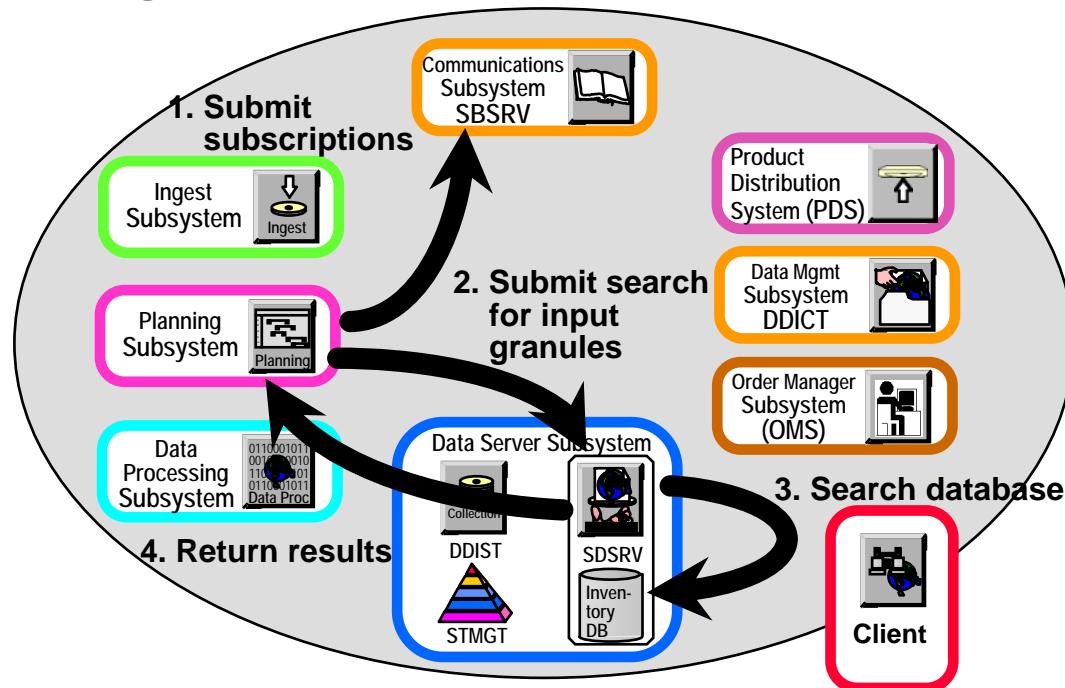
ASTER: PGE Chaining



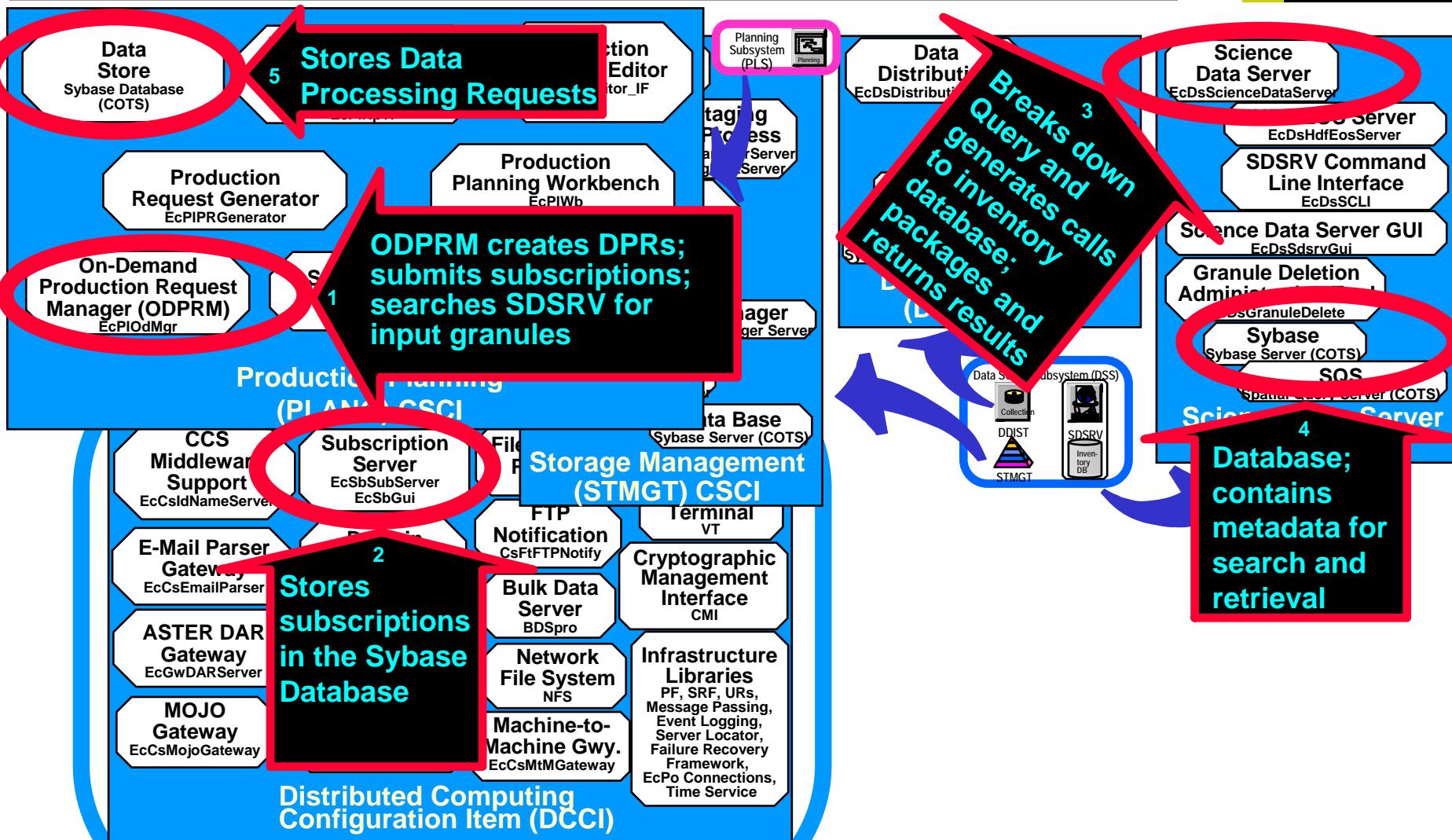
ASTER: Sequenced Production Request Process



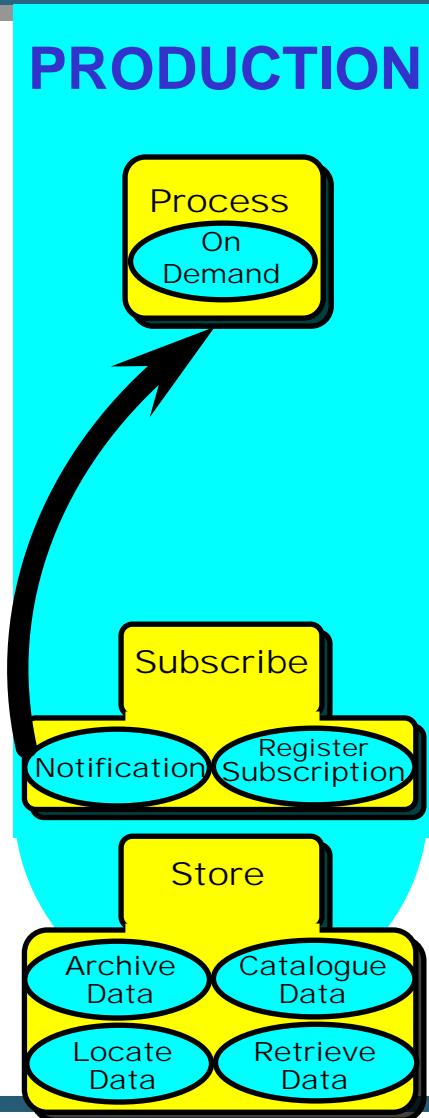
Planning recognizes that, in order to run ETS algorithm on AST_L1BT (L1B TIR), ACT algorithm must be run first. Planning creates DPRs for ACT and ETS, with the AST_09T (L2 Surface Radiance TIR) output feeding the ETS algorithm, submitting subscriptions for data not available in the archive.



ASTER: CSCI/Component Role in Sequenced Production Request



Chaining and On-Demand Production (Cont.)

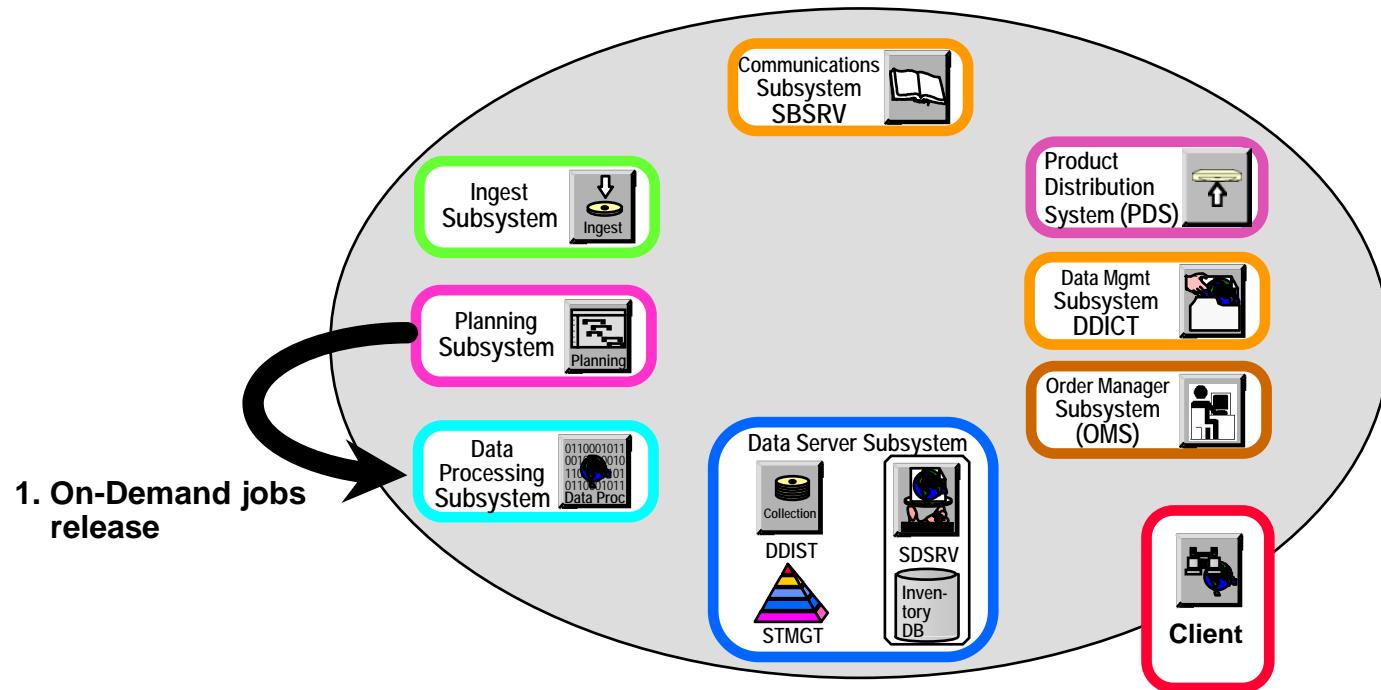


Planning releases the On-Demand jobs, including the DPR for ACT and a dependent one for ETS

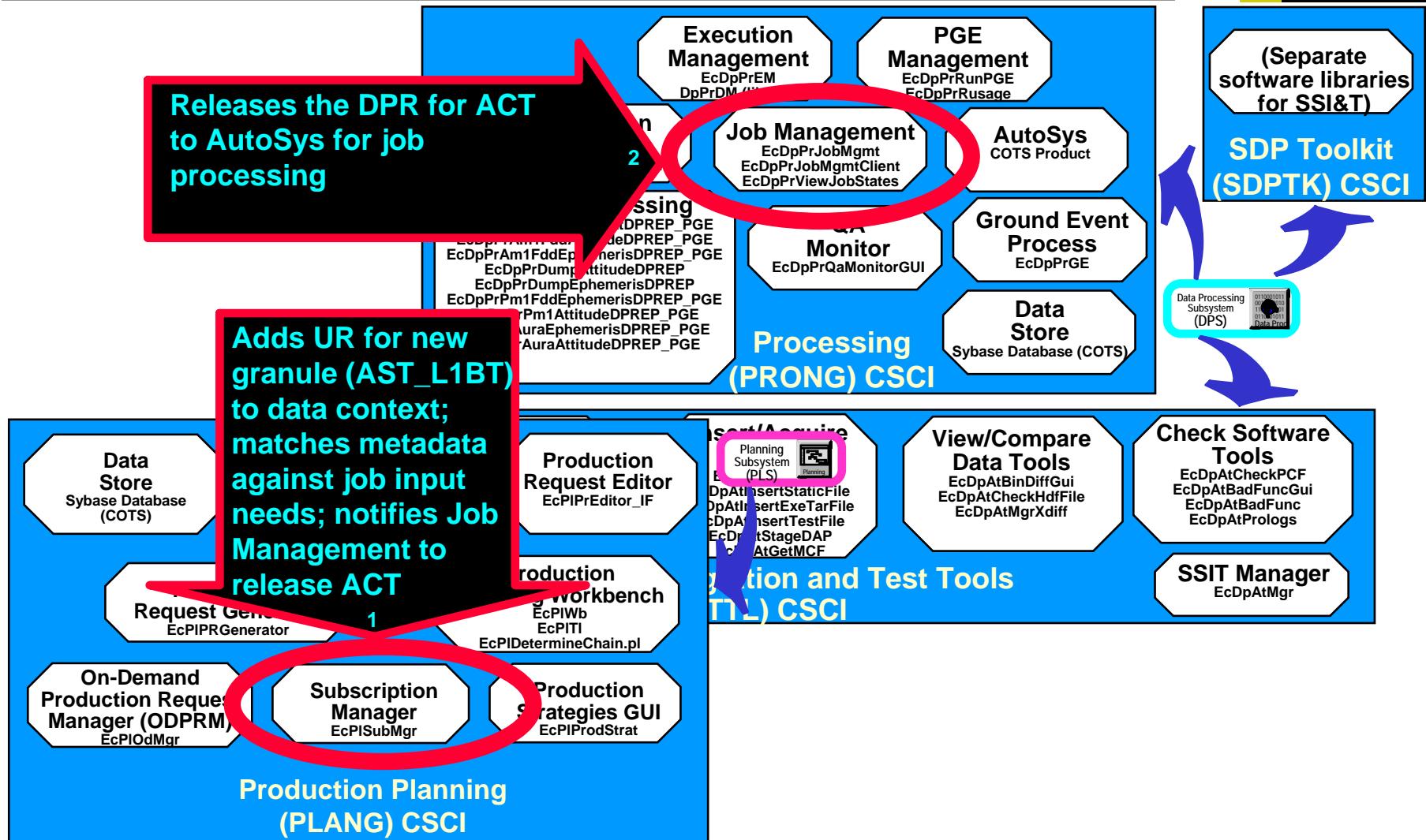
ASTER: Job Activation Process



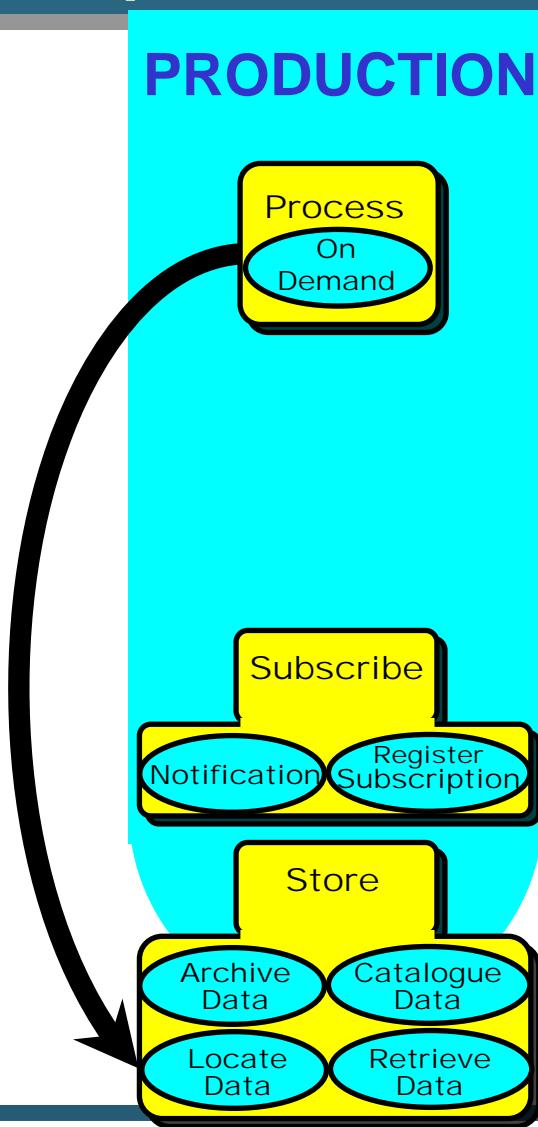
Planning releases the On-Demand jobs; the release activates the ACT DPR for processing.



ASTER: CSCI/Component Role in Job Activation



Chaining and On-Demand Production (Cont.)

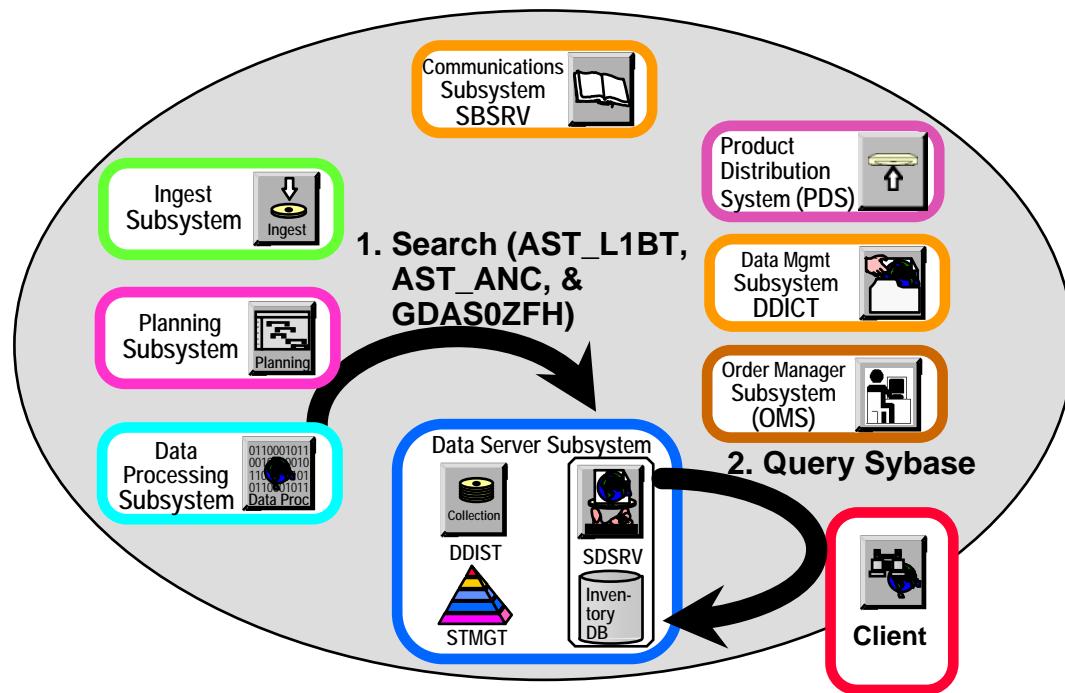


Job locates
AST_L1BT,
AST_ANC
(ASTER ancillary
data set), and
GDAS0ZFH
(NCEP ancillary)
data required for
ACT algorithm

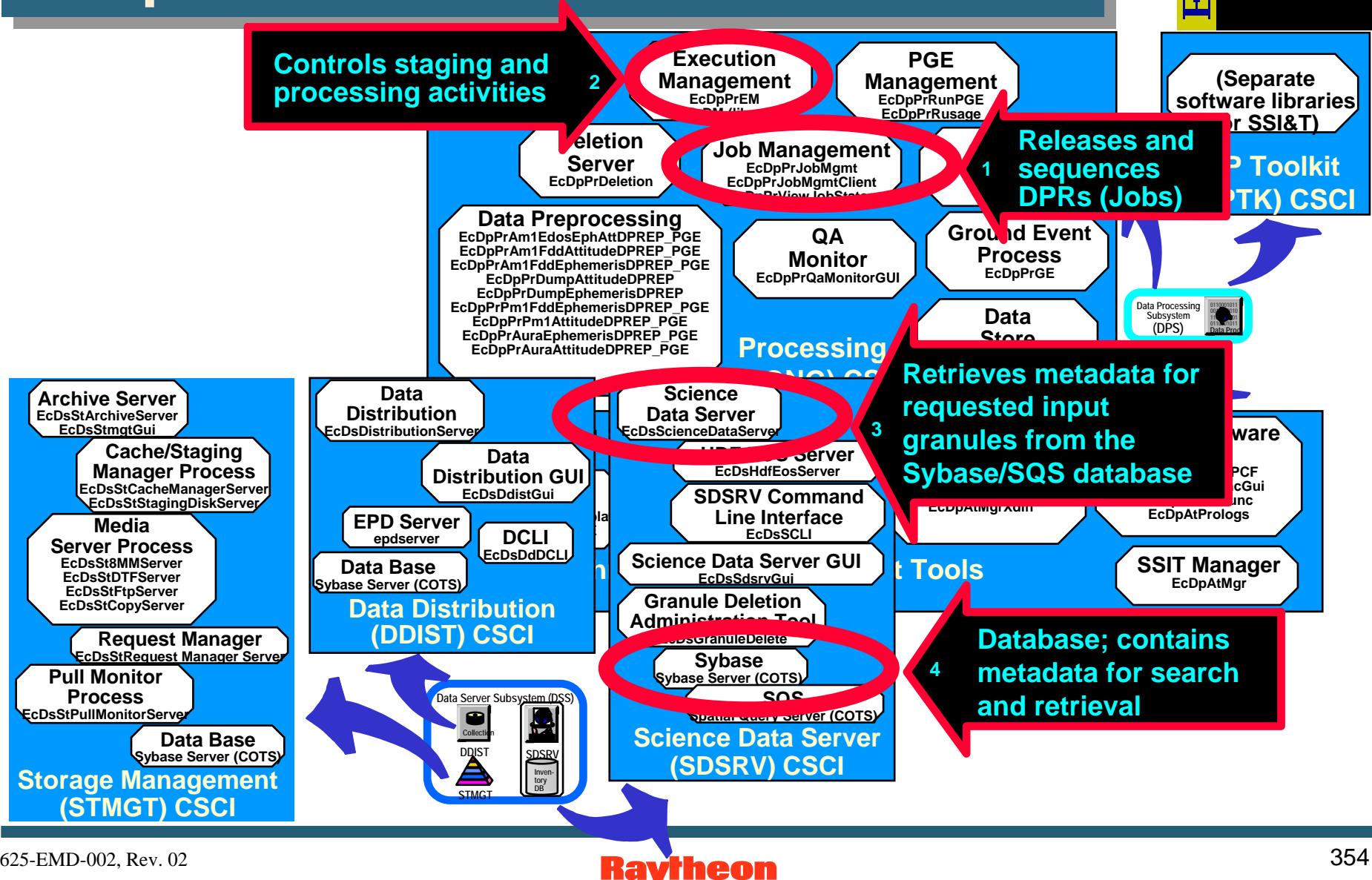
ASTER: Input Data Location Process



ACT locates required AST_L1BT (L1B TIR), AST_ANC (ASTER ancillary data set), and GDAS0ZFH (NCEP ancillary) input data granules.



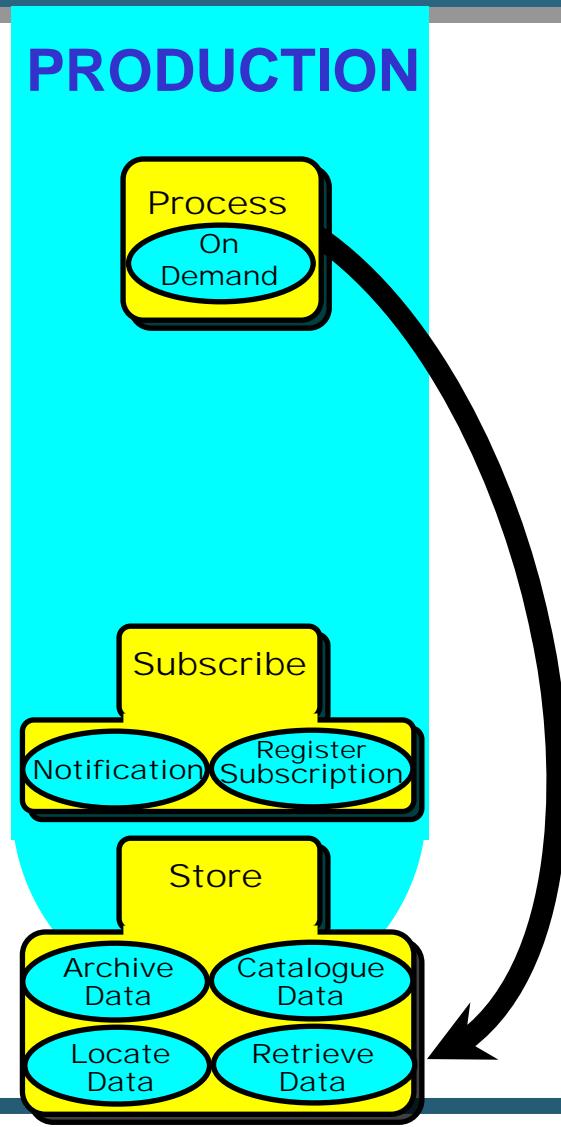
ASTER: CSCI/Component Role in Input Data Location



Chaining and On-Demand Production (Cont.)

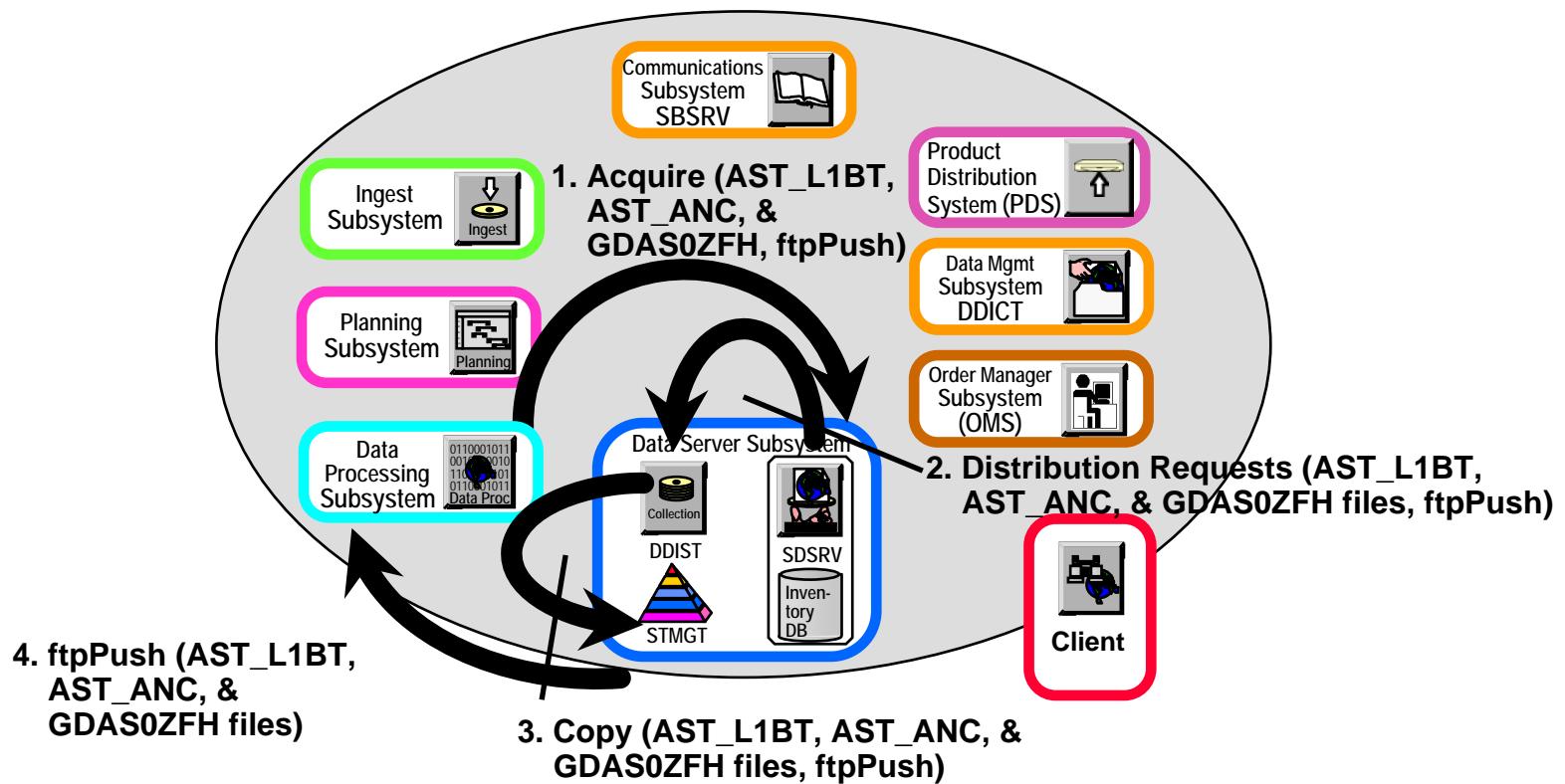


**Retrieve
AST_L1B,
AST_ANC
(ASTER ancillary
data set), and
GDAS0ZFH
granules as input
to ACT; PGE
execution begins**

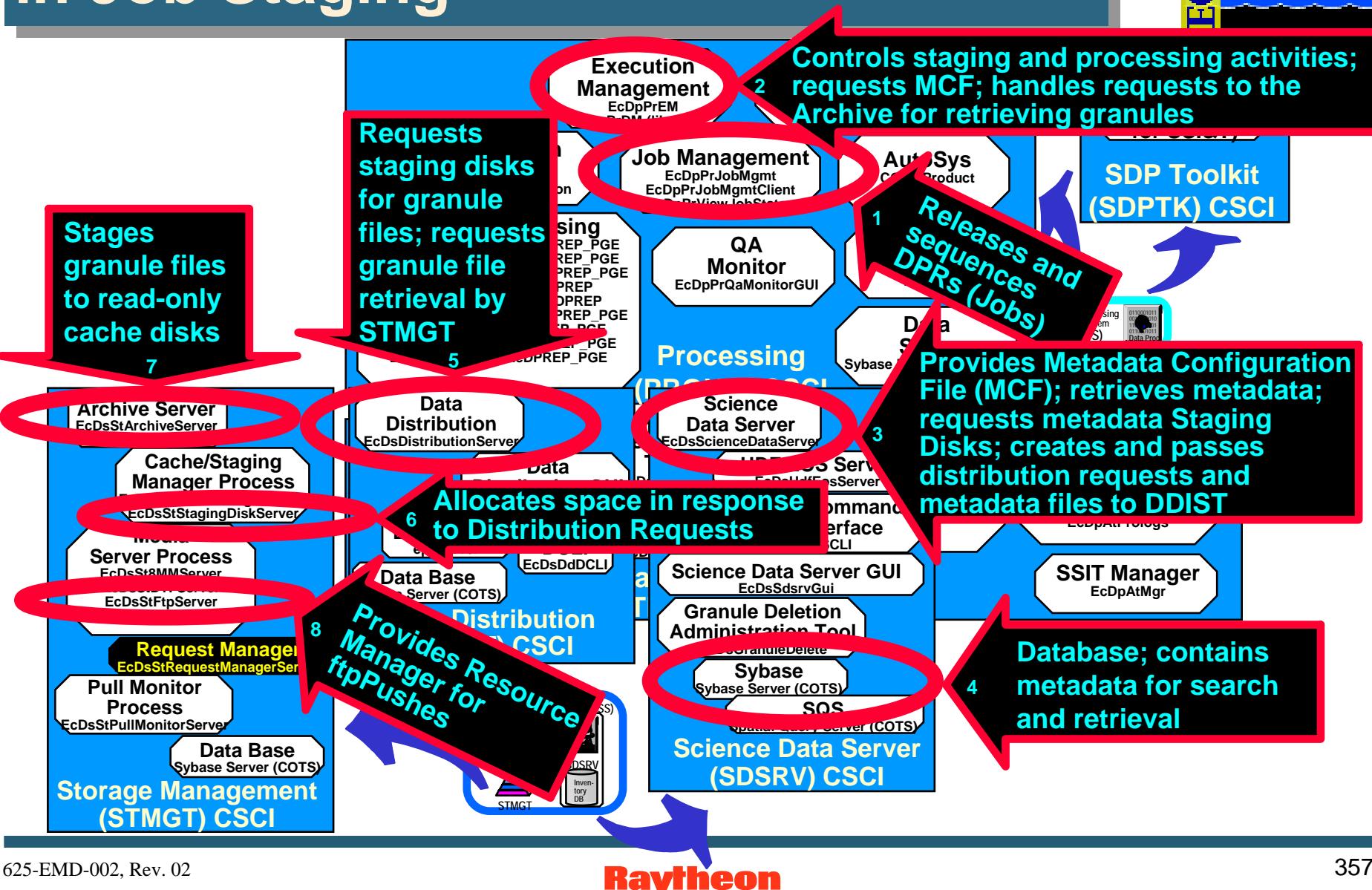


ASTER: Job Staging Process

ACT production job retrieves required AST_L1BT (L1B TIR), AST_ANC (ASTER ancillary data set), and GDAS0ZFH (NCEP ancillary) input data granules.



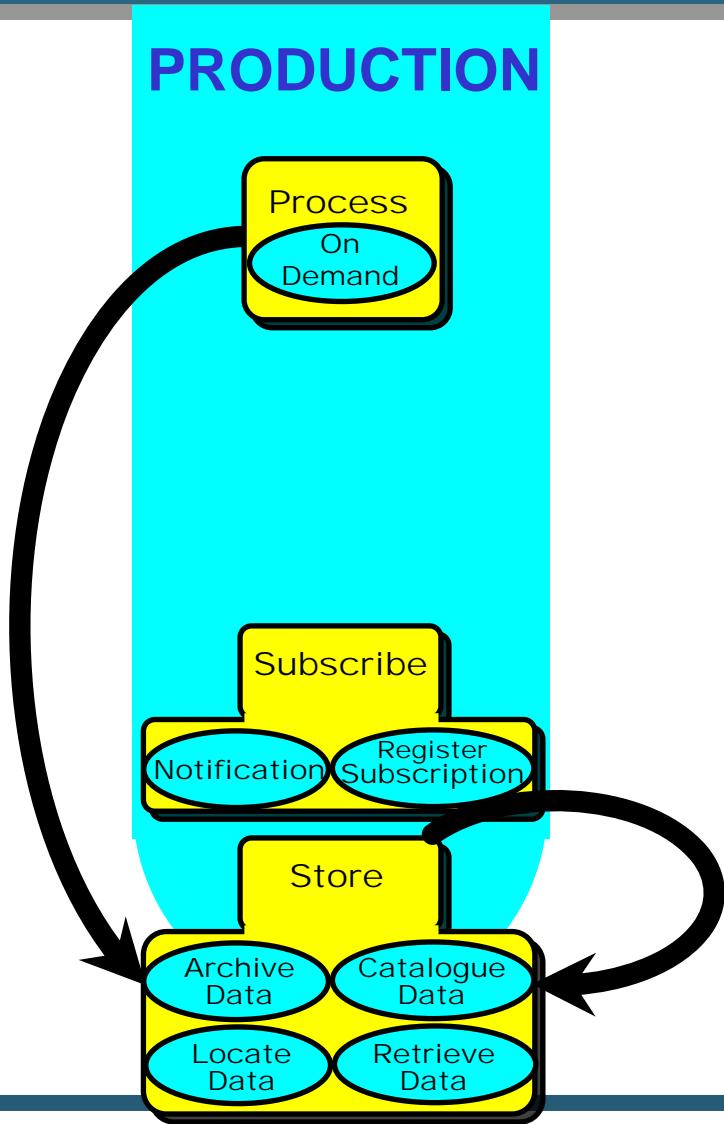
ASTER: CSCI/Component Role in Job Staging



Chaining and On-Demand Production (Cont.)



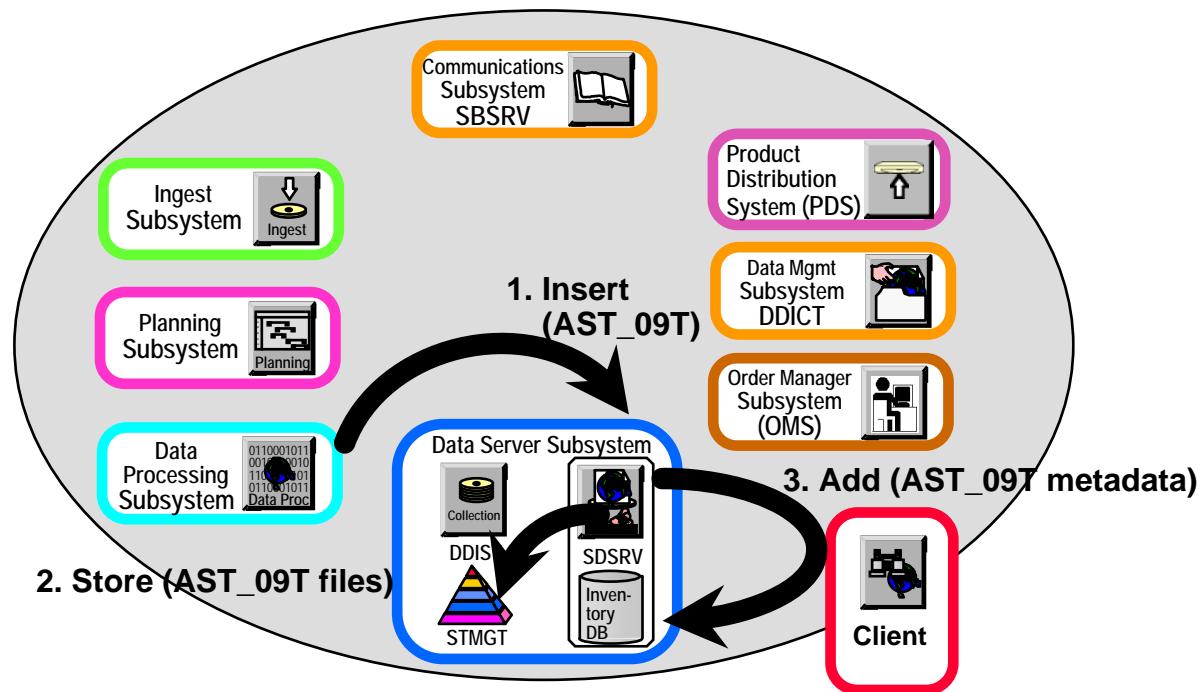
Archive newly created AST_09T (L2 Surface Radiance TIR) granule after completion of ACT PGE; update catalogue with reference to AST_09T



ASTER: PGE Execution and Output Insertion Process



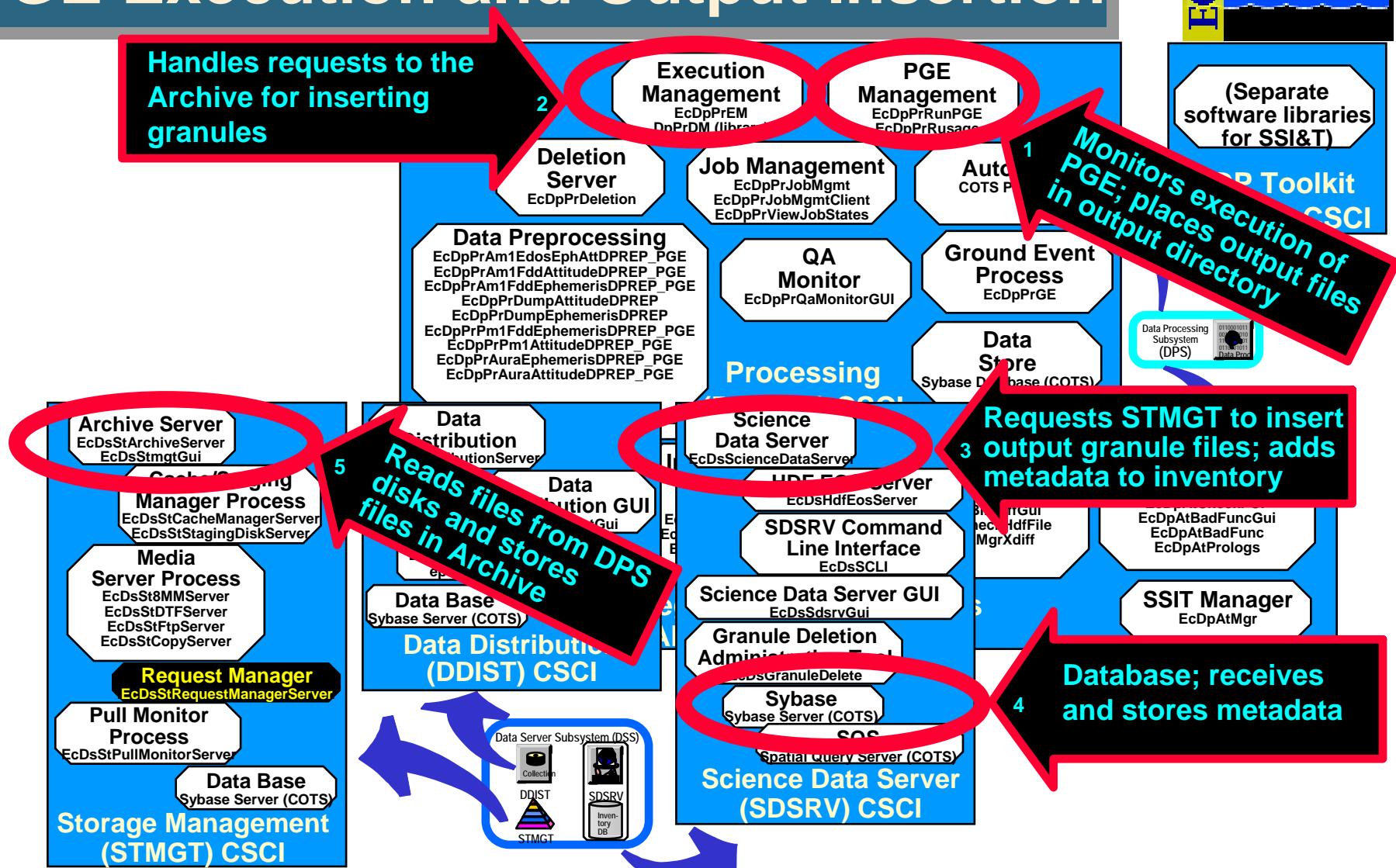
ACT PGE is successfully executed and newly created AST_09T (L2 Surface Radiance TIR) granule is archived; inventory is updated.



ASTER: CSCI/Component Role in PGE Execution and Output Insertion



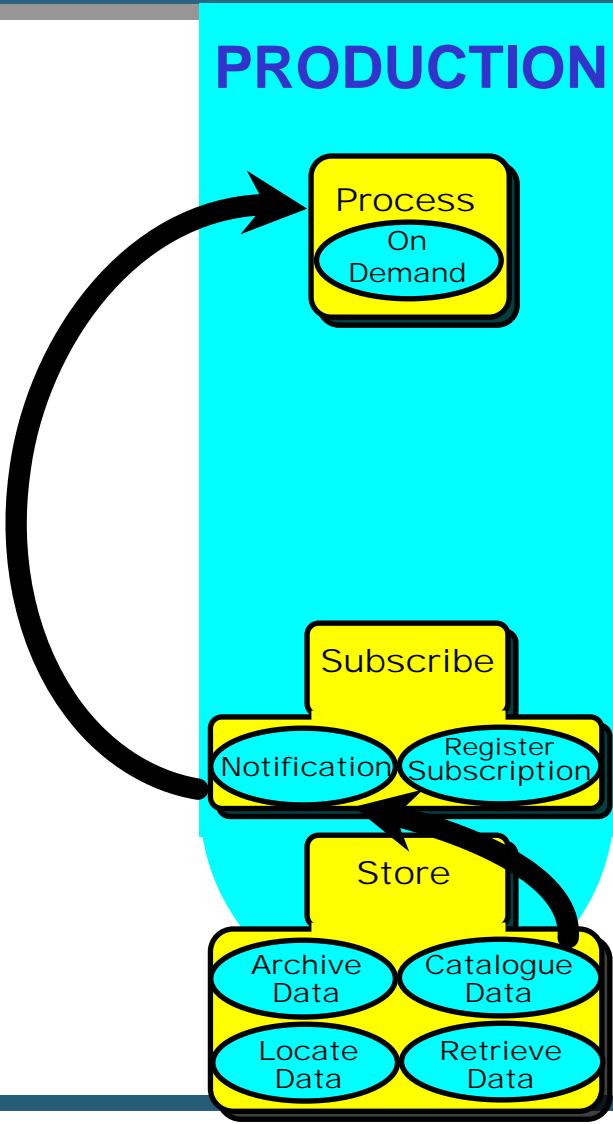
(Separate software libraries for SSI&T)
PGE Toolkit CSCI



Chaining and On-Demand Production (Cont.)



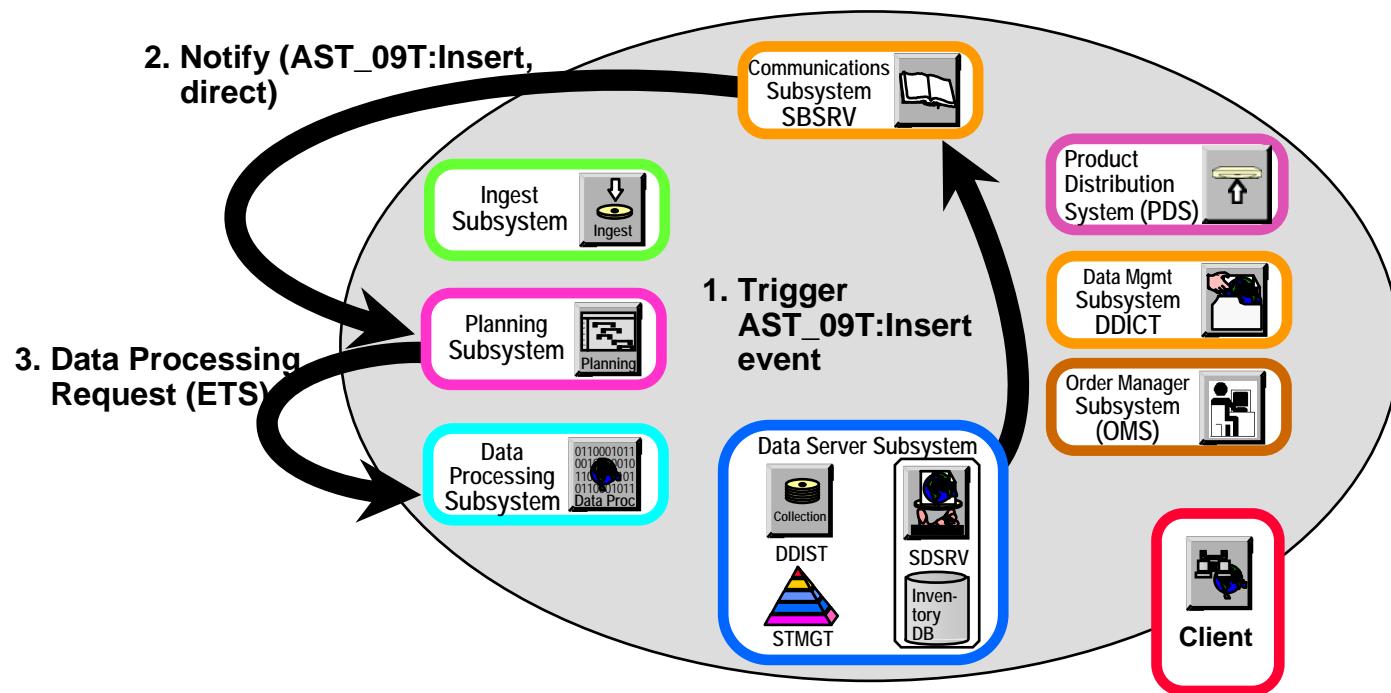
Insert terminates with an insert event notification to Subscribe, which in turn triggers initiation of ETS algorithm



ASTER: Notification and Subscription Triggering Process



Notify all AST_09T:Insert subscribers. This includes notification of the Planning Subsystem, for chained processing.



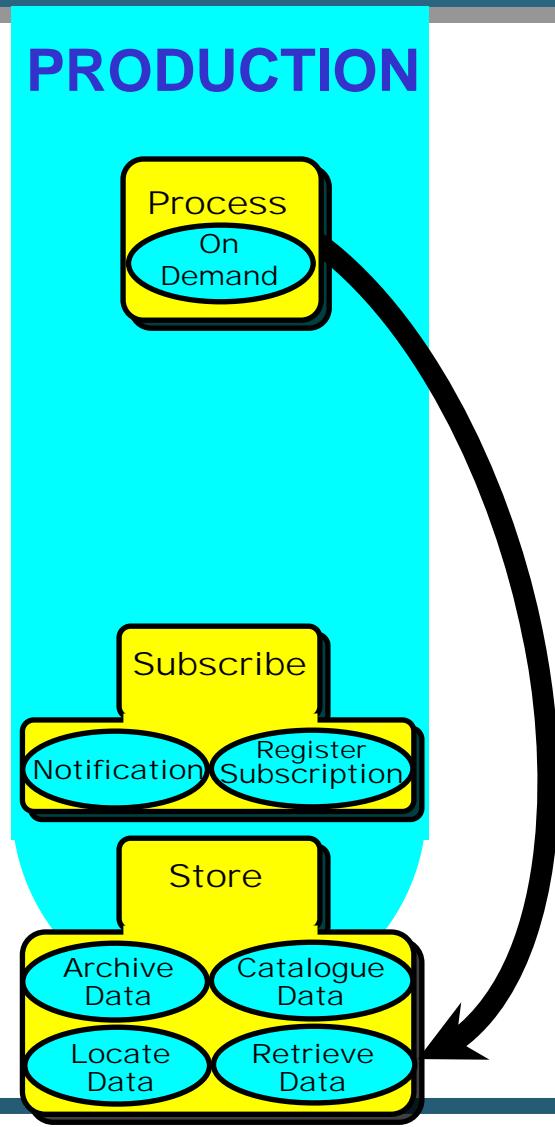
ASTER: CSCI/Component Role in Notification/Subscription Triggering



Chaining and On-Demand Production (Cont.)

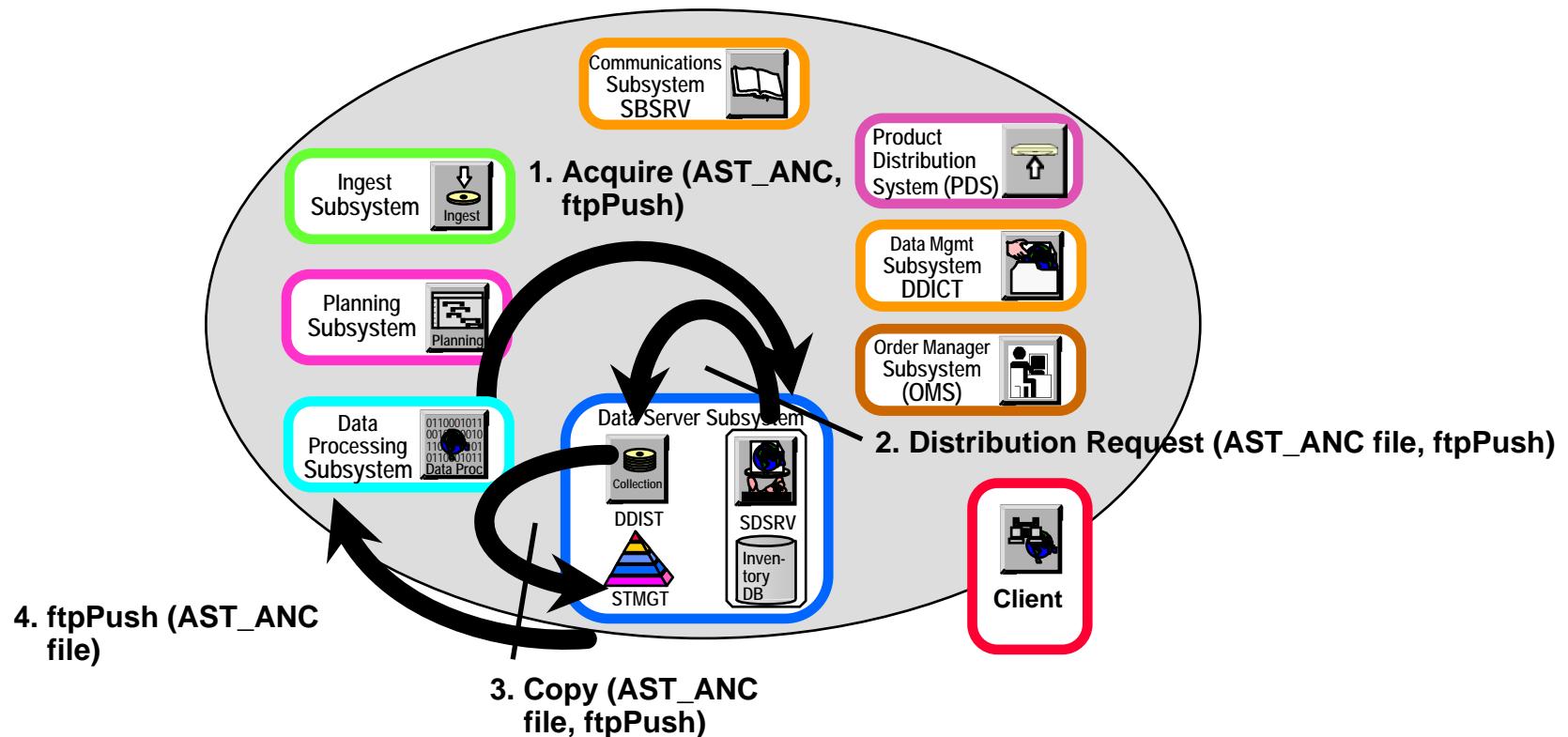


Retrieve AST_ANC
(ASTER ancillary
data set) granule
as input to ETS
production job;
PGE execution
begins

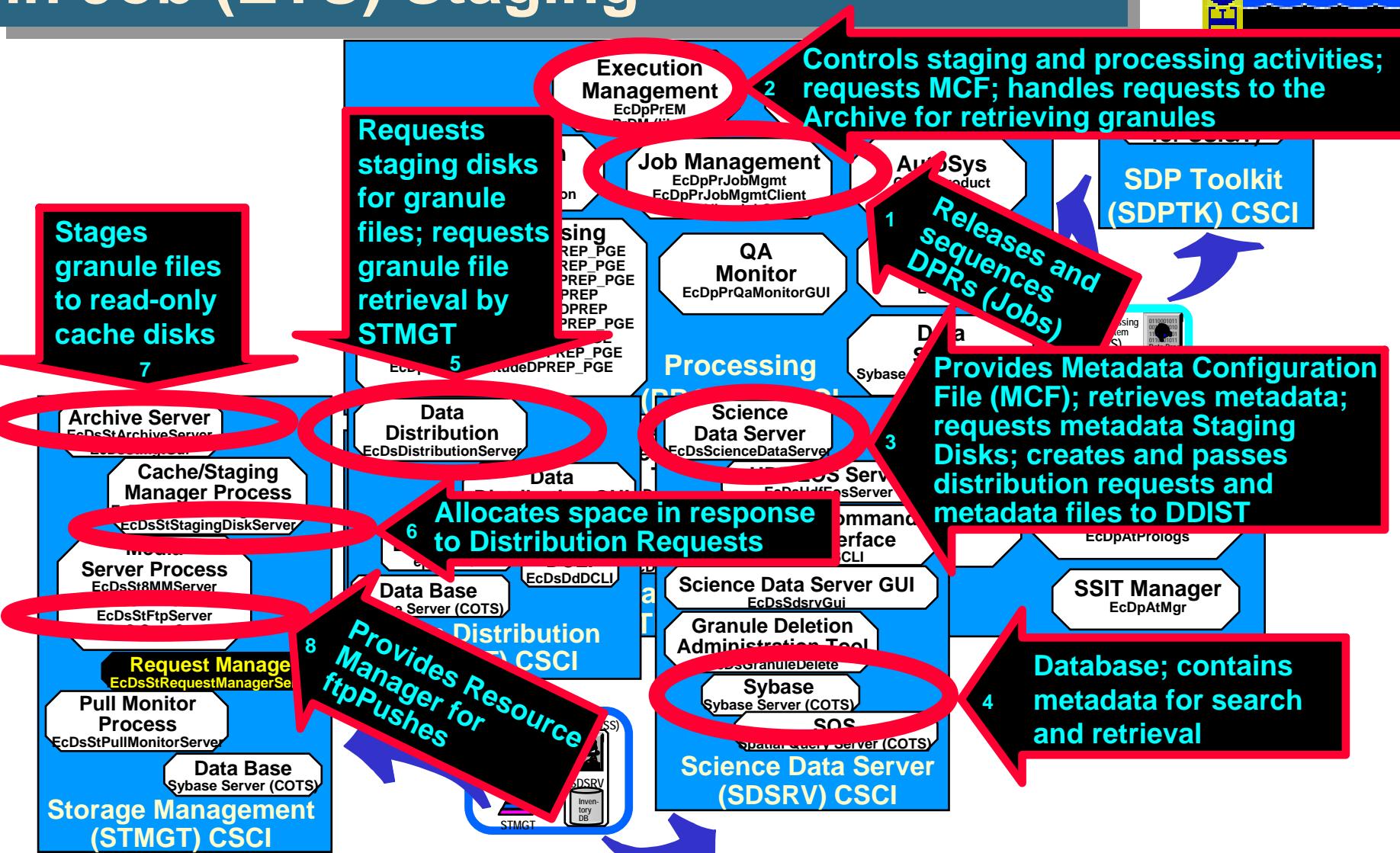


ASTER: Job (ETS) Staging Process

ETS production job retrieves required AST_ANC (ASTER ancillary data set) input data granule
 (Note: AST_09T is already available on DPS resources).



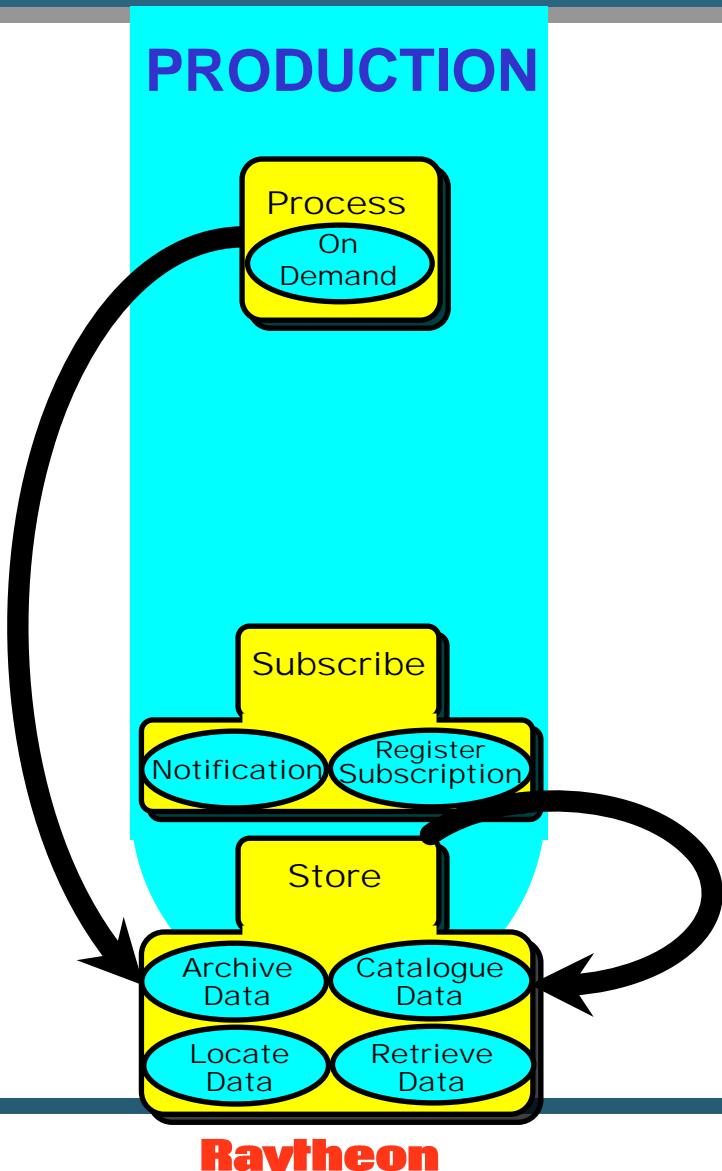
ASTER: CSCI/Component Role in Job (ETS) Staging



Chaining and On-Demand Production (Cont.)



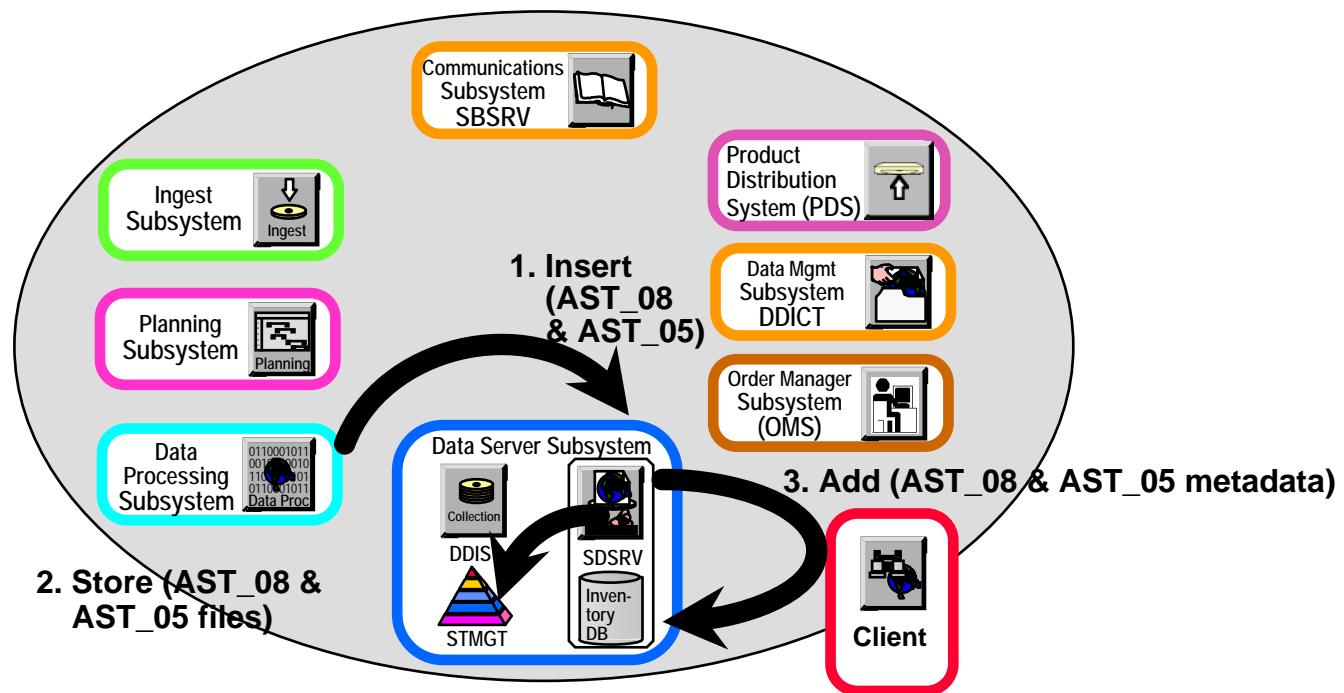
Archive newly created AST_08 (L2 Surface Temperature) and AST_05 (L2 Surface Emissivity) granules after completion of ETS PGE; update catalogue with references to AST_08 and AST_05



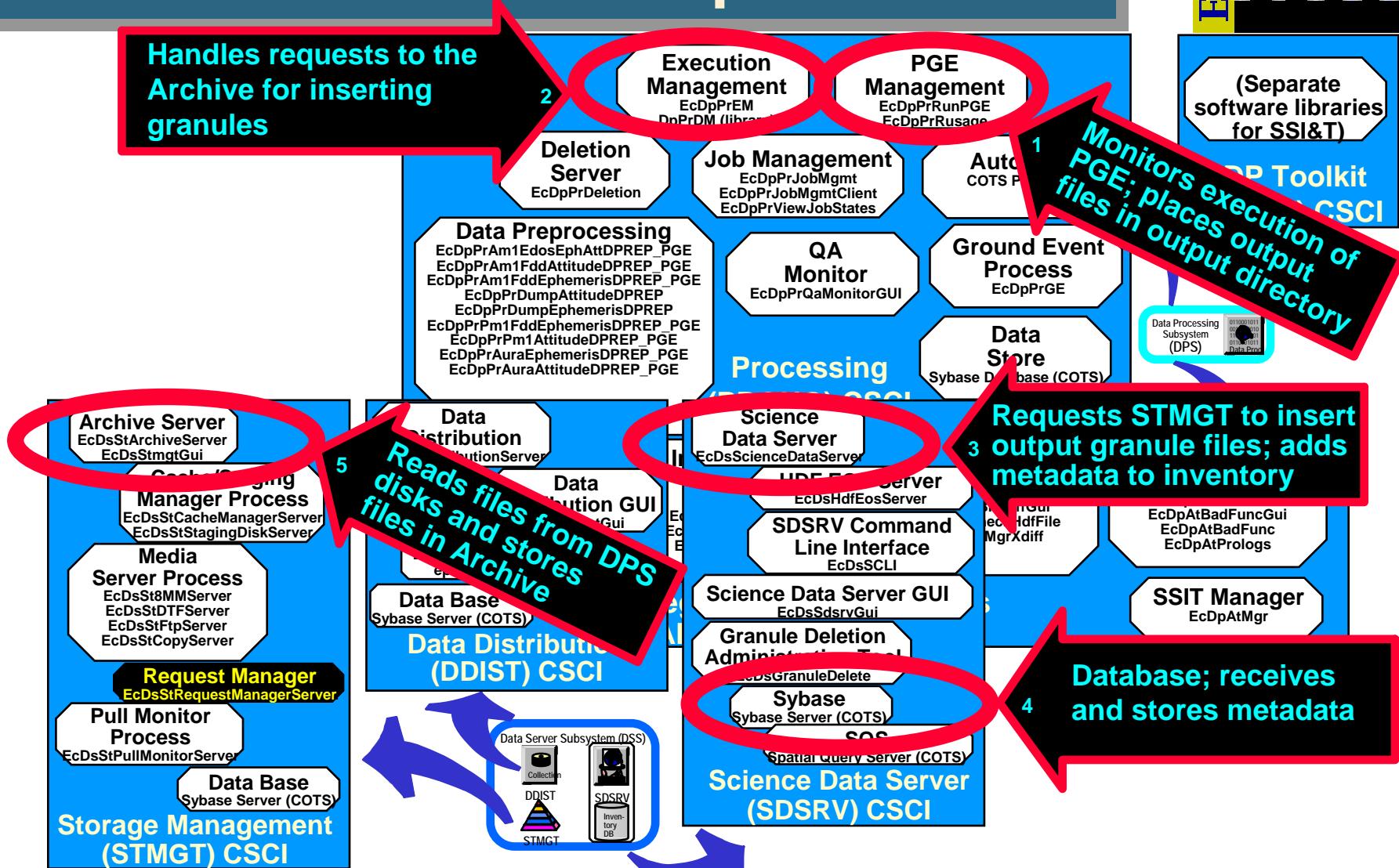
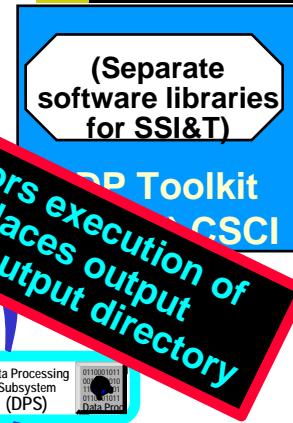
ASTER: PGE (ETS) Execution and Output Insertion Process



ETS PGE is successfully executed and newly created AST_08 (L2 Surface Temperature) and AST_05 (L2 Surface Emissivity) granules are archived; inventory is updated.



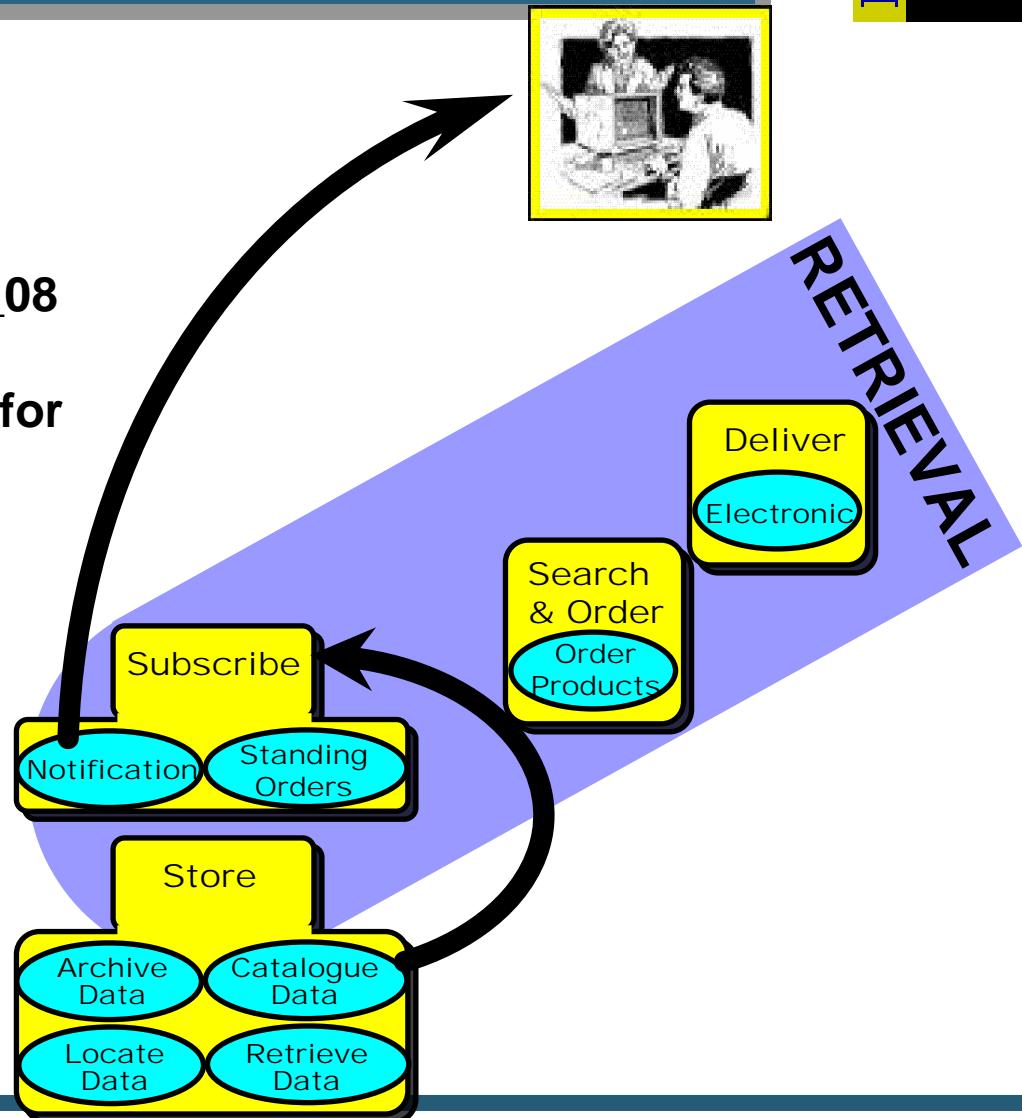
ASTER: CSCI/Component Role in PGE Execution and Output Insertion



Chaining and On-Demand Production (Cont.)



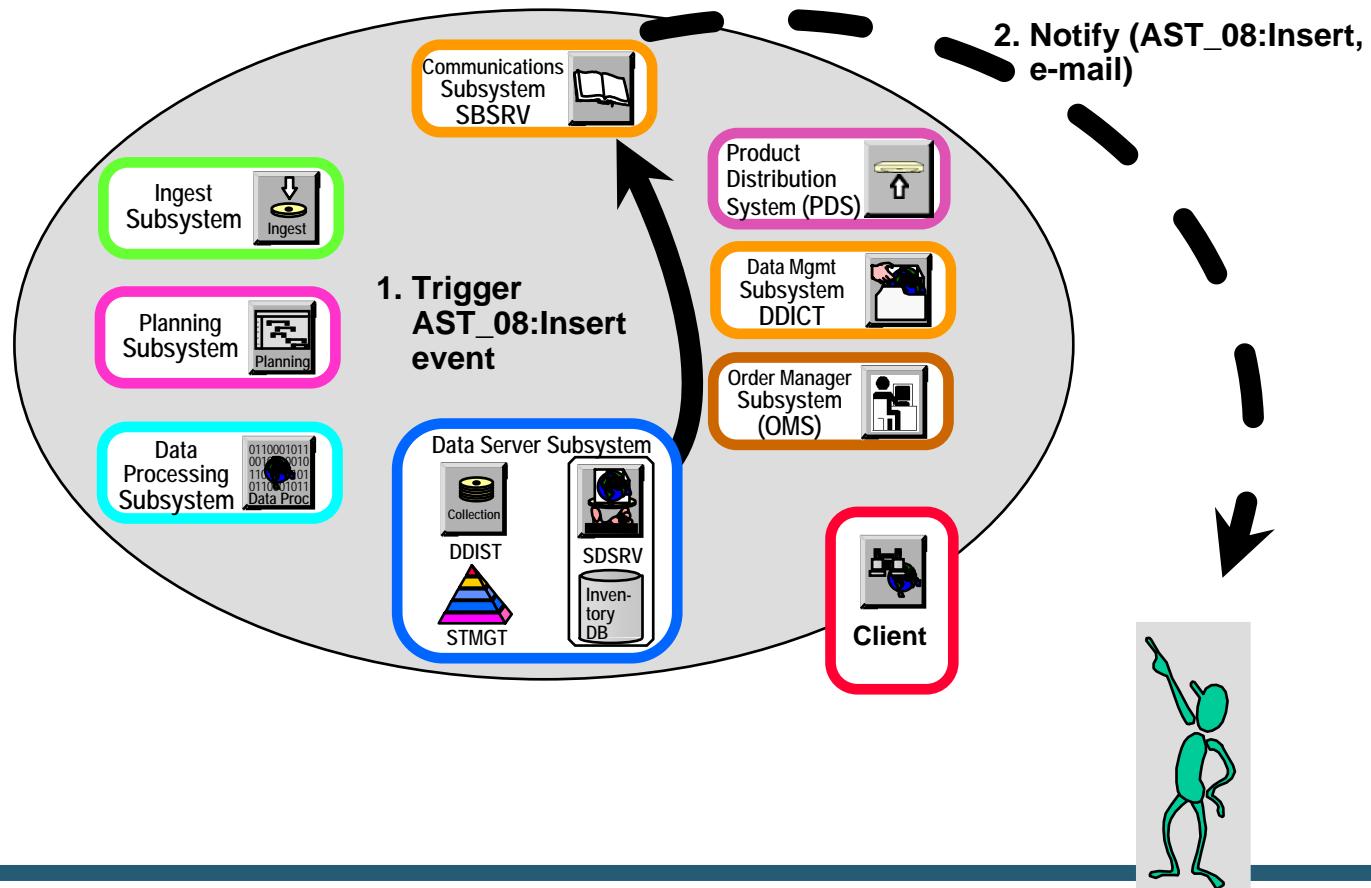
Insert terminates with an insert event notification to Subscribe, which triggers e-mail notification to the Science User that the AST_08 granule has been inserted; standing order processing for new AST_08 granule can begin



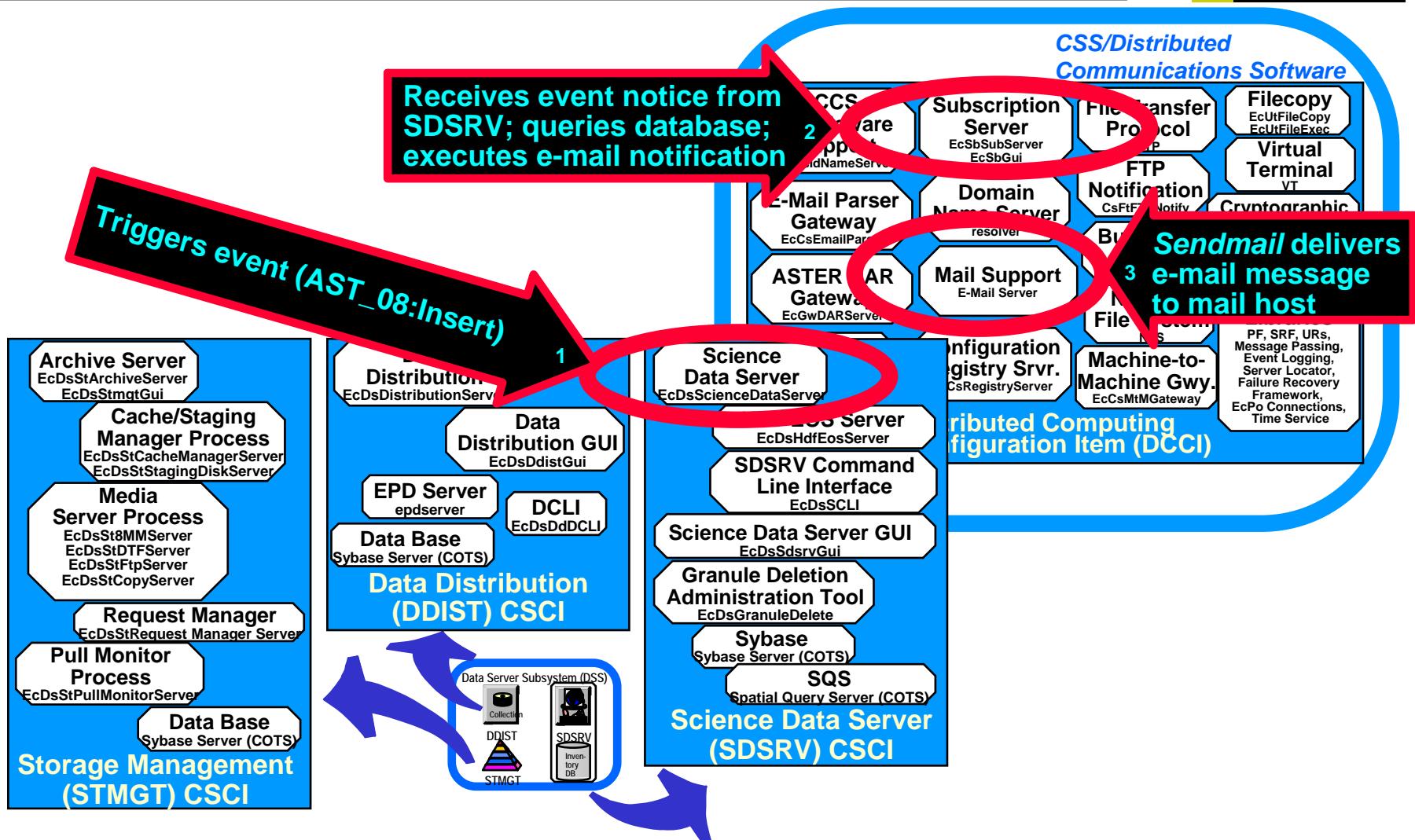
ASTER: Notification & Subscription Triggering (AST_08) Process



With insertion of the AST_08 (L2 Surface Temperature) granule, the ASTER Scientist is notified by e-mail; processing can begin for the standing order



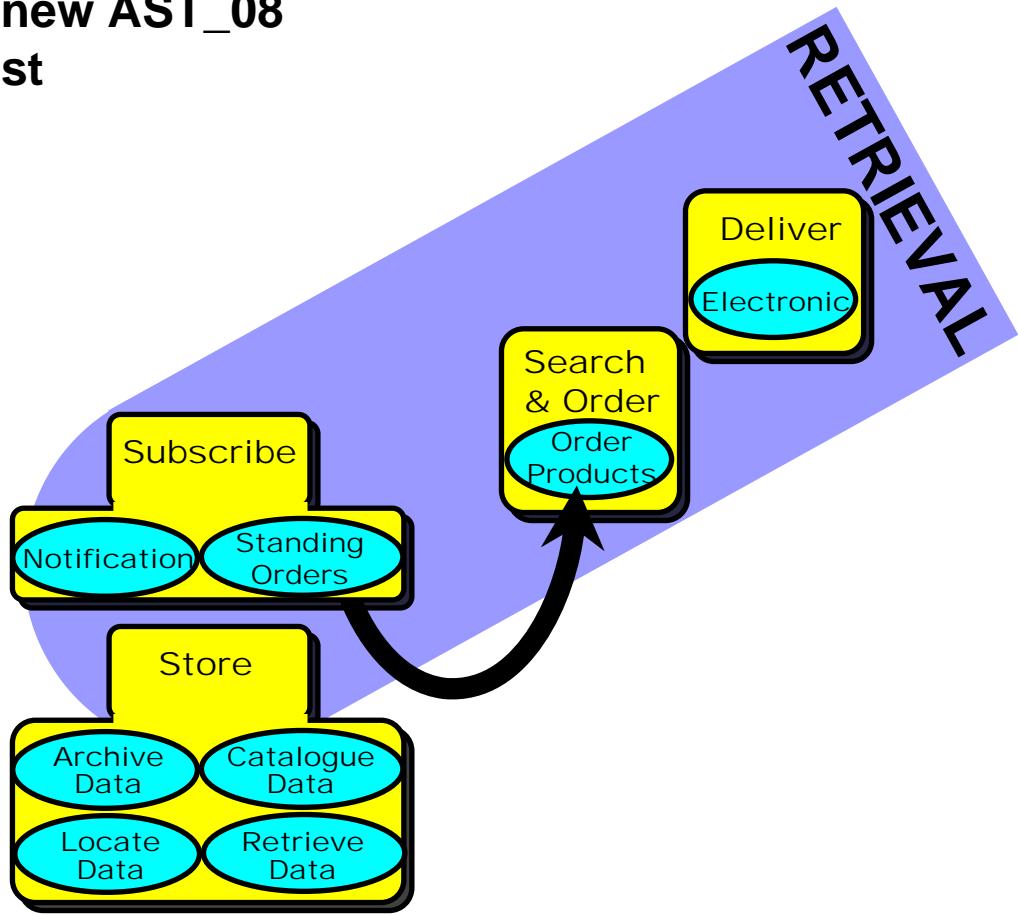
ASTER: CSCI/Component Role in Notification/Subscription Trigger



Chaining and On-Demand Production (Cont.)



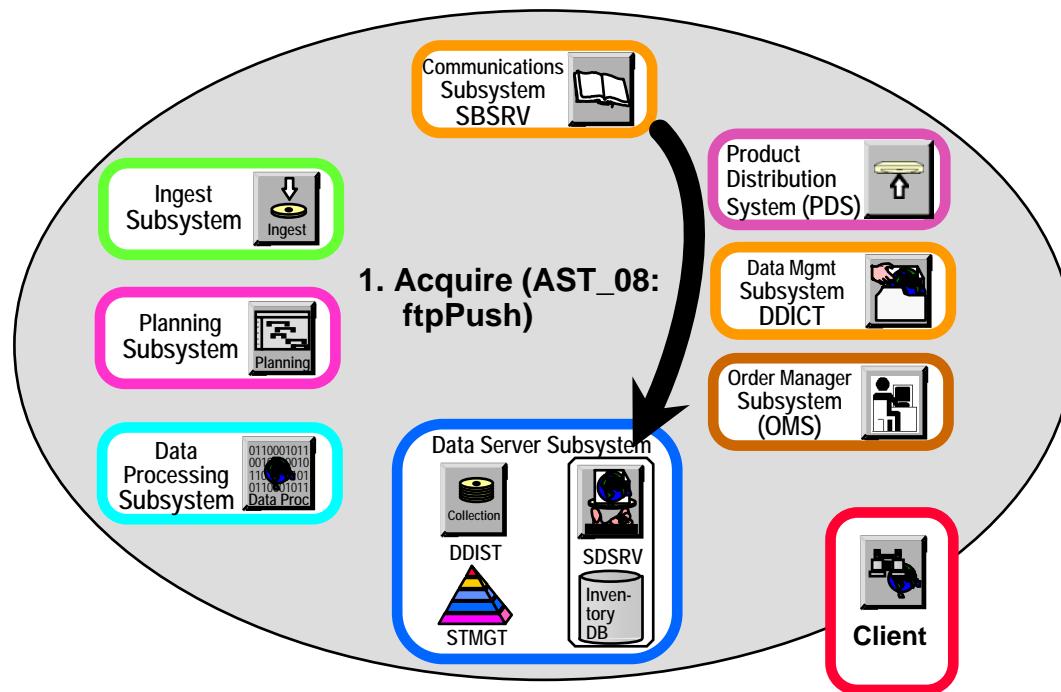
Submit acquire request for new AST_08
granule on behalf of scientist



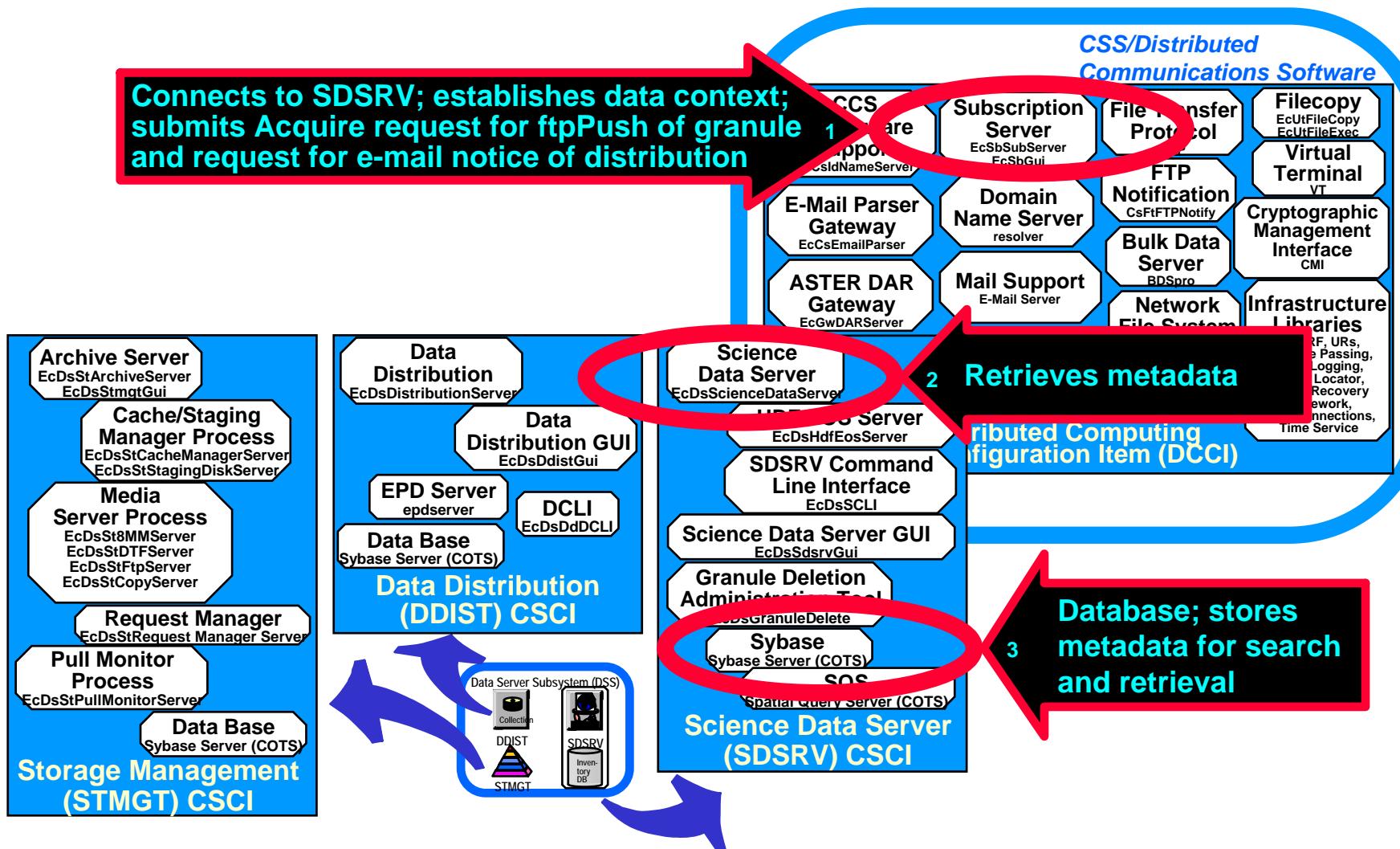
ASTER: Standing Order, Acquire Submission Process



Subscription Server submits acquire request for AST_08 (L2 Surface Temperature) data, via ftpPush, on behalf of the Science User



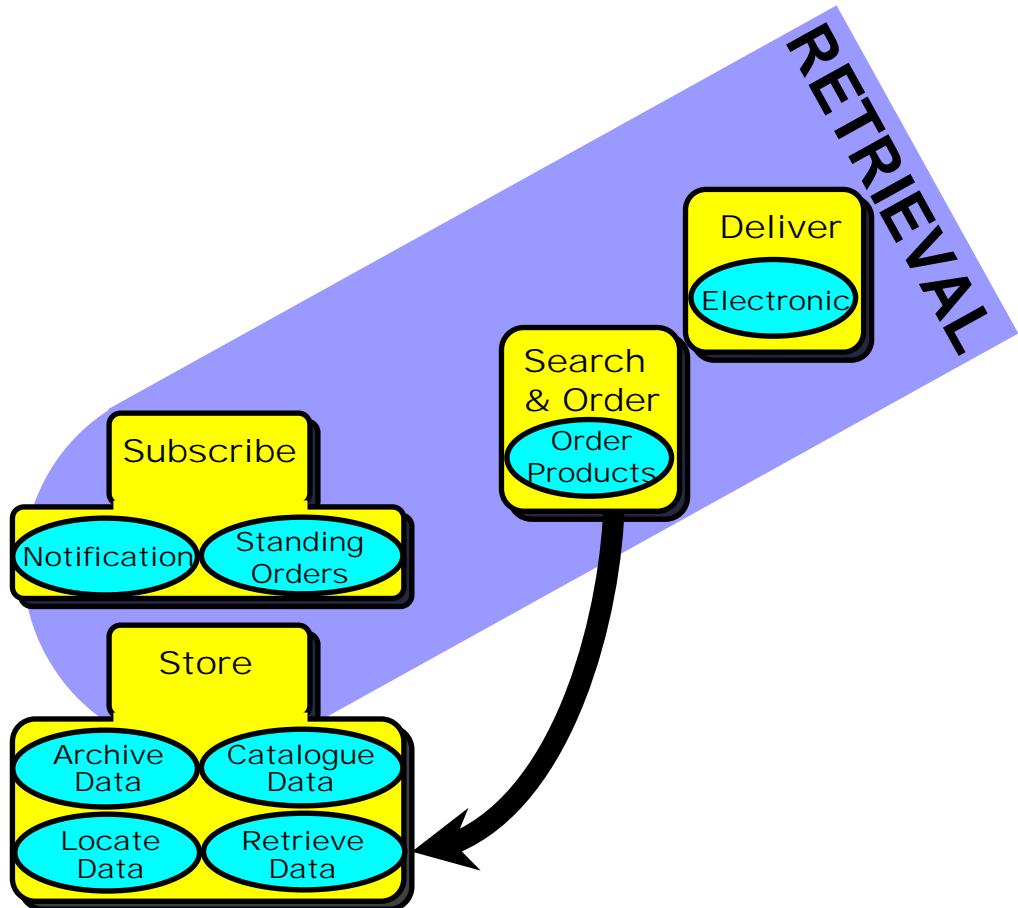
ASTER: CSCI/Component Role in Standing Order, Acq. Submission



Chaining and On-Demand Production (Cont.)



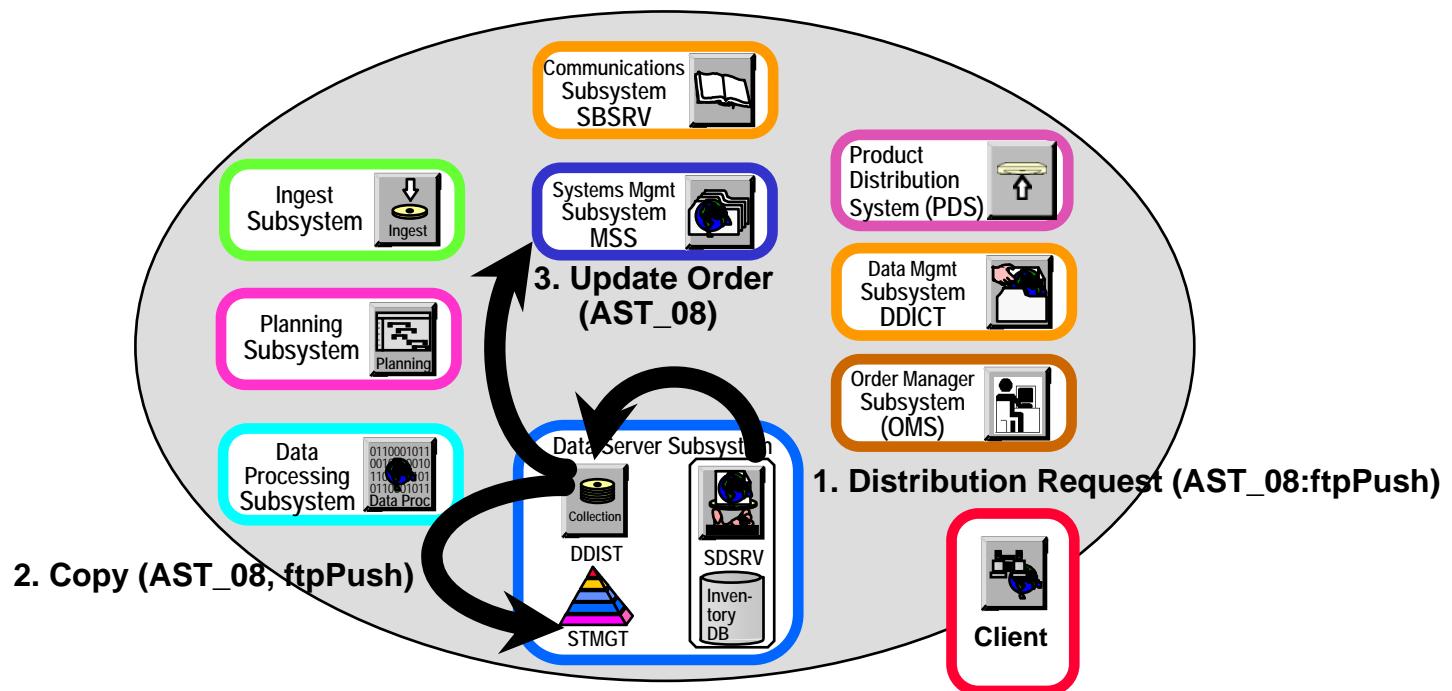
Retrieve newly created
AST_08 granule



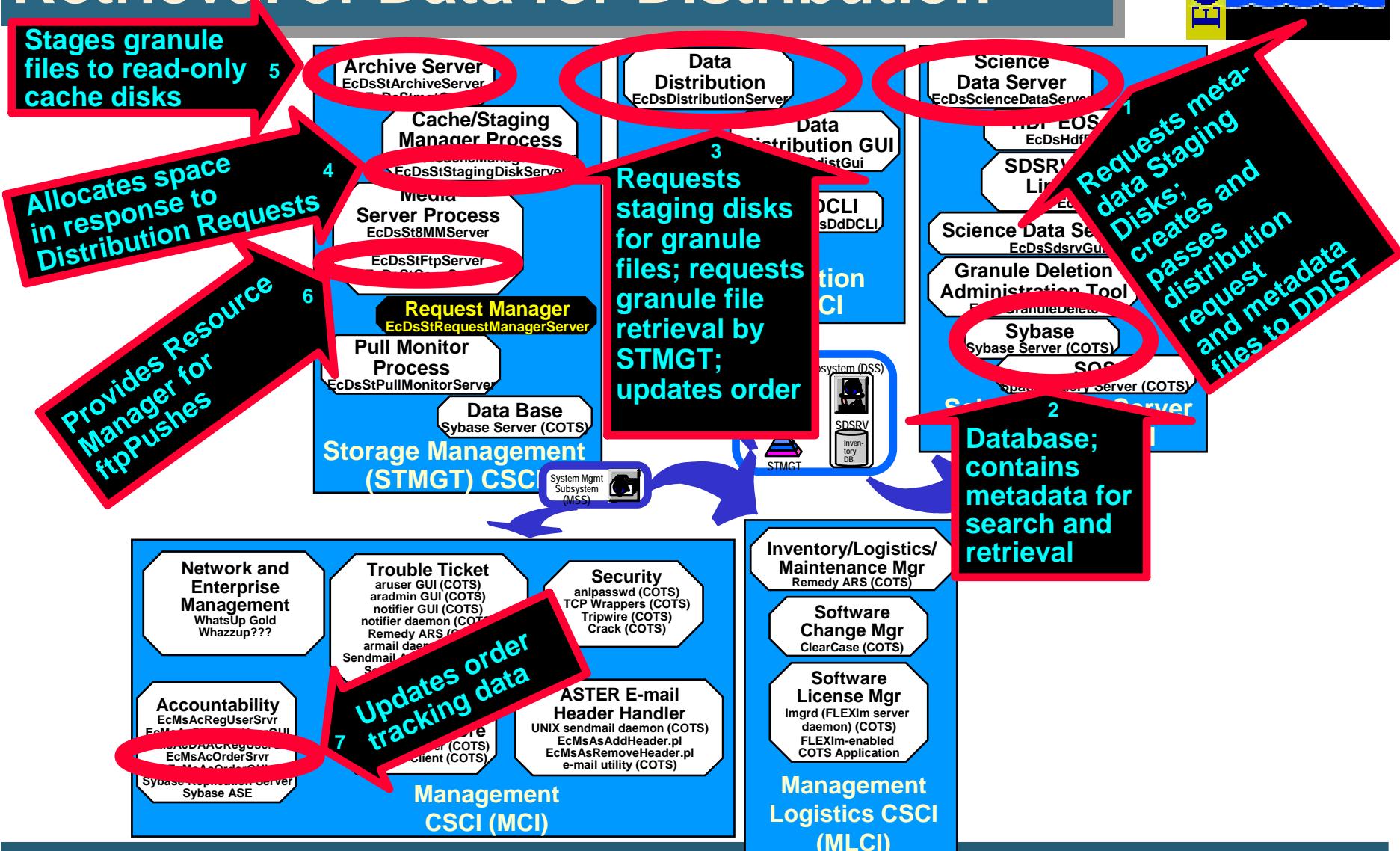
ASTER: Retrieval of Data for Distribution Process



Retrieve newly created AST_08 (L2 Surface Temperature) granule from the Archive and update the order tracking information.



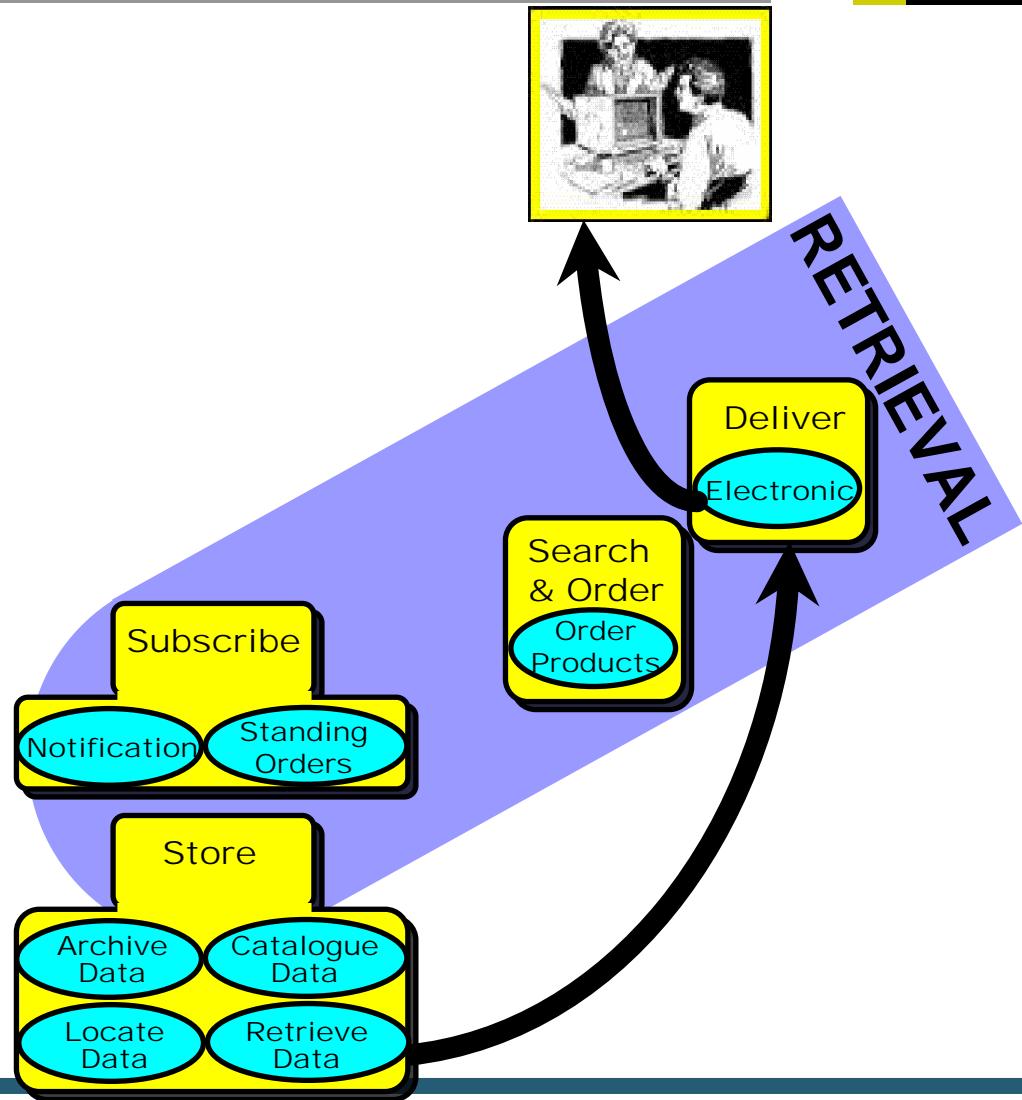
ASTER: CSCI/Component Role in Retrieval of Data for Distribution



Chaining and On-Demand Production (Cont.)



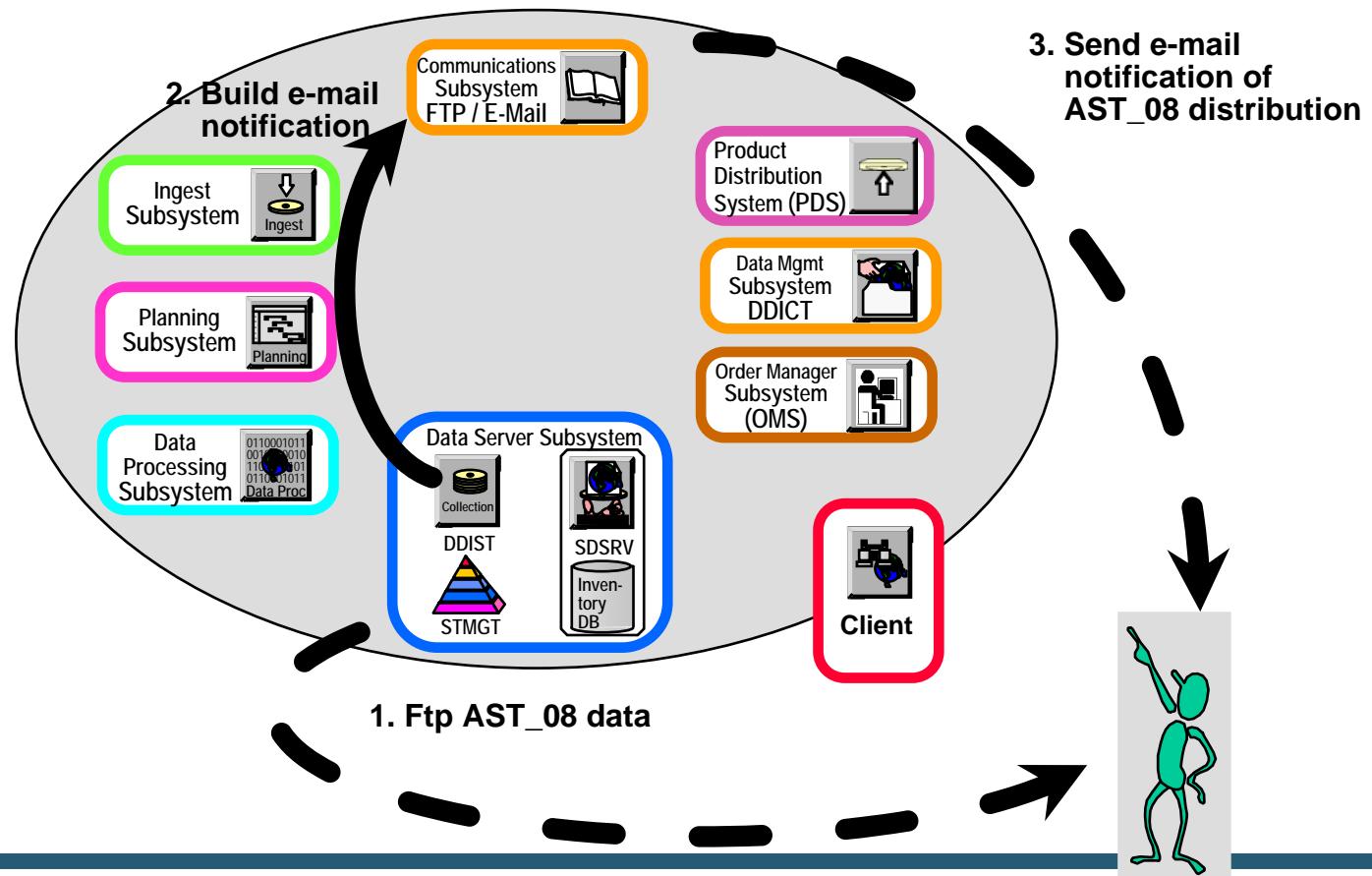
Ftp newly created AST_08
granule to scientist's
workstation and send an
e-mail notification of the
distribution



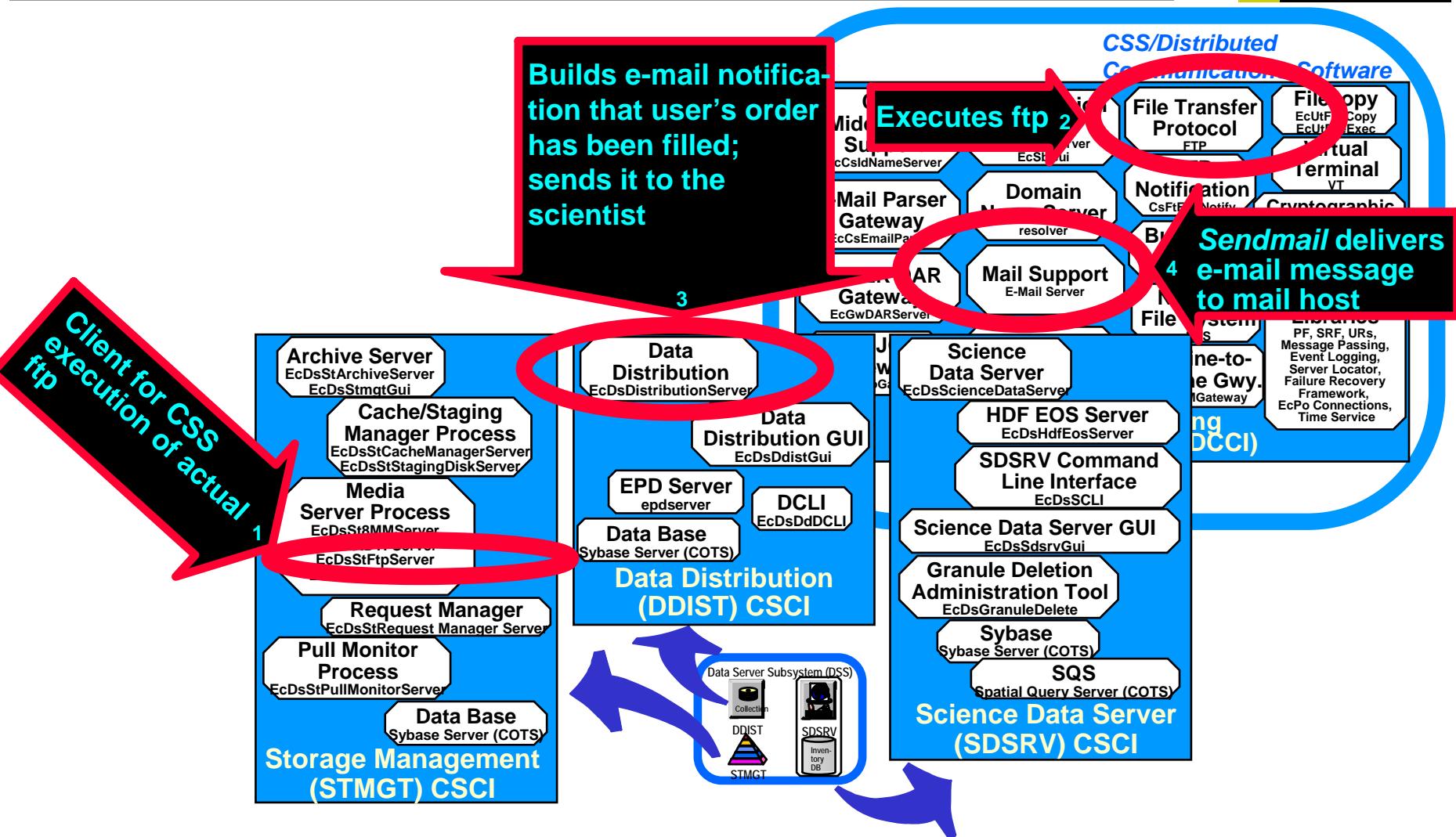
ASTER: Electronic Data Push Distribution Process



Ftp AST_08 (L2 Surface Temperature) granule to ASTER Scientist's workstation.



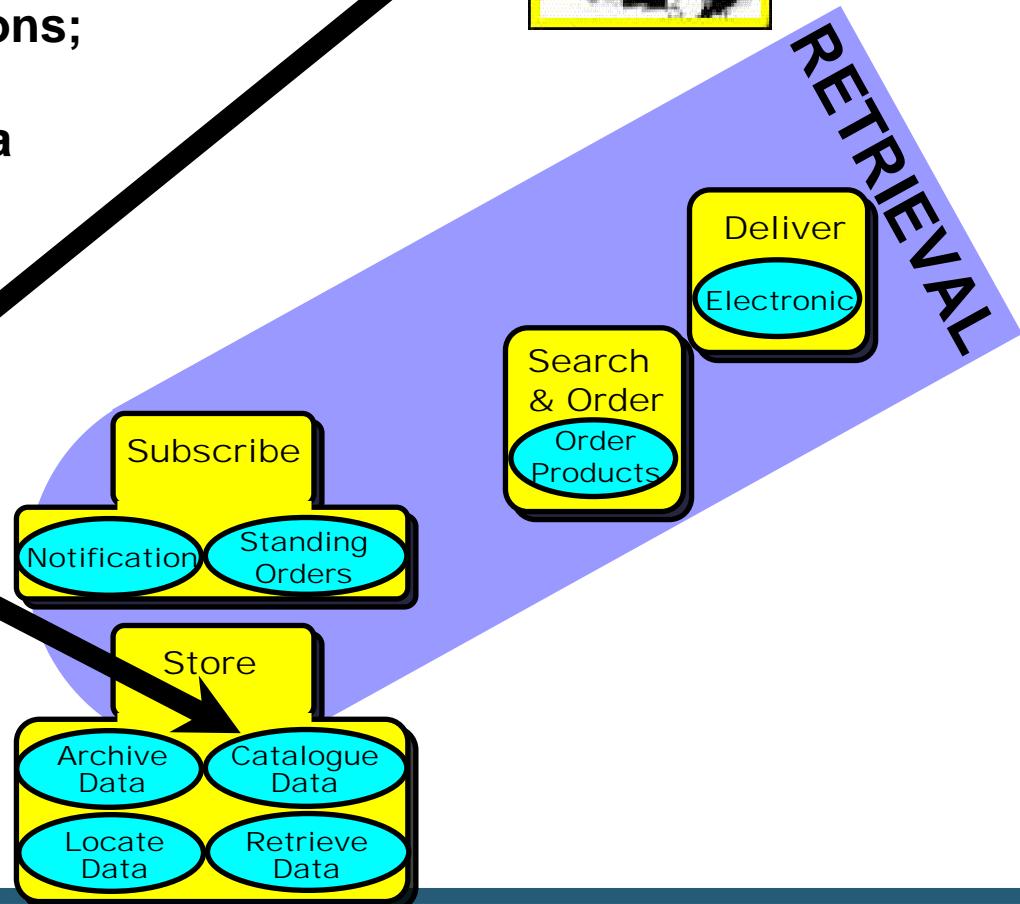
ASTER: CSCI/Component Role in Electronic Data Push Distribution



Chaining and On-Demand Production (Cont.)



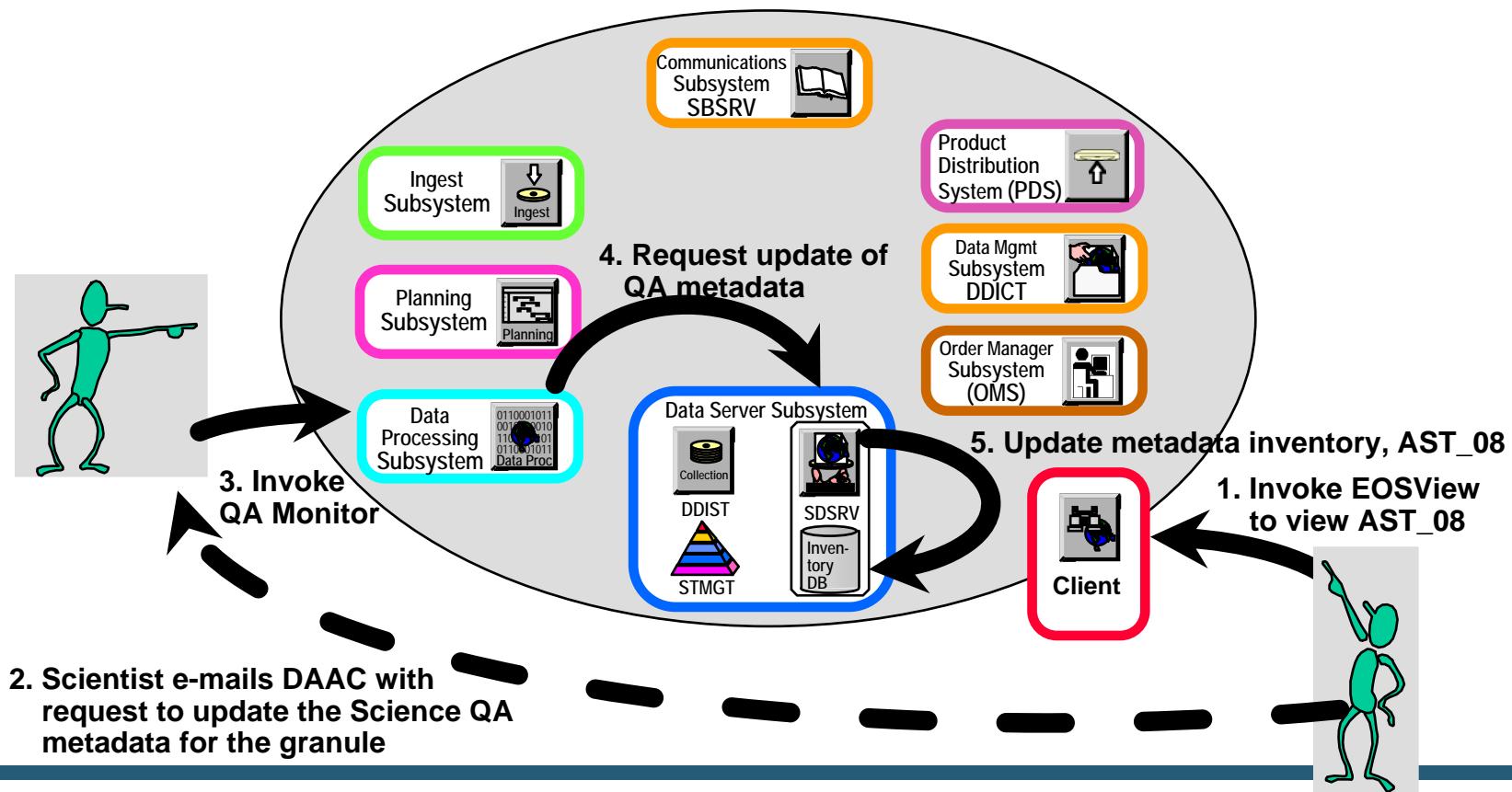
Scientist uses EOSView to perform Quality Assurance (QA) check on the AST_08 product and e-mails DAAC Operations; DAAC Operations updates AST_08 inventory metadata



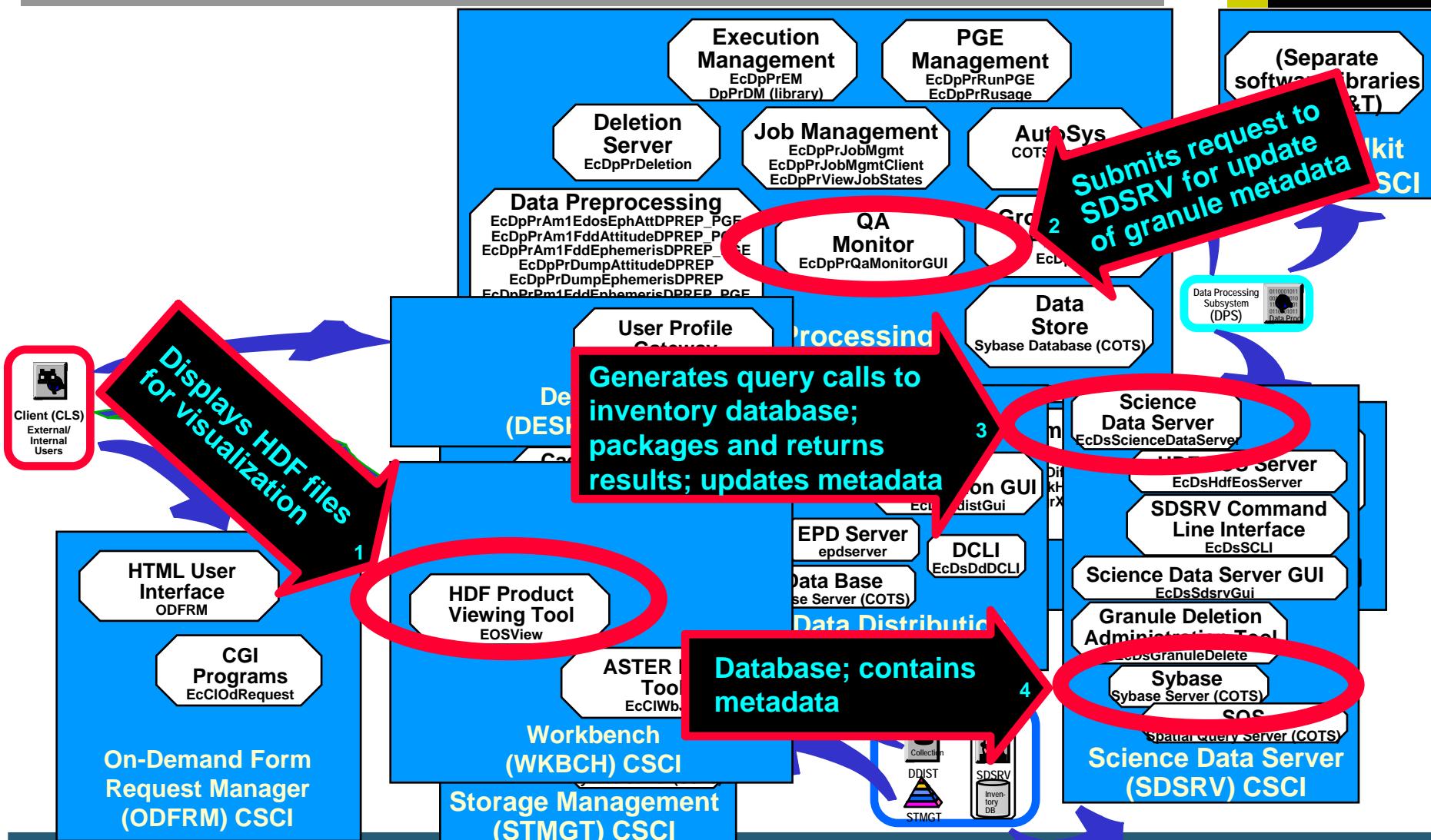
ASTER: QA Metadata Update Process



Science User uses EOSView tool to review AST_08 (L2 Surface Temperature) product and sends e-mail request to DAAC Operations for update of the Science QA Metadata for the granule; DAAC Operations uses QA Monitor tool for the update.



ASTER: CSCI/Component Role in QA Metadata Update



ASTER Scenario: Expedited Data



External
Data Provider

Data Subscription
Data Insertion
Data Notification

PRODUCTION

Generate Plan

Ingest

Subscribe

Store

Deliver

Search & Order

User

RETRIEVAL

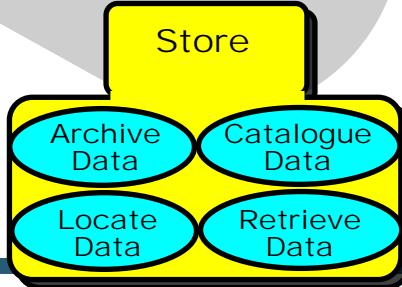
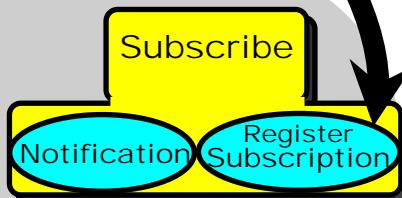


Expedited Data



**DAAC submits
subscription, on behalf
of scientist for
notification of new
ASTER Expedited data**

INSERTION

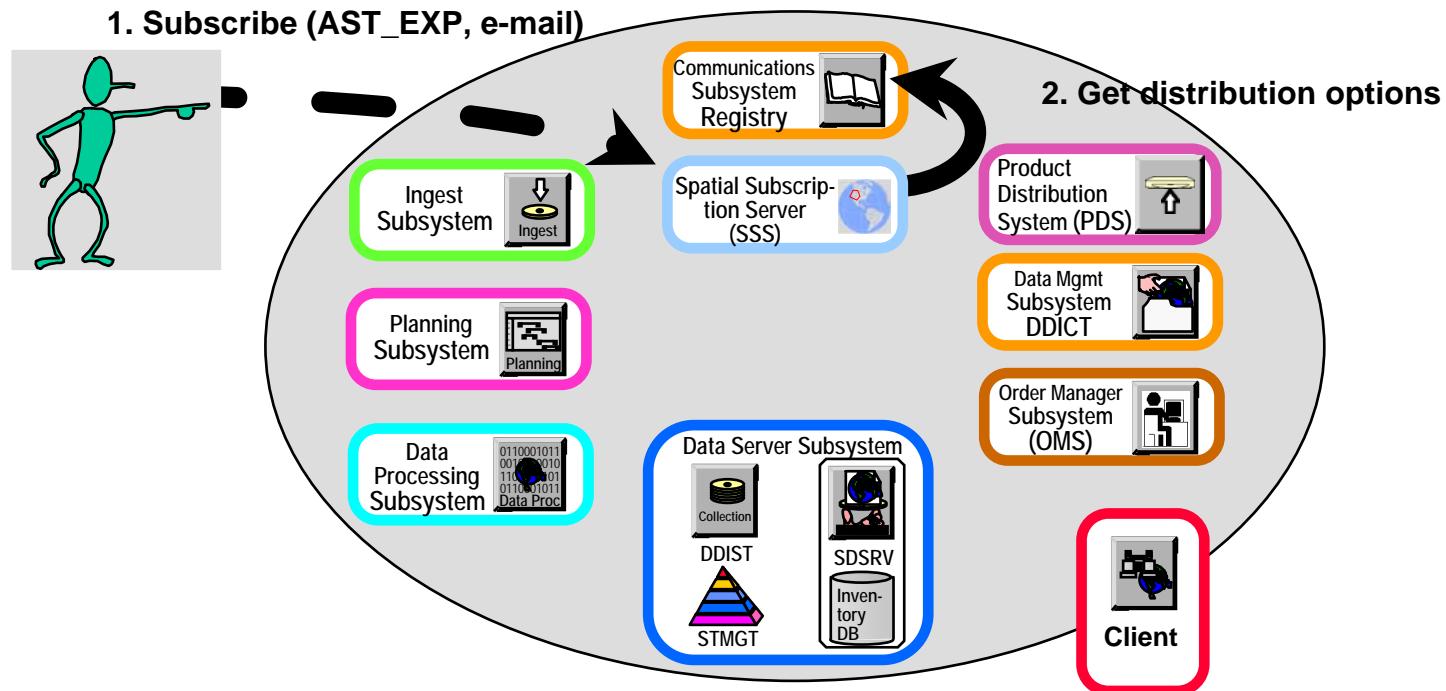


Raytheon

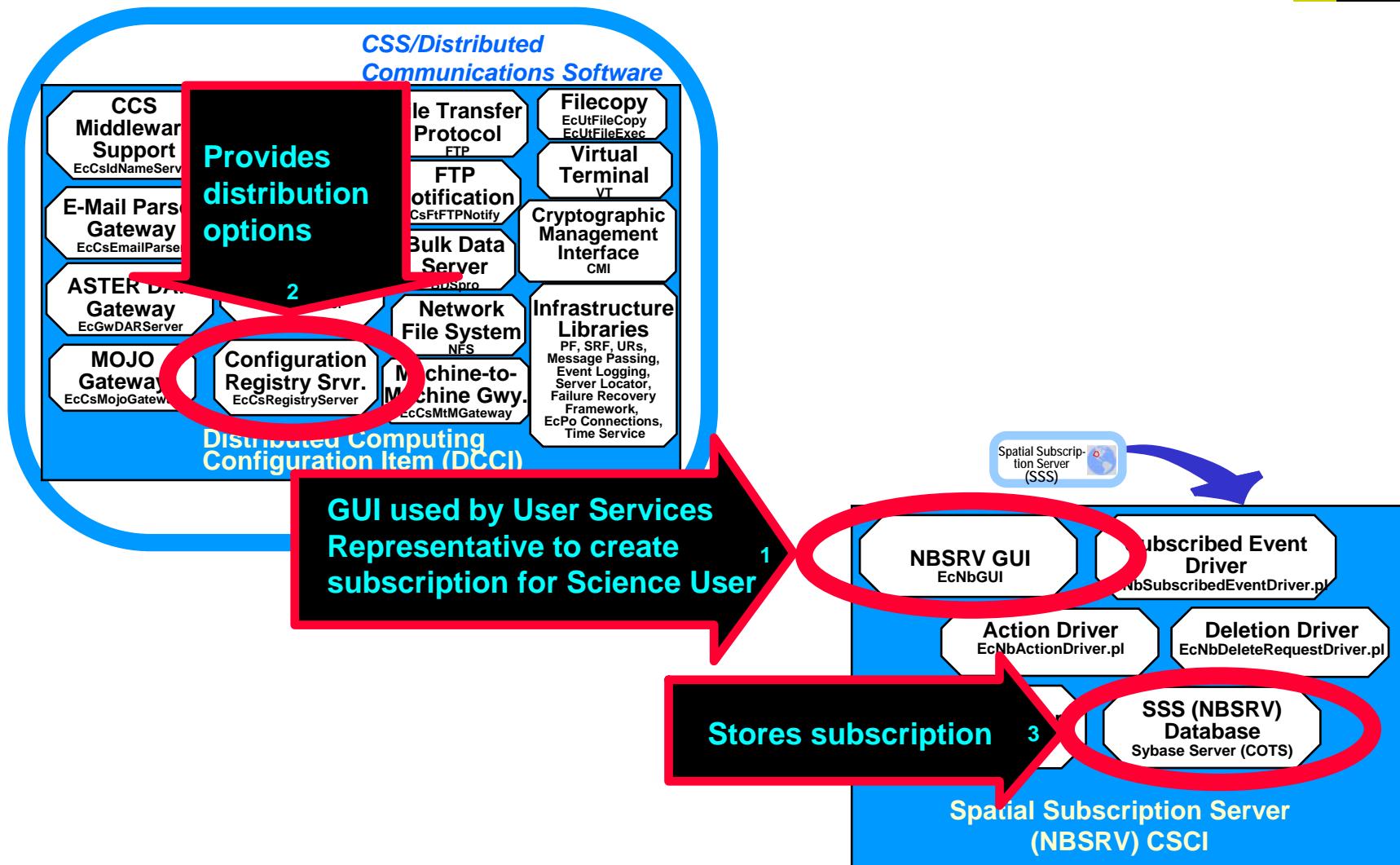
ASTER: User Subscription Registration for AST_EXP Process



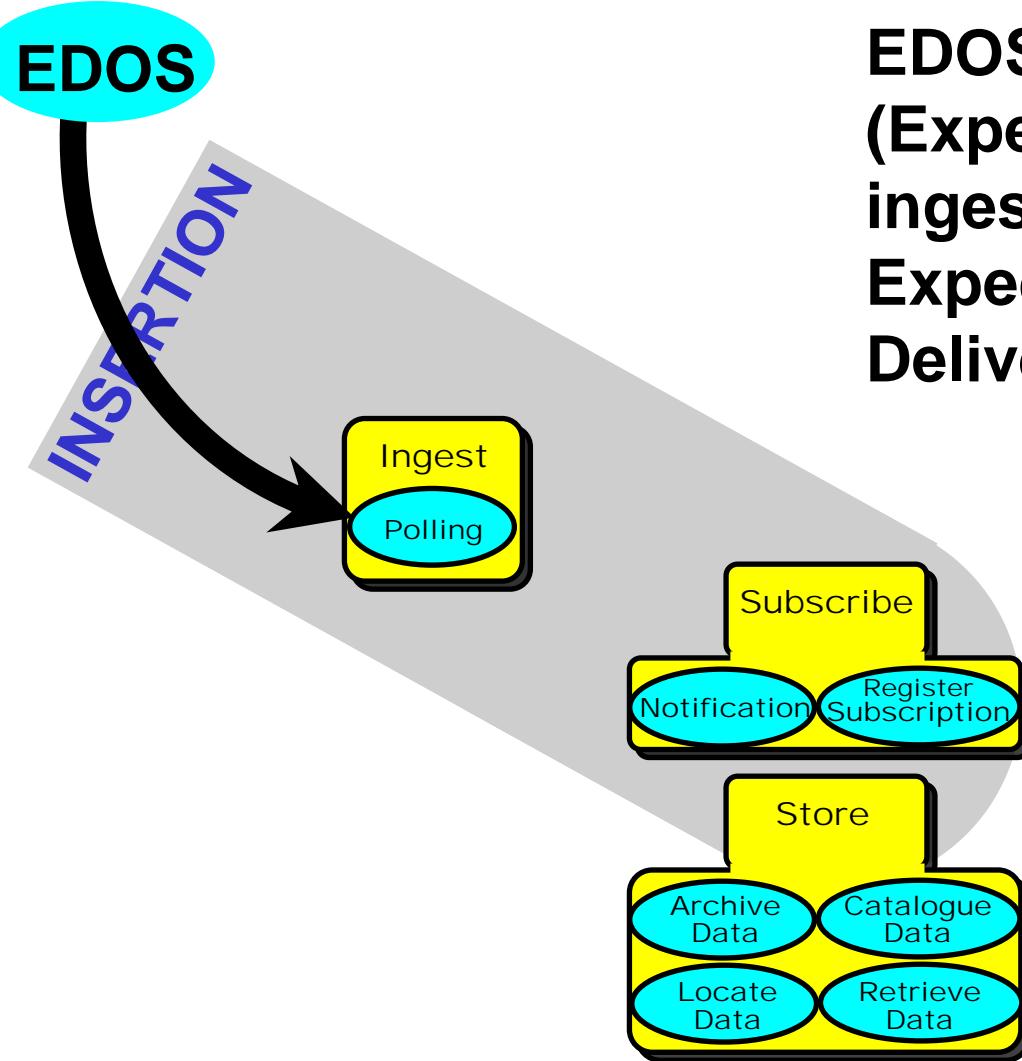
DAAC enters subscription, on behalf of scientist, for e-mail notification of newly inserted ASTER Expedited Data product.



ASTER: CSCI/Component Role in AST_EXP Subscription Registration

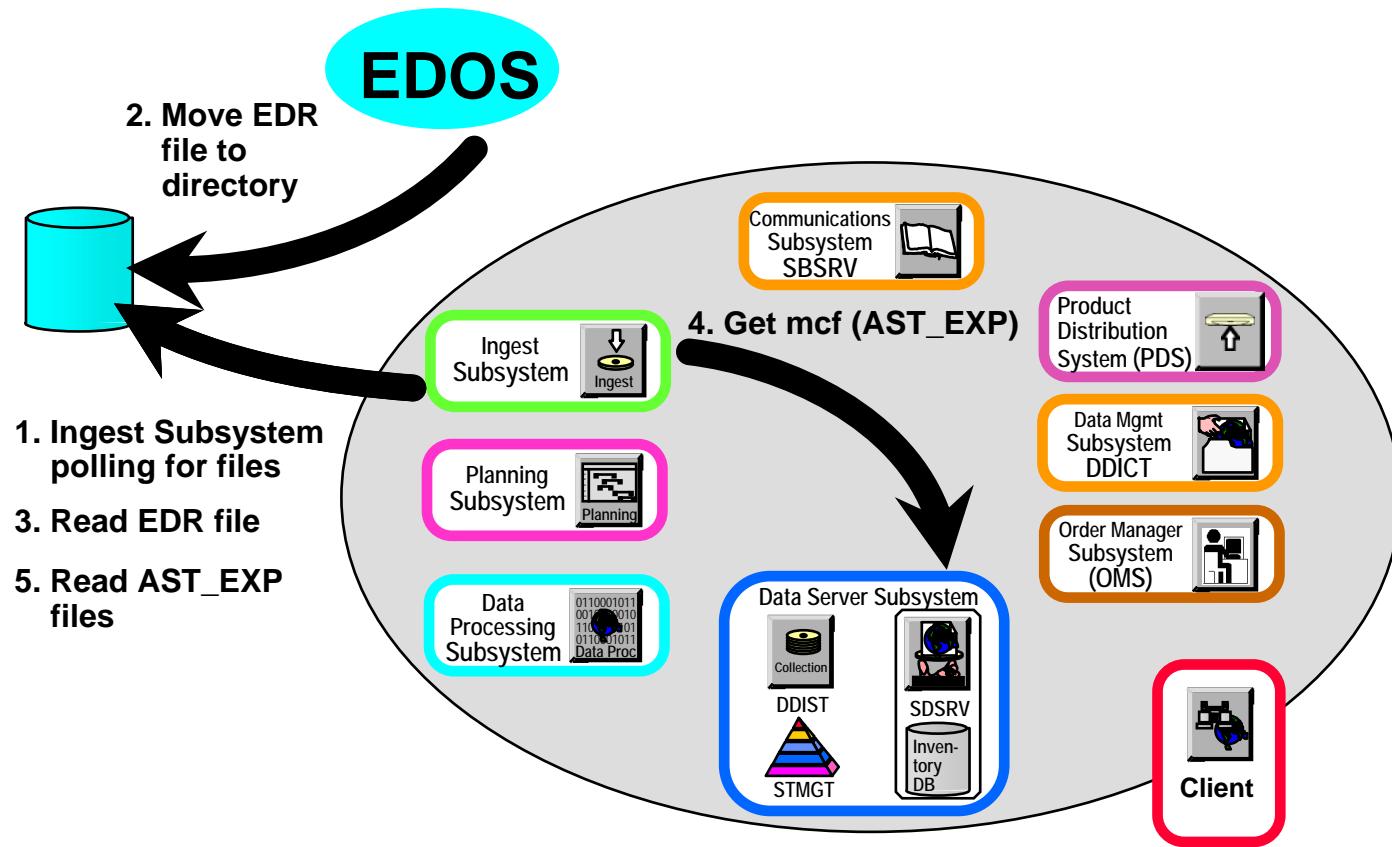


Expedited Data (Cont.)



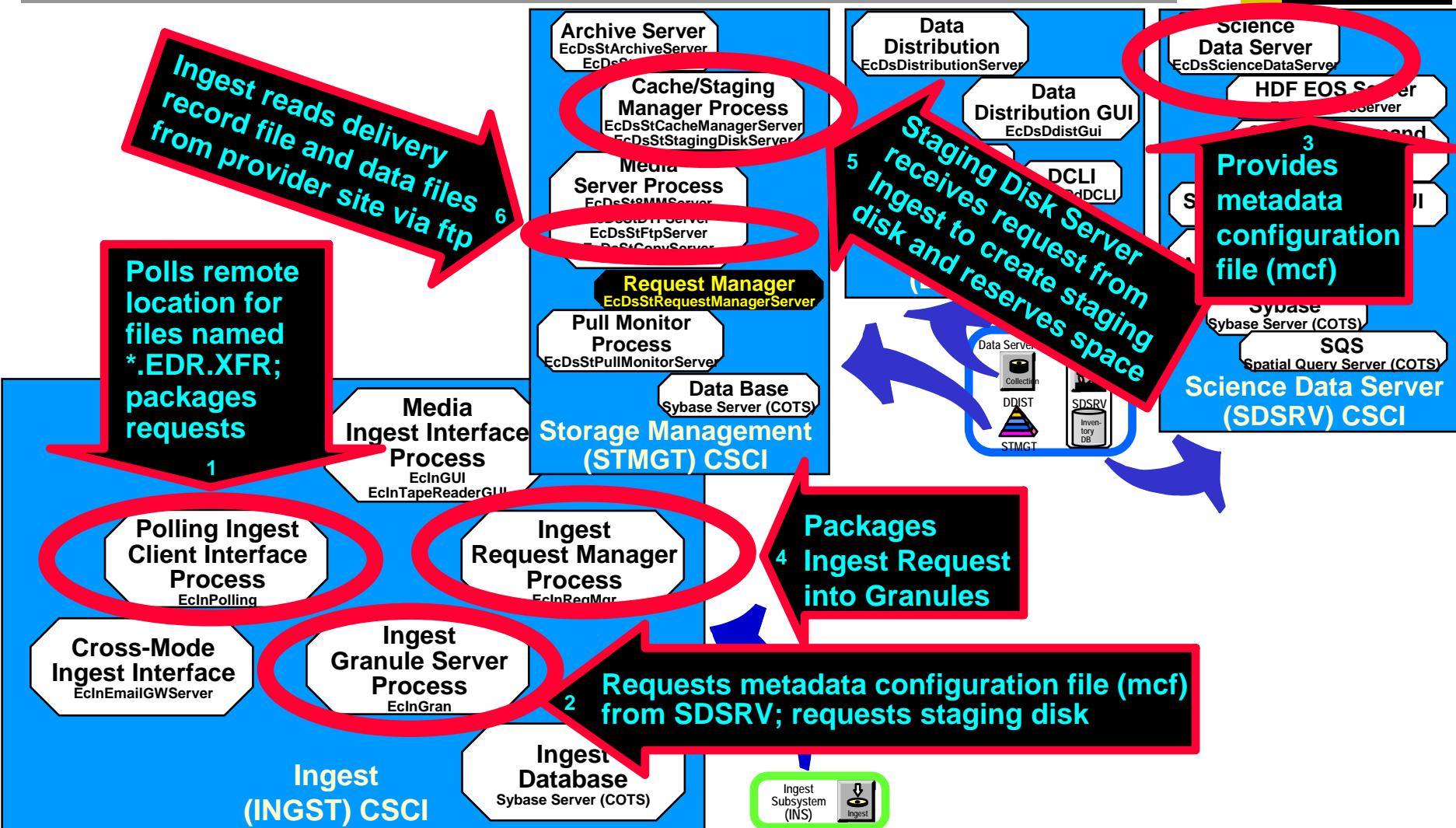
**EDOS initiates AST_EXP
(Expedited Data)
ingestion via EDOS
Expedited Data Set
Delivery Record (EDR)**

ASTER: Polling Ingest for AST_EXP Process



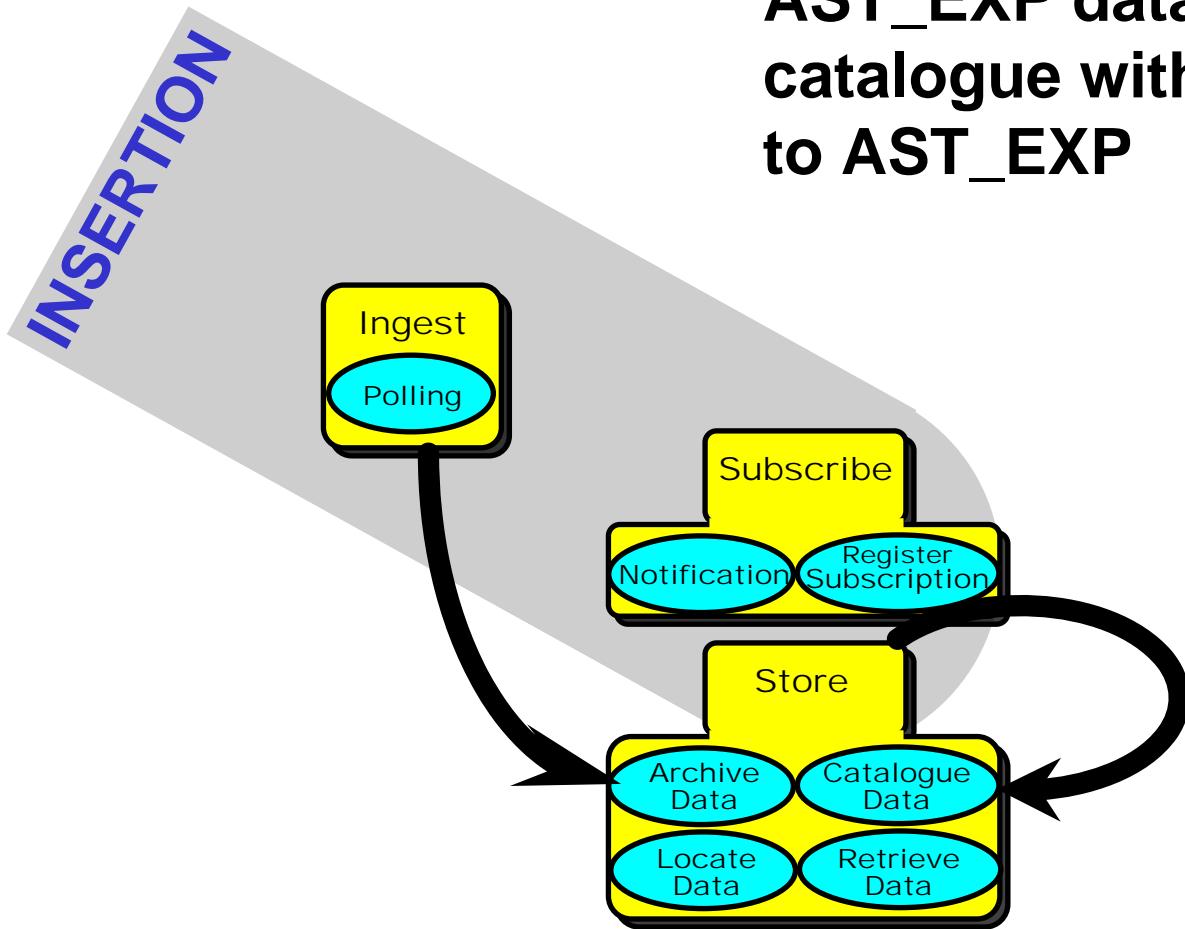
Ingest begins polling specified location (directory), looking for an Expedited Data Set Delivery Record (EDR) file. EDOS transfers the file, via ftp, to the predetermined directory. (Location, directory, username, and password are as specified in the EDOS-ECS Operations Agreement.)

ASTER: CSCI/Component Role in Polling Ingest for AST_EXP



Expedited Data (Cont.)

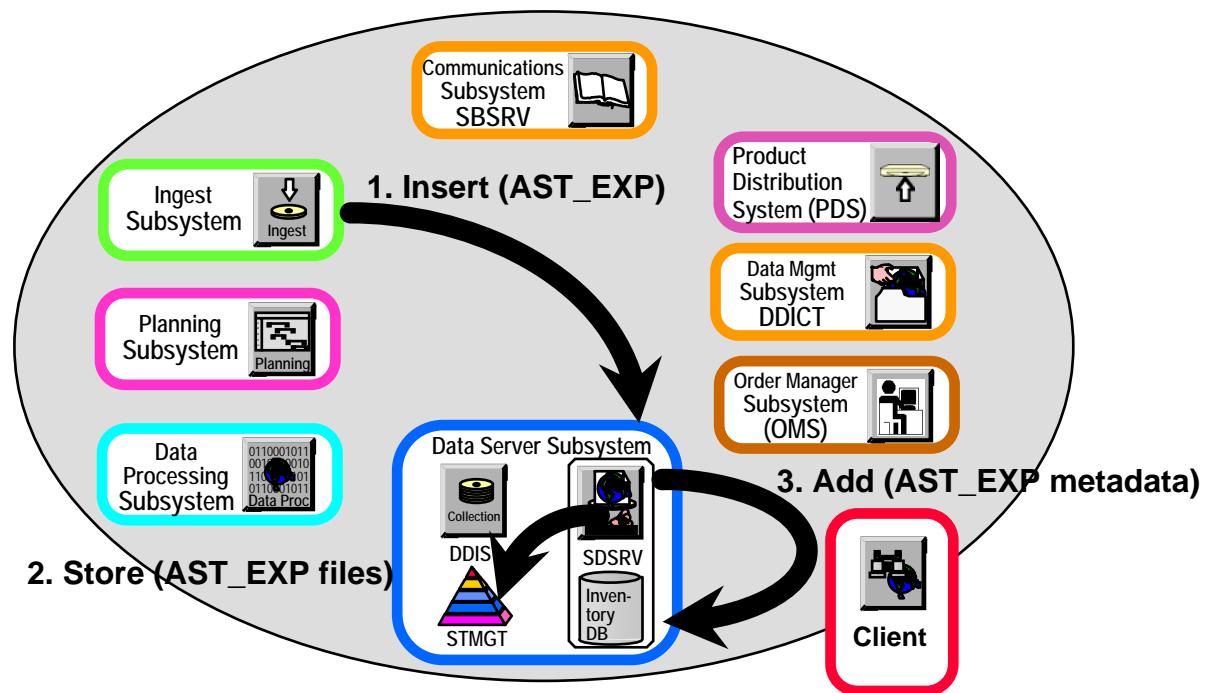
Archive ingested AST_EXP data; update catalogue with reference to AST_EXP



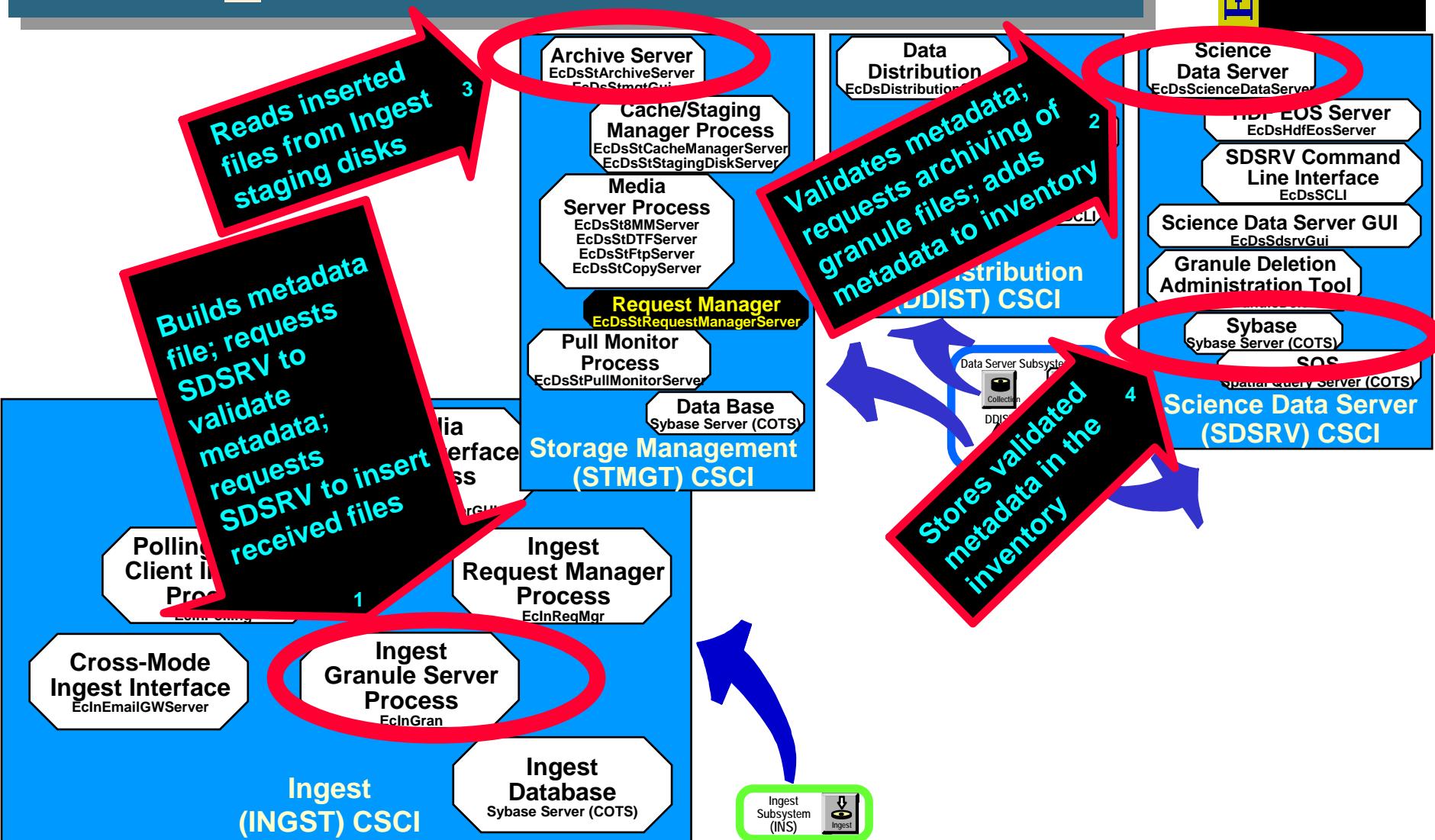
ASTER: AST_EXP Insertion Process



Newly ingested AST_EXP granule is archived; inventory is updated.

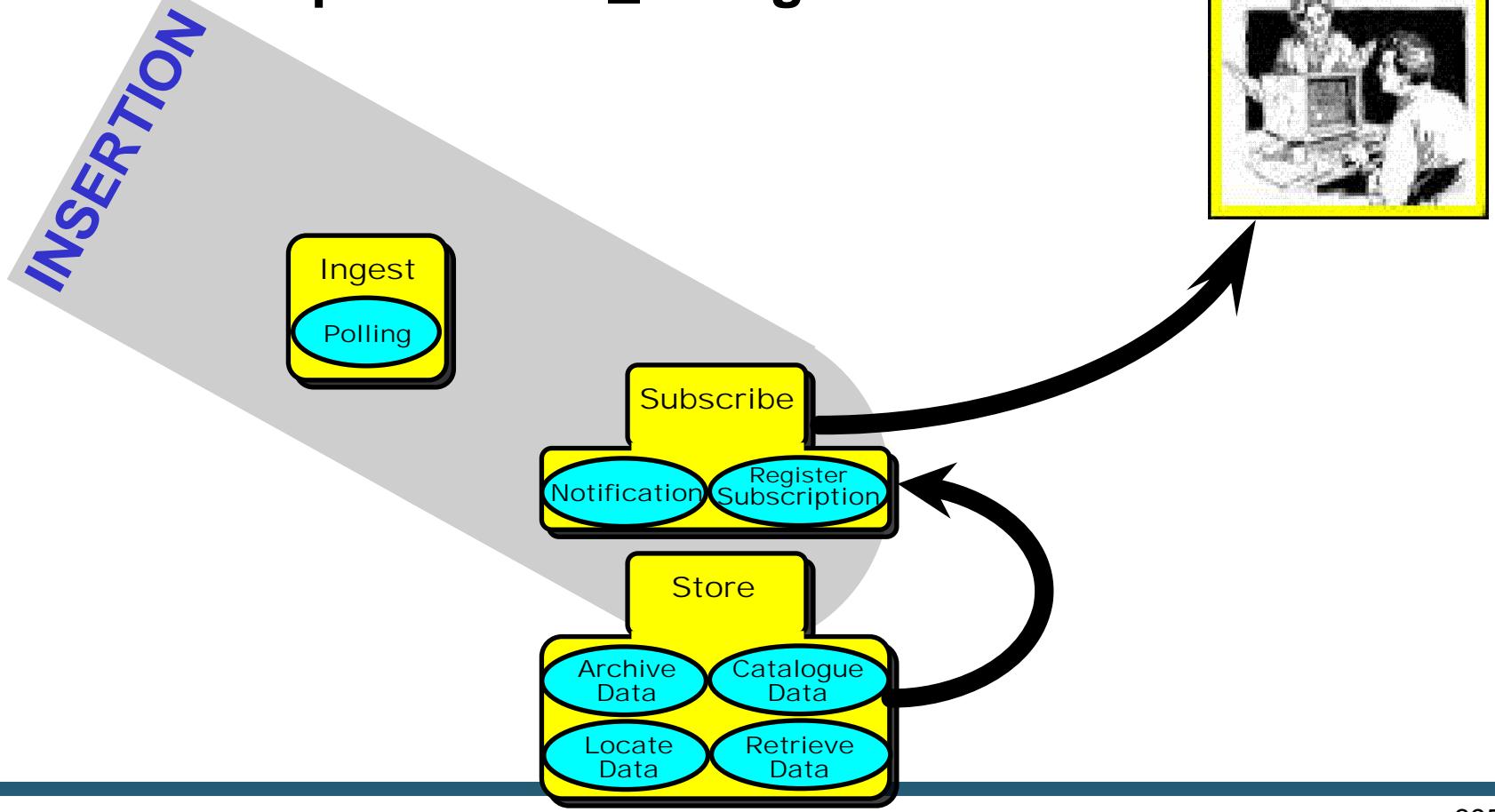


ASTER: CSCI/Component Role in AST_EXP Insertion



Expedited Data (Cont.)

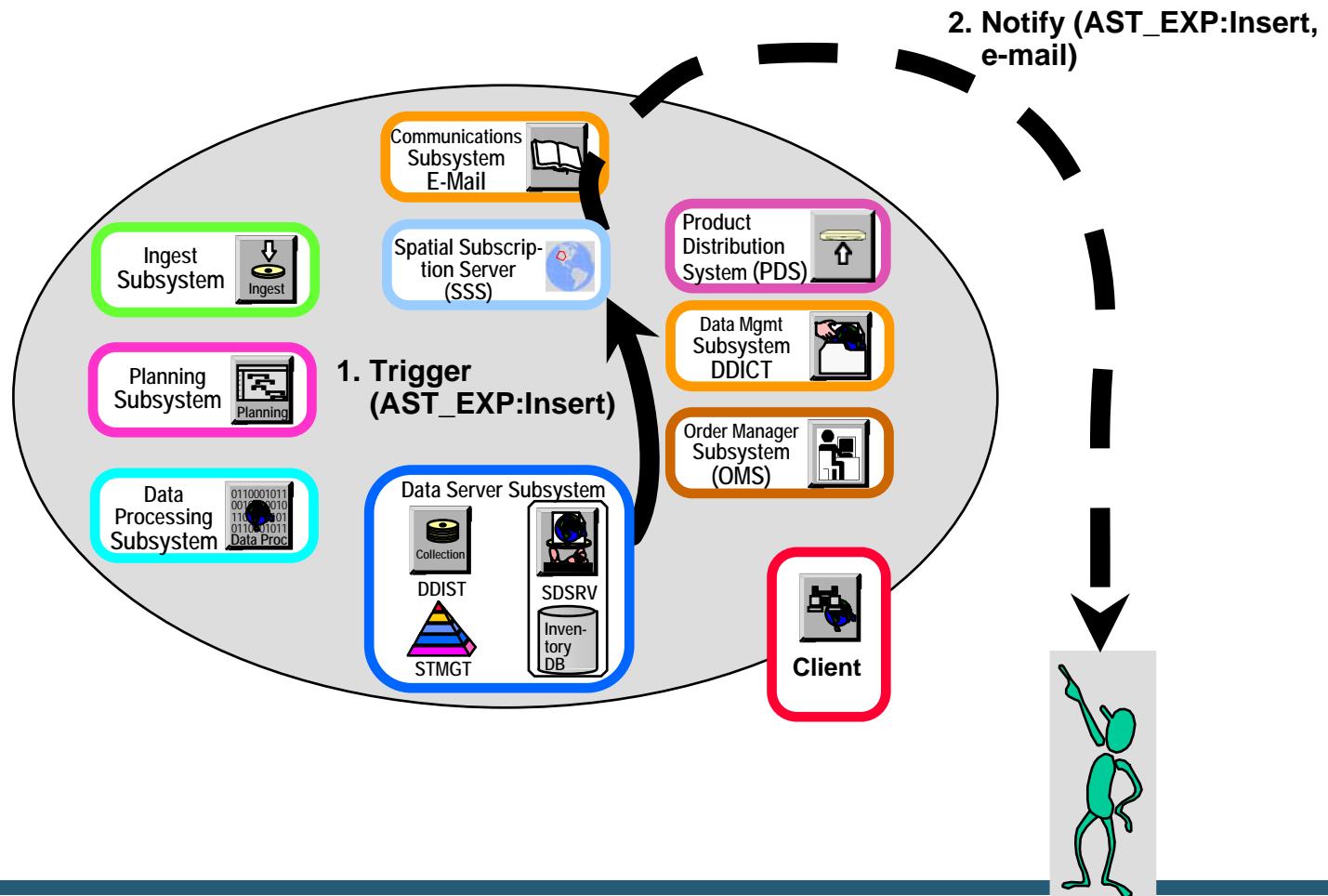
Insert in the SDSRV database triggers an event in the NBSRV database. Subscribe e-mails ASTER Scientist notice of a completed AST_EXP granule insert.



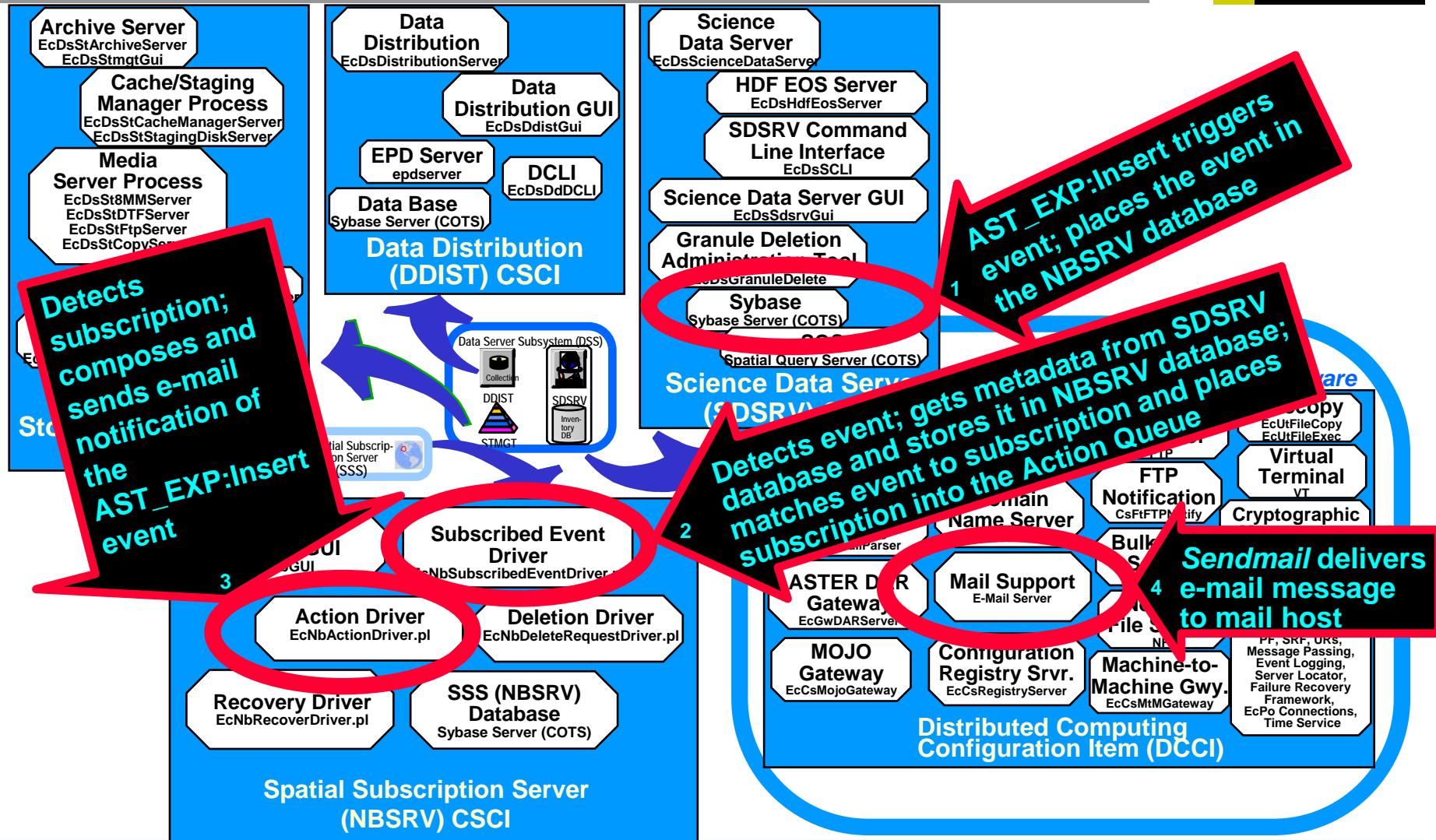
ASTER: AST_EXP Event Notification Process



Notify all AST_EXP:Insert event subscribers.



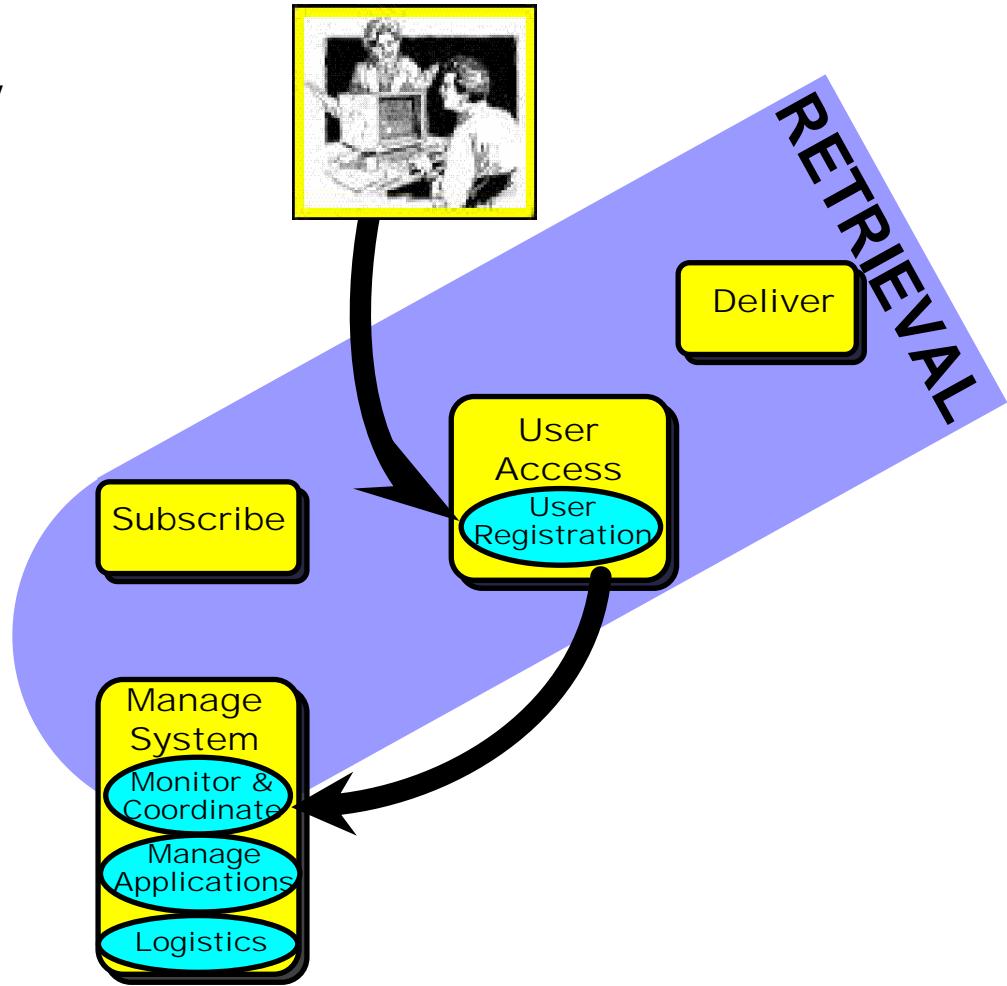
ASTER: CSCI/Component Role in AST_EXP Event Notification





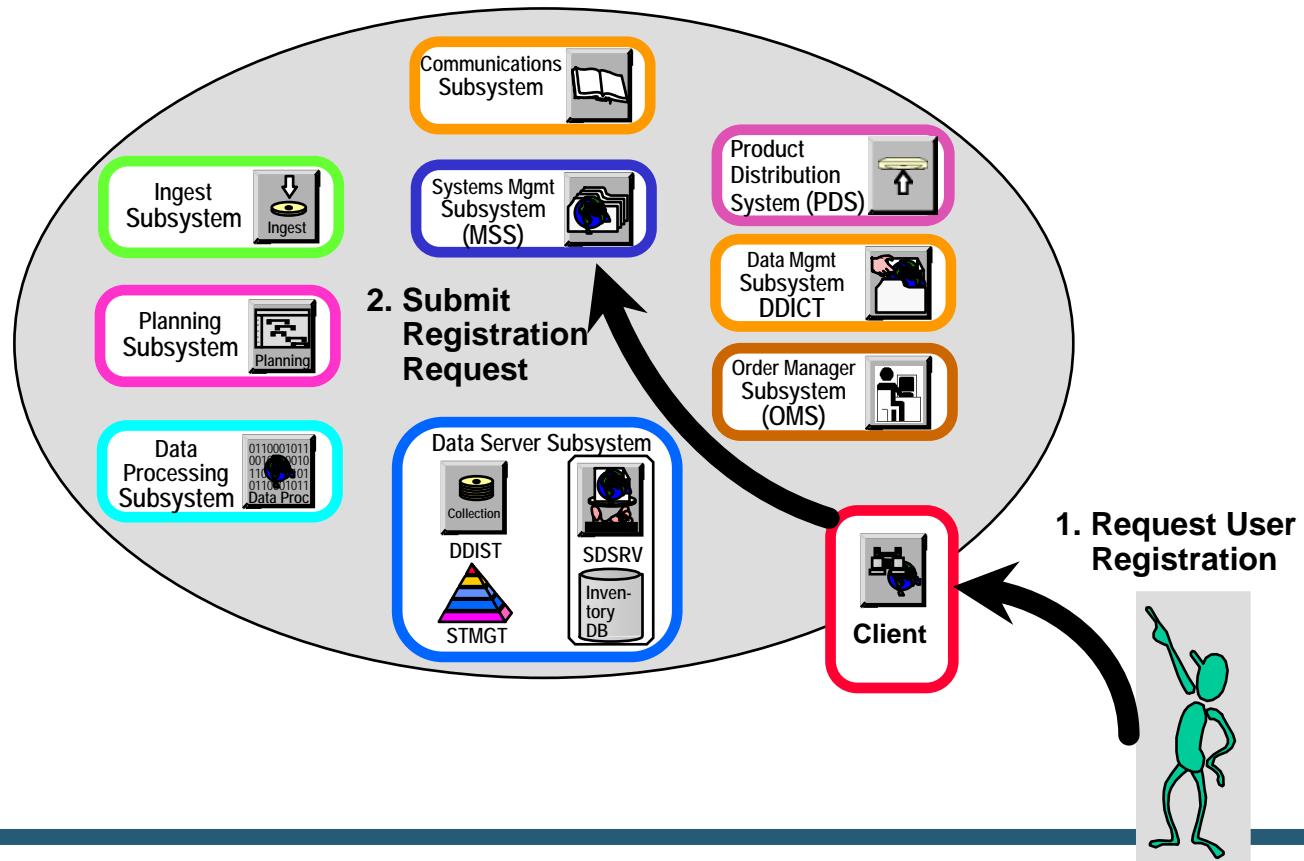
User Registration

Science User starts the form for first-time User Registration from the EOS Data Gateway Web Client and submits registration information.

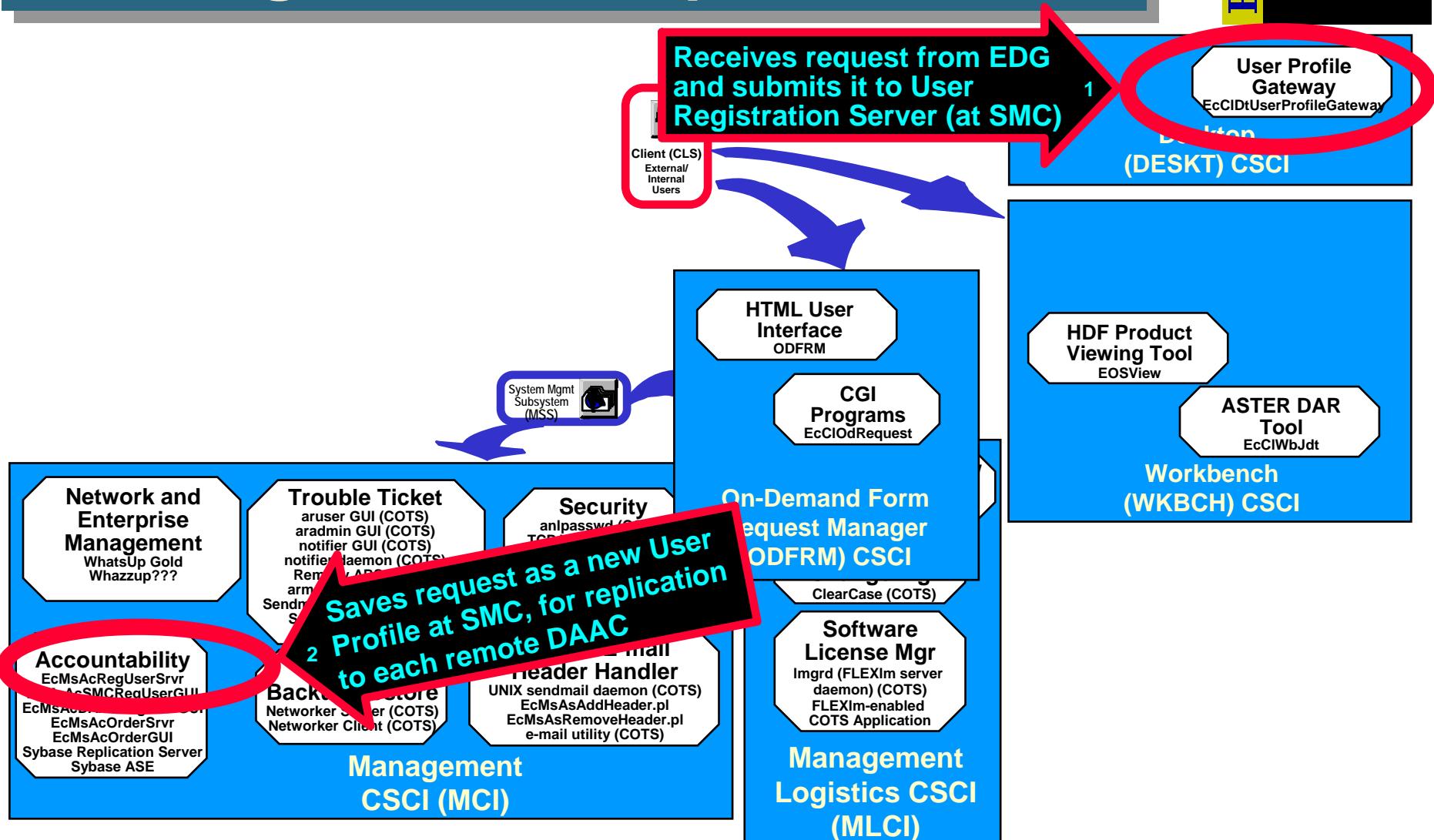


User Registration Request Process

Scientist invokes the form for first-time User Registration from the EOS Data Gateway web client and then enters and submits registration data.



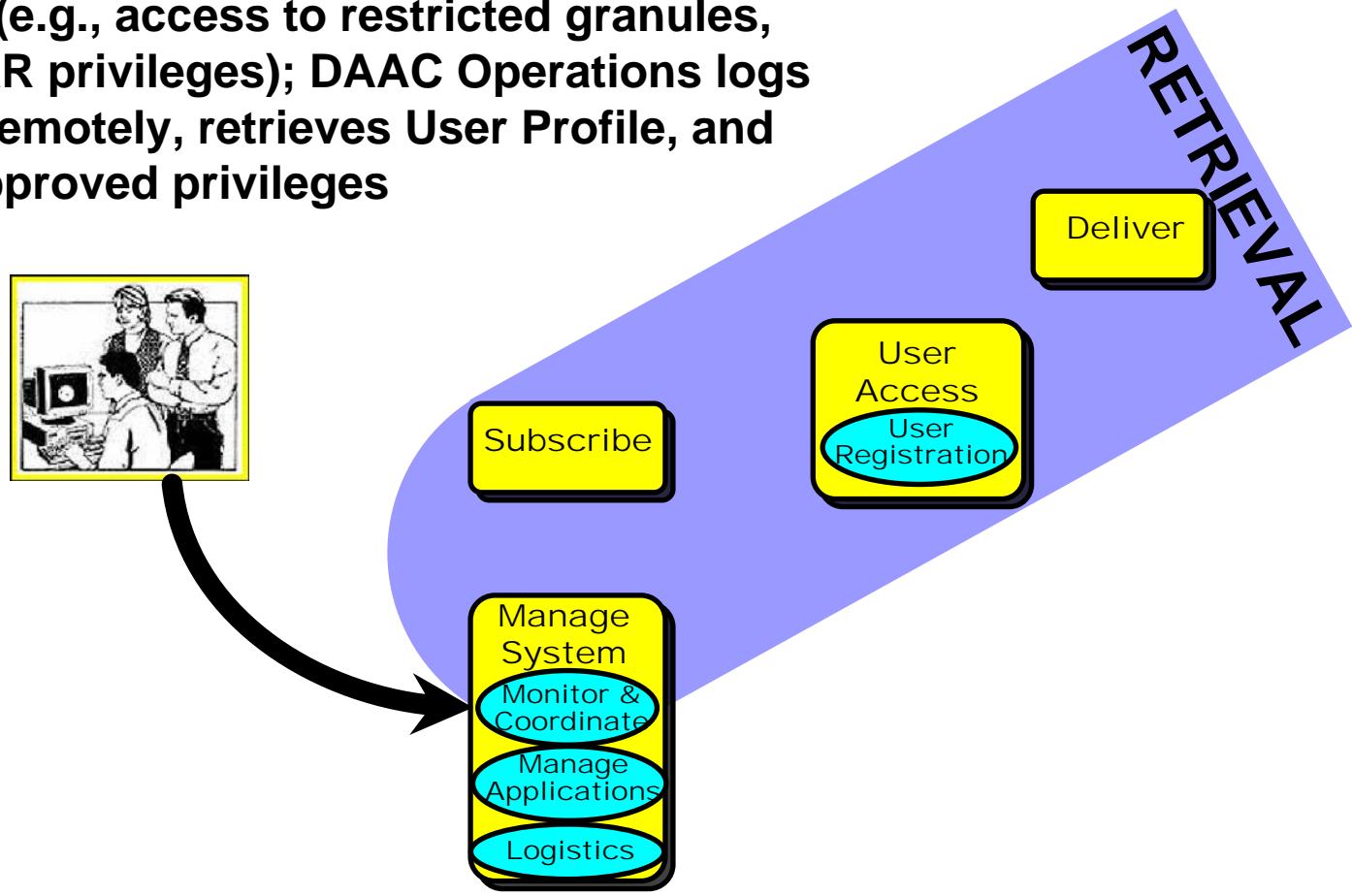
CSCI/Component Role in User Registration Request





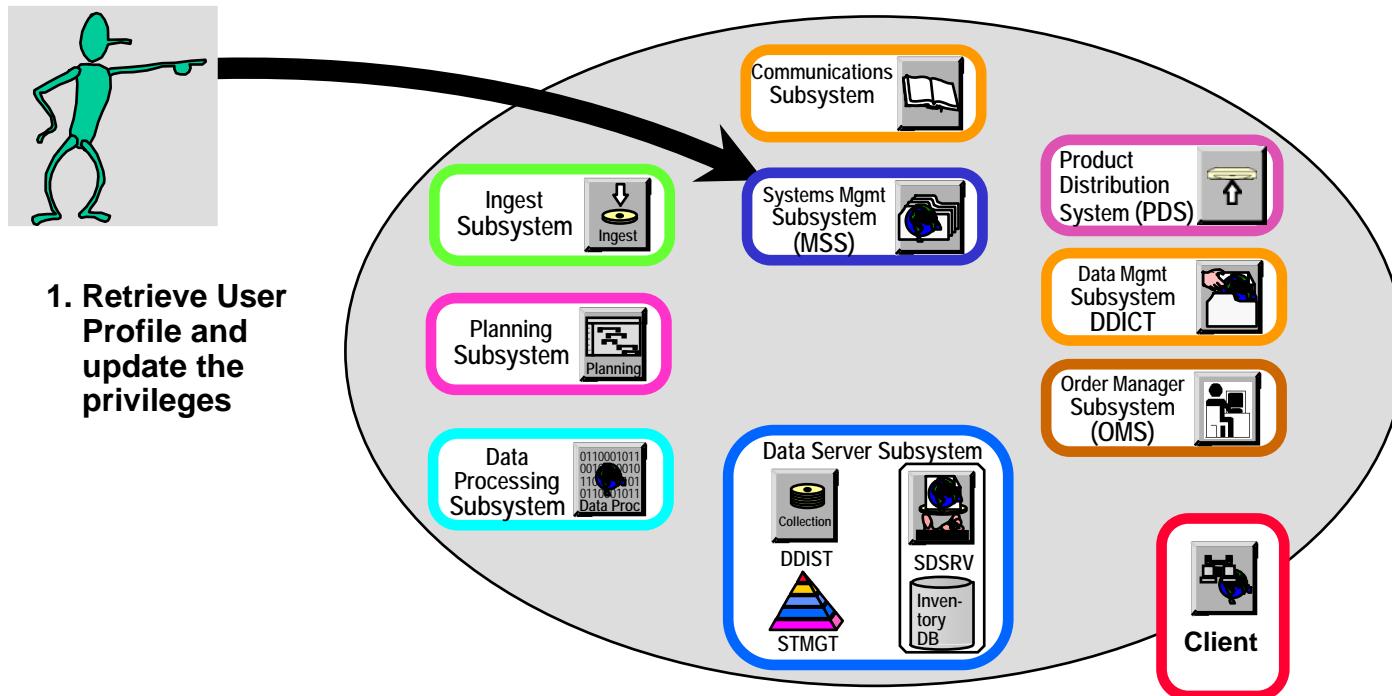
User Registration (Cont.)

Science User calls home DAAC Operations (User Services) to request any needed privileges (e.g., access to restricted granules, ASTER DAR privileges); DAAC Operations logs into SMC remotely, retrieves User Profile, and assigns approved privileges

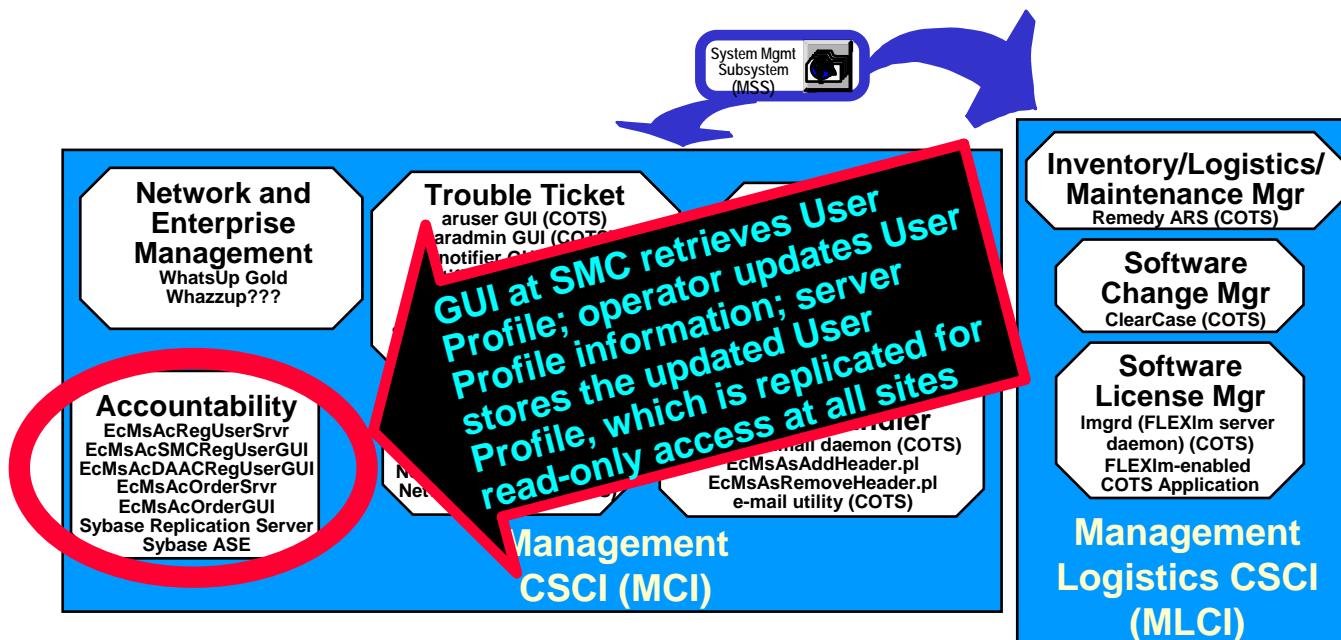


User Registration Approval Process

DAAC User Services Representative at home DAAC uses User Registration Server Graphical User Interface (GUI) at SMC to retrieve User Profile and update the MSS User Profile approved privileges, which are then replicated.



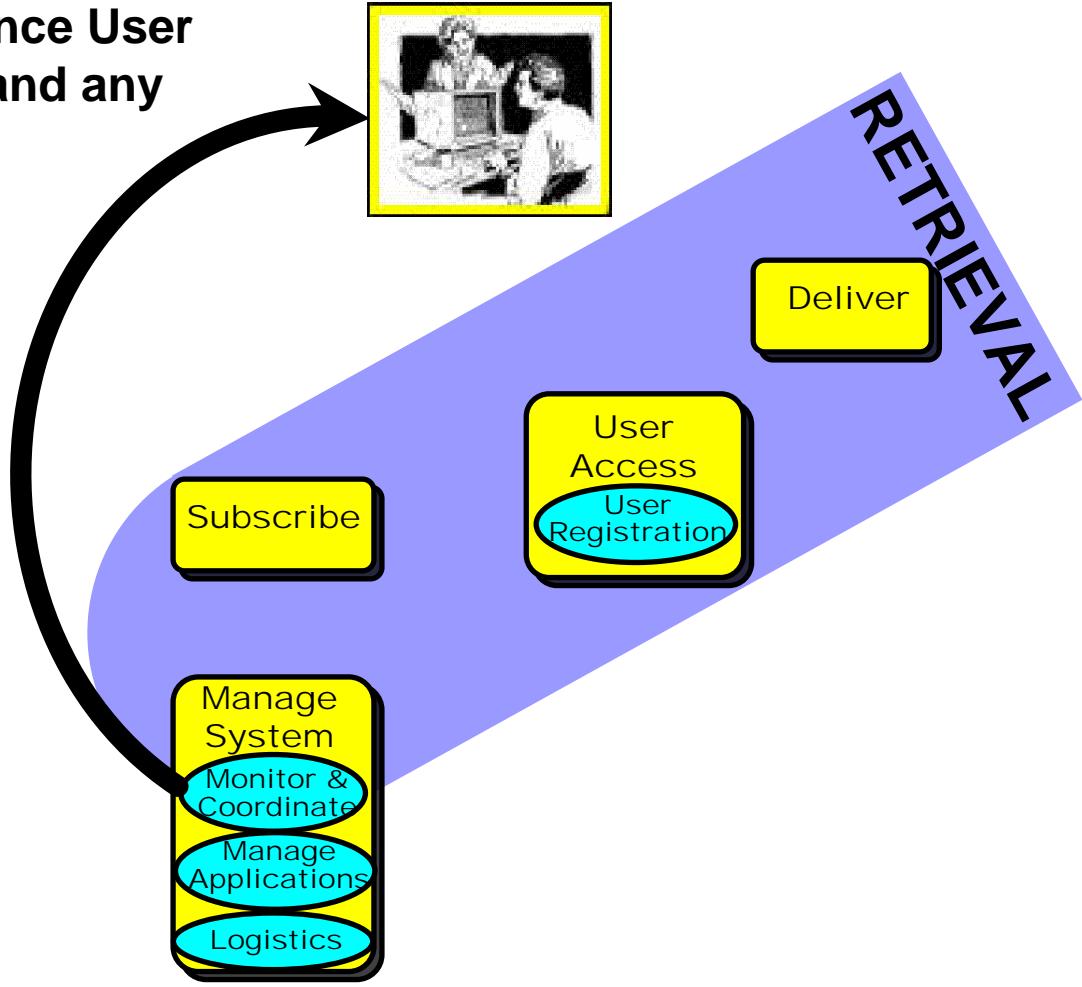
CSCI/Component Role in User Registration Approval





User Registration (Cont.)

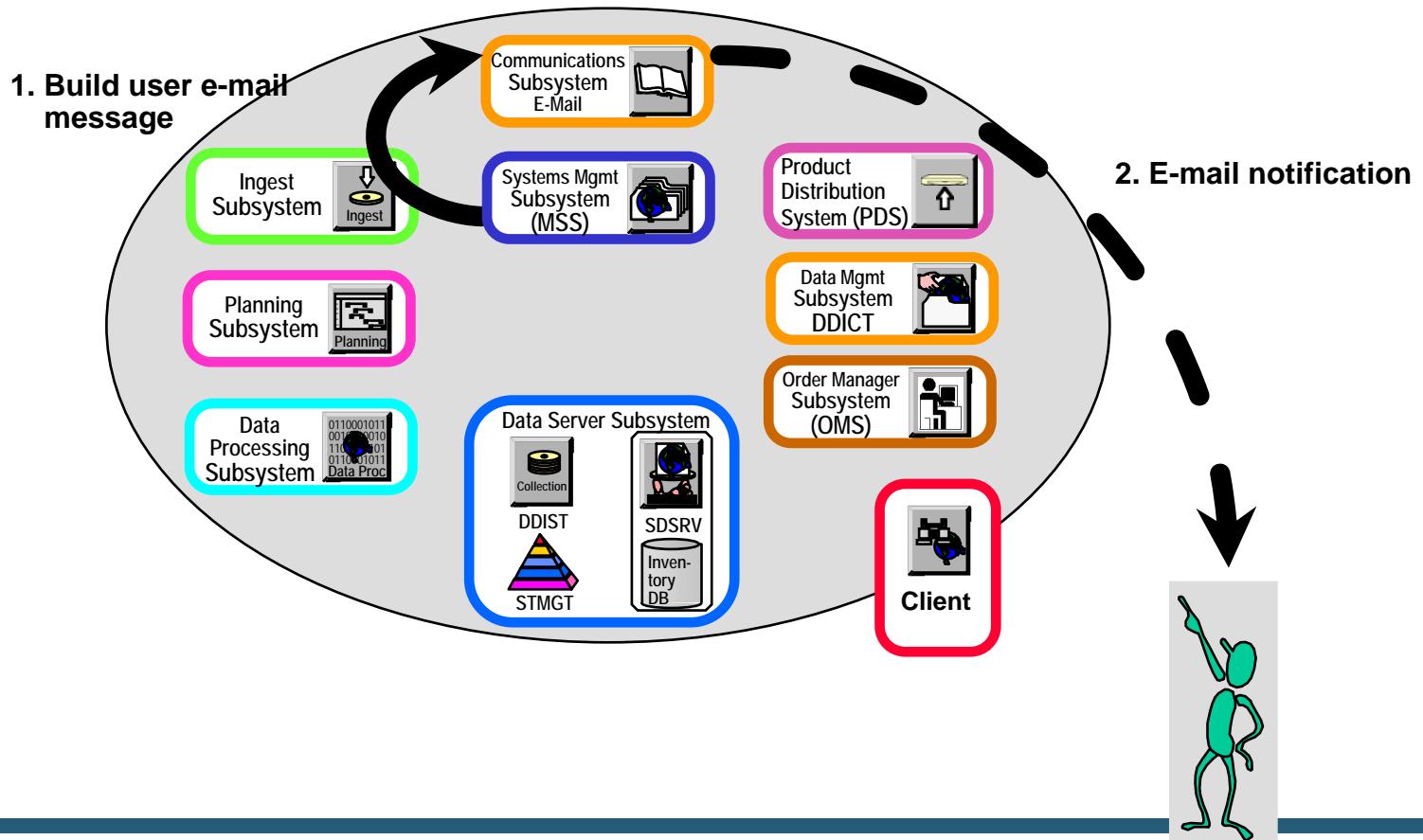
System Management Subsystem (MSS)
sends e-mail to the Science User
confirming registration and any
special privileges



User Registration Confirmation Process



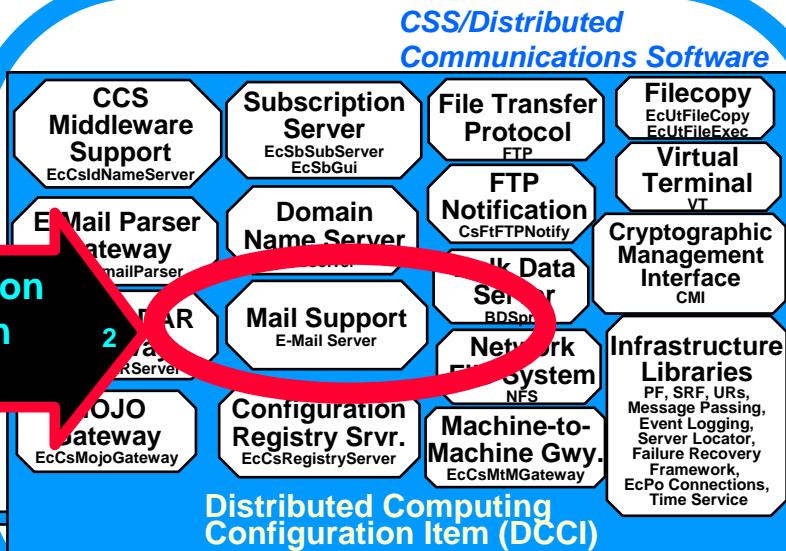
System Management Subsystem (MSS) User Registration Server creates and sends e-mail to the Science User confirming registration and any special privileges.



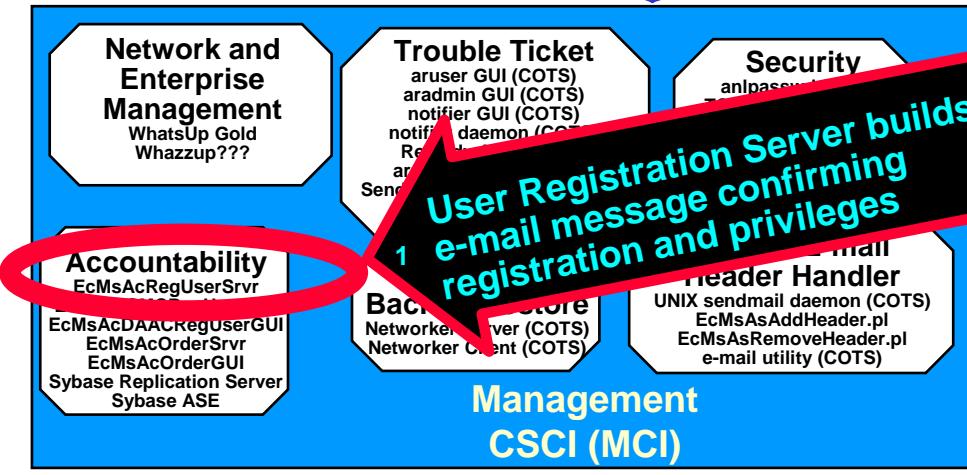
CSCI/Component Role in User Registration Confirmation



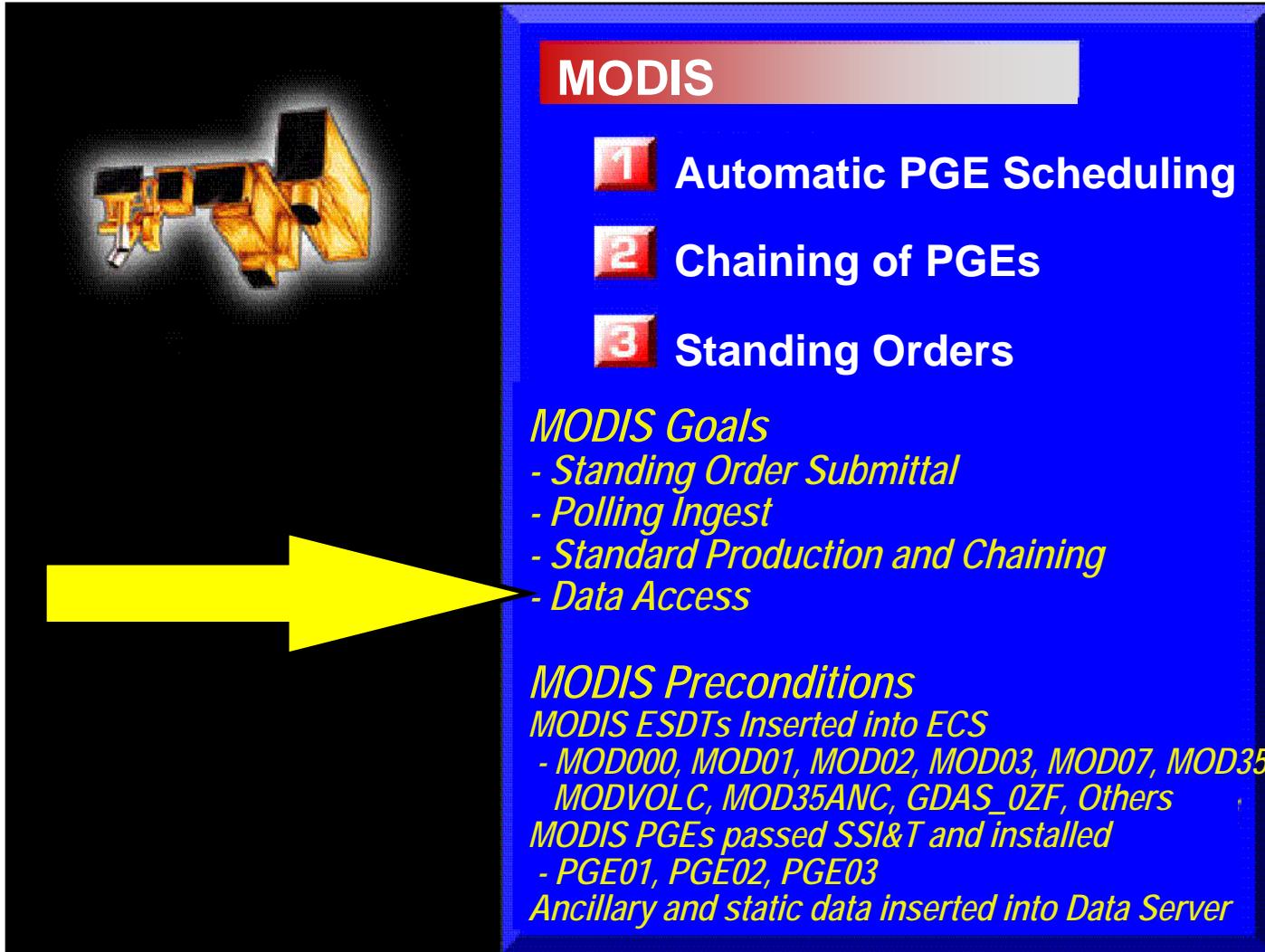
Sends e-mail notification confirming registration and privileges



User Registration Server builds 1 e-mail message confirming registration and privileges



MODIS Scenario



MODIS

- 1 Automatic PGE Scheduling**
- 2 Chaining of PGEs**
- 3 Standing Orders**

MODIS Goals

- *Standing Order Submittal*
- *Polling Ingest*
- *Standard Production and Chaining*
- *Data Access*

MODIS Preconditions

MODIS ESDTs Inserted into ECS

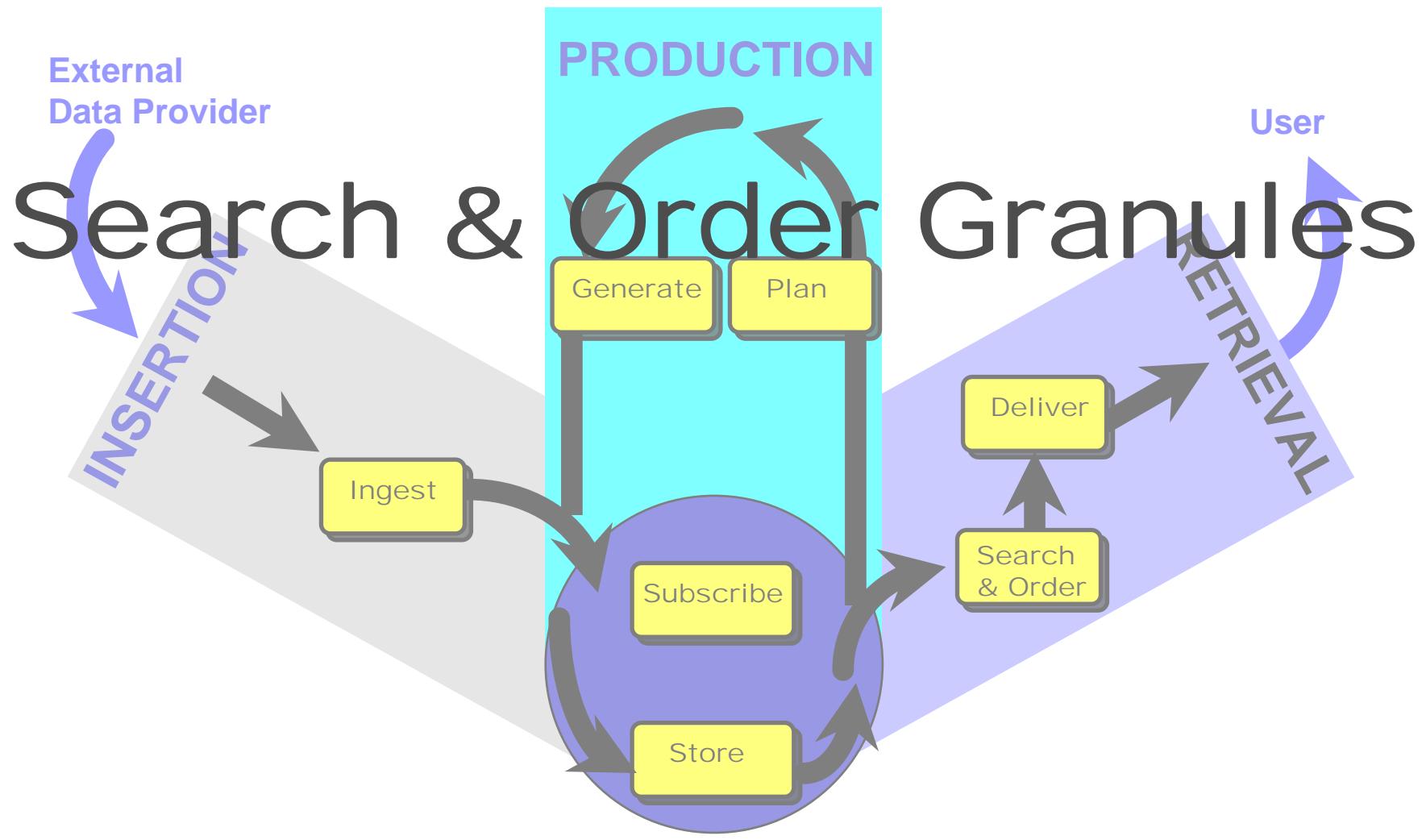
- *MOD000, MOD01, MOD02, MOD03, MOD07, MOD35, MODVOLC, MOD35ANC, GDAS_0ZF, Others*

MODIS PGEs passed SSI&T and installed

- *PGE01, PGE02, PGE03*

Ancillary and static data inserted into Data Server

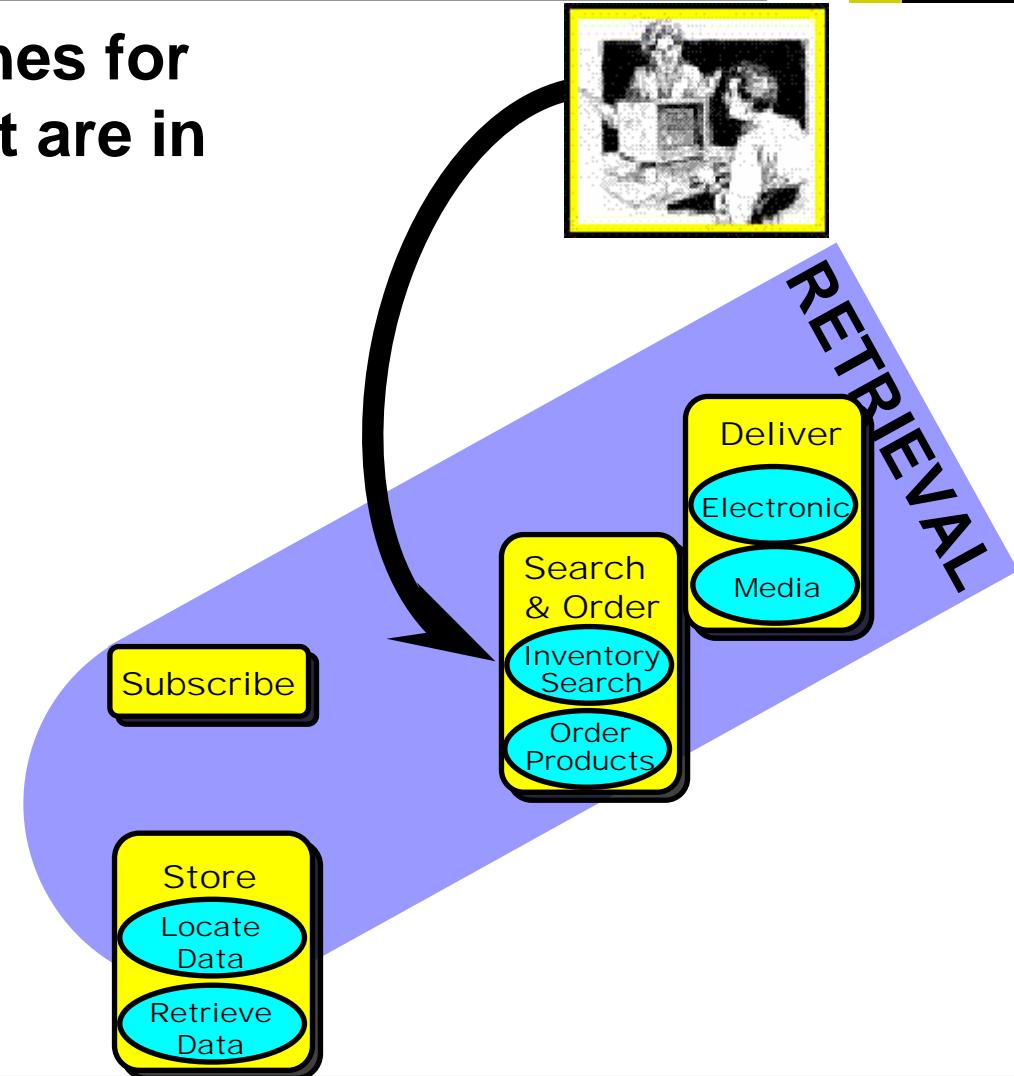
MODIS Scenario: Data Access



MODIS: Data Access



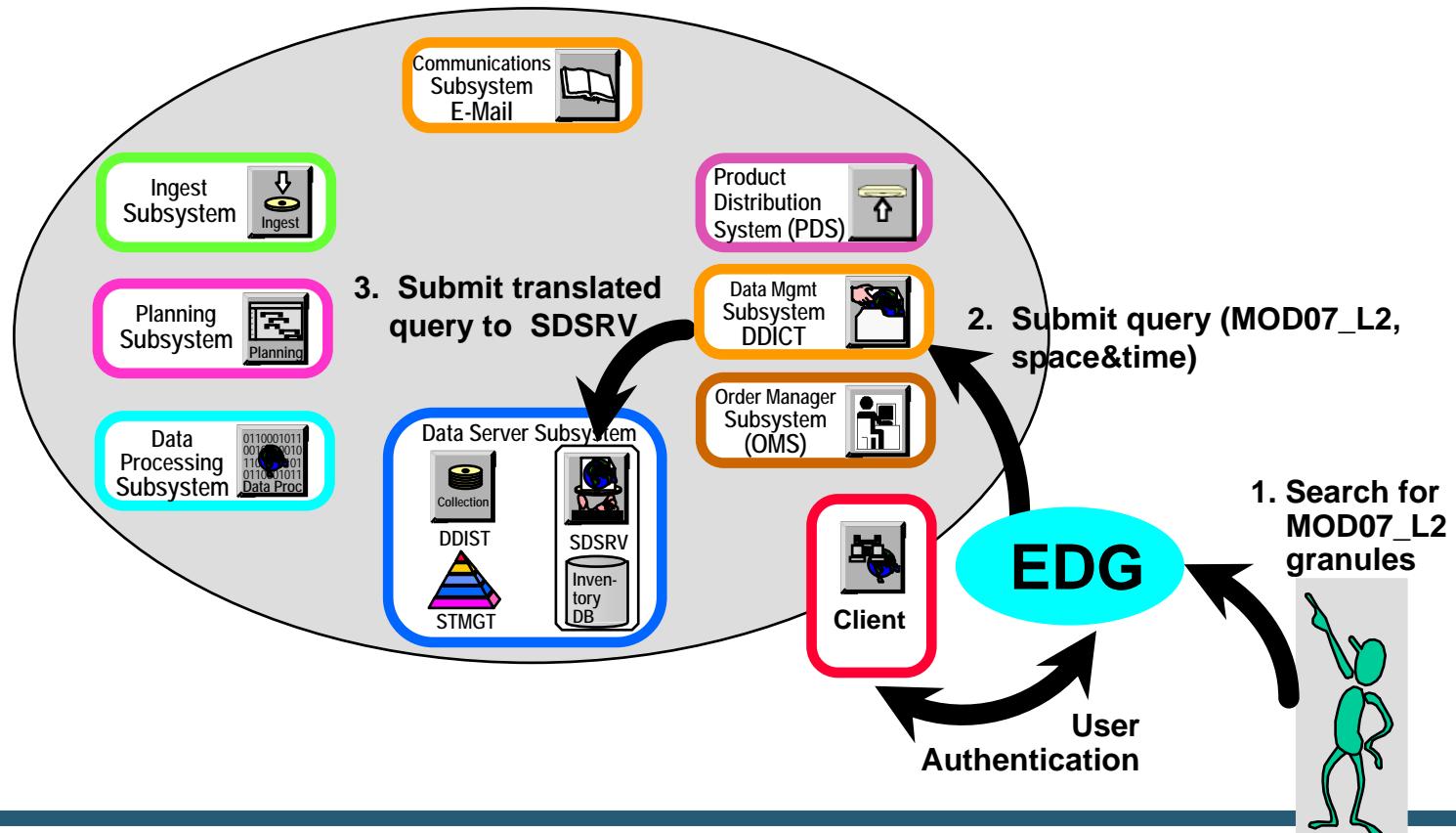
Science User searches for
MODIS granules that are in
ECS data holdings



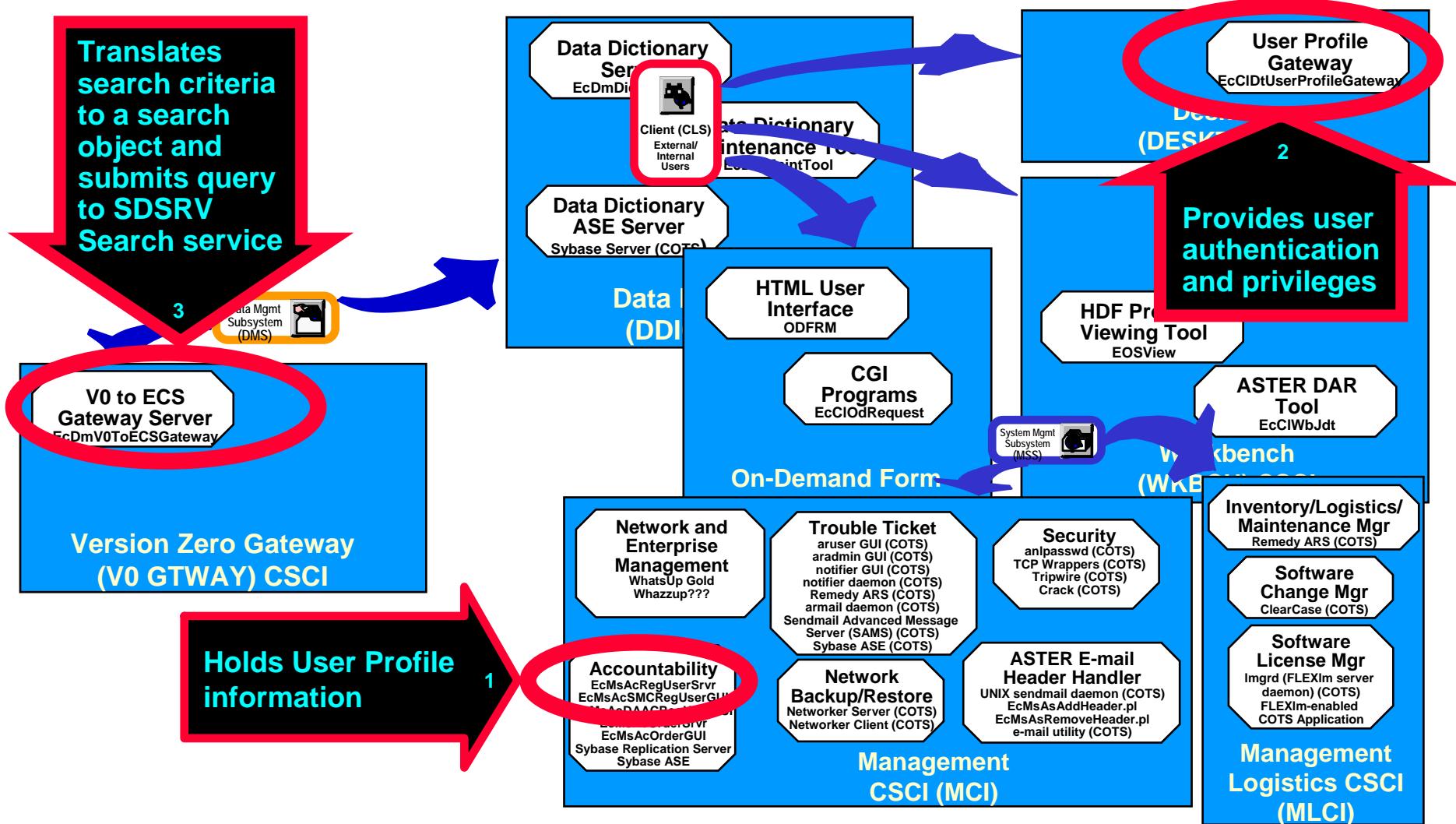
MODIS: Inventory Search Process



Science User uses EOS Data Gateway (EDG) Web Client to perform an Inventory Search for MOD07_L2 data (MODIS Level 2 Joint Atmosphere Product of profiles, ozone, water, and other components) over a specified spatial/temporal domain.



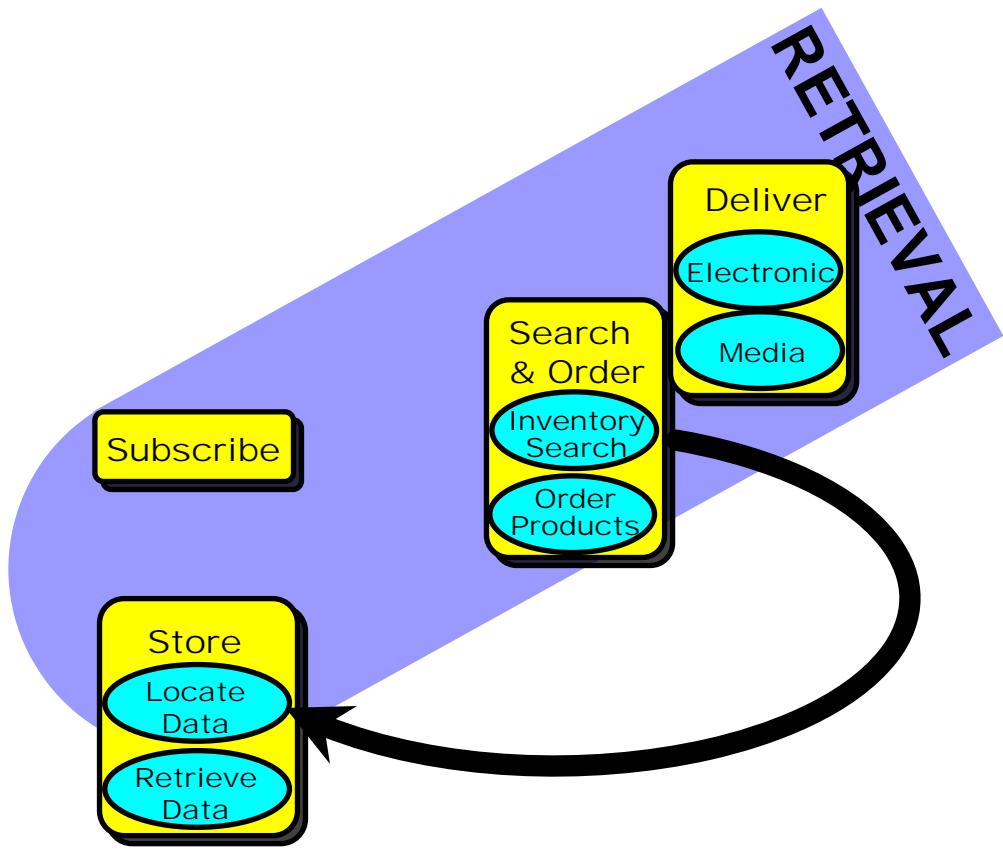
MODIS: CSCI/Component Role in Inventory Search





MODIS: Data Access (Cont.)

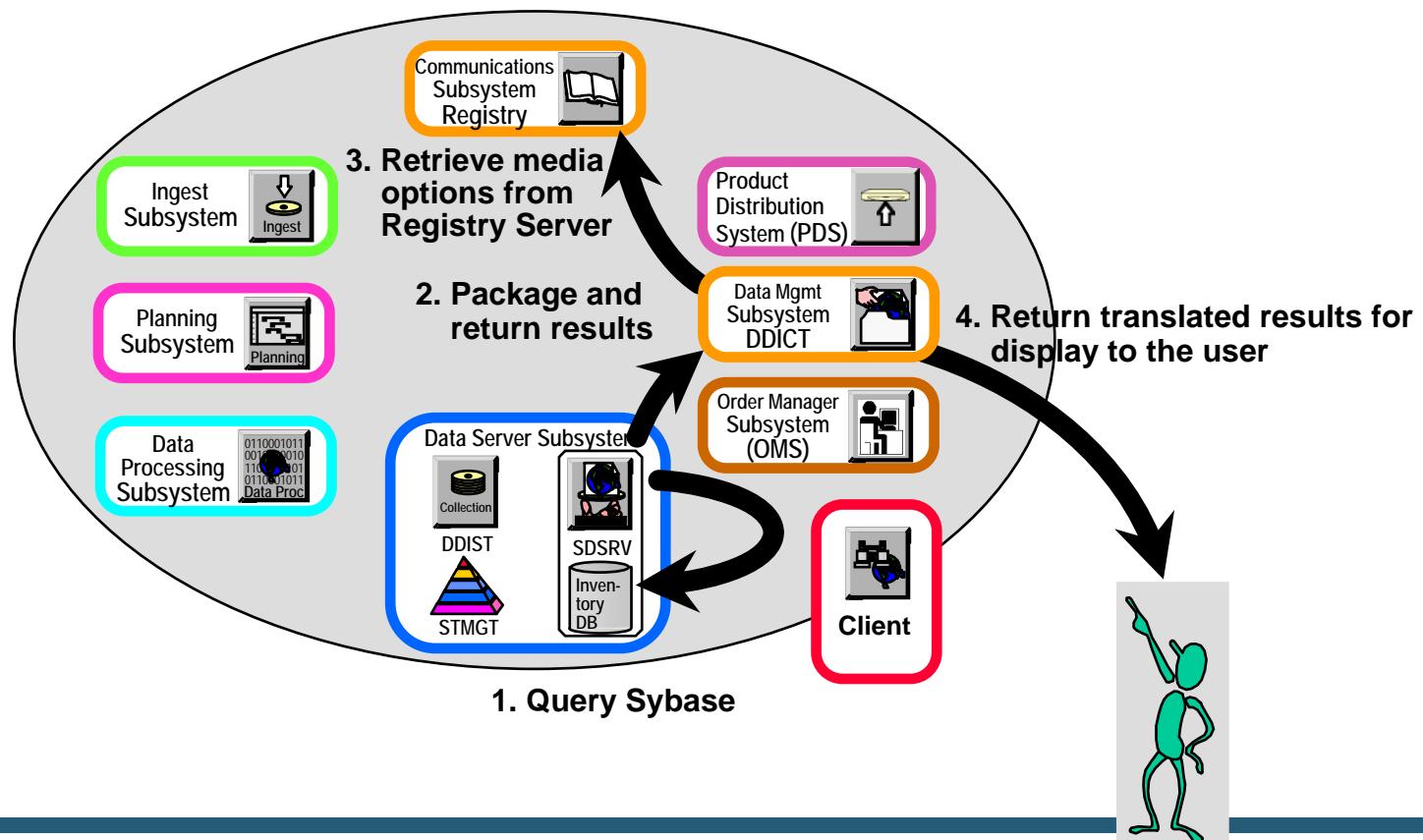
Granules of interest are located
in the ECS data holdings



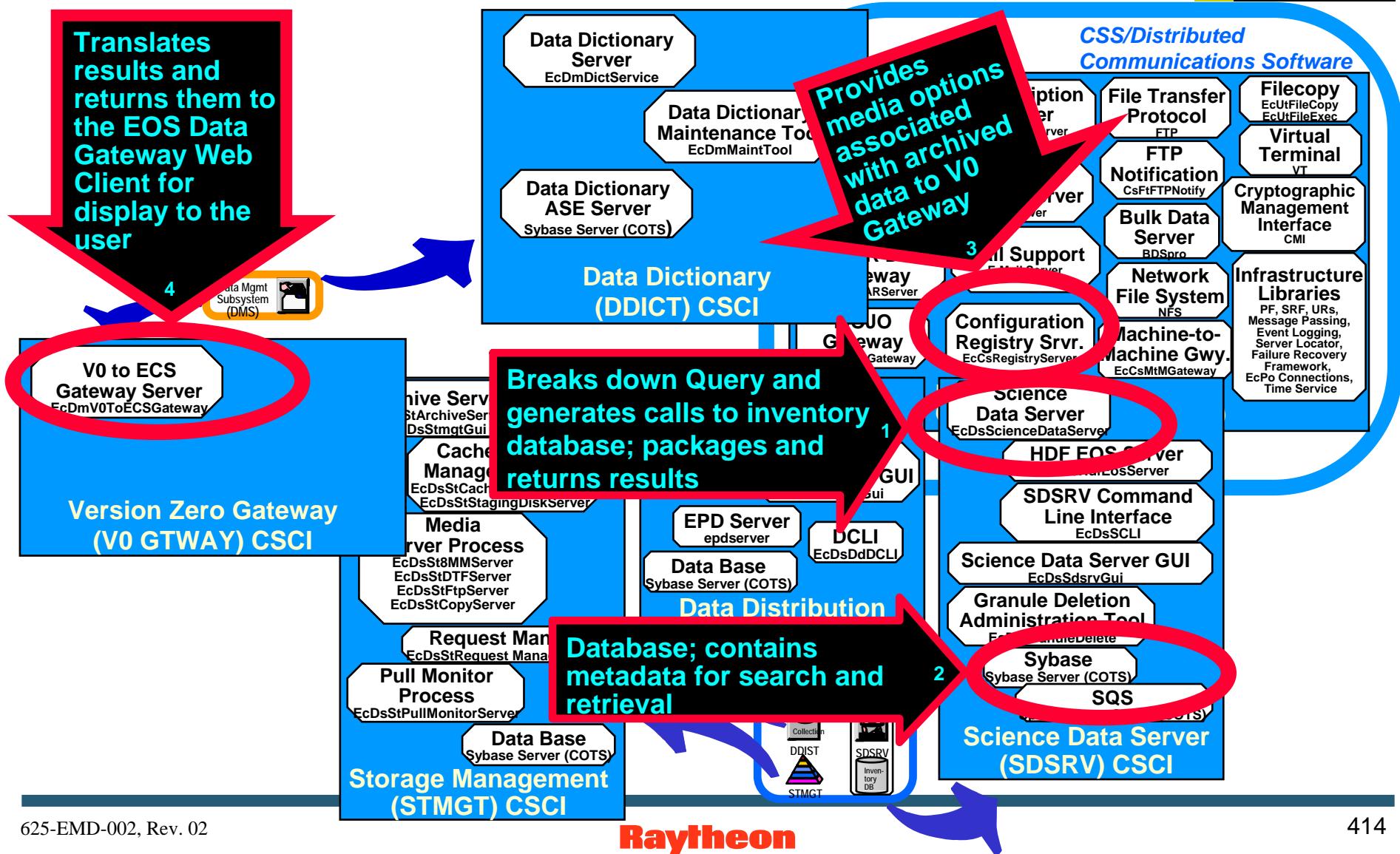
MODIS: Data Search Process



SDSRV queries Sybase/SQS database for granules meeting search criteria and returns results.



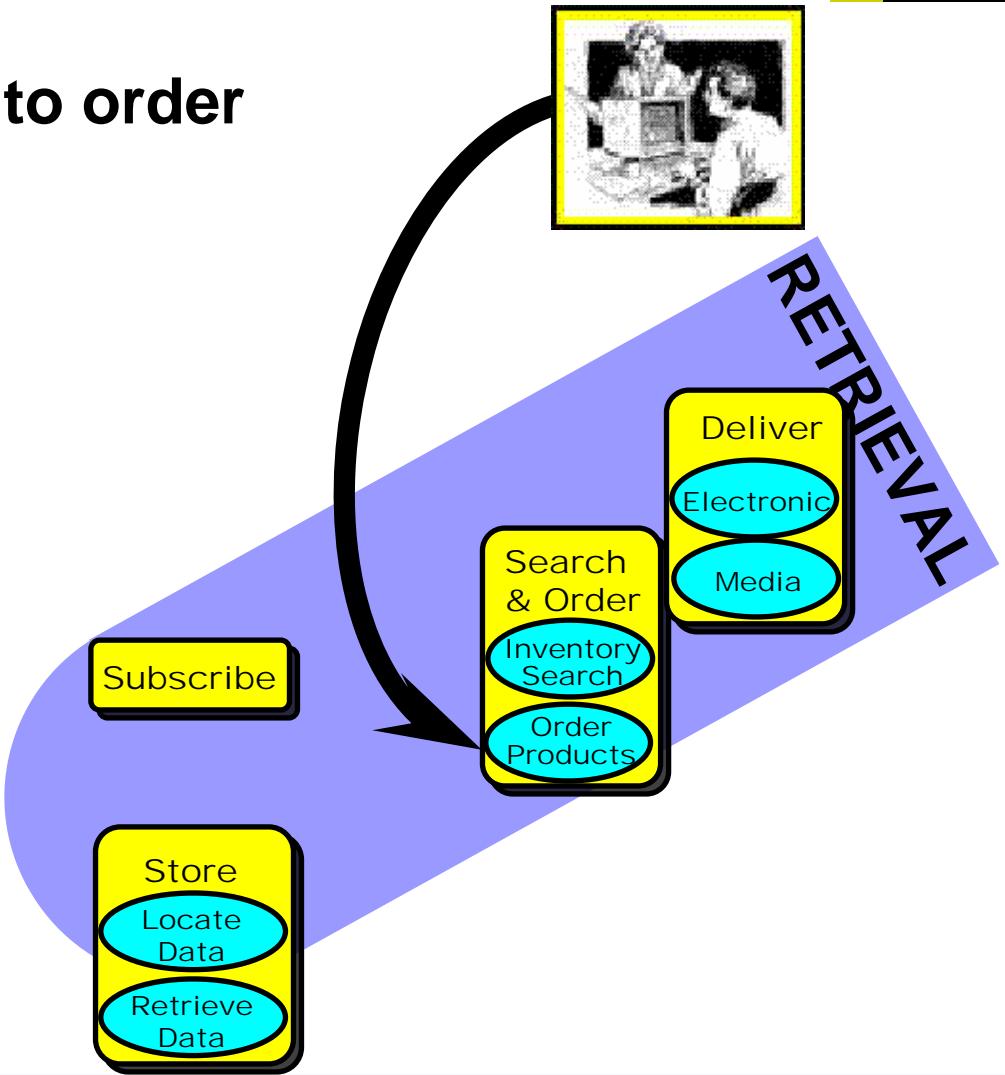
MODIS: CSCI/Component Role in Data Search



MODIS: Data Access (Cont.)



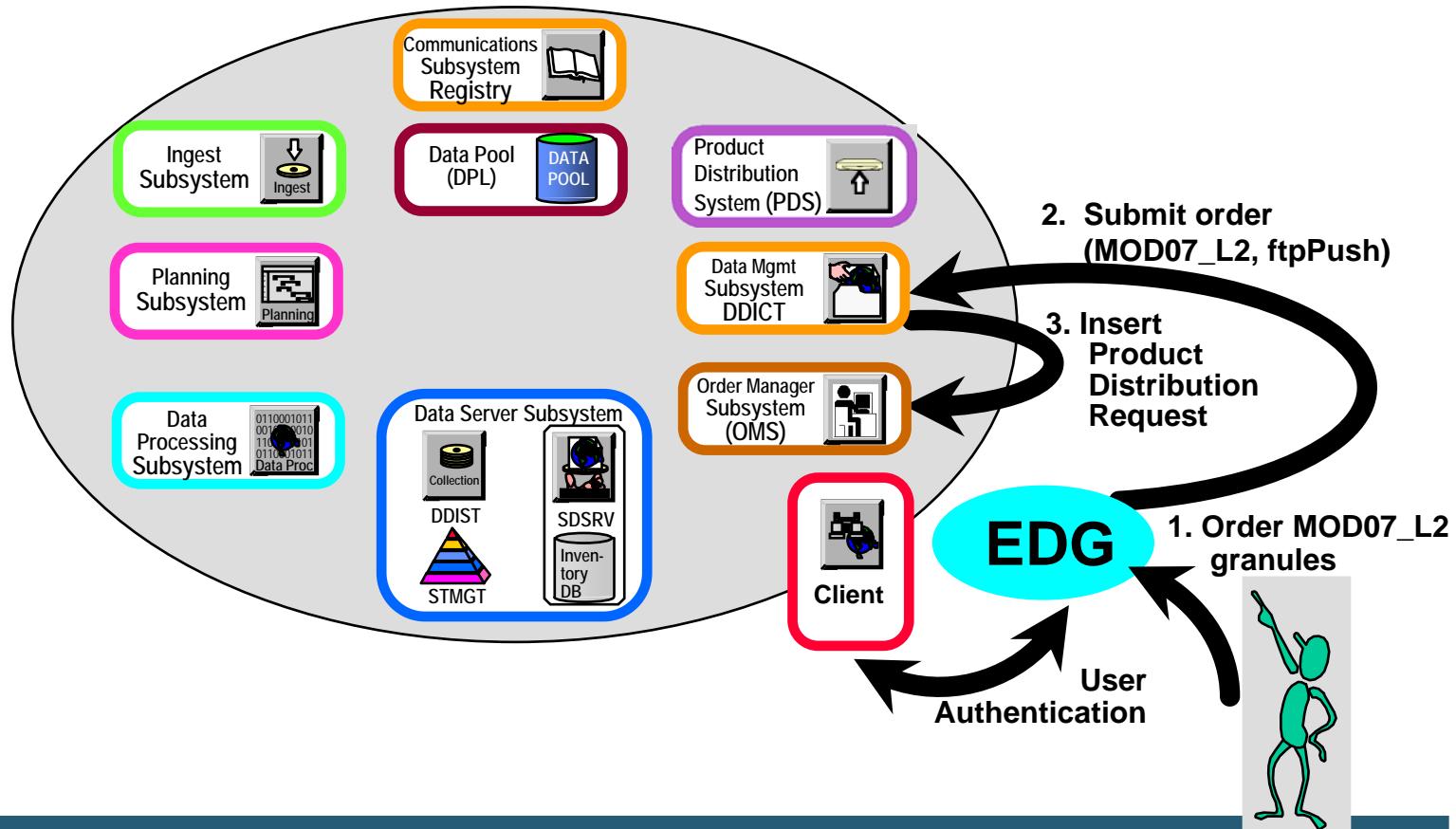
Science User decides to order
granules of interest



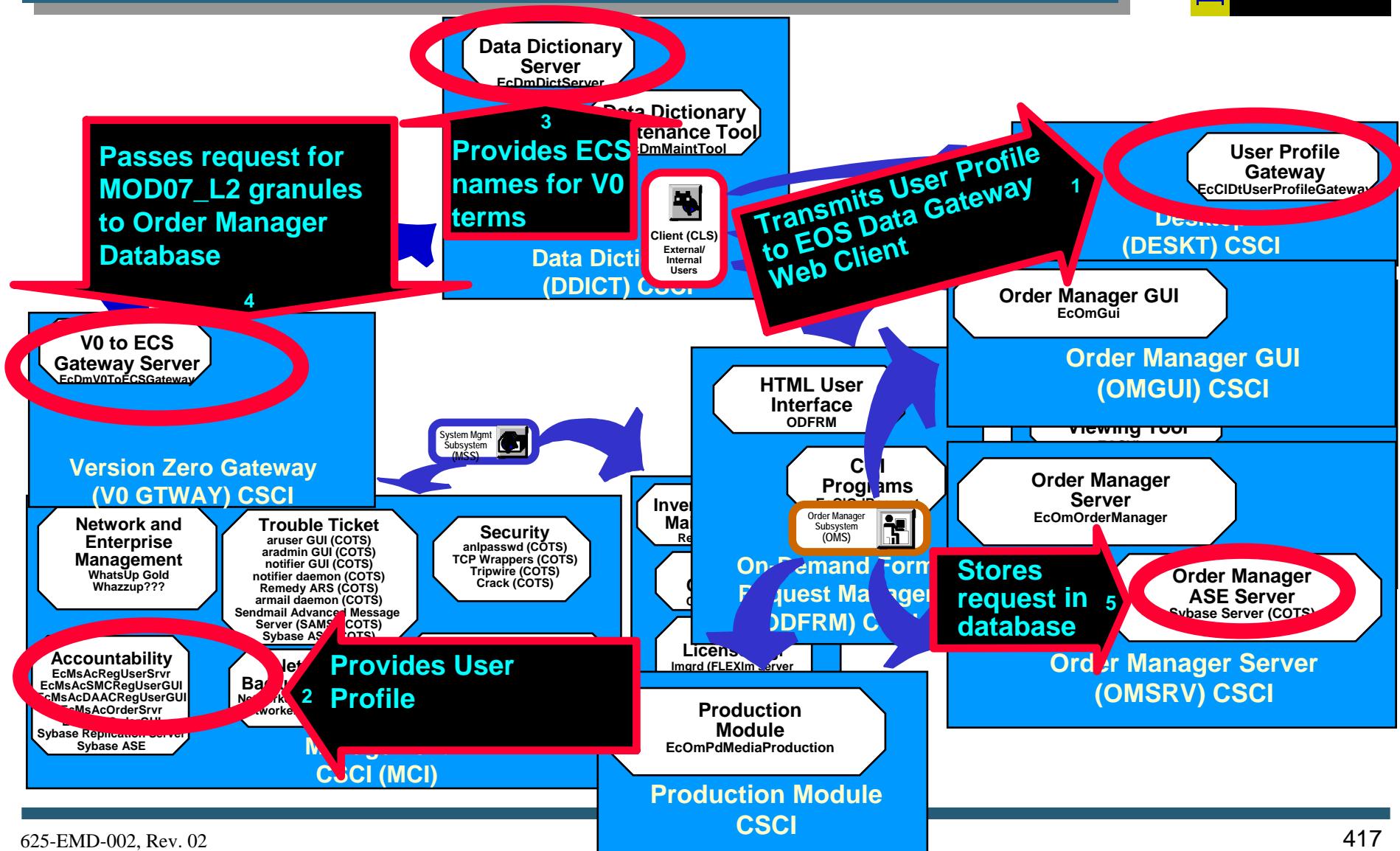
MODIS: Order MOD07_L2



Science User uses EOS Data Gateway Web Client to order MOD07_L2 Granules via ftp push.



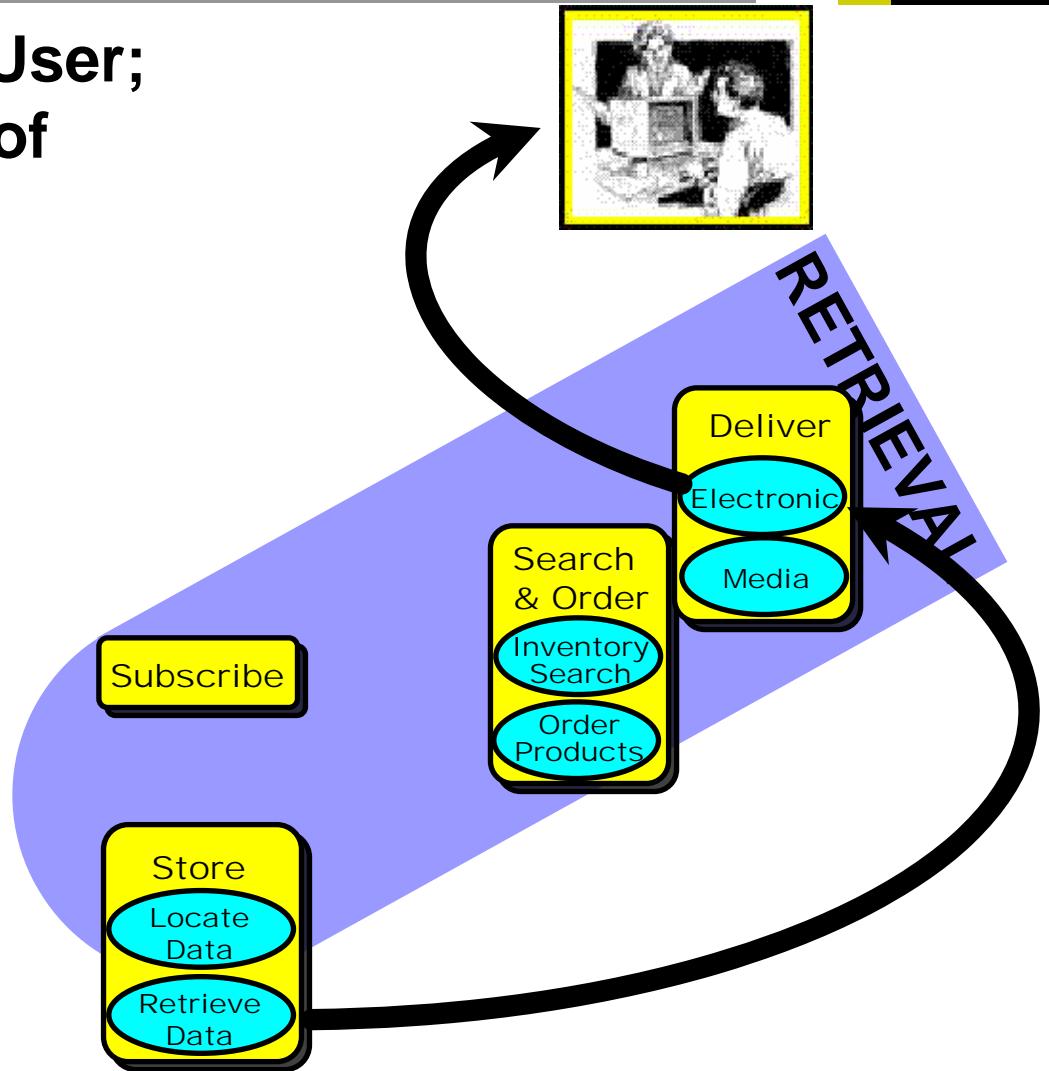
MODIS: CSCI/Component Role in Order MOD07 L2



MODIS: Data Access (Cont.)



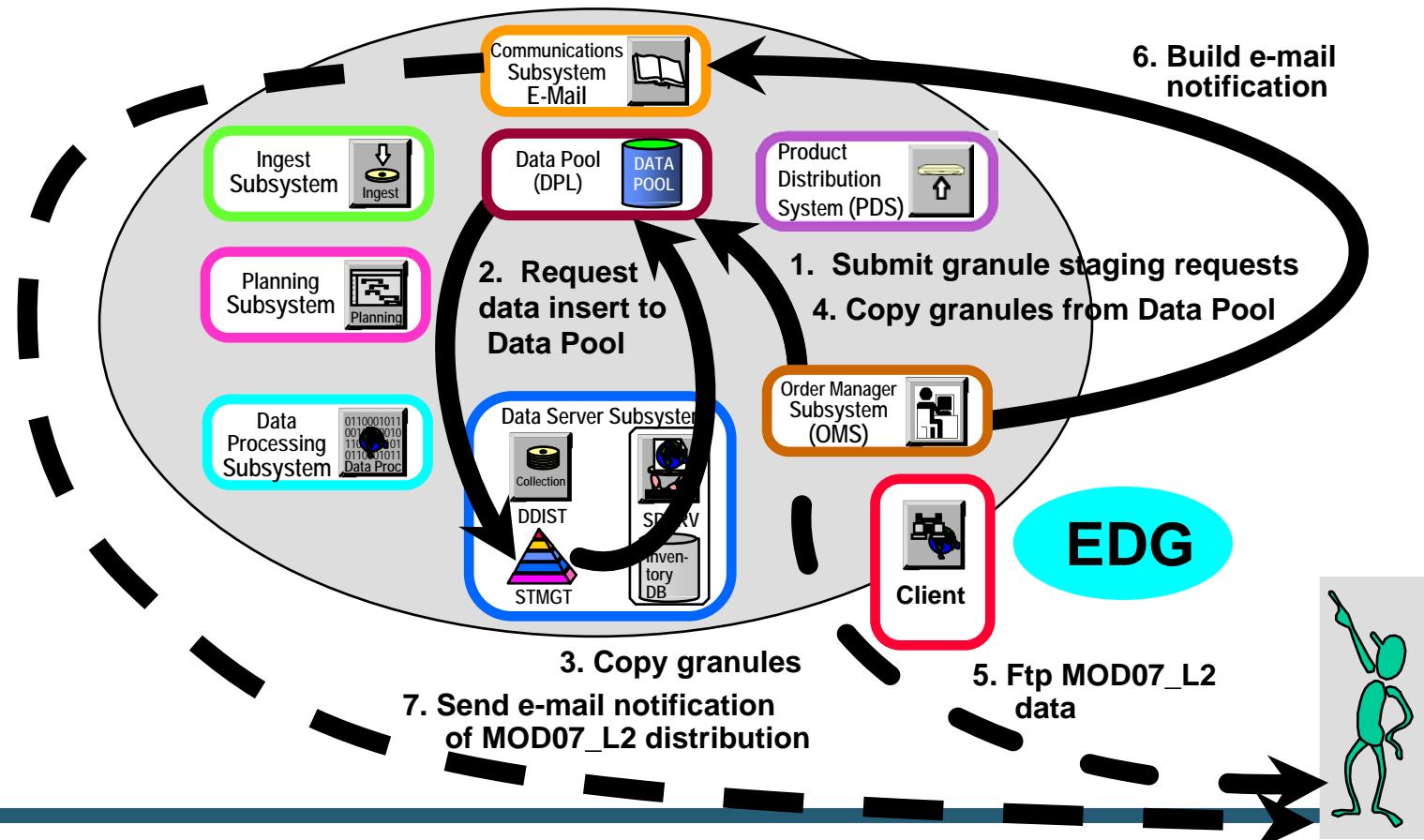
Ftp data to Science User;
notify Science User of
distribution



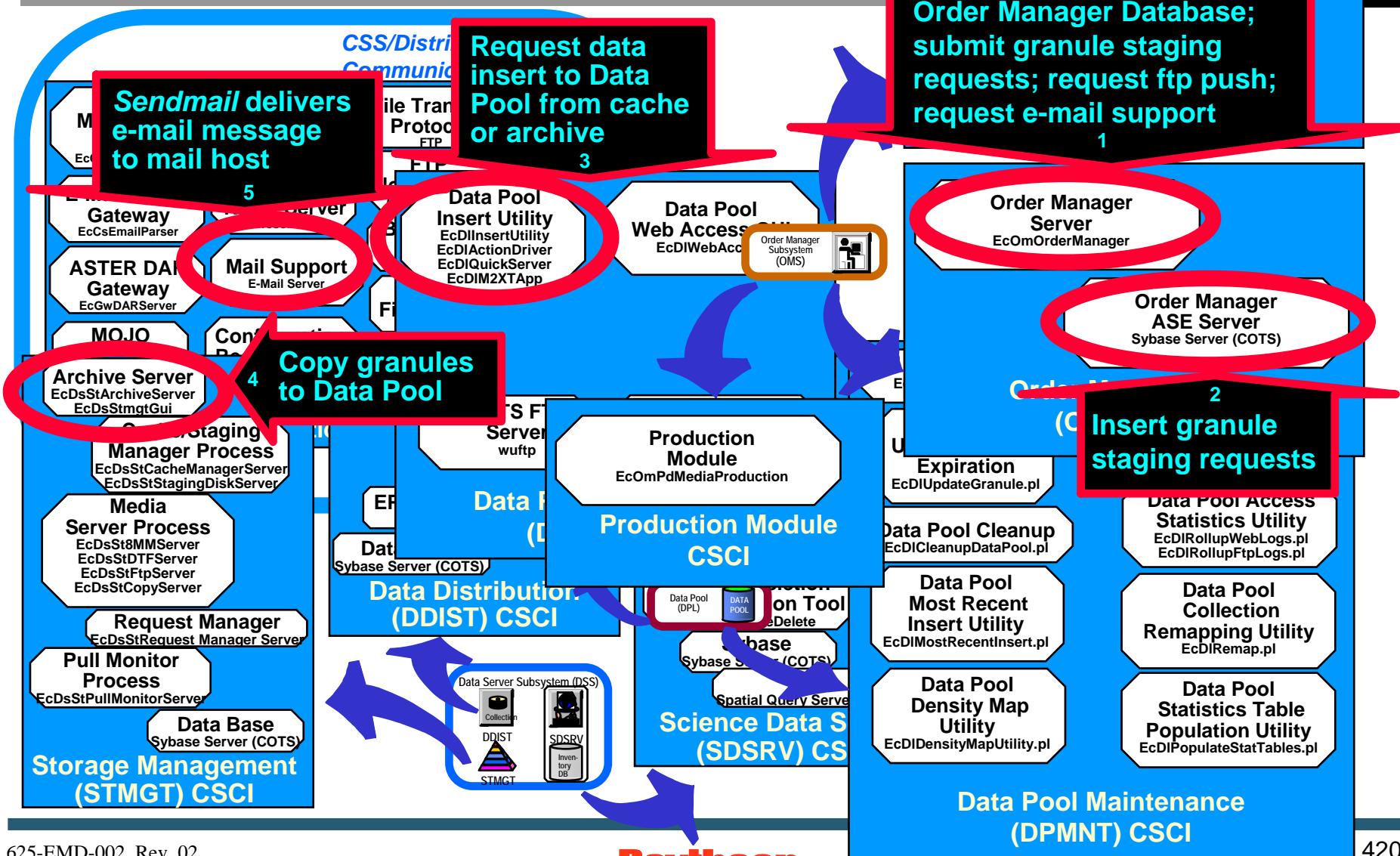


MODIS: Distribute MOD07_L2

Push MOD07_L2 data to Science User's workstation. Send e-mail to Science User with notification of distribution.



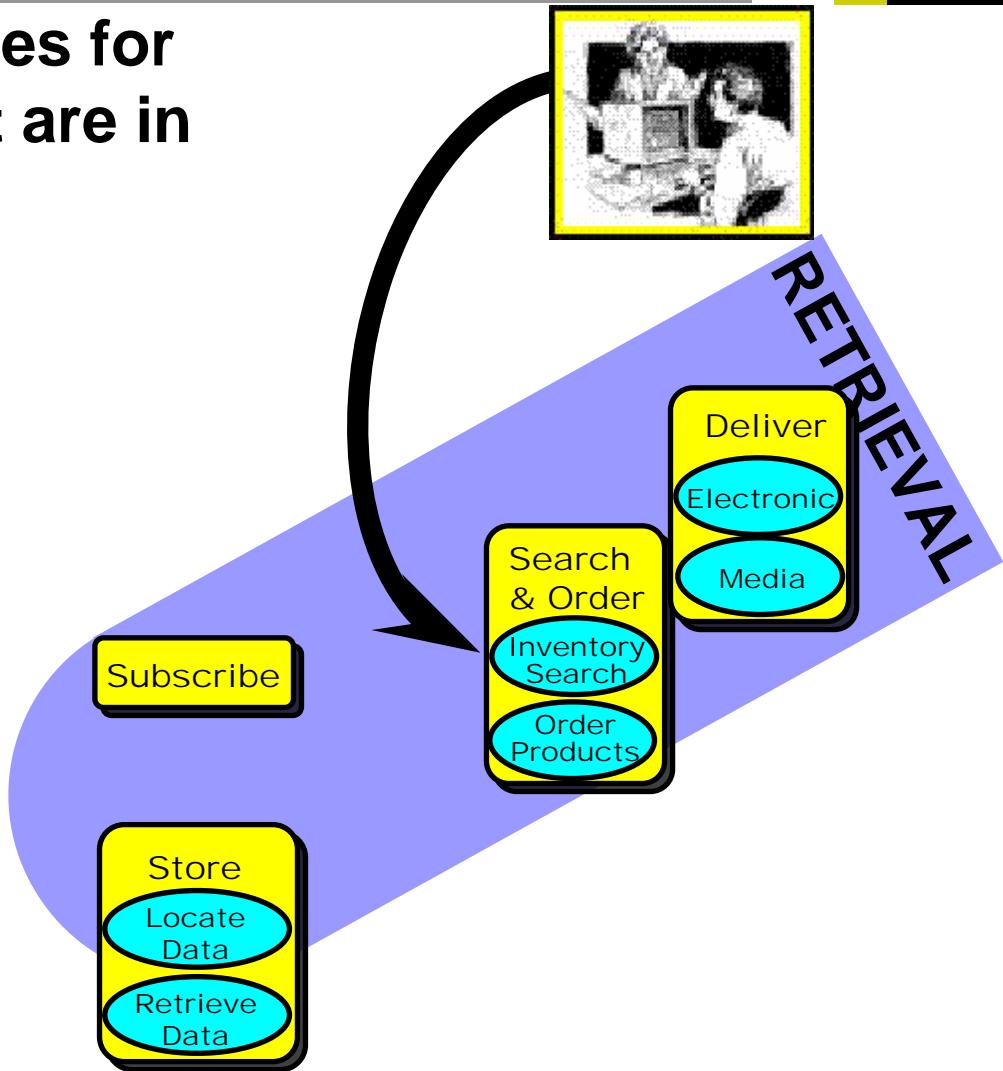
MODIS: CSCI/Component Role in Distribute MOD07_L2



MODIS: Data Access (Cont.)



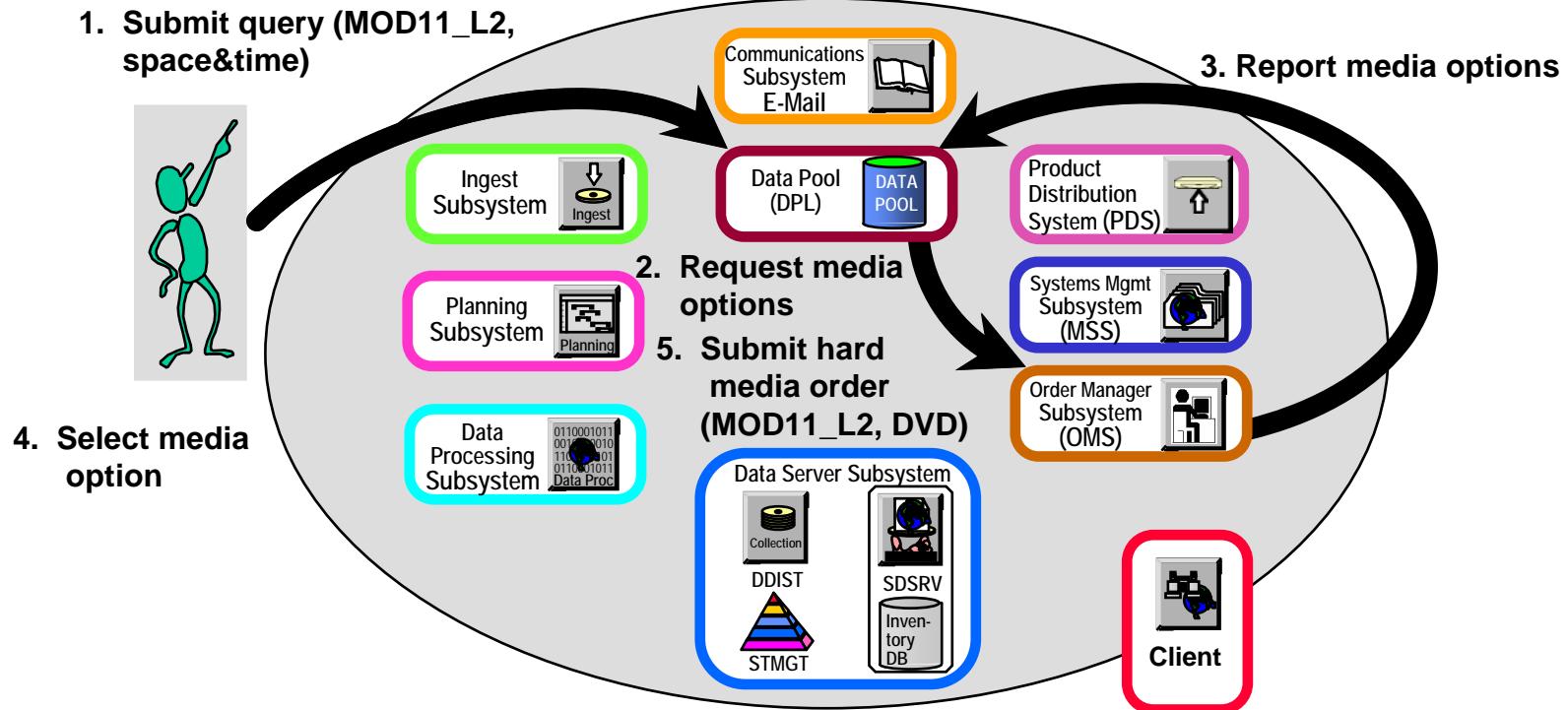
Science User searches for
MODIS granules that are in
the Data Pool



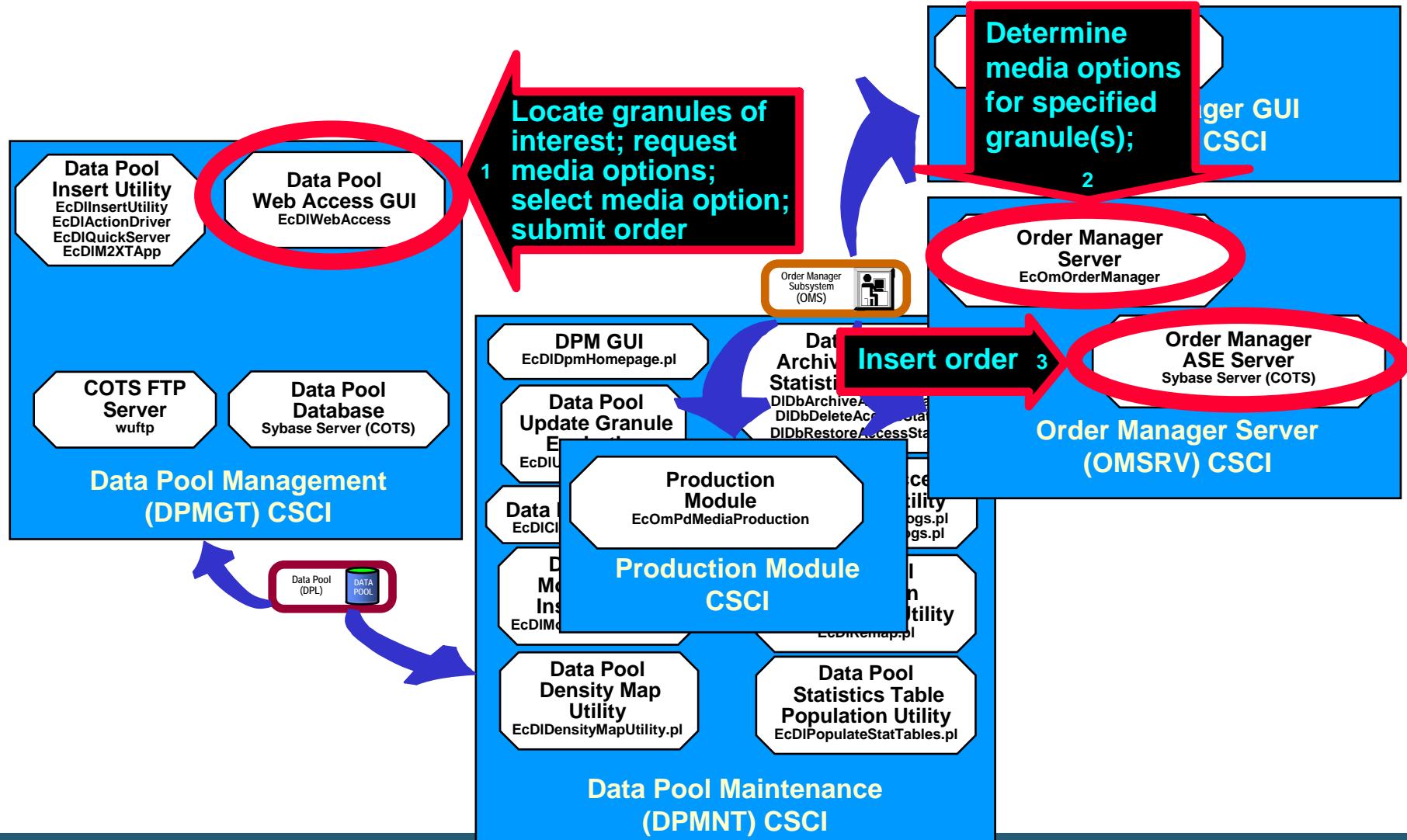
MODIS: Data Pool Search and Order Process



Science User uses the Data Pool Web Access GUI to search for MOD11_L2 data (MODIS/Terra Land Surface Temperature/Emissivity 5-Min L2 Swath 1km) over a specified spatial/temporal domain and submit an order for delivery on DVD.



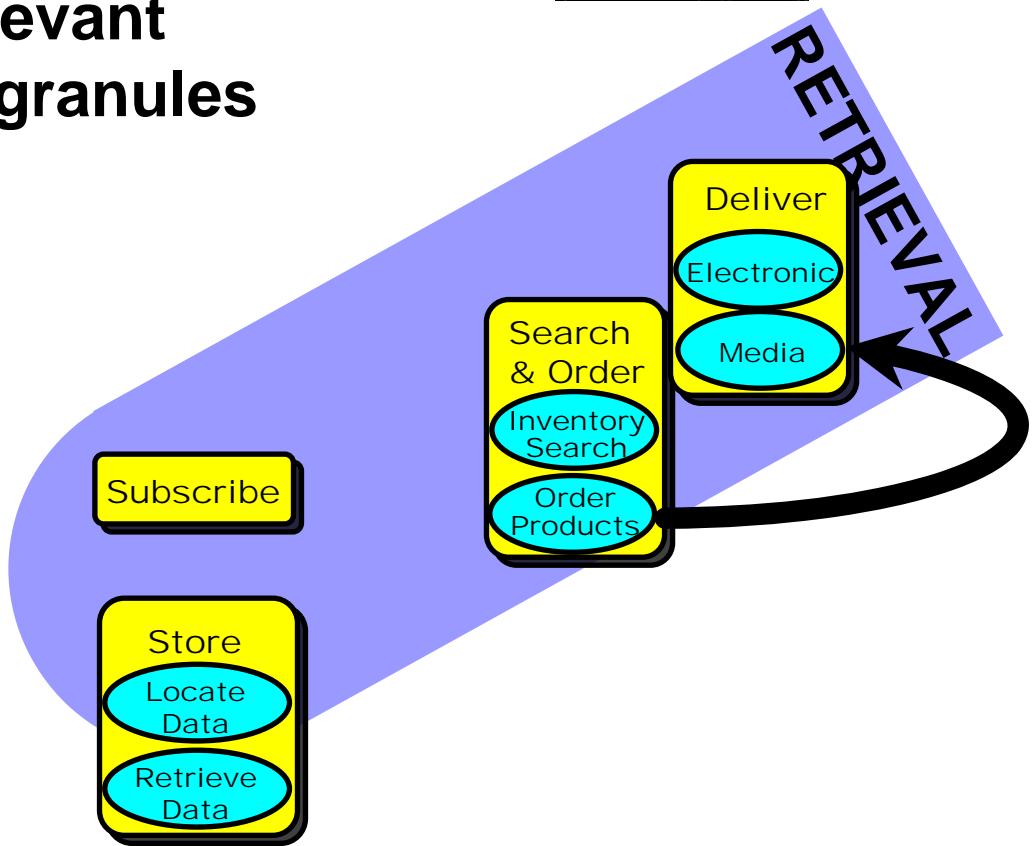
MODIS: CSCI/Component Role in Data Pool Search and Order



MODIS: Data Access (Cont.)



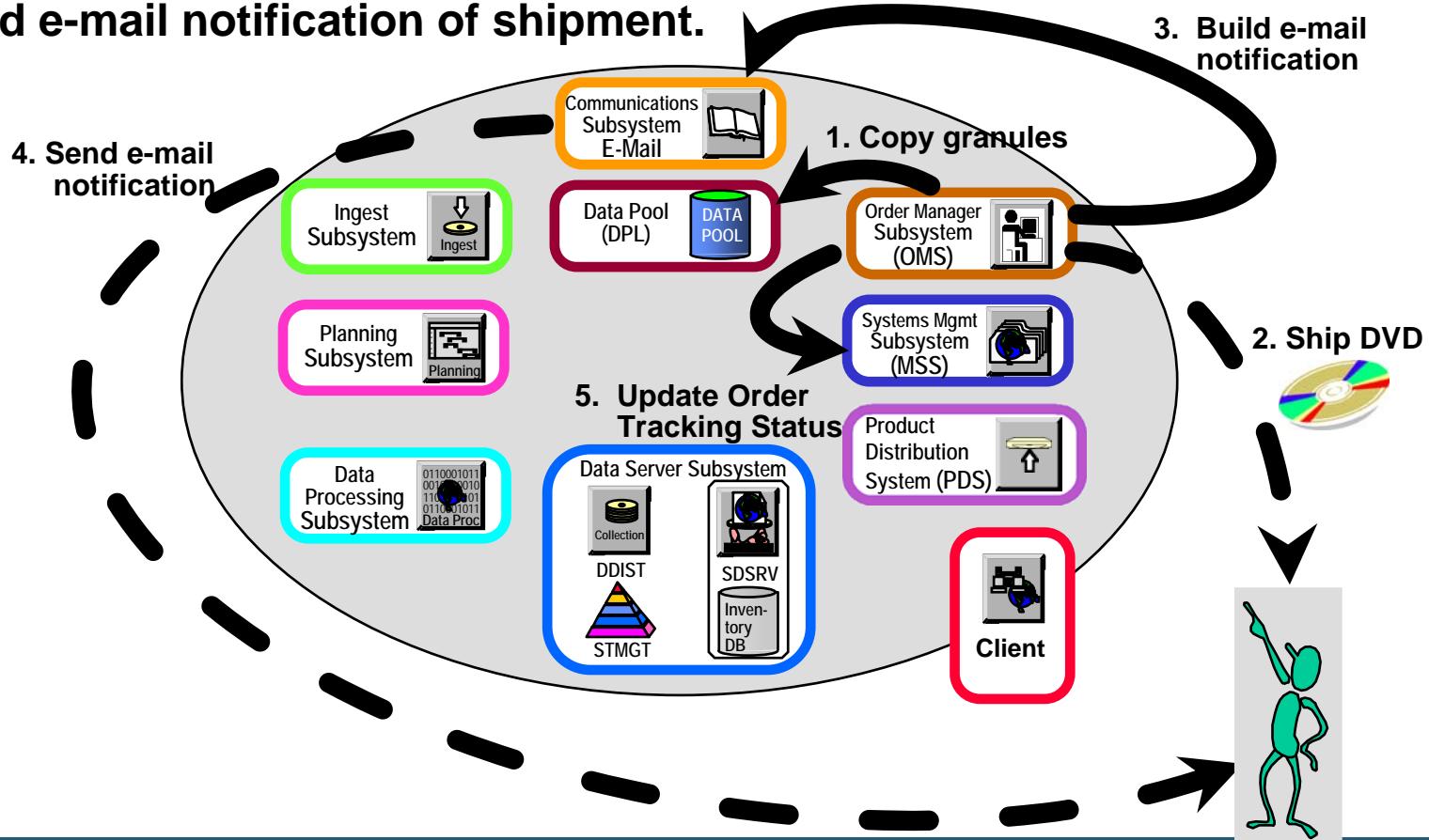
Request for physical media distribution of granules is dispatched to the relevant Production Module; granules are copied to DVD and prepared for shipment to scientist



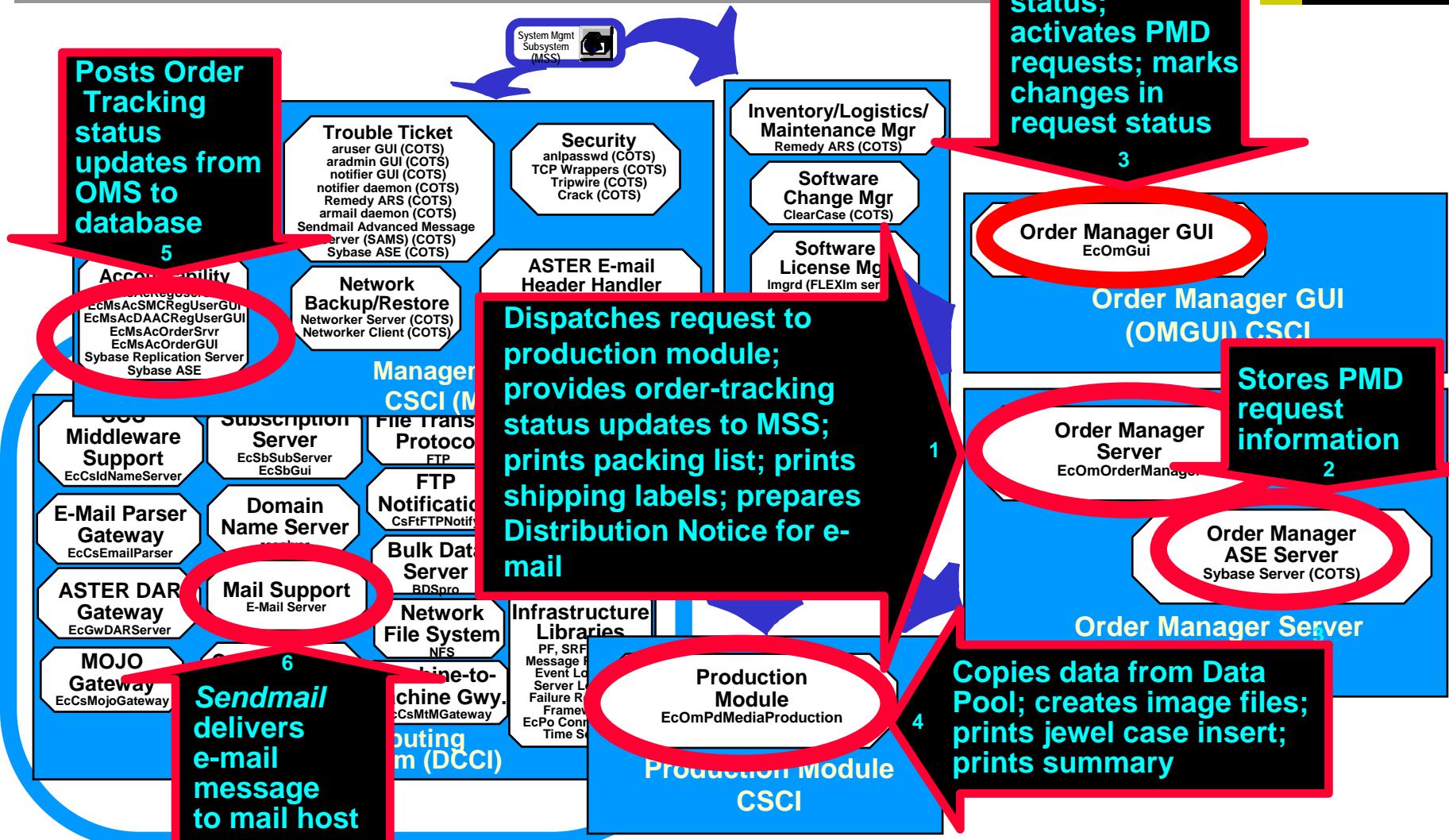
MODIS: DVD Creation/Distribution Process



Dispatch the validated request for MODIS granules to the appropriate production module. Copy granules from Data Pool to DVD. Prepare shipping documents and e-mail notification of shipment. Ship tape to Science User. Send e-mail notification of shipment.



MODIS: CSCI/Component Role in Distribute on Physical Media





Summary

- Thirteen subsystems
- Special Access: ASTER
 - DAR
 - Expedited Data Support
- Data Transfer from External Provider to ECS
 - DTF-2 Tape Ingest
 - Polling Ingest
- Planning and Data Processing
 - Standing Orders
 - On-Demand Processing: Chaining
 - QA Update



Summary (Cont.)

- **Data Access and Distribution**
 - User Registration
 - Archive Data Search
 - Electronic Distribution
 - Data Pool Search
 - Media Distribution



References

- 305-EMD-001, *Release 7.10 Segment/Design Specification for the EMD Project**
- 313-EMD-001, *Release 7.10 Internal Interface Control Document for the EMD Project**

*Note: These documents are available on EDHS (<http://edhs1.gsfc.nasa.gov>).