GWP-T-x05-00000
Host Software Framework

CNES - Products & Ground Segments Department

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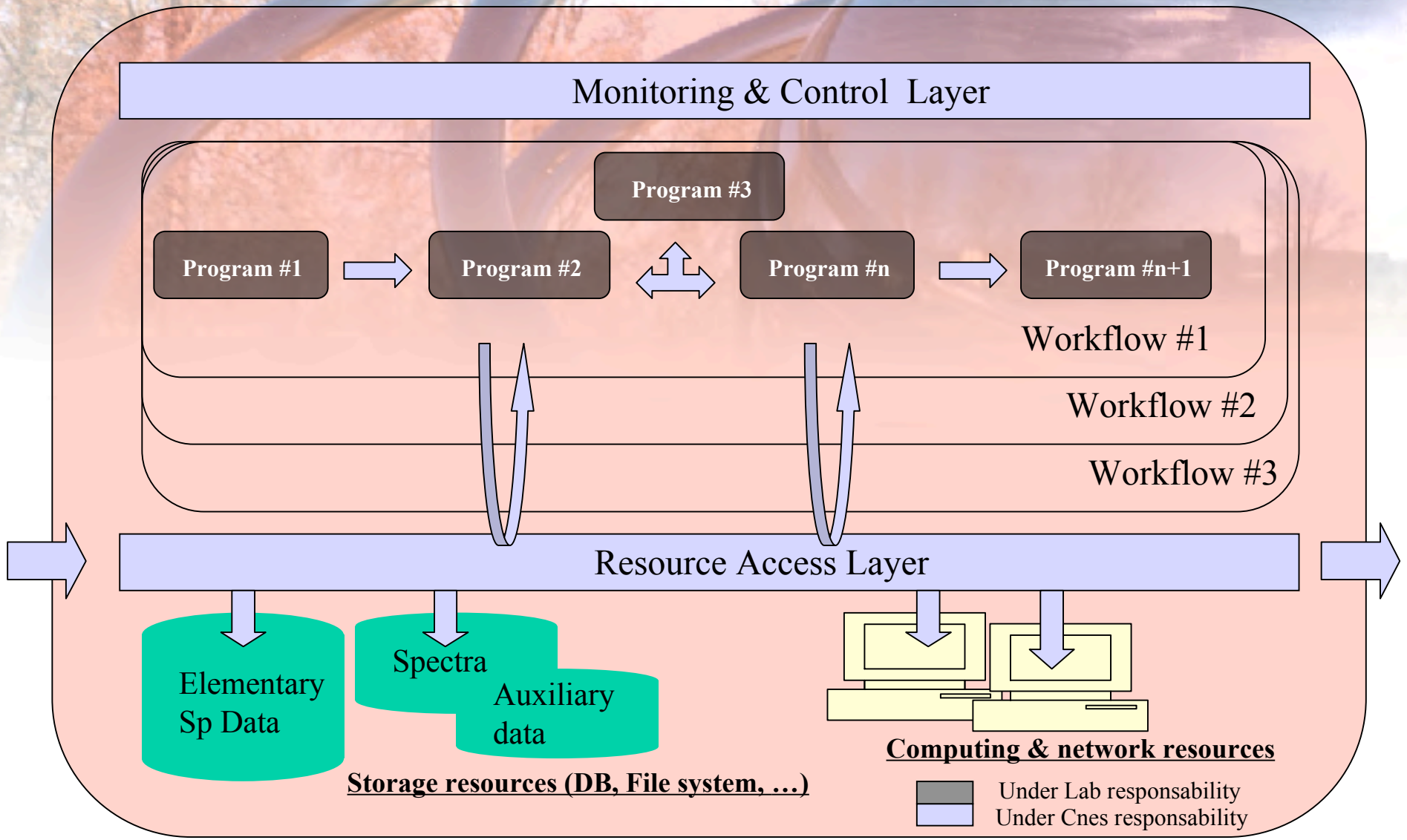
What is an “host software framework” ?

- An ' Host Software Framework' has to facilitate the integration of diverse software programs and their execution in an operational context : while the programs will be developed by different researchers according to common rules, the framework will provide common services and api for a seamless integration of those programs into a unified software system.
- By separating out functions such as data load and store, monitoring, execution, … the framework lets a programmer concentrate on developing the core code.
- The framework can be considered as software components, to be designed, developed and tested.

Host Software Framework Overview



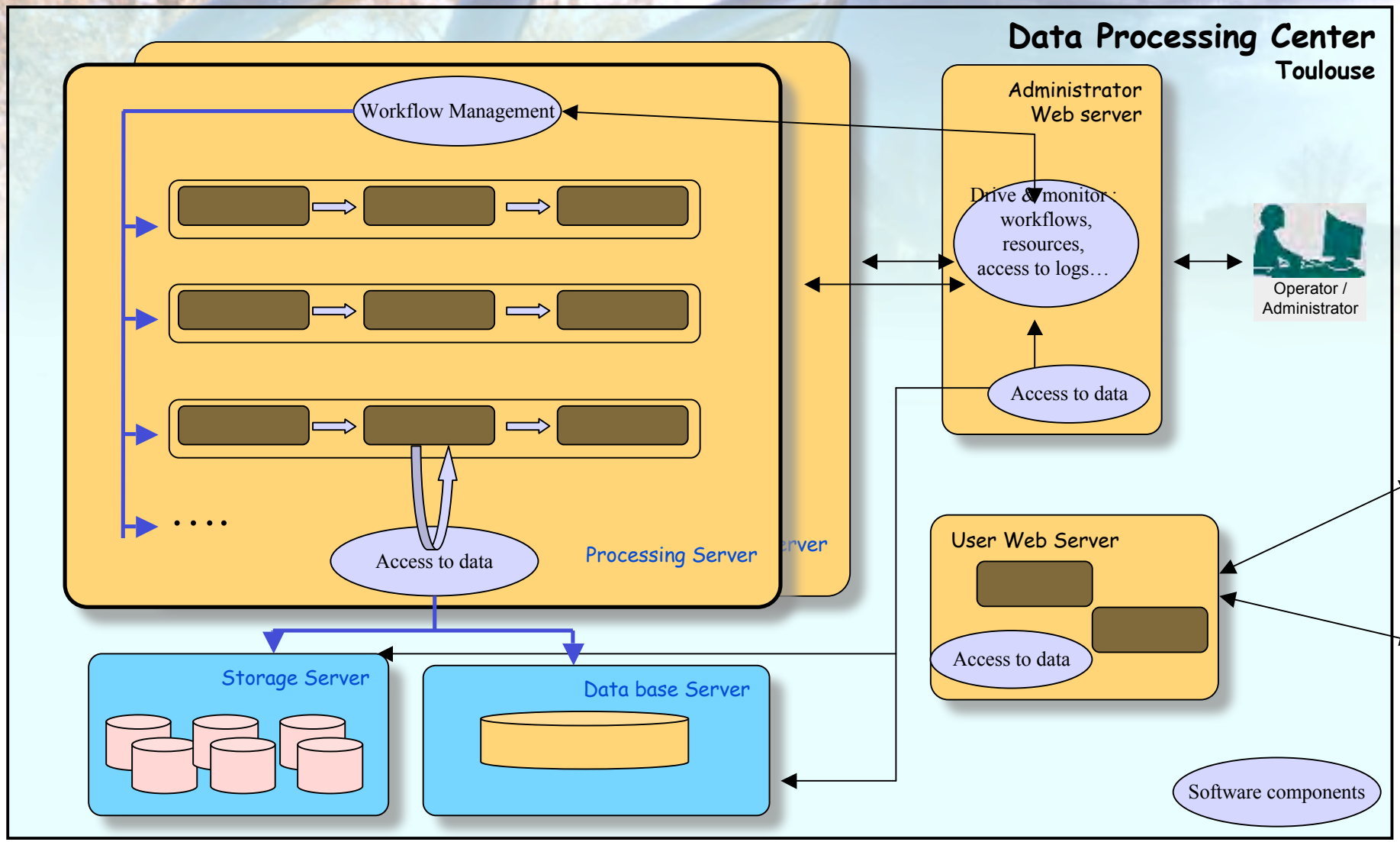
Main functions (1)

- Invoke program execution in an automatic mode into nominal/degraded workflows. For that, the framework will offer diverse services such as :
  - **Workflow definition (defining each sequence of software programs – in static/dynamic mode)**
  - **Workflow execution (by invoking scientific software) -> implement workflow engine, scheduling tools, …**
  - **Workflow follow up : process status, event logging, …**
- Provide “service interfaces” :
  - **“Data access layer” from the scientific software programs -> Implement API to access to data base, flat files, … (ingestion, extraction, updating, …),**
  - **“External data access layer” from/to the Gaia main database,**
  - **“CPU access layer” to submit jobs, process -> Implement API to invoke CNES computational resources (job scheduler),**
  - **…**
- Implement a logic model of data into the DBMS suitable for processing,
- Implement if necessary distribution of storage, computational machines, …
- Based over infrastructure components (file system, data exchange service, DBMS services, other COTs, ….).

User functions (2) : “operator” view point

- For Cnes operation staff :
  - **Provide MMI for operation staff requirements**
    - **Drive and monitor workflow execution,**
    - **Fetch event logs,**
    - **Interact with the system in operation,**
    - **….**
  - **Have a reference host software framework to receive and test new version of software units before integrating software programs into the system in operation.**
- For scientific expert staff :
  - **Provide MMI to operate quality checks (First look)**
  - **TBD**

A first simplified schema …



GWP-T-610-10000 – List of activities (C6/C4/C8)

- ✓ **Gather requirements,**
- ✓ **Specify functions, performance, … (functional analysis, Software Requirements Specification),**
- ✓ **Study technical feasibility (breadboard model ?) – COTS assessment, …**
- ✓ **Sub contract development – Follow up, acceptance**
- ✓ **Implement step by step "critical" software components.**

- ✓ **Planning : 2006-2009**
  Host framework integration rules will be soon defined (4Q 2006) in order to have:
  - ✓ Easy tasks scheduling definition (scientific workflow),
  - ✓ For a distributed host infrastructure (cluster-like approach based on job scheduling)
  - ✓ Common API and Services (Data access, Logging …)
  - ✓ Easy configuration of scientific programs in order to facilitate global optimisation (data location and access, range of objects, …)

COTS : Commercial-Off-The-Shelf