France Grilles Operations: proposal for a sustainable model

1. Key principles

Assessment of France-Grilles setup phase (May 2010 – February 2011) has highlighted the need for a better clarification of responsibilities and tasks. To achieve that, we propose to decompose France Grilles Operations into:
- infrastructures (What are our tools)
- tasks (what do we do with them)
- roles (who does what)

2. Infrastructures: what are our tools?

2.1. Our definition of "infrastructure"

Infrastructure is the basic physical and organizational structure needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function (source: Wikipedia). In the context of this document we call "infrastructure" a set of machines (hardware) and services (software) that are used together to answer to a specific need.

2.2. Foundation infrastructures

We call "foundation infrastructures" the infrastructures running grid middleware and that provide the base of the Grid, or emulate it for testing or training purposes. They are clearly identified as:
- **Production infrastructure**: the set of machines and services providing a production grid service;
- **Test infrastructure**: the set of machines and services providing a base for testing new resources, middleware and components;
- **Training infrastructure**: the set of machines and services providing a base for training new users and administrators alike;
- **Network infrastructure**: the set of machines and services providing the necessary network connections in order for the above to work.

2.3. Control infrastructures

We call "control infrastructures" the infrastructures built to operate, facilitate, control, supervise or assess the activity of the foundation infrastructures. They are identified as:
- **Monitoring infrastructure**: the set of machines and services for monitoring the status of resources and services from the foundation and control infrastructures; *e.g. nagios box*
- **Accounting infrastructure**: the set of machines and services for measuring and reporting the usage of resources from the foundation infrastructures; *e.g. national accounting DB*
- **Security infrastructure**: the set of machines and services for facilitating the enforcement of security policies and procedures on the foundation and control architectures; *e.g. national pakiti server*

- **Tools infrastructure**: the set of machines and services for facilitating operations, support and communication on and between the foundation and control architectures; *e.g. helpdesk, wiki, mailing lists*
- **Certification authority (CA) infrastructure**: the set of machines and services for providing users with credentials to use the foundation and control architectures. *e.g. CA servers*

2.4. Infrastructures: summary and overall view
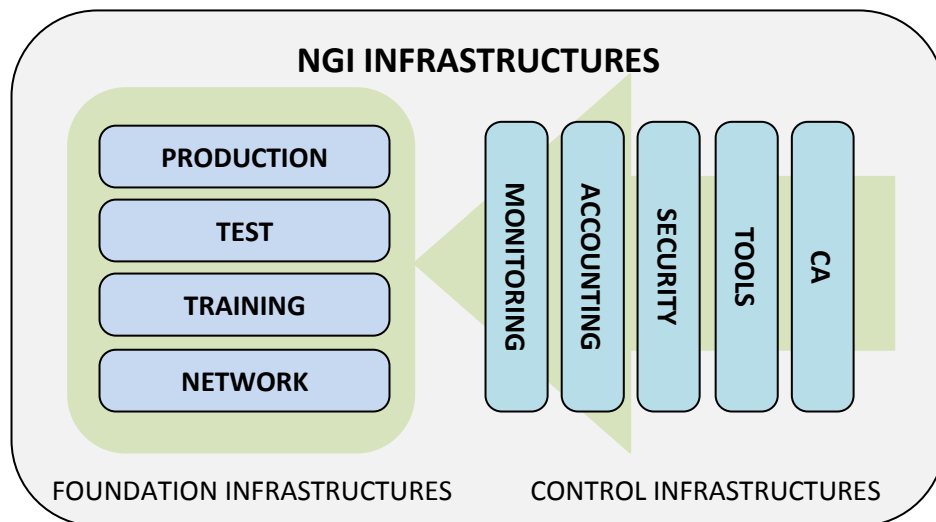
Fig.1: Representation of France Grilles Infrastructures

3. Tasks: what do we do with our tools?

3.1. Separation and grouping

There are many ways of logically separating and grouping tasks. The methodology we have chosen groups them:
- **Thematically:** tasks in the same topic will have common high level objectives.
- **Functionally or hierarchically:** tasks at the same level or within the same function will have similar types of responsibilities.

3.2. Group of tasks

3.2.1. Infrastructures tasks

The aim of this set of tasks is to **provide, administer and maintain our infrastructures**. Tasks can be grouped in two categories:
- **Hosting tasks**: provide the machines, install them, ensure their availability, maintain and upgrade hardware.
- **Service administration tasks**: install the relevant software/middleware, configure it, administrate the service, maintain and upgrade software.

Hosting tasks have to be done by the hosting structure (e.g. site), and quality of service has to be guaranteed at this level.
Administration tasks can be done by the hosting structure as well, but can also be delegated. In this case, hosting structure has to ensure that those to whom the task is delegated to have the means to

perform it: access to the machines, proper administration rights, conformance to security policies etc.

3.2.2. Thematic tasks

Thematic tasks are, in contrast to infrastructure tasks, centered on high level operational objectives: their aim is to provide **controlled, reliable, secure, stable and usable infrastructures**, as well as to **establish and maintain contact between operations and other activities or bodies**.

These tasks have to be grouped into **topics**. Examples of topics are: monitoring activities, security operations, accounting activities, site certification, resource allocation …

3.3. Levels

3.3.1. Strategic coordination

This is the top coordination and supervision level that has responsibility for:
- The definition of strategies and long term plans
- Coordination with partners outside the scope of NGI operations (e.g. EGI, EMI, EUGridPMA…)
- Intra- and inter-activity coordination as well as coordination of infrastructure tasks
- The definition and exploitation of indicators and metrics for all activities

3.3.2. Technical supervision

The technical supervision level has responsibility for:
- The definition of technical plans to implement strategic plans
- The supervision of this implementation
- The establishment of indicators and metrics for the relevant activity
- Watch activity on technological evolutions

3.3.3. Implementation

The implementation level corresponds to the realization of the technical plans. This namely includes development, day-to-day operations and procedures.
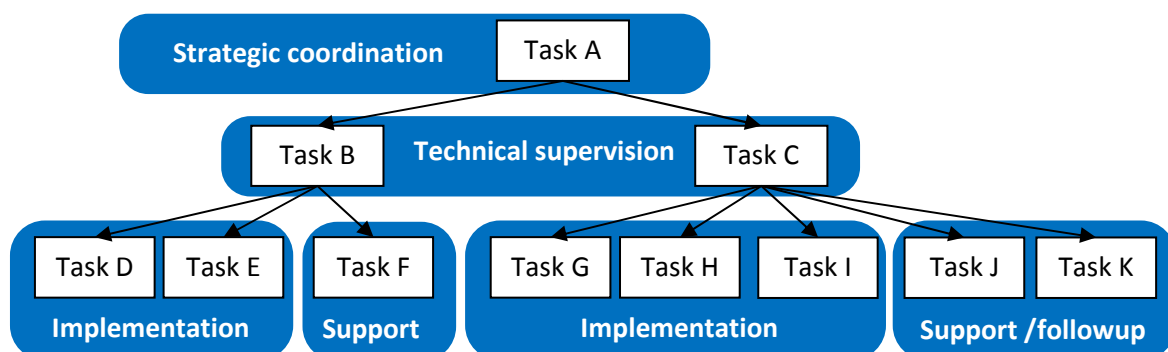
3.3.4. Support and follow-up

The support and follow-up level has responsibility for:
- Following up incidents
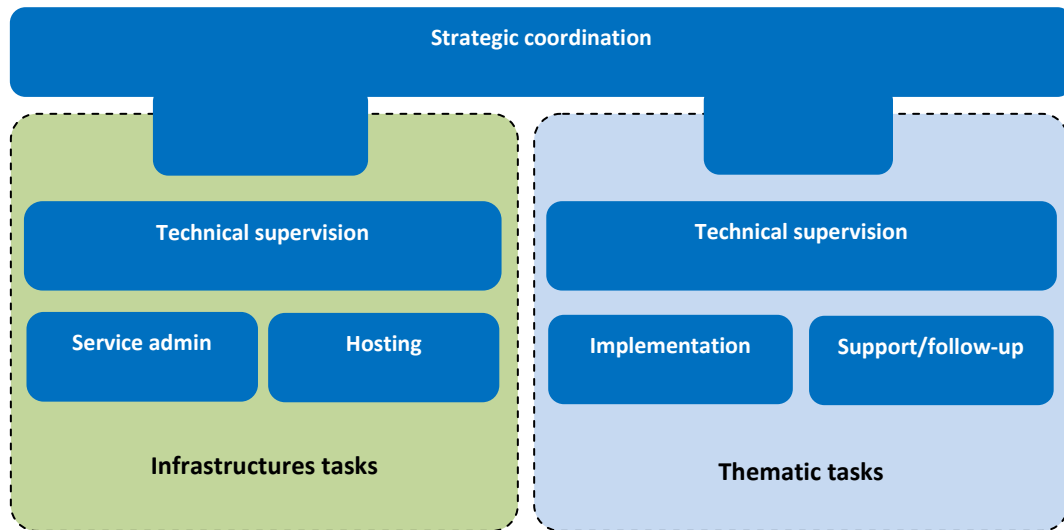- Providing expertise and support to sites and users

3.3.5. Hierarchy of tasks in a given topic

There is a hierarchical dependency between the first levels, but "implementation" and "support and follow-up" appear at the same hierarchic level (see fig.2)

Fig.2: Hierarchy between tasks according to their level

3.4. Tasks: summary and overall view

Fig.3: representation of France Grilles tasks

4. Roles: Who does what?

4.1. Roles definition

We define a role by a set of functions and a given level of responsibilities with regards to a specific task or set of tasks. A given person can have many roles, and a given role can be taken by more than one person. The following list of roles can be extracted from daily operations:
- Strategic coordinator
- Technical supervisor
- Technical Expert
- Developer/producer/executor
- Helper/Supporter
- Service administrator
- System administrator

4.2. Responsibilities associated to roles

4.2.1. Used formalism: RACI matrix

We propose to define responsibilities associated to roles for a given topic according to a formalism known as RACI: A Responsibility Assignment Matrix describes the participation by various roles in completing tasks or deliverables for a project or business process. It is especially useful in clarifying roles and responsibilities in cross-functional projects and processes. *(Source: Wikipedia)*
RACI is an acronym derived from the four key responsibilities most typically used:
- **Responsible**: Those who do the work to achieve the task.
- **Accountable** (also Approver or final Approving Authority): The one ultimately answerable for the correct and thorough completion of the deliverable or task, and the one from whom Responsible is delegated the work.
- **Consulted**: Those whose opinions are sought, typically subject matter experts
- **Informed**: Those who are kept up-to-date on progress, often only on completion of the task.

4.2.2. RACI matrix for infrastructure tasks

We define responsibility assignment for infrastructure tasks as follows:

| Task Level	Roles				
	🔴 strategic coordinator	🙂 technical supervisor	🔵 service admin	🟢 system admin	🙂 technical expert
Strategic coordination	R, A	C	I	I	C
Technical supervision	A	R	C, I	I	C
service administration	I	A	R	C, I	C
hosting	I	A	C, I	R	C

4.2.3. RACI matrix for thematic tasks

We define responsibility assignment for thematic tasks as follows:

Task Level	Roles				
	🔴 strategic coordinator	🙂 technical supervisor	🔵 developer/ producer	🟢 Helper/ supporter	🙂 technical expert
Strategic coordination	R, A	C	I	I	C
Technical supervision	A	R	C, I	I	C
Implementation	I	A	R	C, I	C
Support and followup	I	A	C, I	R	C

5. Overall view of the model

NGI operations provide services on top of its infrastructures. Its internal organization defines tasks and roles. TO BE CONTINUED
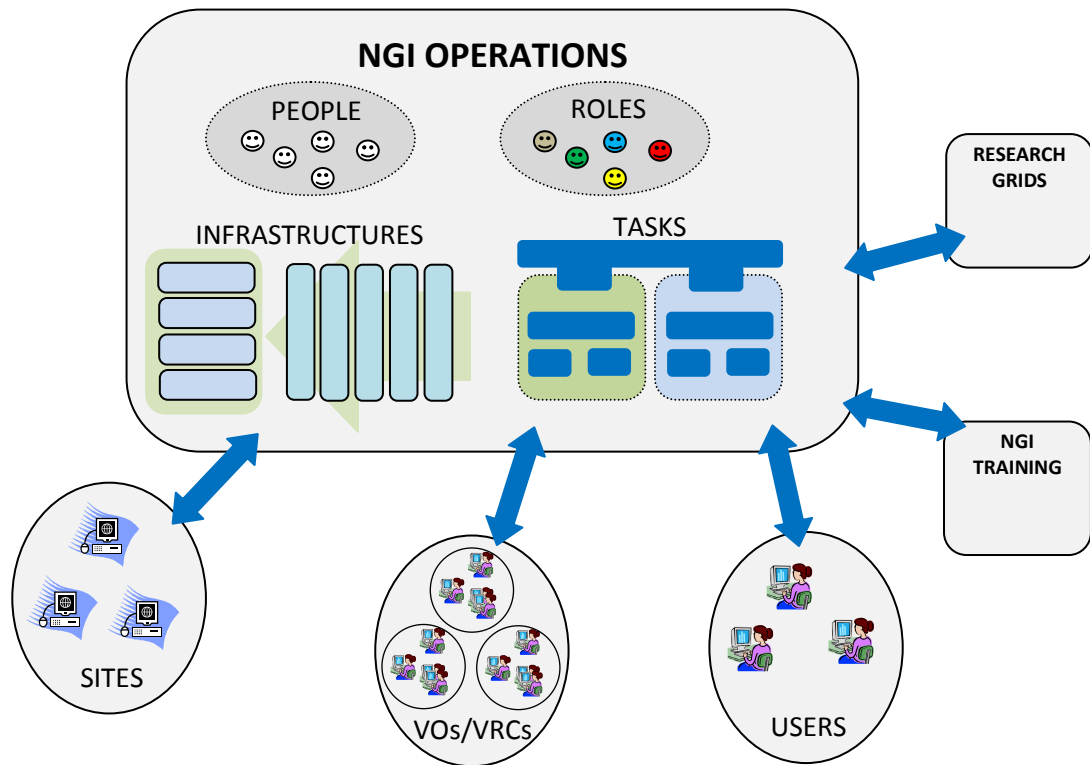
Fig.4: overall view of France Grilles operations in their context