

VirgoLab Organisation Proposal

Virgo week plenary meeting 7 November 2024

EGO-VIRGO implementation committee

Outline

- EGO-Virgo Implementation committee
- Identification of top priorities
- VirgoLab Organisation Proposal
 - VirgoLab purpose and organisation
 - Organigram
 - Projects and technical teams
 - Governance bodies: EB, TC, Virgo Board of Pls
 - Management positions: EGO Director, EGO-Virgo Programme manager
 - Resources and Resources review procedure
- Next steps

EGO-Virgo Implementation Committee

Aim for the committee: preparing the implementation of the recommendations from the Organisational review report. EGO Council is the implementation owner.

Implementation Committee members:

- From EGO Council: Marco Pallavicini, Vincent Poireau, Jorgen D'Hondt;
- EGO Director: Massimo Carpinelli;
- Virgo spokesperson: Gianluca Gemme;
- Bureau members: Ursula Bassler (chair of the committee), Rosemarie Aben (vice-chair and scientific secretary), Franco Carbognani (EGO representative), Viola Sordini (Virgo representative), Tjonnie Li ('New Virgo member' experience).

Additionally, there are three senior advisors from the Virgo collaboration: Benoit Mours, Fulvio Ricci, Jo van den Brand.

First meeting of the committee: 29 August 2024, since then weekly Bureau meetings and one general meeting (2 October). Next general meeting: 25 November.

Top priority implementation

Based on the classification and the Organisation Review Report we extracted four top priority implementations:

- Creation of VirgoLab;
- Implementation of Executive Board;
- Implementation of Technical Committee;
- Transformation VSC to Collaboration Board and creation of VirgoLab Board of Pls.

N.B. All other recommendations will be implemented in due time, but we cannot do it all at once.

VirgoLab Organisation Proposal

We have written a proposal document for the organisation of VirgoLab to define exactly what will be implemented.

The draft document reflects work in progress.

We will discuss its content during this presentation and share the updated document with the Virgo collaboration after the next Implementation Committee meeting (end of November).

The VirgoLab organisation proposal is based on the current structure of the Virgo collaboration, yet a future transition to IWGN is taken into account.

VirgoLab Organisation

VirgoLab purpose

VirgoLab is mandated by the EGO Council for the **production of calibrated, high-quality strain gravitational wave data**, obtained with the Virgo Interferometer and to be provided to the Virgo Collaboration with sensitivities and timelines comparable to the data of the LIGO gravitational wave observatories.

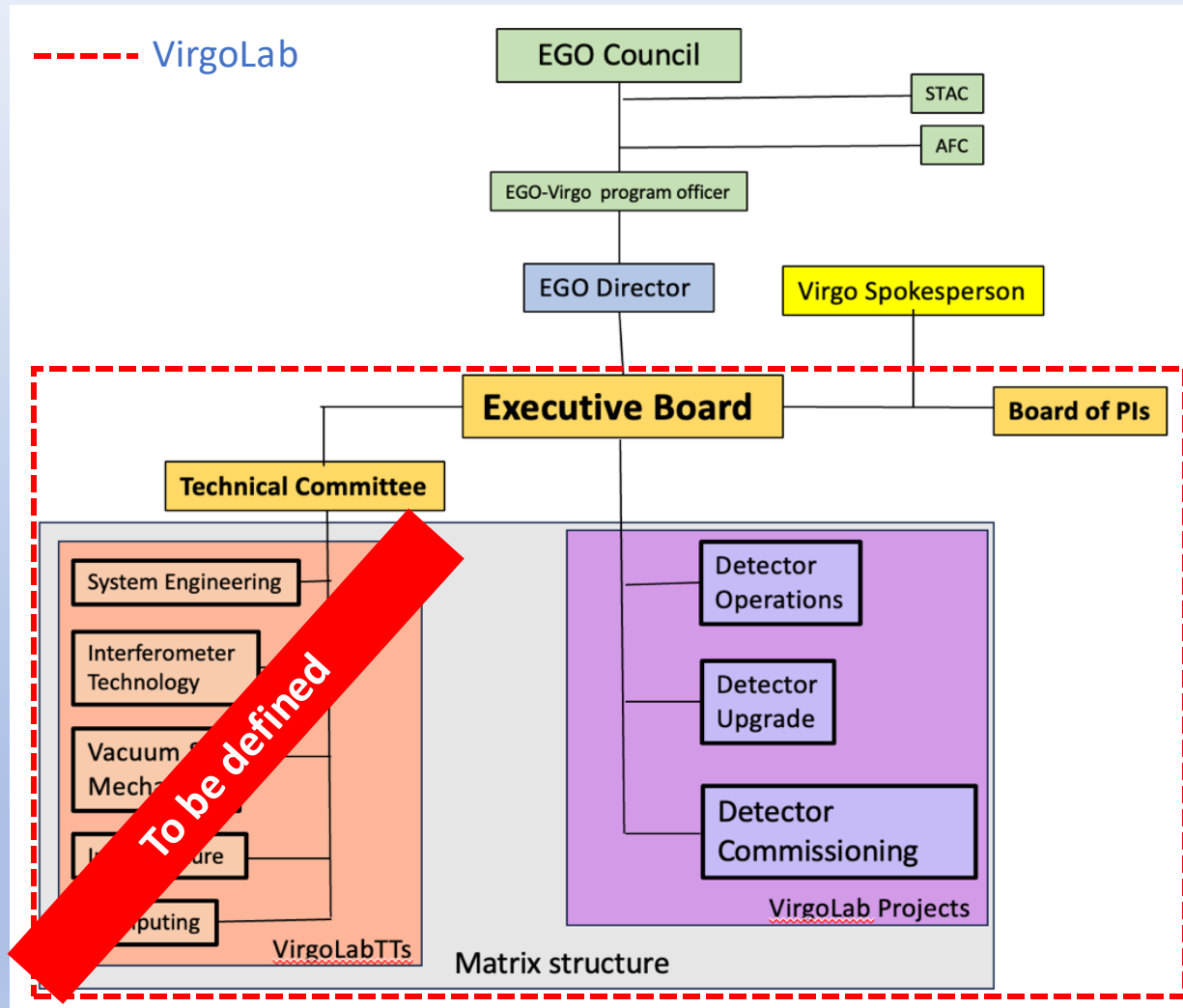
The creation of VirgoLab is inspired by LIGOLab, the operating structure of the US gravitational wave antennas, yet taking into account the differences arising from the European funding structure and research landscape.

VirgoLab is meant to also fit into the future situation with IGWN.

VirgoLab organisation

- VirgoLab is set up as a **distributed laboratory** to enable joint operation, commissioning and upgrades by EGO and External Labs (i.e. Virgo laboratories, institutes and university departments);
- VirgoLab consists of **personnel from EGO and from the External Labs**;
- VirgoLab is **hosted by EGO** and embedded into EGOs organisational structure;
- The organigram of VirgoLab, sketched by the Organisational Review Committee, is proposed to be implemented as a **strong matrix organisation**;
- Strong matrix organisation: **individuals work in functional units** (technical teams, TT) and are at the same time committed to **contribute their technical expertise to one or more projects**. It balances the functional responsibilities within each VirgoLab TT with the specific needs of each VirgoLab Project.
See the back-up slides for more information on matrix organisations.

VirgoLab organigram



Detector Upgrade, Operations and Commissioning are organised as VirgoLab Projects, supported by VirgoLab Technical Teams (functional units) that focus on the core technical areas.

N.B. Technical teams are not the same as the EGO departments.

Future links with IGWN will be defined.

VirgoLab Projects

The projects require collaboration across the VirgoLab Technical Teams, leveraging expertise and human resources from each.

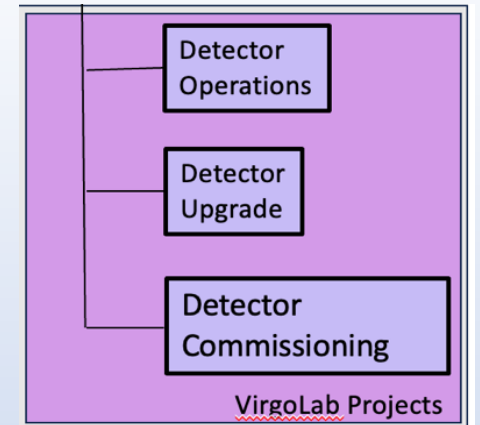
Each project will be led by a Project Coordinator (and possibly a deputy):

- They manage all aspects of the project: planning, resource allocation, execution and delivery;
- They direct personnel on tasks related to project deliverables, deadlines, and milestones, in agreement with the MoA with the concerned External Labs;
- They are responsible for using the workmanship standards that are formulated by the Technical Teams.

Procedures concerning the Project Coordinator:

- The Project Coordinators are proposed by the EGO Director, presented to the VirgoLab Board of PIs and approved by EGO Council;
- The Project Coordinators are appointed for a renewable fixed term (same term as the EGO director).

Personnel participating in a project will report to their Project Coordinator for project-specific work.



VirgoLab Technical Teams

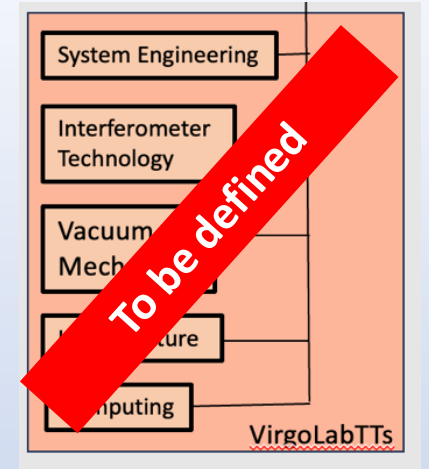
The VirgoLab Technical Teams (TTs) bring together all the technical expertise required for a well-functioning Virgo interferometer.

Key responsibility of VirgoLab TTs: Definition of workmanship standards that ensure consistency, quality benchmarking, and risk reduction in project outputs.

Each VirgoLab TT is led by a Team Leader (and possibly a deputy):

- They coordinate the functional expertise and resources of the team;
- They ensure that the defined workmanship standards are applied in all projects;
- They are responsible for training and competence development of the TT members (in collaboration with the External Lab or EGO department);
- The VirgoLab Team Leaders are appointed by the EB.

Each member of a VirgoLab TT will report to their Team Leader on their activities and for their technical development and skill training.



Initial structure, to be further defined by EB.

Governance bodies

Executive board (1/3)

Key responsibilities:

- **Operational and Upgrade Decisions:** The EB takes all decisions concerning the operation, commissioning and upgrades of the Virgo interferometer;
- **Resource loading:** The EB establishes the necessary resources for the projects and manages the available resources to reach the best performances of the Virgo Interferometer;
- **On-site equipment:** The EB is responsible for all equipment in the Virgo Interferometer. It will take over the responsibility from the External Lab as soon as the equipment is inserted into the Virgo Interferometer.

Executive board (2/3)

Composition:

- EGO Director (Chair);
- Upgrade Coordinator;
- Commissioning Coordinator;
- Detector Operation Coordinator;
- Technical Committee Chair;
- Virgo Spokesperson;
- Chair of the VirgoLab Board of Pls.

The composition must ensure that all aspects of Virgo's operation and future upgrades are covered by the appropriate expertise.

The members of the EB are on site on a regular basis, typically a few days a week and more if the situation requires it. (EGO Council should define exactly what 'regular basis' means)

Executive board (3/3)

EB Chair:

- The EB is chaired by the EGO Director

Meetings:

- The EB meets on a weekly basis. In case of critical and urgent matters, the EB meets as frequently as necessary.

Decision-making:

- The EB is committed to striving for consensus in its decisions;
- In the event that the EB cannot reach consensus on a particular issue the EGO Director has the final authority.

Reporting:

- The EGO Director reports to the EGO Council on the decisions of the EB;
- The members of the EB report the relevant decisions to the entities they are responsible for.

Technical Committee (1/3)

Key responsibilities:

- **Technical Advice:** Review and recommend on technical proposals, system performance, and upgrade plans;
- **Risk Management:** Assess and advise on technical risks and mitigation strategies;
- **Technical Coordination:** Ensure effective collaboration between technical teams and VirgoLab Projects;
- **Oversight of Training and Safety procedures:** Responsible for the adequate training and safety procedures to be in place;
- **Coordination TTs:** Responsible for the coordination among the different VirgoLab TTs.

Technical Committee (2/3)

Technical Committee

Composition:

- Technical Committee Chair;
- VirgoLab Technical Team Leaders;
- Additionally, experts are invited to the meetings when necessary.

The Technical Committee Chair is normally appointed by the EB from among the VirgoLab Team Leaders.

Technical Committee (3/3)

Meetings:

The TC meets on a monthly basis, additional meetings can be scheduled as needed, in particular on request of the EB.

Decision-making:

- The TC seeks consensus for the advice it provides, but all perspectives are presented to the EB;
- In case no consensus can be reached, the Technical Committee Chair has the final authority;
- Final decision-making rests with the EB and the EGO Director.

Reporting:

- The TC reports directly to the EB, providing technical recommendations;
- Decisions taken by the EB or the TC are reported by the Team Leaders to their respective teams.

VirgoLab Board of PIs (1/3)

Board of PIs

The Board of PIs is the representation of the groups (External Labs + EGO) contributing to VirgoLab.

Key responsibilities:

To be defined: the minimum contribution to be represented in the Board of PIs.

- **Resource Review Process** (discussed in detail on slide 26)
 - The Board receives an annual report on the use of the resources provided by the External Labs to VirgoLab;
 - It reviews the resource requested for the upcoming year;
 - It liaises with the funding institutions for pledges of resources to be provided from the External Labs to VirgoLab.
- **Membership:** The Board of PIs is responsible for examining the participation of new groups to VirgoLab and oversees the establishment of the MoA between EGO and a new group.
- **Personnel Matters:**
 - The Board is represented in the search committee of the EGO director;
 - The Board expresses its vision on a geographically balanced scientific representation in IGWN in advance of the selection of the IWGN Spokespersons.
- **Technical publications:** the Board is responsible for the authorship policy.

Note: The Board of PIs plays an important advisory role, but it does not interfere with the operational chain of command.

VirgoLab Board of PIs (2/3)

Board of PIs

Composition:

- The PIs of the groups (External Labs + EGO) contributing to VirgoLab (The PIs in the Board are appointed by the External Labs themselves)
- The EGO Director and the Virgo spokesperson attend the meetings.

The Board elects a chair amongst its members.

The VirgoLab Board of PIs may introduce sub-committees, e.g. for publication policy matters, memberships, etc

VirgoLab Board of PIs (3/3)

Meetings:

The Board of PIs typically meets three to four times a year.

Decision-making:

- The Board of PIs strives for consensus in its decision-making (on matters such as the approval of the annual report, membership, personnel matters, election of its chair);
- Voting rules have still to be defined (i.e. simple majority, qualified majority).

Reporting:

While advisory in nature, the Board's feedback is communicated to the EB through the Chair of PIs to ensure that the perspective of the External Labs is considered in strategic decisions.

Management positions

EGO Director

EGO Director

Key responsibilities:

- The EGO Director has the final authority on all decisions concerning the operation and maintenance of the Virgo interferometer;
- They take ultimate responsibility for the success or failure of Virgo's mission;
- They are the chair of the VirgoLab Executive Board (EB);
- They are in charge of leveraging expertise and resources from the External Labs (together with Council representatives, the chair of board of PIs and the Spokesperson).
- They represent VirgoLab in EGO Council.

Mandate and appointment:

- The Director's term is fixed and renewable once, with the renewal decision being taken by the EGO Council, in consultation with the Board of PIs;
- The EGO Director is appointed by EGO Council after an international recruitment process operated by a search committee.

Reporting:

- The EGO Director reports to the EGO Council. They attend EGO Council meetings. As chair of the VirgoLab EB, they attend the meetings of the Board of PIs.

EGO-Virgo program manager

EGO-Virgo program officer

Key responsibilities:

- The EGO-Virgo Program Officer should insure liaison between EGO Council and the EGO director;
- Their responsibility is mostly focused on VirgoLab, but also include the other EGO activities;
- They follow the activities and decisions of the VirgoLab EB;
- They oversee the implementation of EGO Council decisions, in particular concerning VirgoLab;
- In case of difficulties, they could be the first level of information and exchange, before calling EGO Council.

Mandate and appointment:

- The mandate of the Program Officer is defined by EGO Council;
- The Program Officer will be appointed by EGO Council. The person should have no involvement in the VirgoLab or associated scientific collaboration.

Reporting:

- The Program Officer exchanges on a weekly basis with the EGO director and reports to the EGO Council President.

Resources and Processes

Resources

- The EB and especially the EGO director must have access to resources in order to fulfil their mandate;
- MoAs between EGO and the External Labs will specify the commitment from the External Labs to VirgoLab. There can be two types of commitments:
 - Commitments for resources: financial resources and personnel working for VirgoLab for xx% of their time;
 - Commitments to deliver: e.g. a commitment to build equipment to be inserted into the interferometer.

Resources review procedure - proposal

1. The EGO Director presents the following documents to the Board of PIs:
 - An annual report on the use of the financial and human resources that were provided to EGO and to the External Labs for commitments in VirgoLab;
 - A proposal for the required resources for the coming year;
 - A forecast of the resources required for the next five years.
2. The Board of PIs reviews the requested resources and liaises with their funding agencies to secure the necessary resources for VirgoLab, both financial and human.
3. The EGO director consults the STAC and AFC for feedback on these documents, and adapts them following the feedback;
4. The EGO Director presents the final annual report, proposal of resources for the coming year, and the 5-year forecast, as well as a document summarising the committed pledges of each group to EGO Council;
5. EGO Council approves the documents (after adjustment if necessary) and these then form the basis of the commitment for the following year.

Next steps

Next steps

- The Committee will adjust the VirgoLab Organisation Proposal document according to suggestions raised today;
- The Committee will clarify outstanding issues and processes, and adapt the proposal accordingly;
- The Committee will simulate different models of participation in VirgoLab using the Virgo Member Database (VMD), to define requirements of being member of VirgoLab;
- The Committee will test the proposal using a number of case studies, and propose changes to the proposal if necessary; **Invitation: what cases should be studied?**
- Gianluca, together with the Committee, and after discussion with the VSC, will make a proposal for modified Virgo Bylaws to fit the transition to VirgoLab;
- The updated VirgoLab Organisation Proposal and modified Virgo Bylaws are presented to the Collaboration, VSC and EGO Staff.

Additional material

VirgoLab simulation

SVAC for: Commissioning, Detector, Operations

Showing breakdown for SVAC >= 0.5

Countries	Members Involved	SVAC	
		Total contribution	Avg. contribution / Member
France	89	47.925	0.54
LAPP	20	13.865	0.69
LUTH/CAEN	2	1	0.5
LMA-Lyon	16	9.15	0.57
ARTEMIS-Nice	12	3.76	0.31
APC - Université Paris Cité	6	3.15	0.53
L2IT, Toulouse	2	1.5	0.75
IJCLab	13	5.7	0.44
Institut Fresnel Marseille	5	3.15	0.63
g-MAG	4	1.95	0.49
IPHC Strasbourg	9	4.7	0.52
International	39	29.57	0.76
Spain	17	4.15	0.24
Italy	137	56.06	0.41
Netherlands	39	11.58	0.3
Belgium	11	4.85	0.44
Poland	6	2.9	0.48
Brazil	7	0.45	0.06
Totals	345	157.485	0.46

- Tool to simulate the VirgoLab is now live within the Virgo Members Database (G. Hemming, EGO)
- Shows all groups with at least one SVAC dedicated to Commissioning, Detector or Operations.
- A **dropdown menu** allows to make an additional selection on the individual SVAC.
- The classification of the activities and the numbers declared by members are being reshuffled **don't look at the numbers yet!** We will have a more meaningful version by December EGO council.

1 SVAC = a weekly effort of 35 hours during 46 weeks of a year

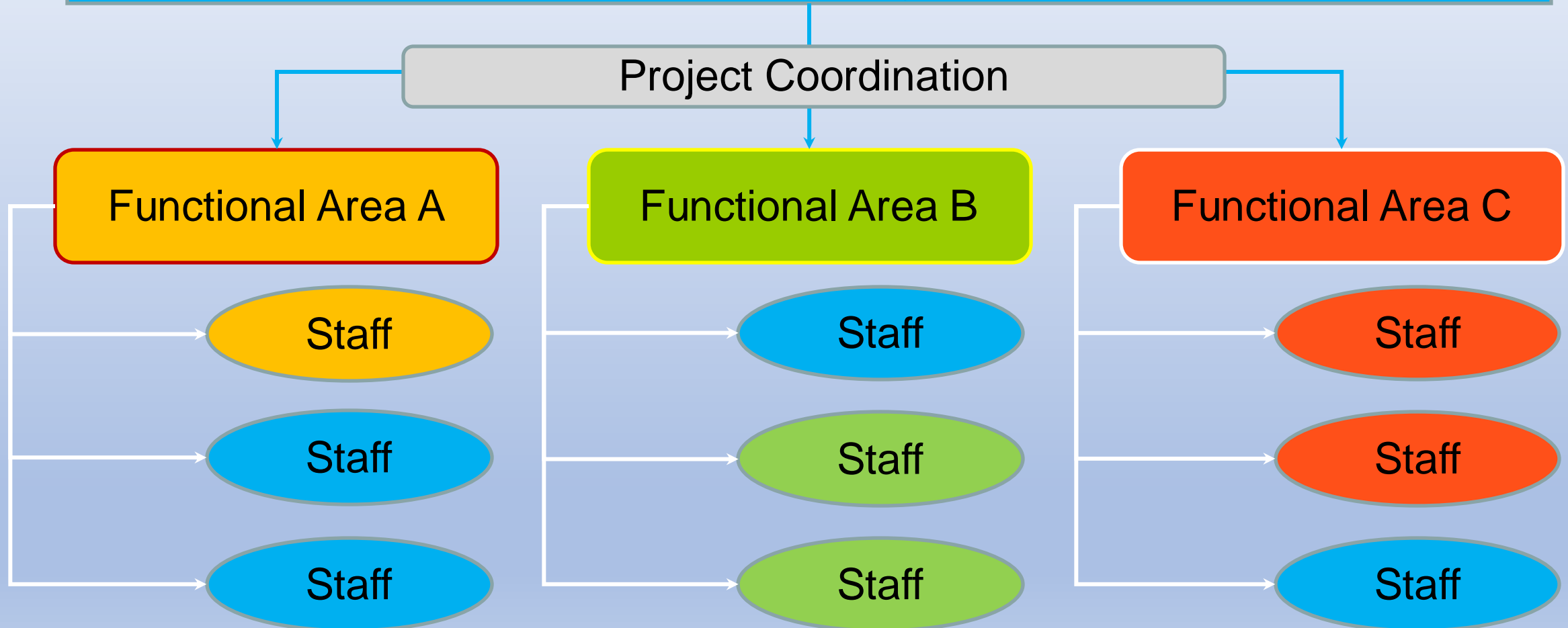
Additional material: Matrix organisation

Functional Organization

- The organization is grouped by area of specialization within different functional areas (electronics, mechanics, systems engineering, etc). In a functional organization, maximum power rests with the functional manager and the project manager's role in decision making is minimal.
- Advantages
 - the career progression of the team member is fully owned by the functional manager.
 - Team members report to only one boss, hence avoidance of conflicts in the chain of command.
 - Similar resources are centralized, hence better synergy within groups
- Disadvantages of functional organization;
 - Preference for functional specialization, at the cost of the project
 - No career path in project management
 - Inadequate integration across different functional areas
 - Conflict and rivalry between functional areas may impede communication
 - No individual has full authority and responsibility for the project. No proper accountability for the project can be expected.
 - Project manager has no authority

Projects in the Functional Organization

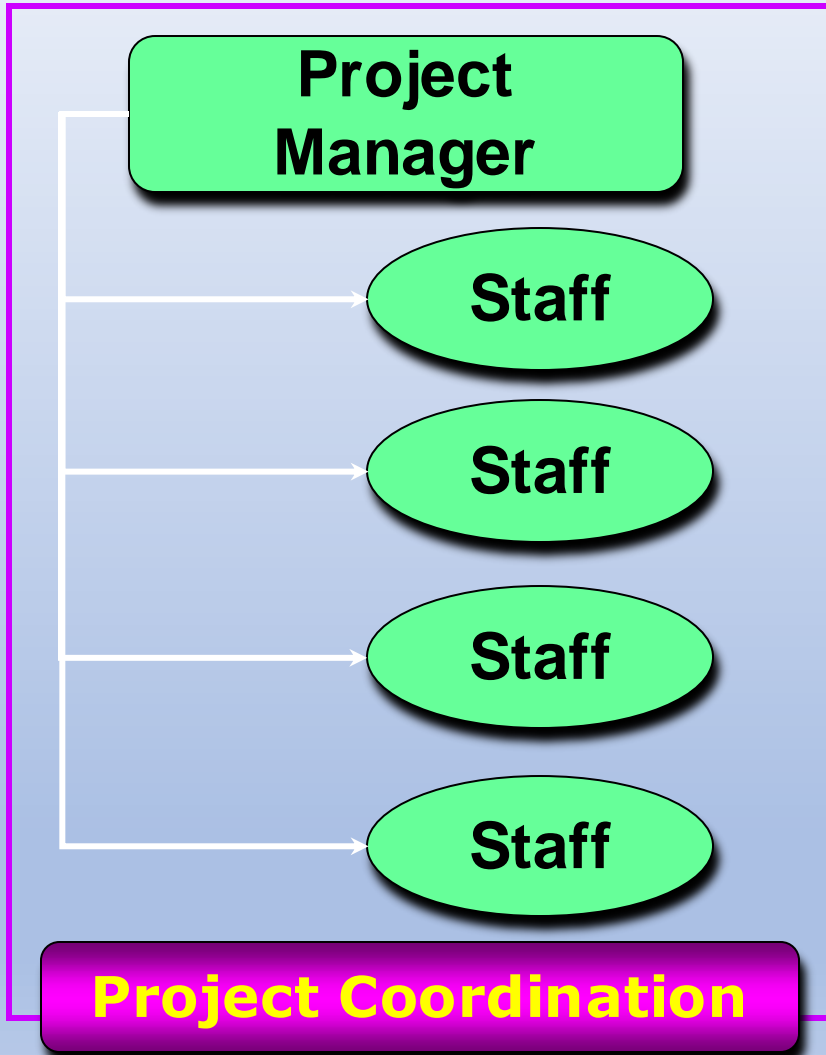
If more than one functional area is involved in a project, the coordination of project activities takes place through the hierarchy



Projectized Organization

- In projectized organization, all the work is considered as a project and the project manager has total control over the projects. Personnel are assigned to and report to a project manager.
- Advantages
 - Team members will be more committed to the project
 - Availability of career paths within the project management stream
 - More effective project related communication
- Disadvantages
 - When the project gets over, the team gets dismantled, hence lack of security leading short term commitments
 - Duplication of facilities and job functions e.g.:- administrative officer for each project, HR coordinator for each project, etc.
 - Less efficient use of resources. Project teams tend to hang on to resources both material and human, even after the need for them.

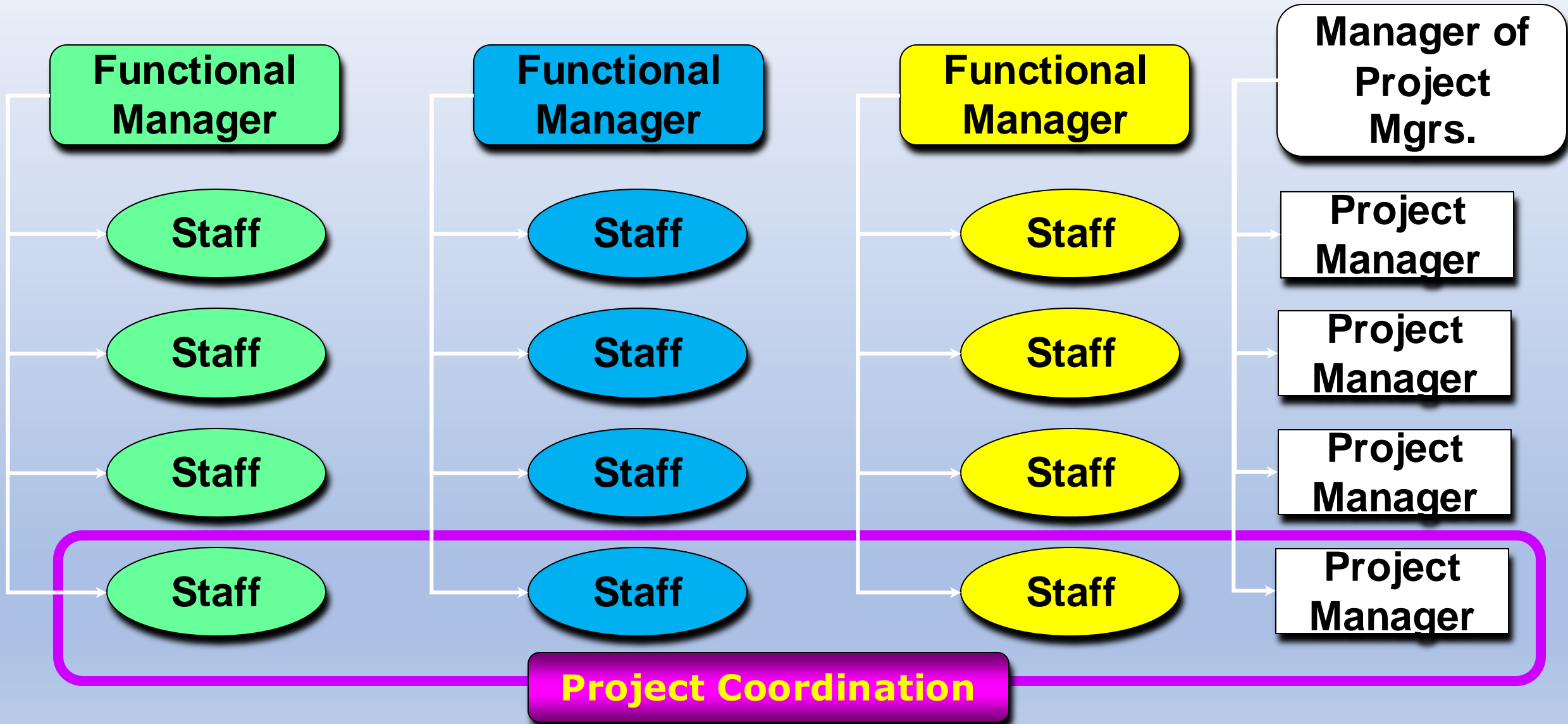
Projects in the Projectized Organization



Matrix Organization

- Matrix organization is a hybrid of both functional and projectized organization, trying to leverage the strength of both. The team members report to two bosses, the project manager and the functional manager.
- In a strong matrix, the power rests with the project manager. In a weak matrix, the power rests with the functional manager. In a balanced matrix, the power is shared between the project manager and the functional manager.
- Advantages
 - More support from functional organizations
 - Allows for the sharing of diverse resources across multiple projects
 - Better horizontal and vertical communication (better than functional)
- Disadvantages
 - More than one boss for project teams, leaving the team members between devil and deep sea, due to conflicts between the project manager and the functional manager
 - More complex to monitor and control, if it spans different locations
 - **there is a potential for conflict between project managers and functional managers**

The (Strong) Matrix Organization



Strong Matrix Organization

- In the “strong” - Matrix a project manager is selected to oversee the completion of the project across the various involved functional levels of the organization.
- The project manager is ultimately responsible for the project’s completion, has final say on major project decisions and controls most aspects of the project, including the assignment of functional personnel, what they do and when.
- The functional managers maintain title over their respective personnel and have consultation rights.
- Advantages
 - ensures a strong project focus by having a project manager who performs a coordinating and integrating role across functional areas

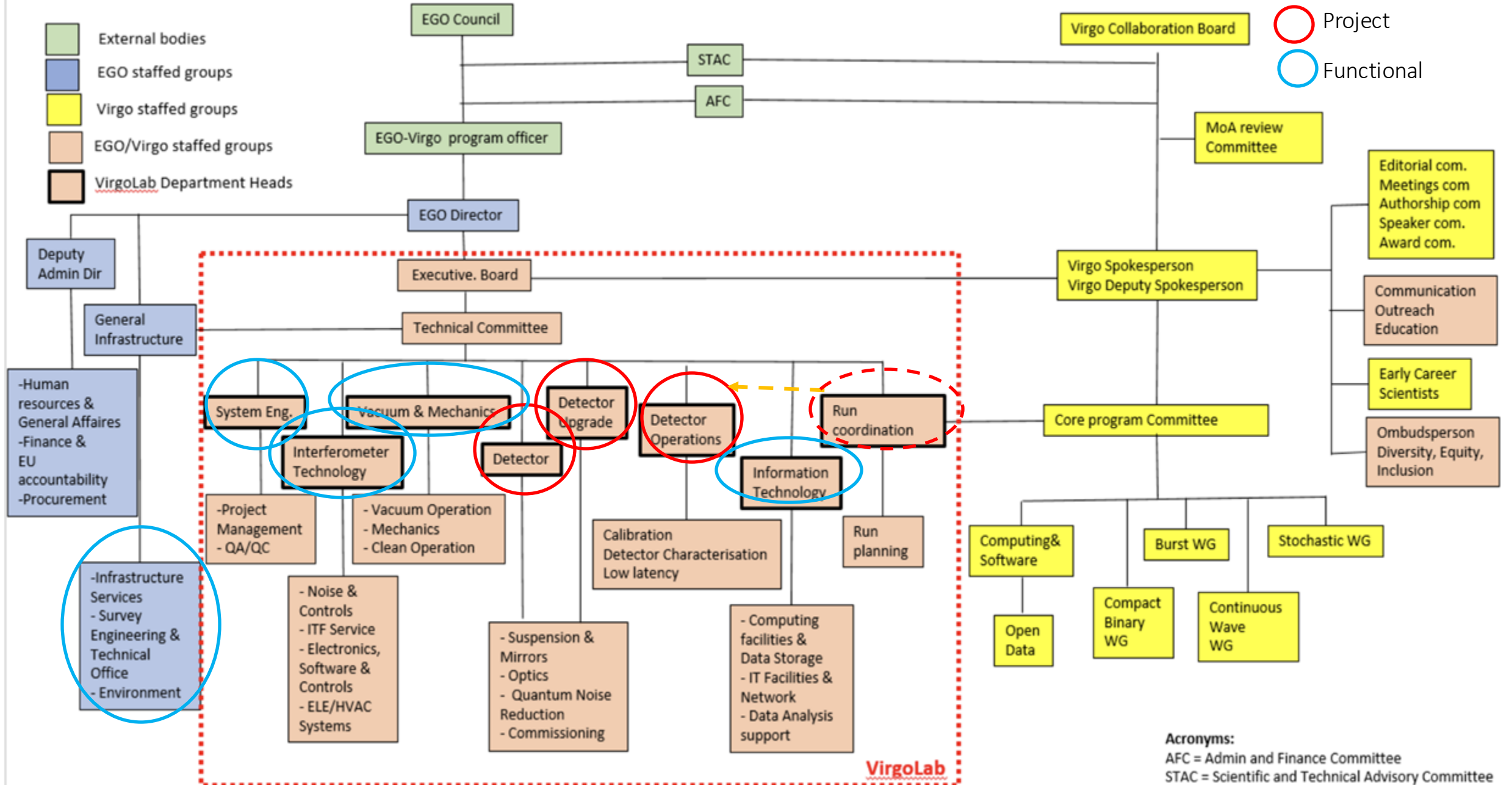
Problems With Matrix Organizations

- Failure to understand the key principles and roles in the more complex matrix organizational environment;
- Distrust in organizational forms which are not based on „unity of command“;
- Apprehensions of functional managers over the apparent superiority of the project goals over those of the functional entity;
- Senior management shortcomings in terms of clearly delineating in writing the formal and reciprocal roles of all the key managers involved in the project;
- Inadequate stakeholder management.

Proposal for the VirgoLab OrgChart

- The advantages of (strong) Matrix organization largely overcome the listed problems as long as senior management is well aware of them and they are properly dealt with
- On the next slides an attempt to adapt the VirgoLab org chart proposed by the review committee into a strong matrix organization by dealing with Detector Upgrade, Detector Operations and Commissioning as projects with the corresponding Coordinator as project manager.
- Note: For all personnel not employed by EGO there would be a 3rd dimension to be added to the matrix: the functional dependency from the external institution. This is ignored here with the idea that it could be managed via secondments to EGO or dedicated MoAs.

Identification of Functional and Project components in the original organigram proposal



Acronyms:
 AFC = Admin and Finance Committee
 STAC = Scientific and Technical Advisory Committee

Possible links between VirgoLab and IGWN

