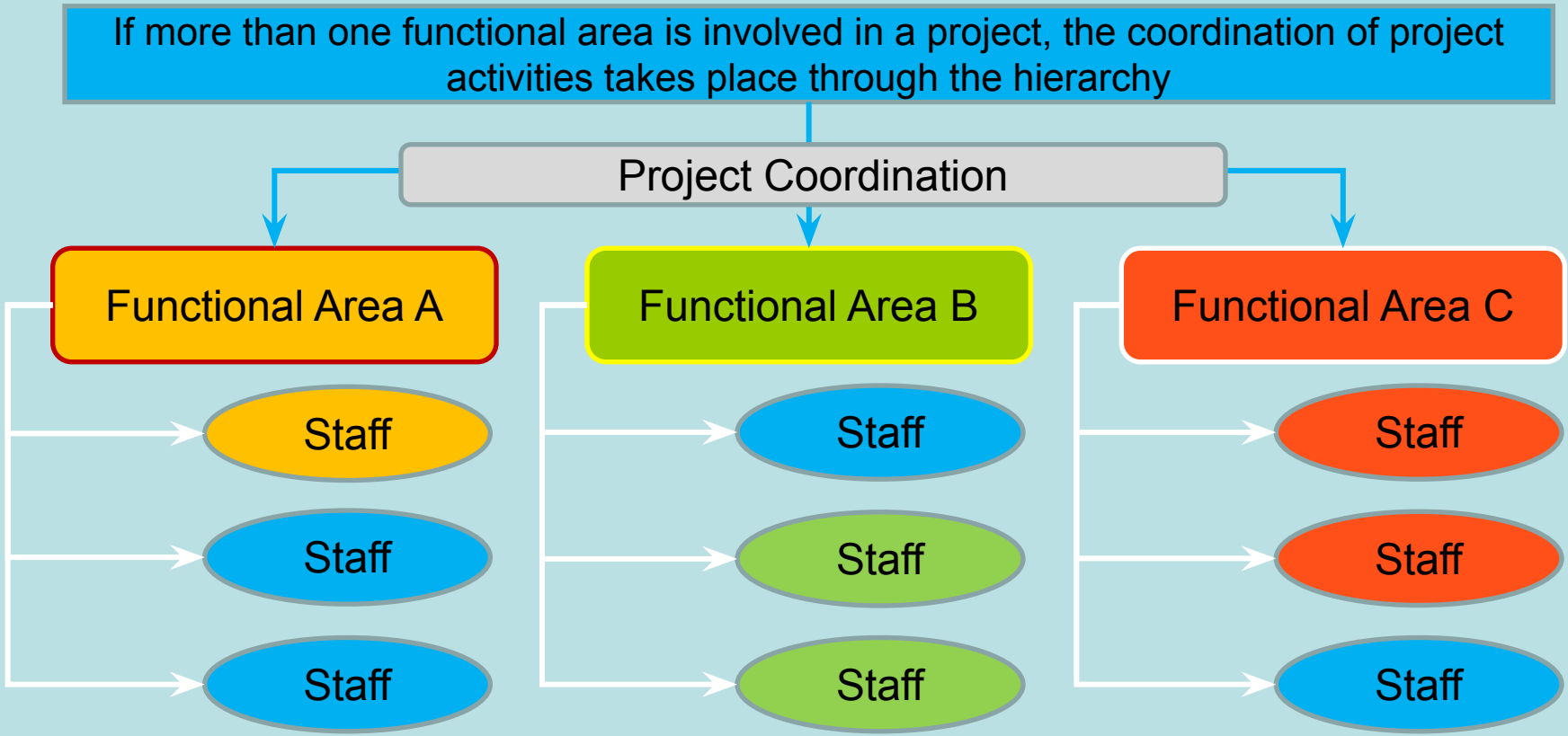
On Functional, Projectized and Matrix Organization and fitting Virgo Lab Org Chart

Functional Organization

- The organization is grouped by area of specialization within different functional areas (electronics, mechanics, sys 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

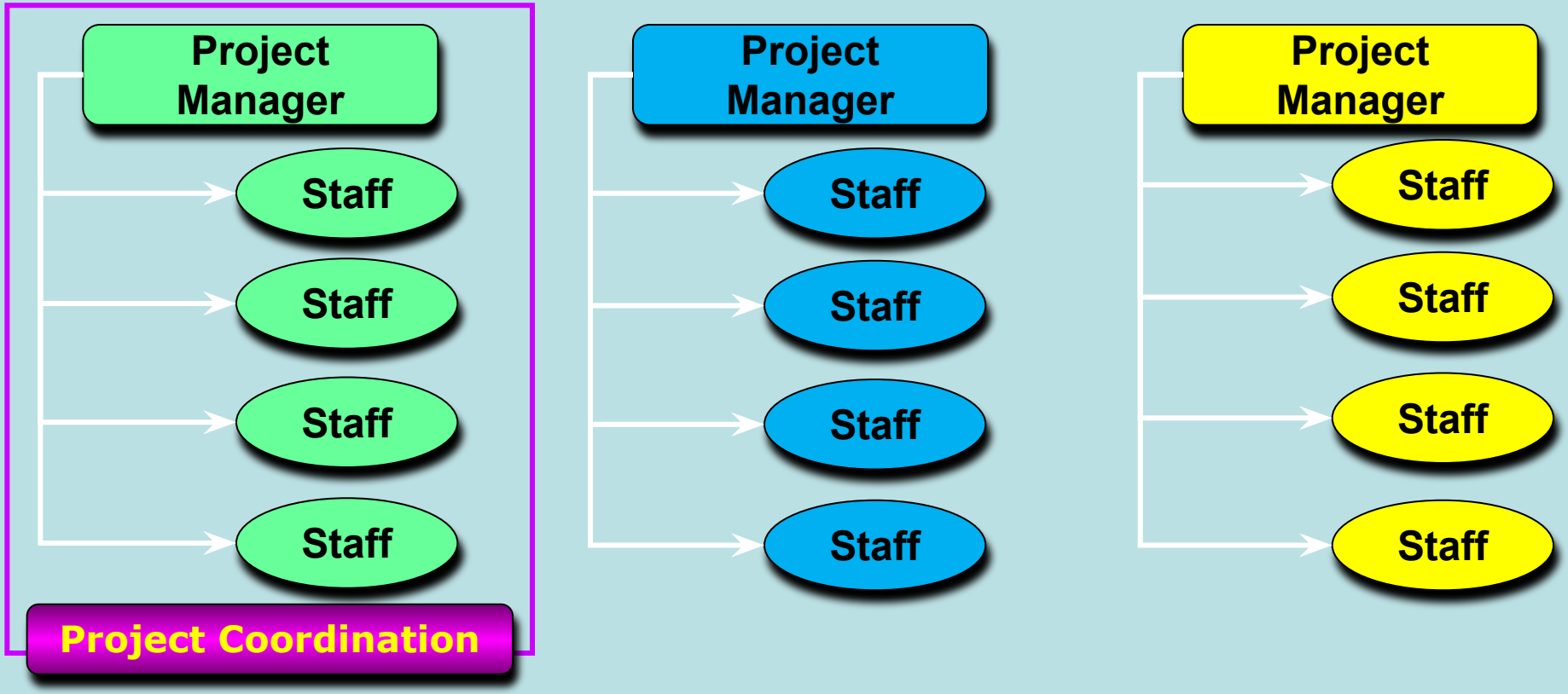
Projects in the Functional Organization



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 eg:- 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.

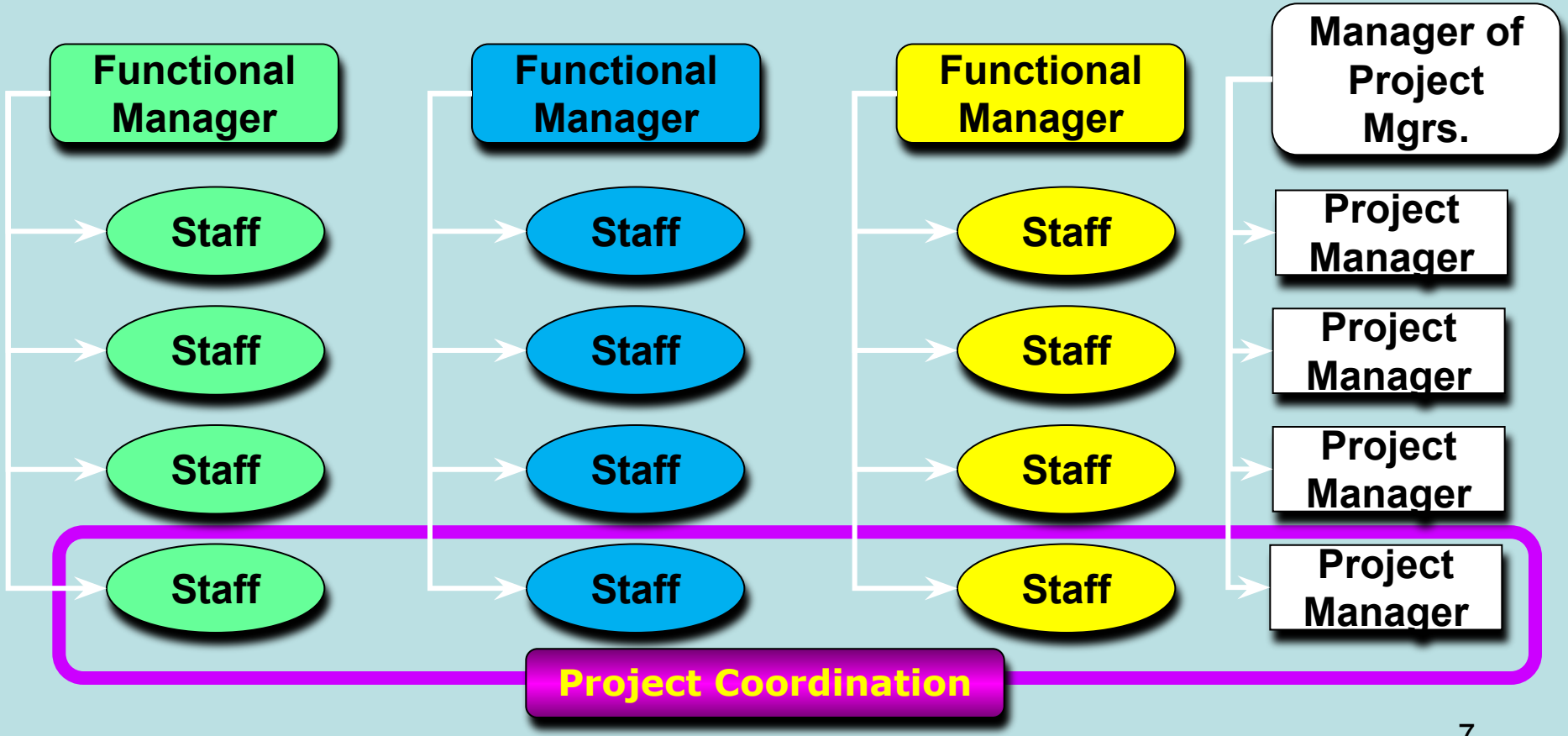
Projects in the Projectized Organization



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 is 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

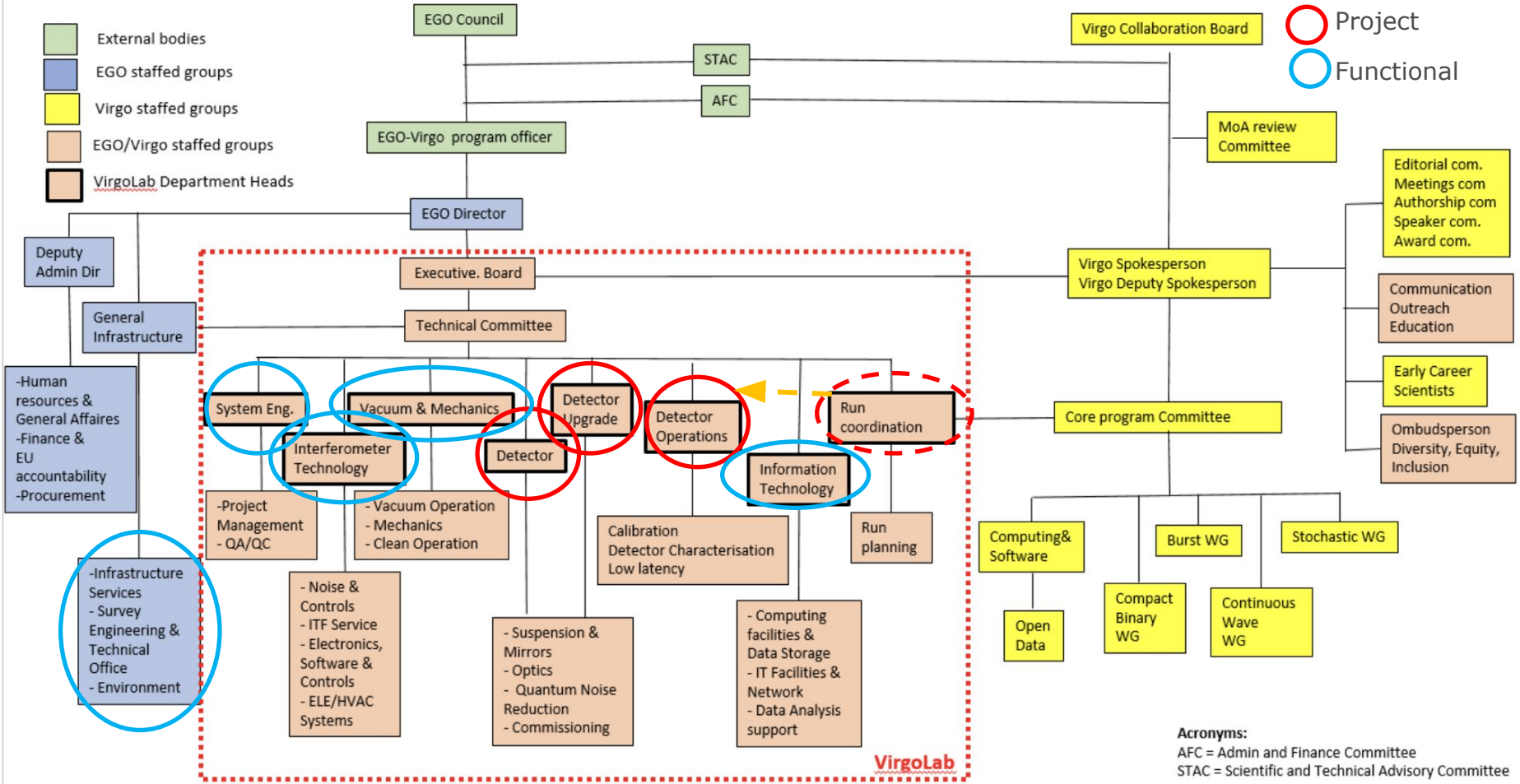
Problems With Matrix Organizations

- 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

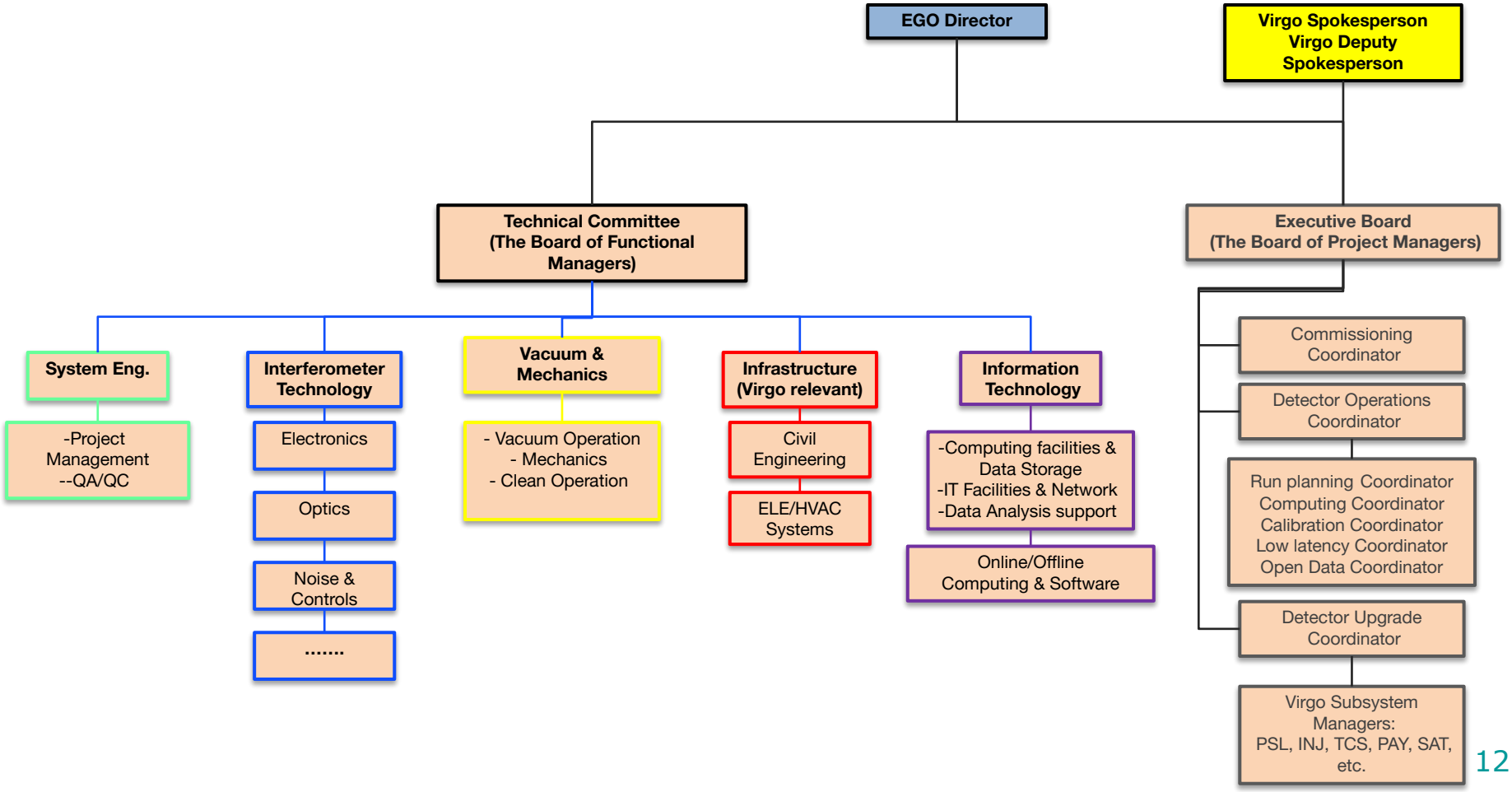
Proposal for the VirgoLab OrgChart

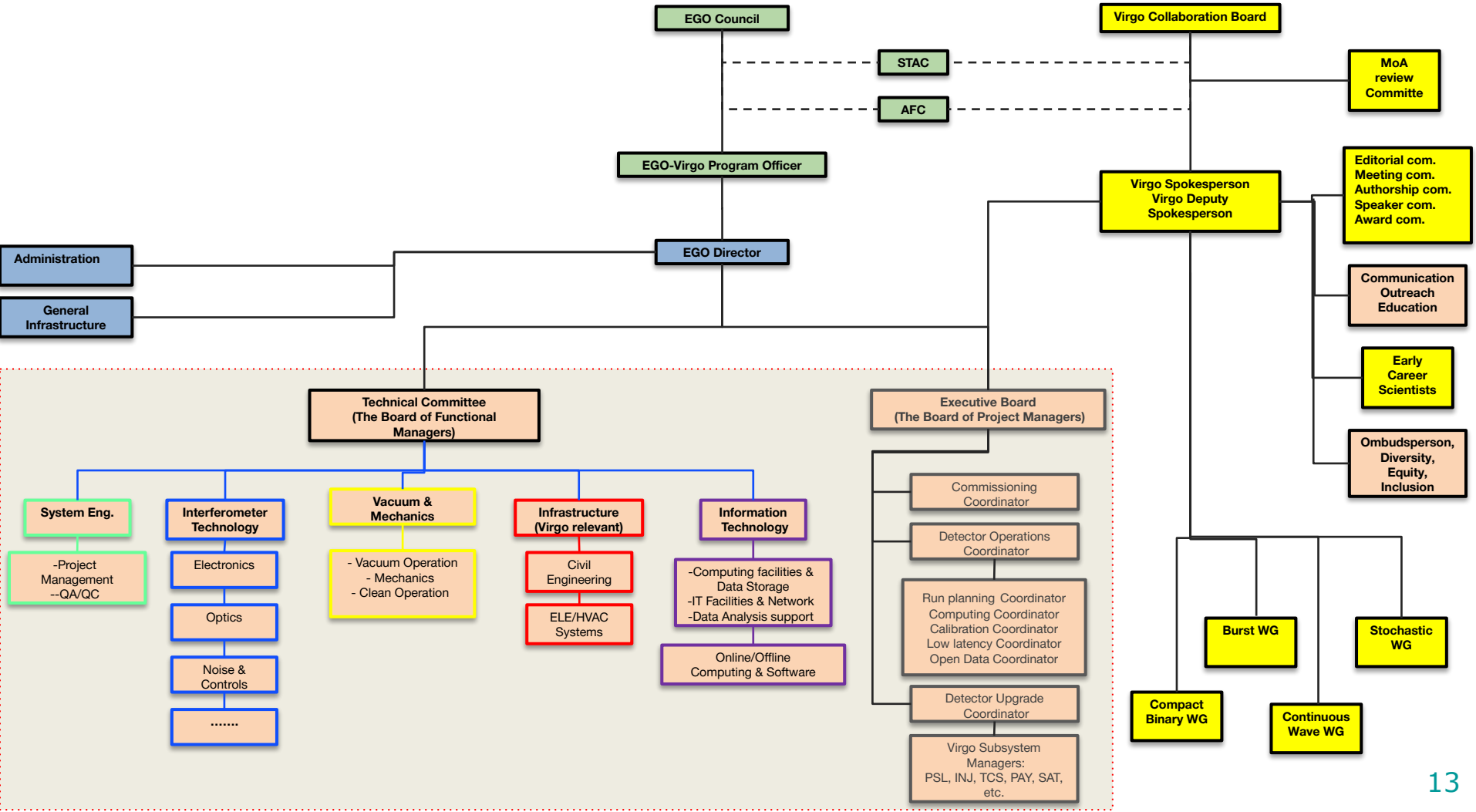
- The advantages of (strong) Matrix organization largely overcome the listed problems as long as senior management is well aware of them and they are properly dealt with
- On the next slides an attempt to adapt the VirgoLab org chart proposed by the review committee into a strong matrix organization 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 on original orgchart proposal



Fitting VirgoLab organization chart into a Strong Matrix org




EGO Council
Virgo Collaboration Board
STAC
AFC
MoA review Committe
EGO-Virgo Program Officer
Virgo Spokesperson
Virgo Deputy Spokesperson
Editorial com.
Meeting com.
Authorship com.
Speaker com.
Award com.
Administration
EGO Director
General Infrastructure
Communication
Outreach
Education
Early Career Scientists
Ombudsperson, Diversity, Equity, Inclusion
Technical Committee (The Board of Functional Managers)
Executive Board (The Board of Project Managers)
System Eng.
-Project Management
--QA/QC
Interferometer Technology
Electronics
Optics
Noise & Controls
.....
Vacuum & Mechanics
- Vacuum Operation
- Mechanics
- Clean Operation
Infrastructure (Virgo relevant)
Civil Engineering
ELE/HVAC Systems
Information Technology
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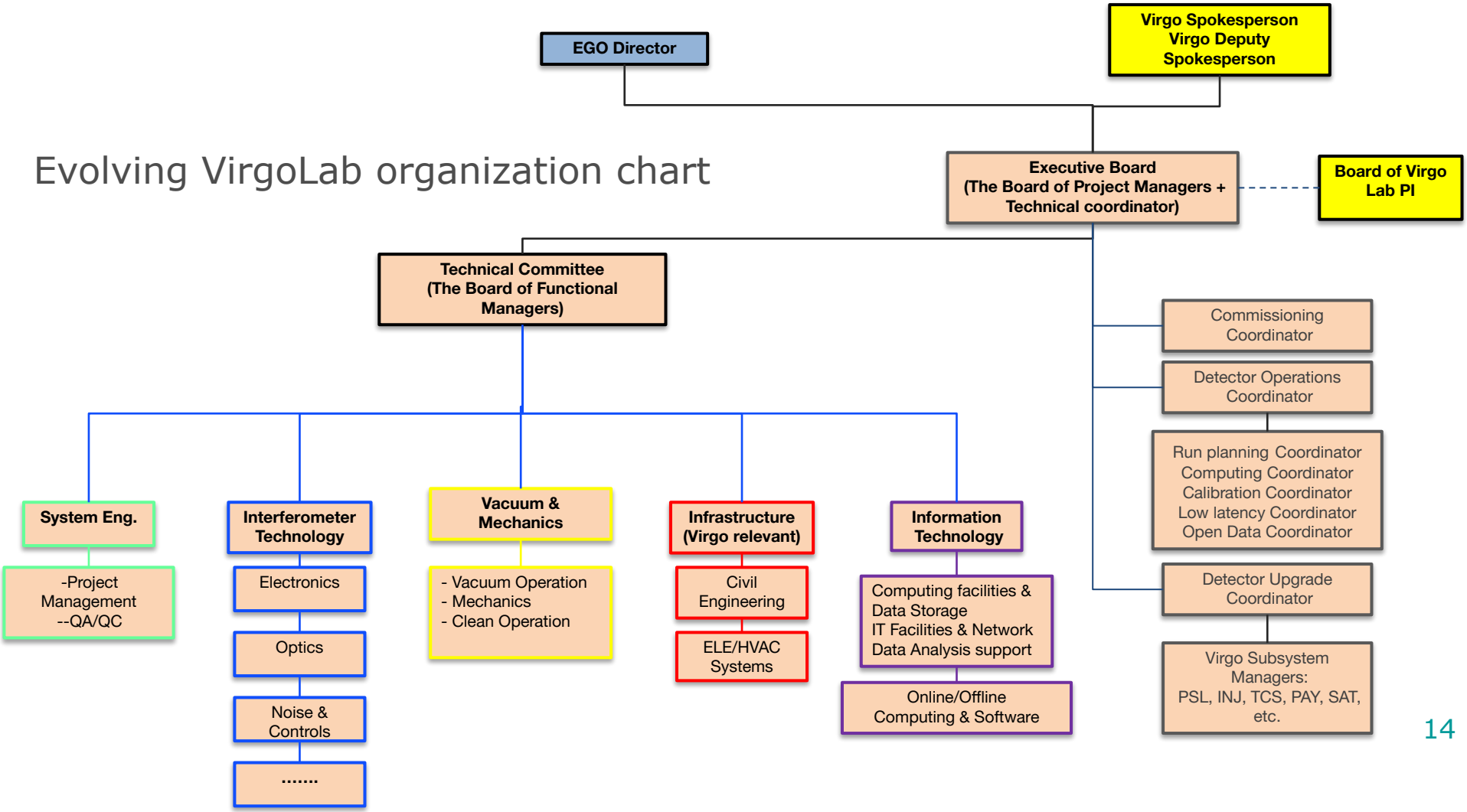
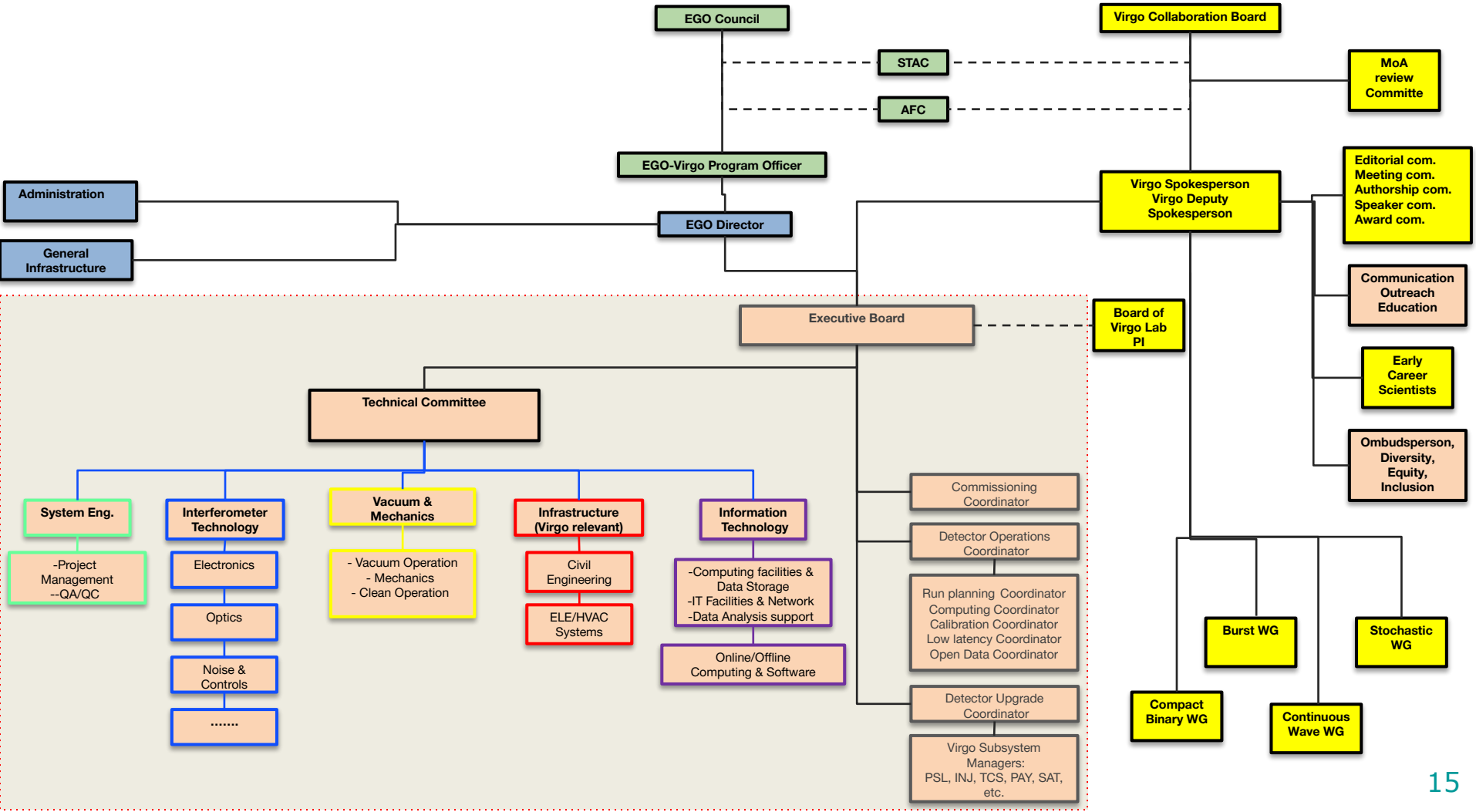
-IT Facilities & Network
-Data Analysis support
Online/Offline Computing & Software
Commissioning Coordinator
Detector Operations Coordinator
Run planning Coordinator
Computing Coordinator
Calibration Coordinator
Low latency Coordinator
Open Data Coordinator
Detector Upgrade Coordinator
Virgo Subsystem Managers:
PSL, INJ, TCS, PAY, SAT, etc.
Burst WG
Stochastic WG
Compact Binary WG
Continuous Wave WG

Evolving VirgoLab organization chart

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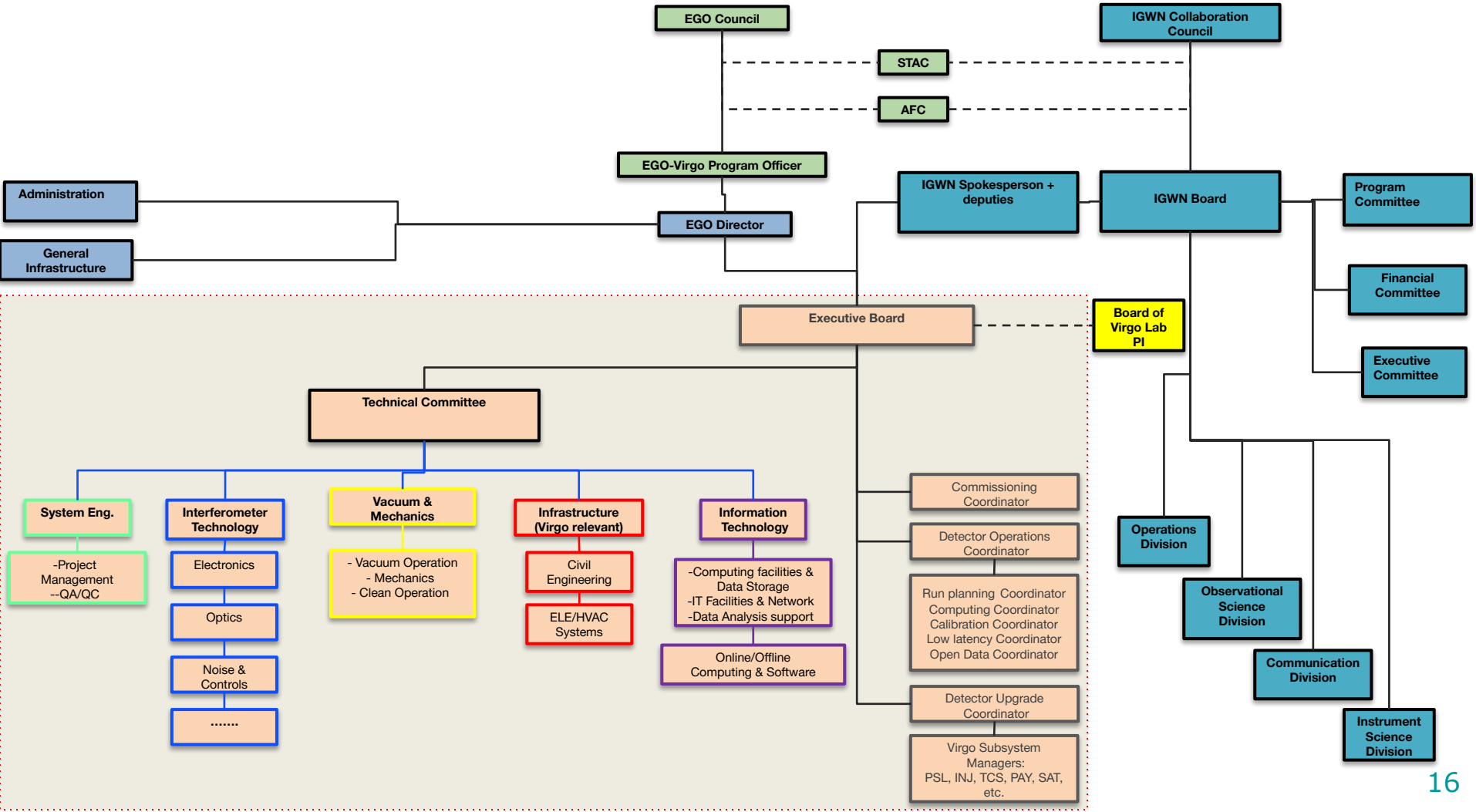
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IGWN Collaboration Council
STAC
AFC
EGO-Virgo Program Officer
Administration
General Infrastructure
EGO Director
IGWN Spokesperson + deputies
IGWN Board
Program Committee
Financial Committee
Executive Committee
Executive Board
Board of Virgo Lab PI
Technical Committee
System Eng.
-Project Management --QA/QC
Interferometer Technology
Electronics
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Detector Upgrade Coordinator
Virgo Subsystem Managers: PSL, INJ, TCS, PAY, SAT, etc.
Operations Division
Observational Science Division
Communication Division
Instrument Science Division

EGO Director

The EGO Director holds the primary executive authority within the organization and is responsible for all activities conducted at the EGO site, ensuring that the Virgo interferometer meets its operational and technological goals. The Director plays a key role in overseeing the organization's operations, ensuring the smooth execution of its scientific objectives, and liaising with external advisory bodies.

Key Responsibilities:

- The EGO Director is the final authority on all decisions concerning the operation and maintenance of the Virgo interferometer on-site. They take ultimate responsibility for the success or failure of Virgo's mission, ensuring that both operational and technological objectives are met.

Appointment and Evaluation:

- The EGO Director is appointed by the EGO Council after an international recruitment process overseen by a search committee. This search committee may include members of the Virgo Collaboration to ensure close involvement in the selection process. Selection criteria include strong leadership, proven management skills, and expertise in gravitational wave science and interferometry.
- The Director's term is fixed and renewable once, with the renewal decision being made in consultation with both the EGO Council and the Virgo Collaboration.

Accountability:

- The EGO Director reports to the EGO Council, which provides oversight and strategic direction. However, the Director retains executive control over the day-to-day operations of the site, working closely with the Executive Committee for operational execution and leveraging the expertise of the Board of PIs for external input.

Executive Board

The Executive Board (EB) is a key decision-making body responsible for overseeing the operational and technological progress of the Virgo interferometer. The board meets regularly to assess and make critical decisions regarding both the day-to-day operations and the long-term upgrades of the interferometer.

Key Responsibilities:

- Operational and Upgrade Decisions: The EB is tasked with making all decisions concerning the operation, commissioning, and upgrades of the Virgo interferometer. The board typically convenes on a weekly basis to review progress, resolve issues, and guide the technical direction of the interferometer.

Composition:

- The EB consists of 7-8 key individuals, representing both the operational and technical leadership of EGO and Virgo. Its membership includes:
  - EGO Director (Chair)
  - Virgo Spokesperson and Deputy Spokesperson
  - Head of System Engineering / Technical Coordinator
  - Upgrade Coordinator
  - Commissioning Coordinator
  - Detector Operation Coordinator
  - Virgo Lab PIs Board Chair
- This composition ensures that all aspects of Virgo's operation and future upgrades are covered by the appropriate expertise.

Decision-Making Process:

- Consensus-Driven Approach: The EB is committed to striving for consensus in its decisions. In practice, this means that members will work collaboratively to find solutions that everyone can agree upon, leveraging the collective expertise of the board.
- Final Authority of EGO Director: In the event that the EB cannot reach consensus on a particular issue, the EGO Director has the final authority to make decisions. This ensures that the board's deliberations do not lead to operational delays or indecision, with the EGO Director empowered to make the necessary calls for the project's success.

Technical Committee

Purpose:

- The Technical Committee (TC) advises the Executive Board (EB) on technical matters related to the operation, upgrade, and maintenance of the Virgo interferometer and supporting infrastructure.

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.
- Subsystem Coordination: Ensure effective collaboration between technical departments and Virgo subsystems.

Composition:

- Virgo-Lab Technical Department Heads
- Additional Experts (as needed)

Meetings:

- Regular: Monthly or as needed to discuss technical performance and ongoing projects.
- Ad-hoc: For urgent or project-specific technical reviews.

Reporting:

- The TC reports directly to the EB, providing technical recommendations. Final decision-making rests with the EB and EGO Director.

Decision-Making:

- Consensus-Based Advice: The TC seeks consensus, but all perspectives are presented to the EB for the final decision.

Board of Virgo Lab PIs (Principal Investigators)

Purpose and Role:

- Advisory Capacity: The Board of Virgo Lab PIs operates in an advisory capacity, providing guidance on strategic scientific and technical matters. It does not have direct decision-making authority over the operational activities of the Virgo Lab
- Feedback Channel: The board serves as a formal mechanism for PIs to communicate their views, concerns, and suggestions to the Executive Board (EB), the EGO Director and the EGO Council. This ensures that the perspectives of external research groups are considered in key decisions.
- Enhancing Collaboration: By bringing together PIs from different external institutions and entities, the board fosters closer collaboration and alignment between EGO and the external labs contributing to Virgo.

Composition:

- PIs of External Research Groups
- Chair: The board elects a Chair who facilitates meetings and coordinates communication with the Executive Board and EGO Council.

Relationship to Governance:

- Non-Interfering with Chain of Command: While the Board of Virgo Lab PIs plays an important advisory role, it does not interfere with the operational chain of command. The EGO Director and Executive Board (EB) retain ultimate authority over operational and technical decisions. The board’s role is to provide informed input that can help shape these decisions.