IS in Organizations

SoftEng
http://softeng.polito.it

Process families

- Support
  - IT, Human resources, Accounting, Firm infrastructure
- Managerial
  - Business intelligence, strategy, management control
- Primary
  - Produce service or product

IT area

- The organizational entity that supports /offers IT services to an organization
  - Position in organizational structure
  - Roles
  - Processes

Cost of IT area

- Typical figures: 1-3% of turnover
  - ENI: 800M / year
  - Intesa: 500M/ year, 10% new projects

IT area and company size

- Only companies above a certain size can sustain an IT area
  - min possible cost for IT area: ~50K euro / year
    (equivalent to 1 person, medium skilled)
  - Min turnover to sustain IT area: ~ 5M
    (50K = 1% of 5M)

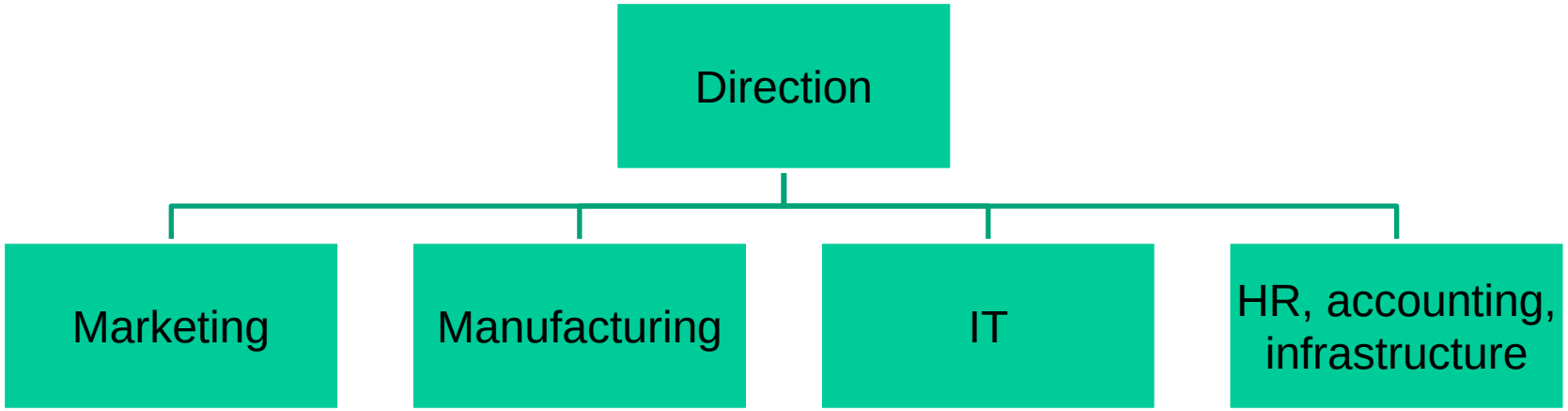
Position

Position of IT area

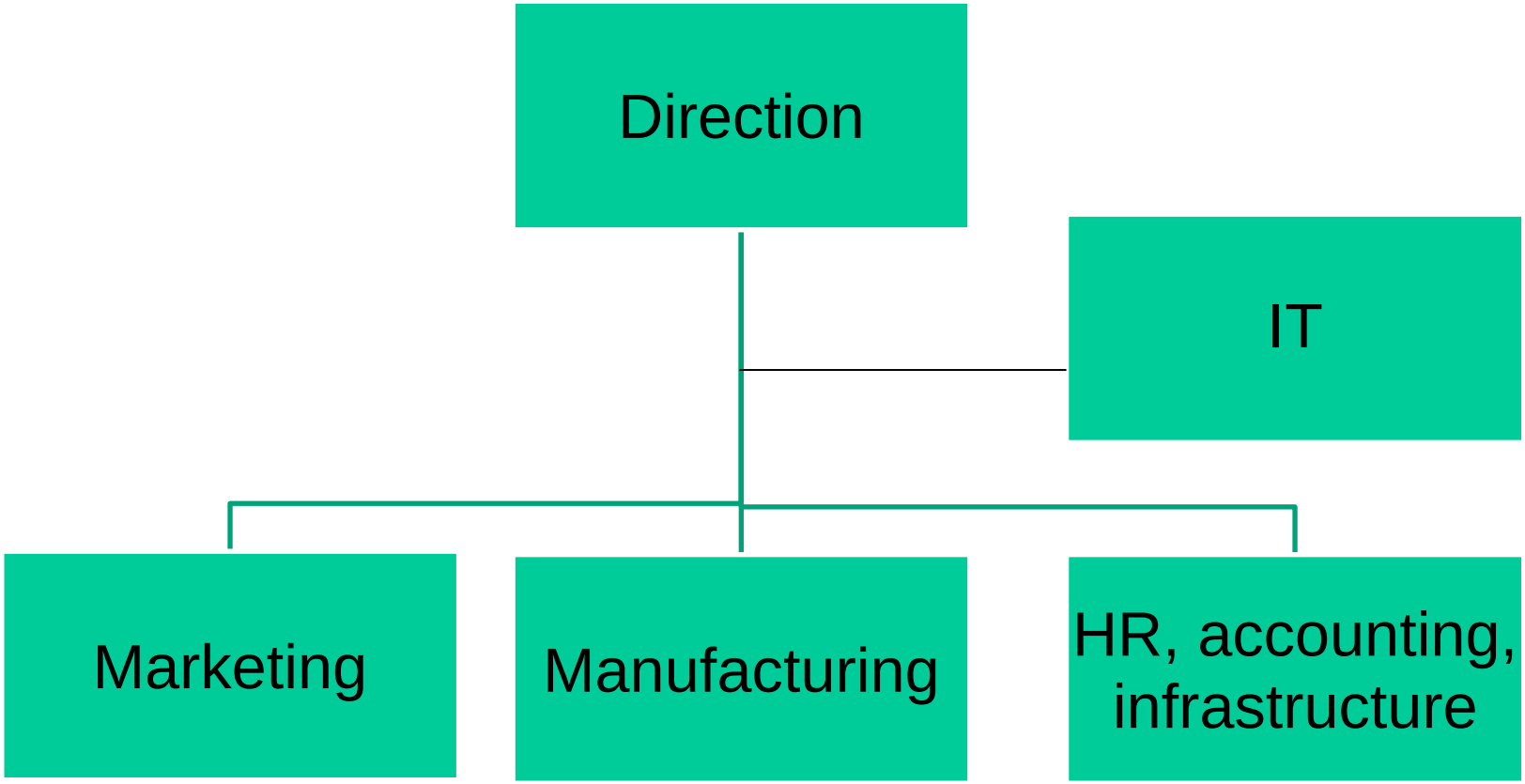
- As line function
  - primary
- As staff function
  - Secondary, or service to line functions
- As sub line function

- Varying degrees of importance, power, and independence

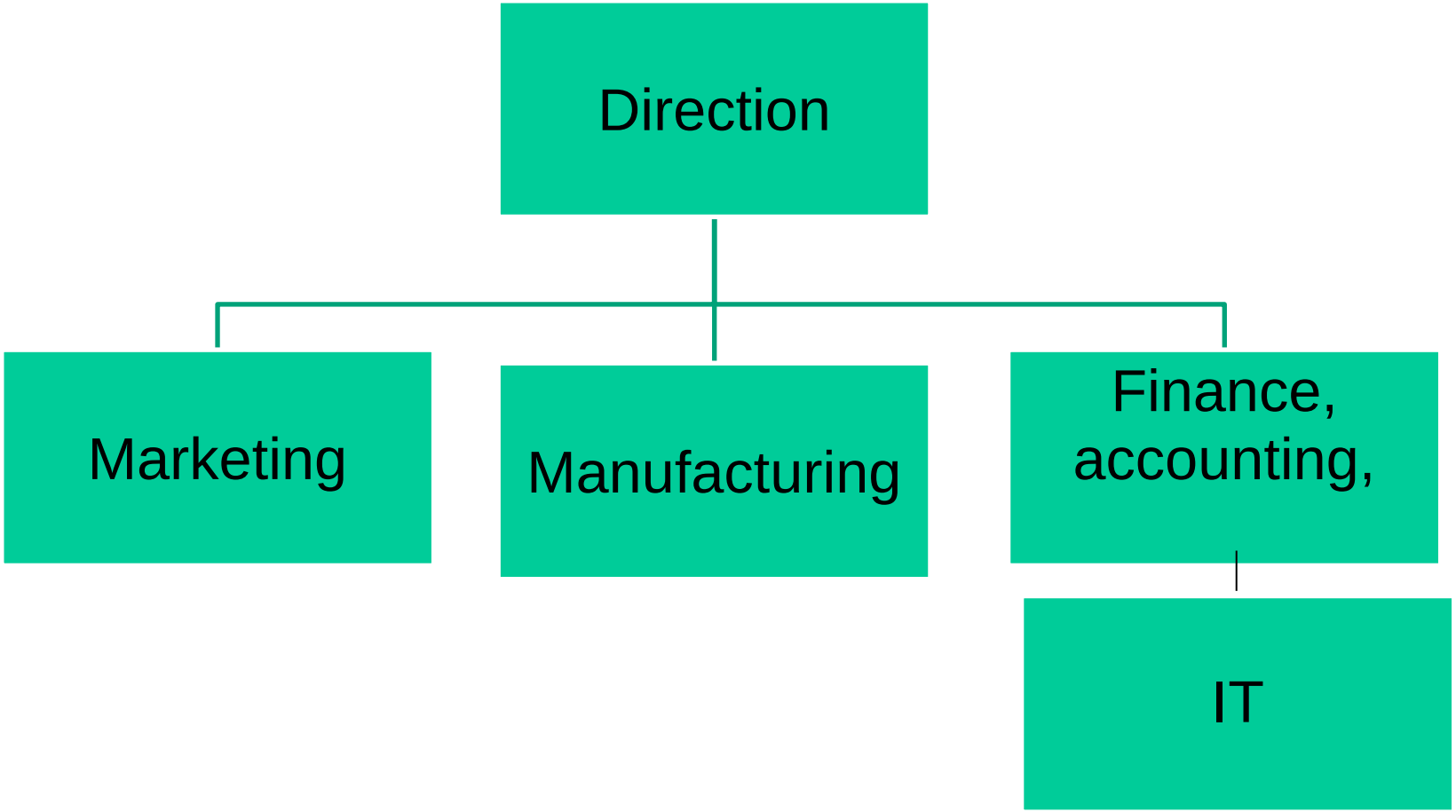
As line function



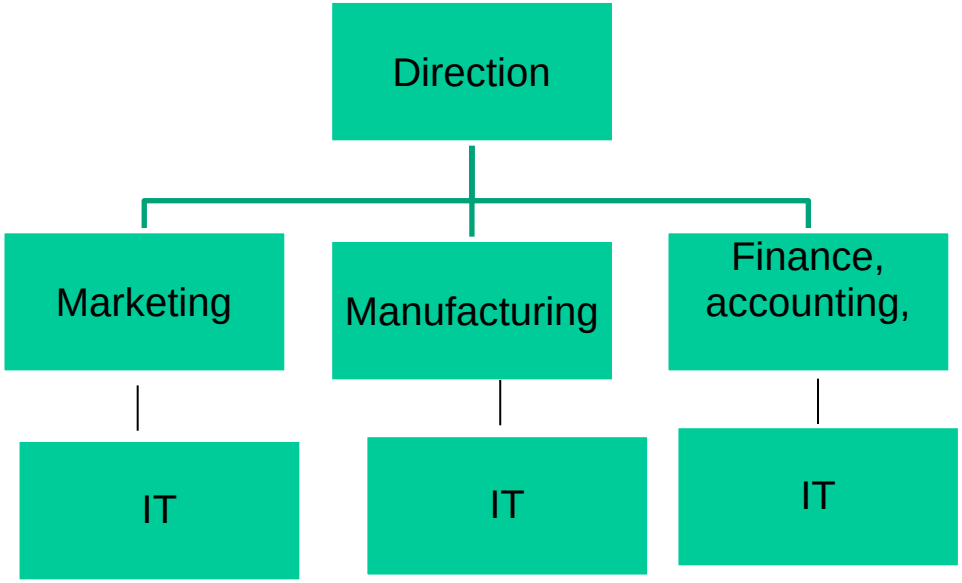
As staff function



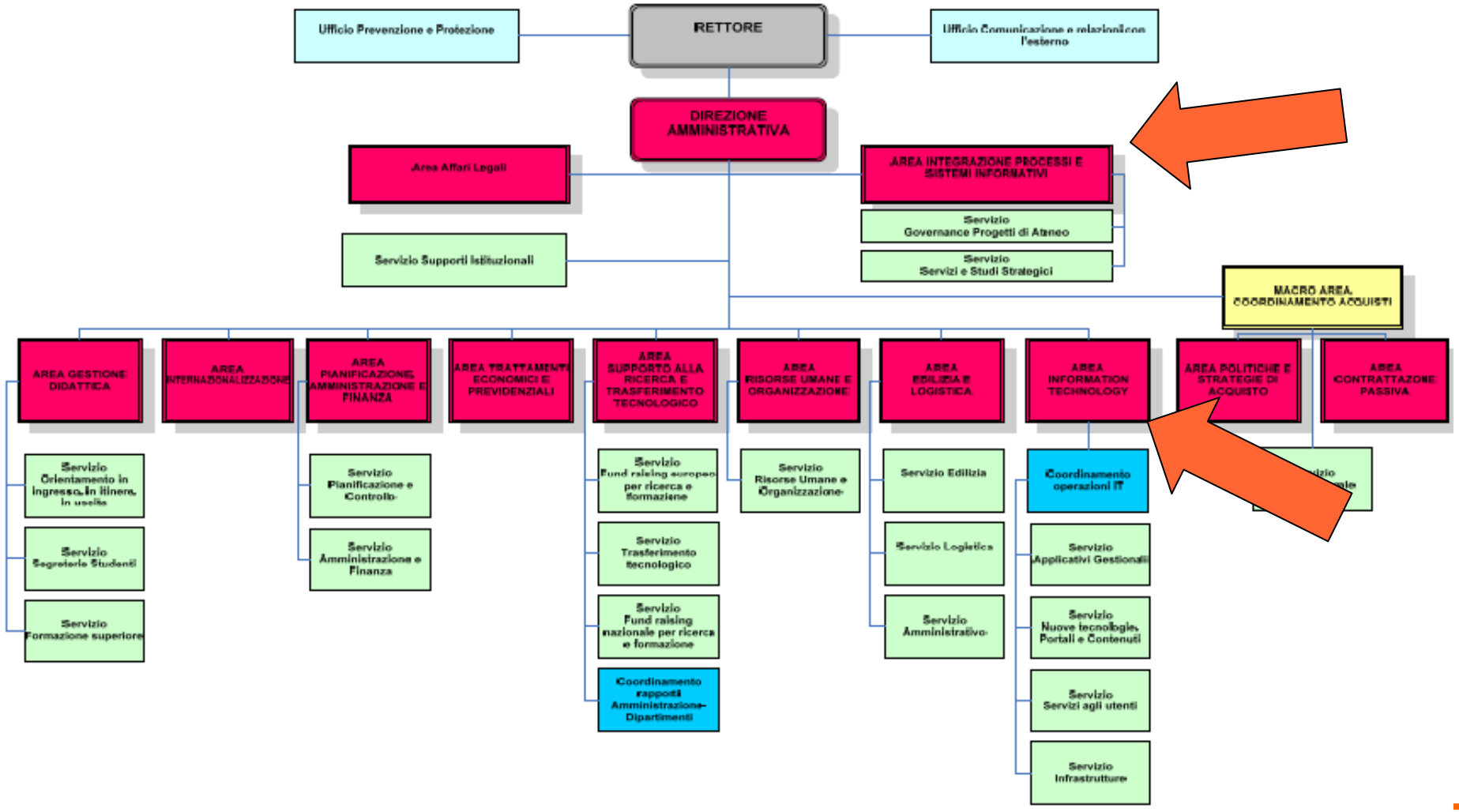
As sub-line function



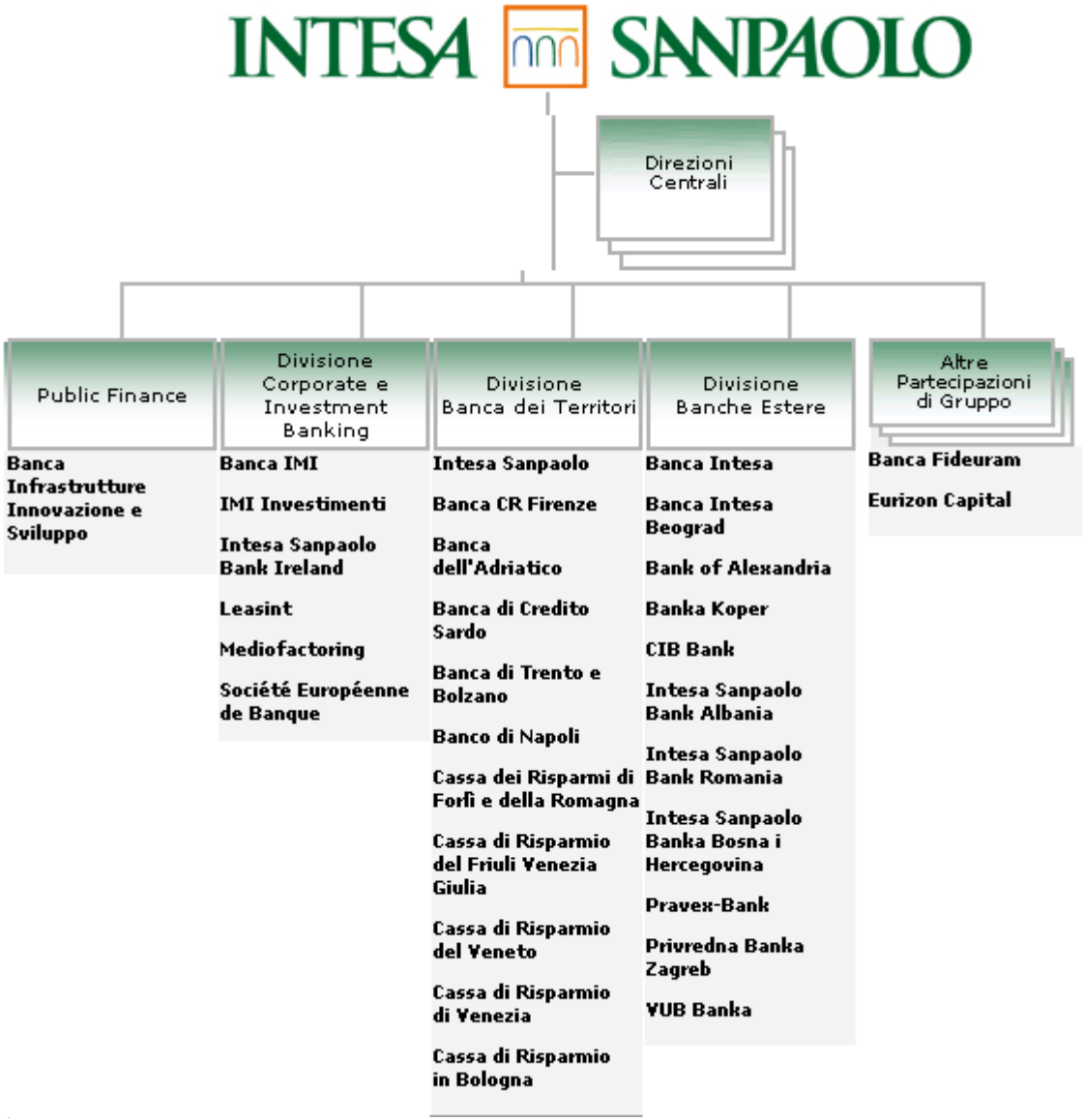
As sub-line functions



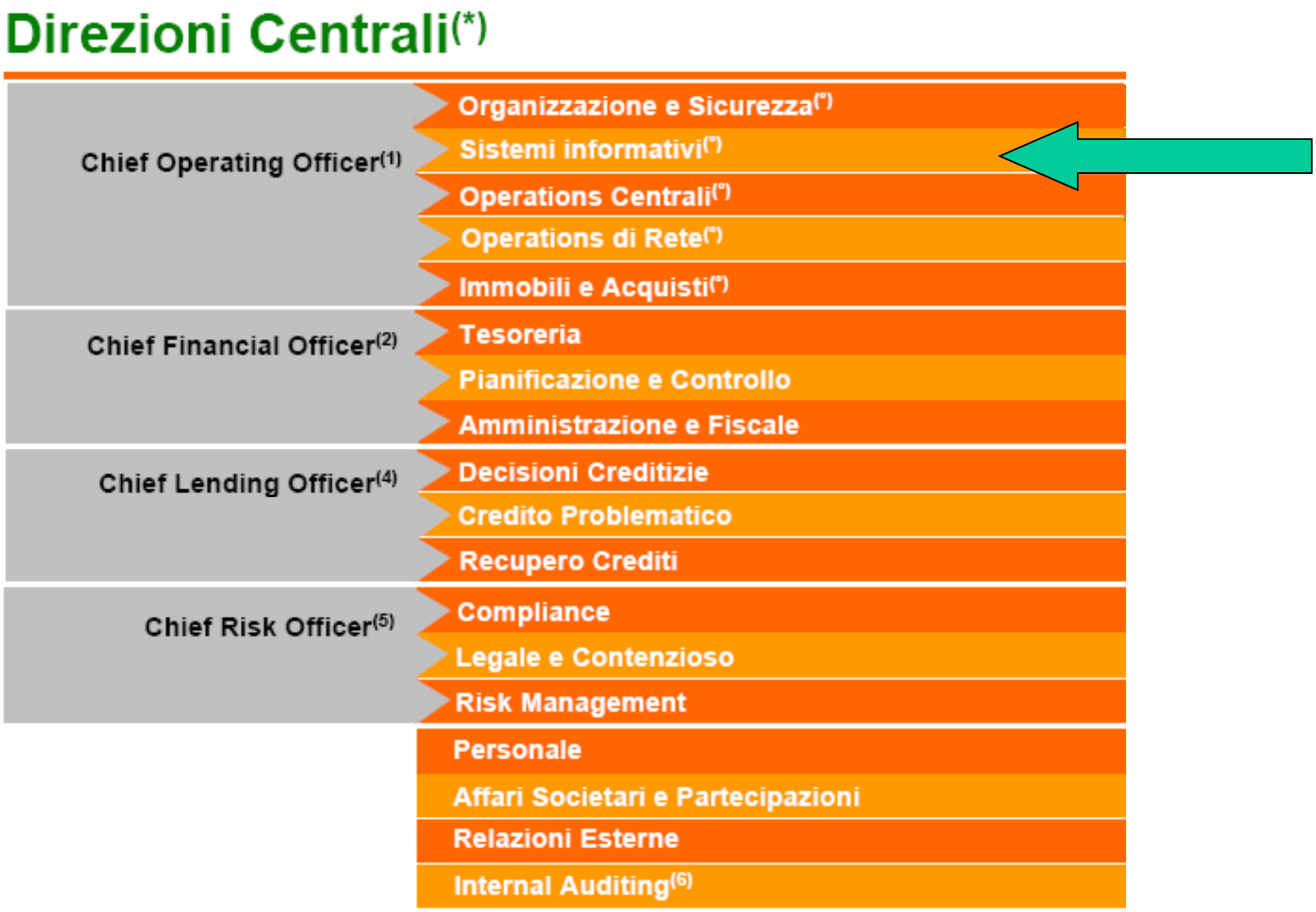
Polito – IT as line function



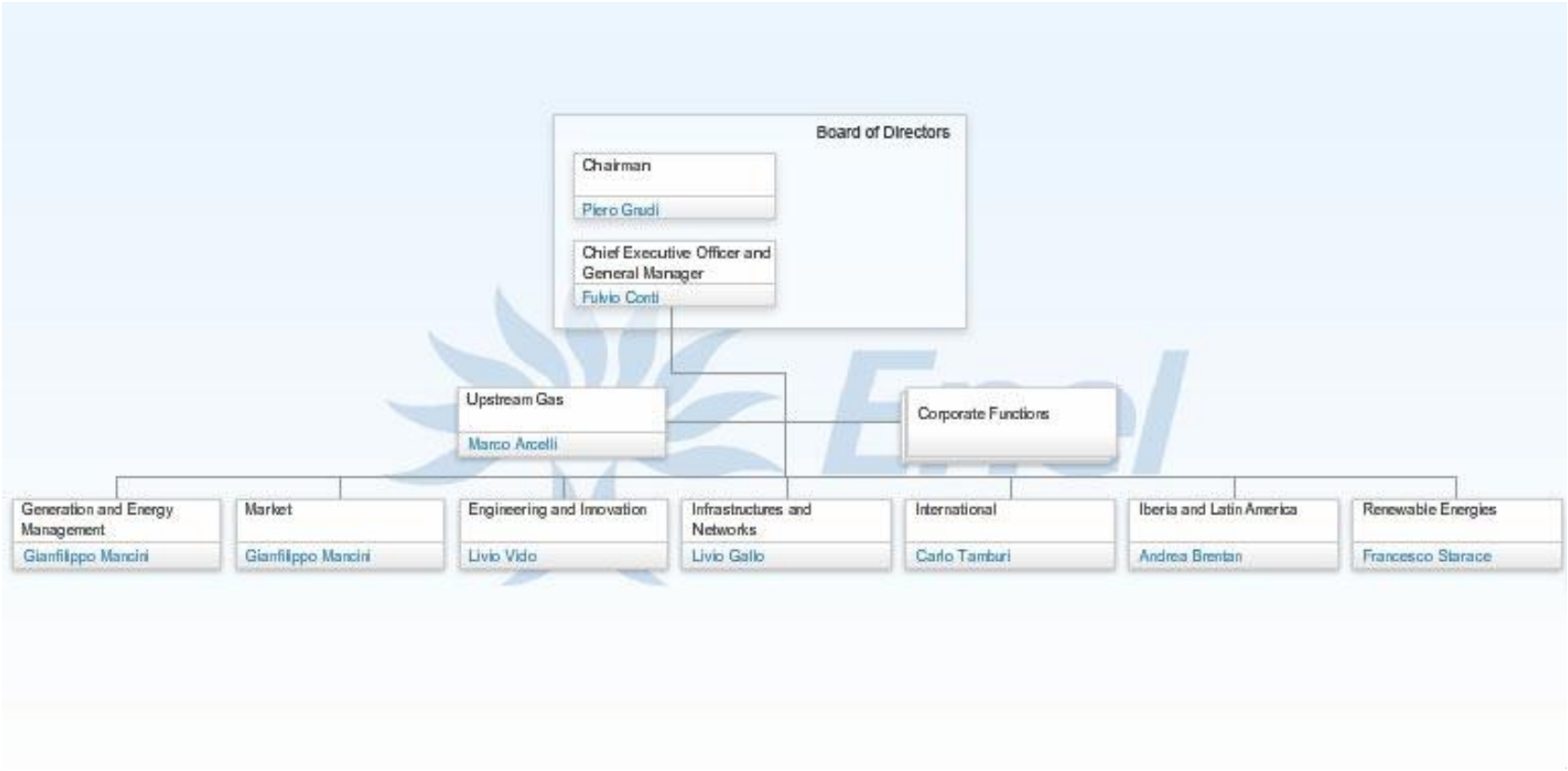
Intesa – IT as staff function



Direzioni centrali



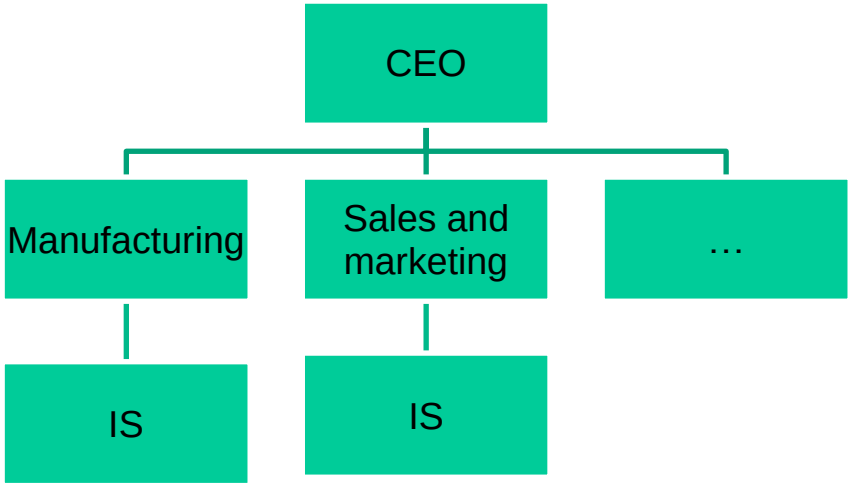
ENEL – IT as corp function

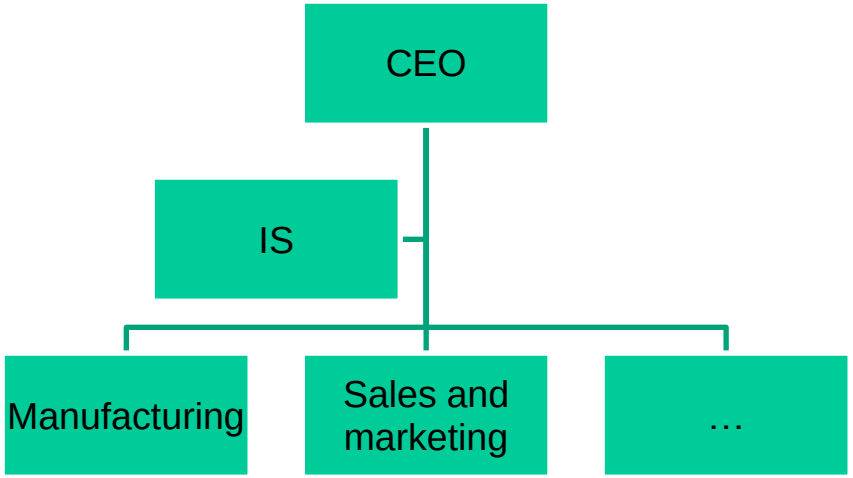


What position?

- Centralized IT vs. Decentralized IT

Decentralized / centralized





Centralized

- Advantages
  - Economy of scale
    - In acquisition (hw, sw)
    - In skills
    - No duplications of assets
  - Standardization
    - Of career paths (in IT)
    - Of architectural choices
    - Of tools (DB, OS, ..)
  - Data sharing (see ERP model)

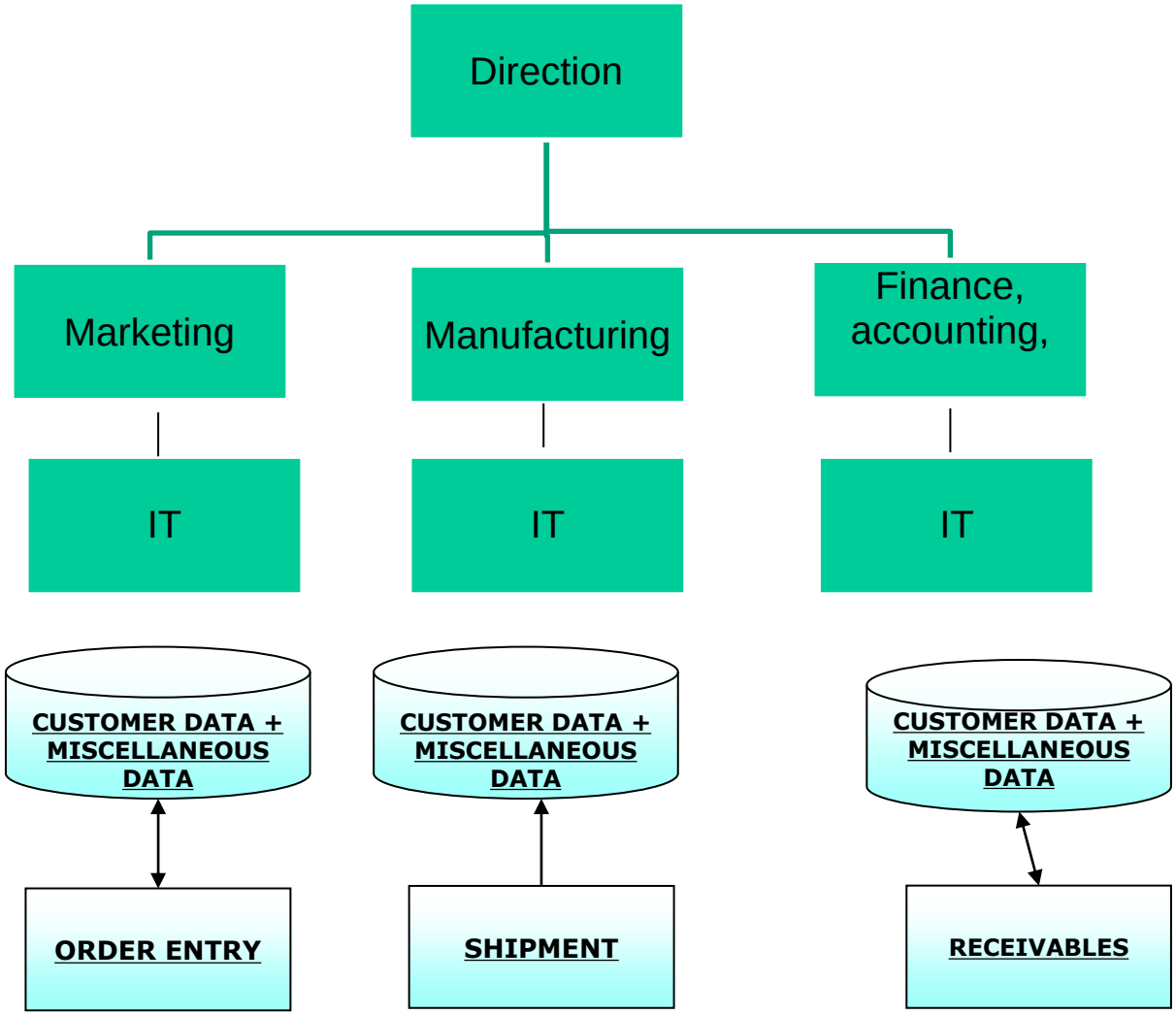
Centralized

- Advantages
  - Enforcement of common policies (risks, recovery, backup, security)
  - Enforcement of IT strategy
  - Control of IT budget and cost
- Disadvantage
  - Less reactivity to requests from other business functions / units
  - Less specialization

Conway's 'Law'

- The structure of an IT system mirrors the communication structure of the organization that produces it
  - Ex: if you have 4 groups working on a compiler, you will have a 4 pass compiler
  - Ex: if a company has 3 IT offices, it will have 3 IT islands (DATA REPLICATION problems)

Decentralized → data replication



Data replication

- Same data in several (legacy) systems
- Dedicated interfaces to synchronize (point to point)
  - Cost
  - Delays
  - Unfeasibility (of overnight synchronization)
  - Company must become system integrator

Data replication

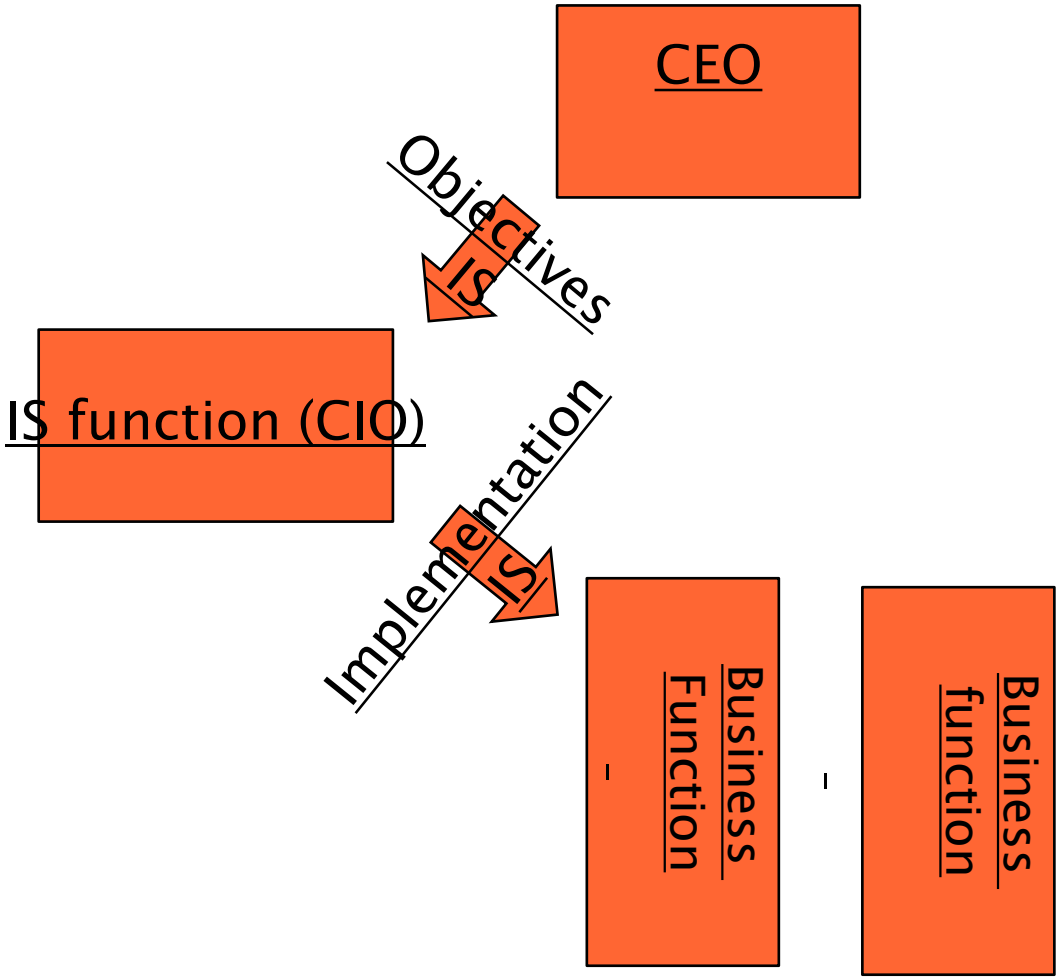
- IT systems are concentrated on business functions
- Processes are inter-function
- Hard to support interfunction processes if IT systems are function oriented
  - Issues in data exchange
  - Issues in coordination

Which interaction model?

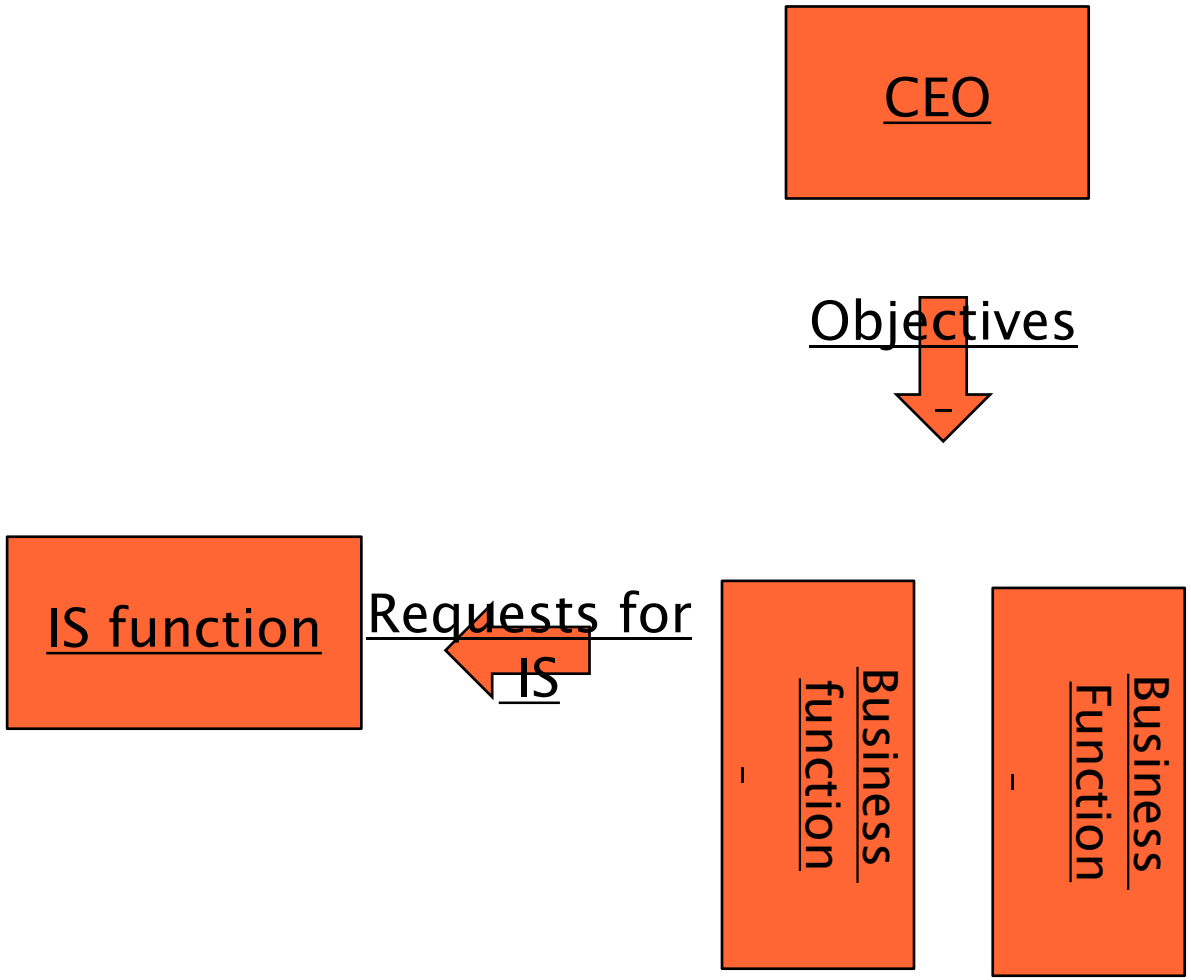
- If the IS area is centralized, which is the interaction between it and other functions?

- Push: IS services ‘imposed’ from IS area
- Pull: IS services ‘requested’ from business function
-

Push


CEO
Objectives
IS
IS function (CIO)
Implementation
IS
Business Function
Business function

Pull


CEO
Objectives
IS function
Requests for IS
Business function
Business Function

Roles in IT area

Basic Manager Definitions

- *Manager:* A trained, knowledgeable worker who is in charge of a team and often holds a master's degree in management or business administration.
- *General Manager:* Manager in charge of an entire organization or business unit.
- *Functional Manager:* Manager in charge of a functional area or team.

End users

- End users are those individuals who have direct contact with software applications as they use them to carry out specific tasks.
- Anyone who uses a software program is an end-user: Students, Customers, Employees, Managers.
- Although being a sophisticated end user is an important asset for the modern manager, because effective use of software programs can lead to increased productivity, it is far more important for modern managers to have the skills and knowledge to make appropriate information systems decisions at the organizational level.

Executives

- Chief Information Officer (CIO): The individual in charge of the information systems function.
- Chief Digital Officer (CDO): The individual in charge of digital transformation and digital innovation in established organizations, he or she is the "transformer in chief."
- Chief Data Officer (CDO): The individual who oversees all aspects of data use in an organization, from collection to compliance to value extraction.
- Chief Information Security Officer (CISO): The individual in charge of digital risk management and cybersecurity.

Technical Staff

- Architect: The individual in charge of developing a framework for the development of a system.
- Developer: The individual who builds high-quality, innovative, and performing software that complies with coding standards, technical designs, and the framework provided by architects.
- Administrator: The individual who is charged with the day-to-day

Analysts and Managerial Staff

- Analyst: The individual who performs analysis in a specific field or topic area.
- Project Manager: The individual ultimately responsible for delivering an information systems project on time, within budget and scope.
- IS Manager: The individual in charge of a team within the IT function of an organization.

Data Science and Analytics

- Data Scientist: The individual in charge of analytics efforts who has the full view of the analytics process end-to-end.
- Data Engineer: The individual that has distinctive skills in data access and data preparation.
- Subject Matter Experts: The individual with a deep understanding of the business and functional domain of analysis.

Other

- IT Consultant: The individual assuming roles like the ones described in previously. However, unlike the in-house IT function, consultants move from client to client as they take on different projects. Moreover, they expend substantial efforts in selling projects to potential clients.

IT entreprise architect

- Define and maintain the IT entrerprise architecture: applications, data models, communication patterns between applications
  - See application portfolio
  - See technological model (deployment diagram, data flow diagram)
  - See conceptual data model

Processes

- See Cobit 5
- See Itil v3

In summary

- IT is a support (horizontal) process in organizations
- IT area is the group of people in charge of IT in an organizations
- IT area can be a staff function, a line function (department), a sub line function
- (medium large) organizations typically define IT as a staff function

- COBIT reference model defines processes, resources, goals and measures within the IT group