IT Management Concepts

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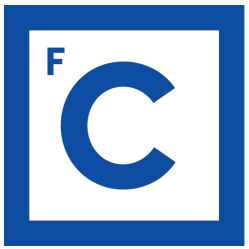


Ciências ULisboa

Faculdade de Ciências da Universidade de Lisboa

Today's Class

1. What is IT administration?
2. IT infrastructure life cycle
3. IT management life cycle
4. IT team organization

3 Perspectives on IT management

(...) Deployment, integration and coordination of the hardware, software and humans to monitor, configure (...) and control the network to meet real-time, operational performance and QoS requirements at a reasonable cost
(Saydam:96)

3 Perspectives on IT management

(...) the branch of computer science that deals with the techniques (...) ensure that computer systems operate flawlessly

(Verma:09)

3 Perspectives on IT management

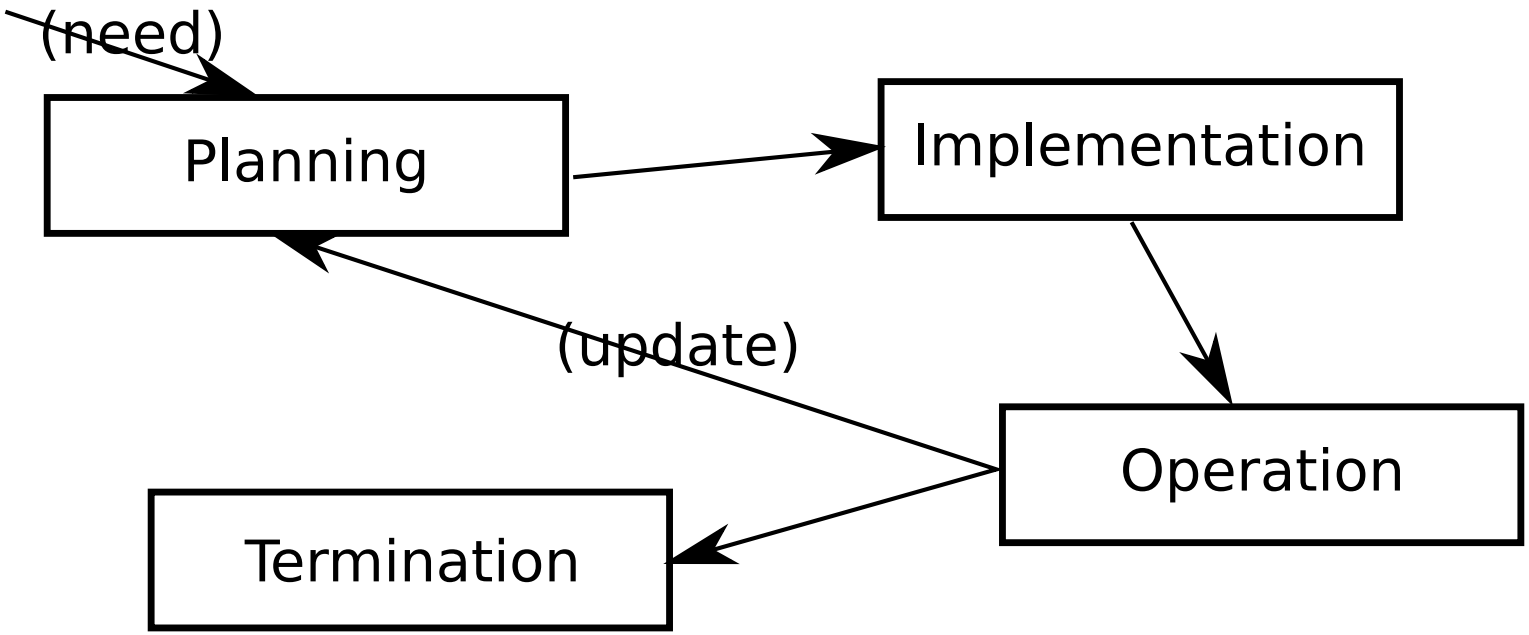
(. . .) planning, supervision and control functions (. . .) provides the adequate service, as expected by its users

(Veríssimo:01)

Summary

- Provide the best possible service considering:
  - User satisfaction
    - Perceived by performance and availability
    - Sometimes user confuse both
  - Cost
    - There is always a tradeoff

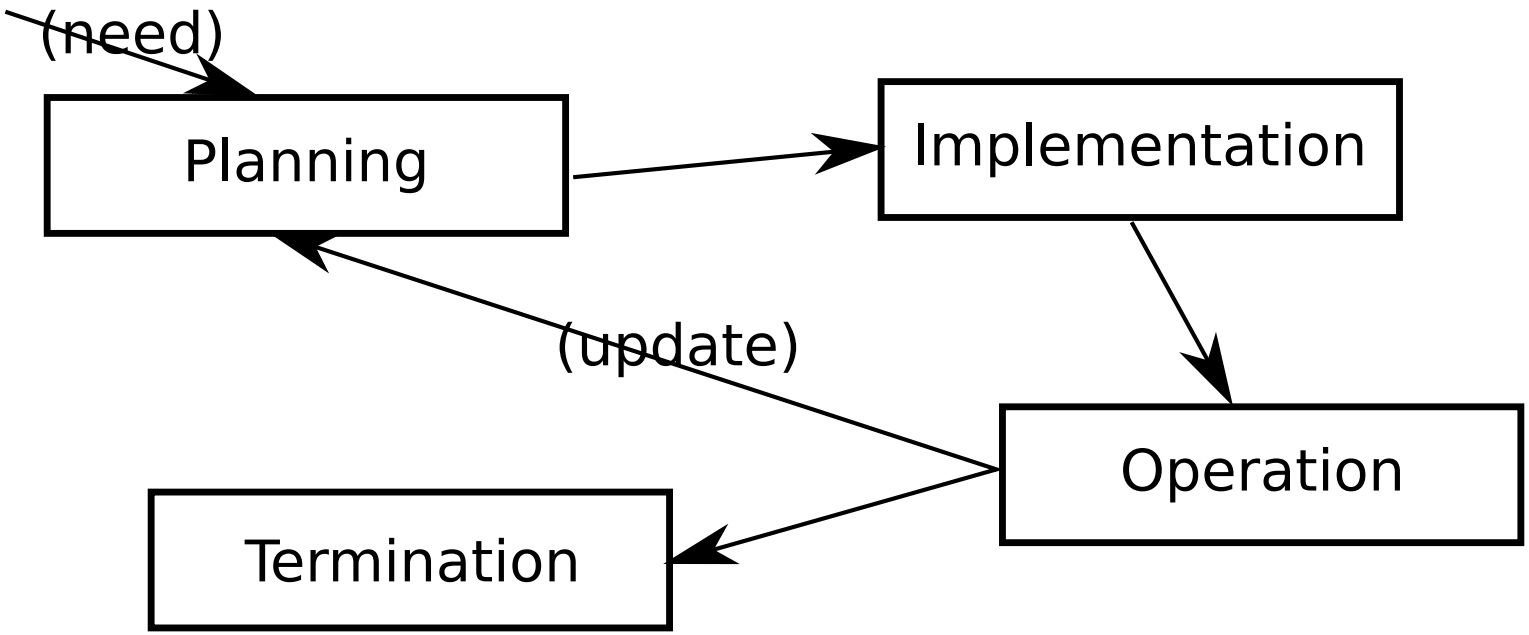
The System Life Cycle



The Need

- Definition of the system goals
- Budget
  - Set up
  - Monthly expenses
- Entities
  - To build the system
  - To manage the system

Planning


(need)
Planning
Implementation
(update)
Operation
Termination

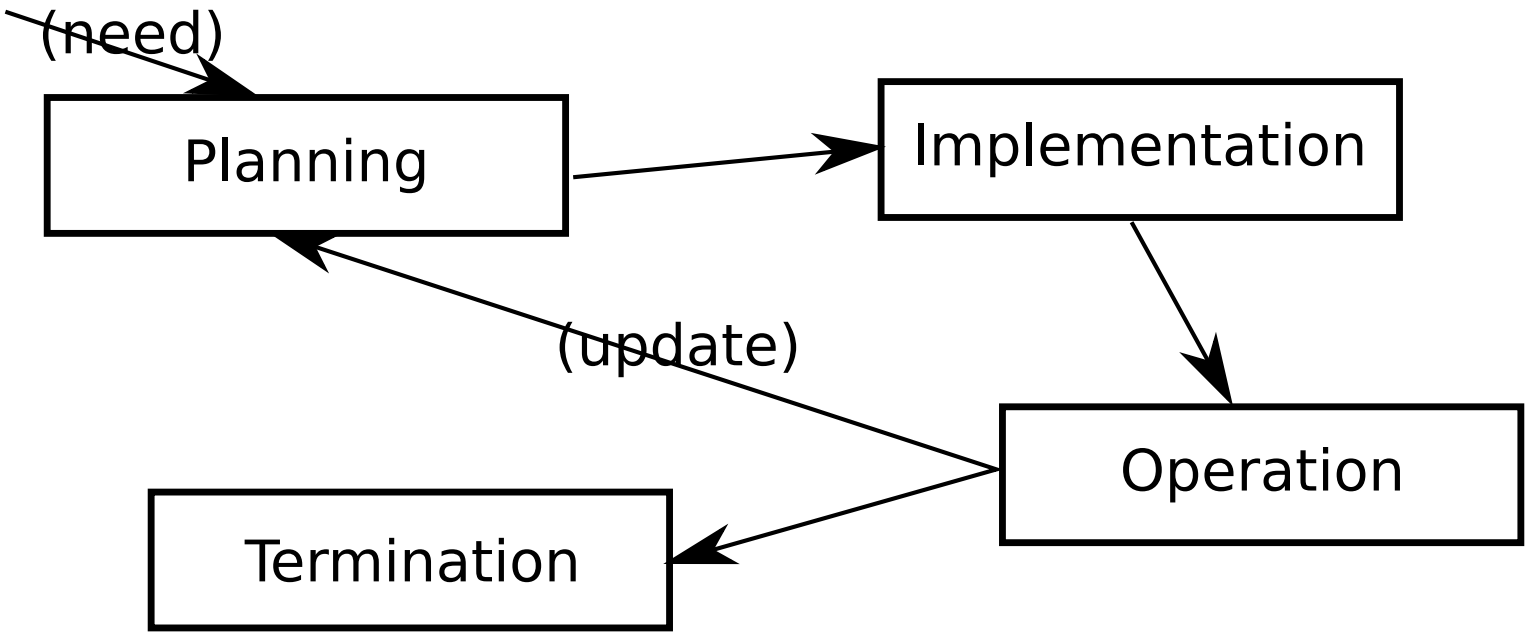
Planning: Requirements

- Functional
- Non-Functional
  - Performance
    - Bandwidth
    - Replication
  - Environmental
    - Geographical location(s)
    - Physical places
  - Cost
  - Operational
    - Management
    - Security
  - Legal

Planning: System Design

- Connectivity
- Applications
- Hardware
  - System sizing
  - Type
  - Configuration
- Management
  - Infrastructure
  - Strategy definition

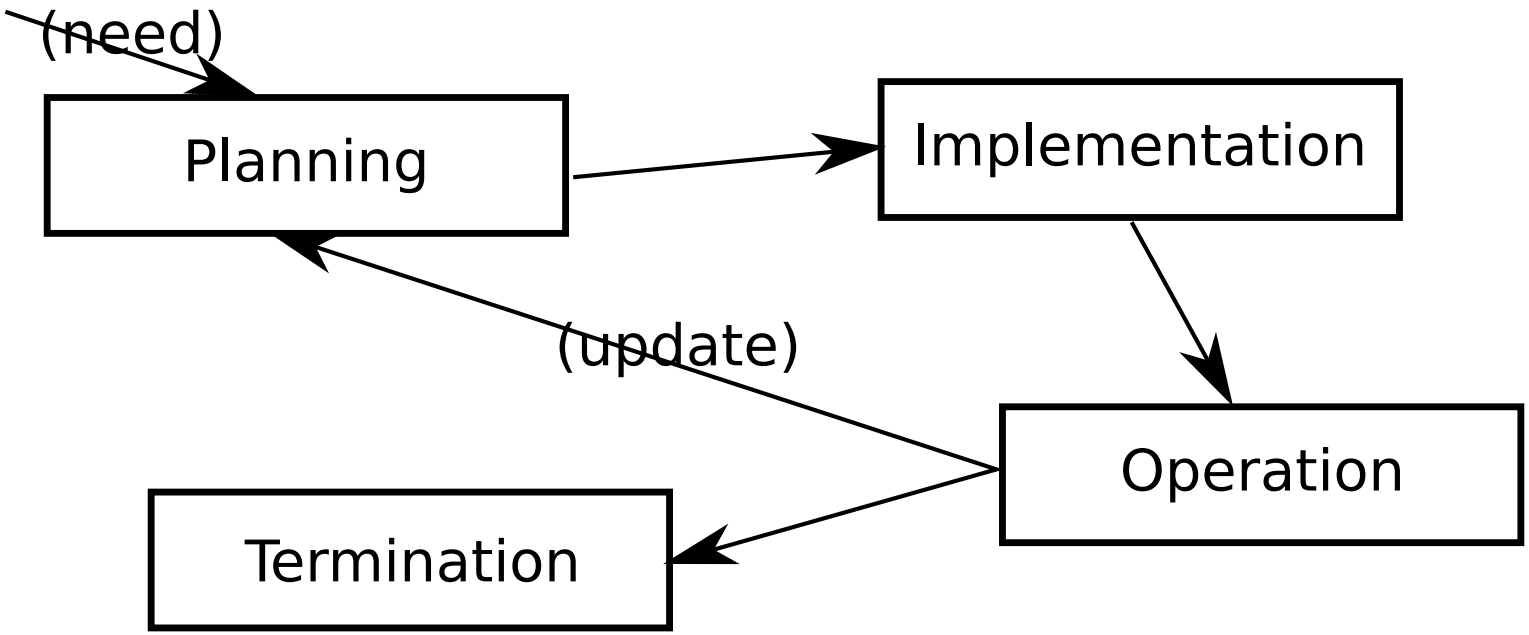
Implementation



Implementation

- Physical construction
  - Data center
  - Wiring
- Hardware acquisition
- Hardware installation
- Contracts
- Tests
  - Performance
  - Requirements satisfaction
  - Strategy
  - Policies

Operation


(need)
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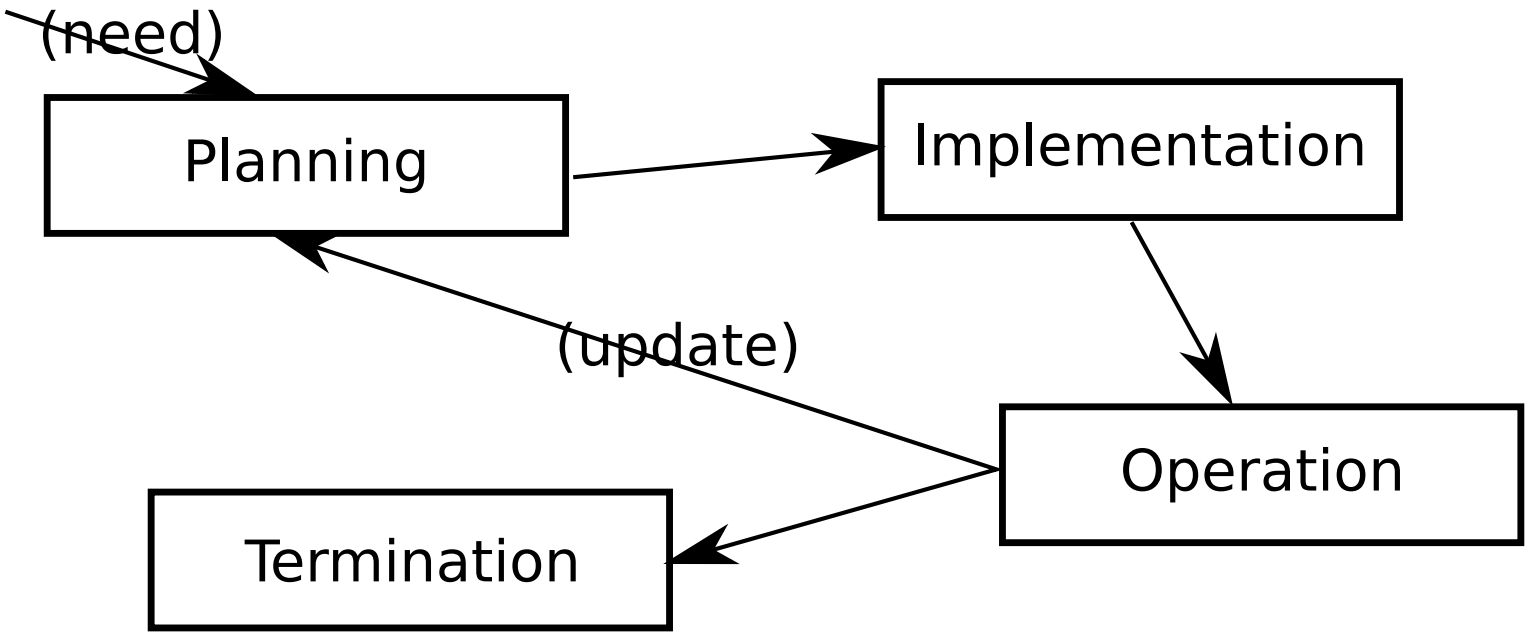
Operation

- Where the system is expected to spend more time
- Services are being provided
- Management ensures that services comply with expectations
- Team on the management life cycle

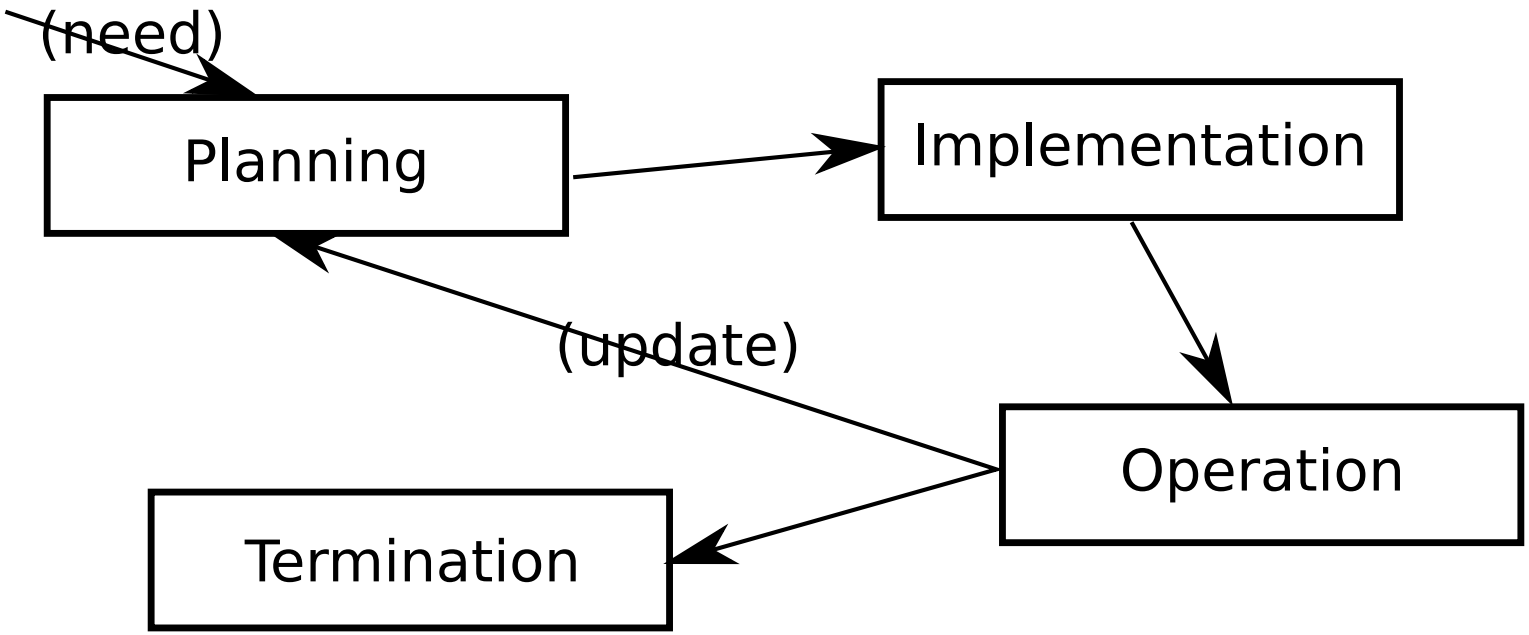
Update


(need)
Planning
Implementation
(update)
Operation
Termination

Update

- Not a regular maintenance procedure
  - Requires planning stage
- Why?
  - Low performance
  - Technology upgrade
    - Lower operational cost
  - Company changes
    - Mergers
    - New business

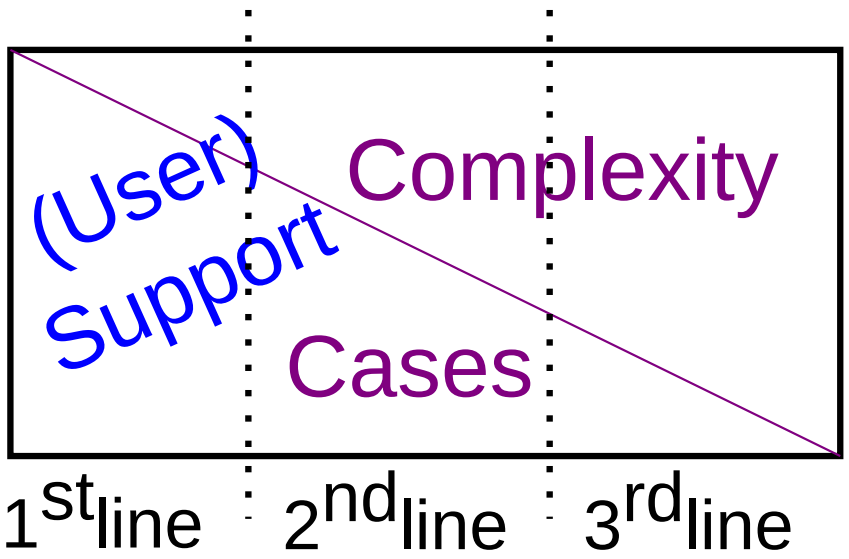
Termination



Termination

- Beyond shutdown
- Data transfer
- Proper elimination of the hardware
  - Security and confidentiality constraints
  - Environmental constraints
    - E.g. recycling
  - Legislation

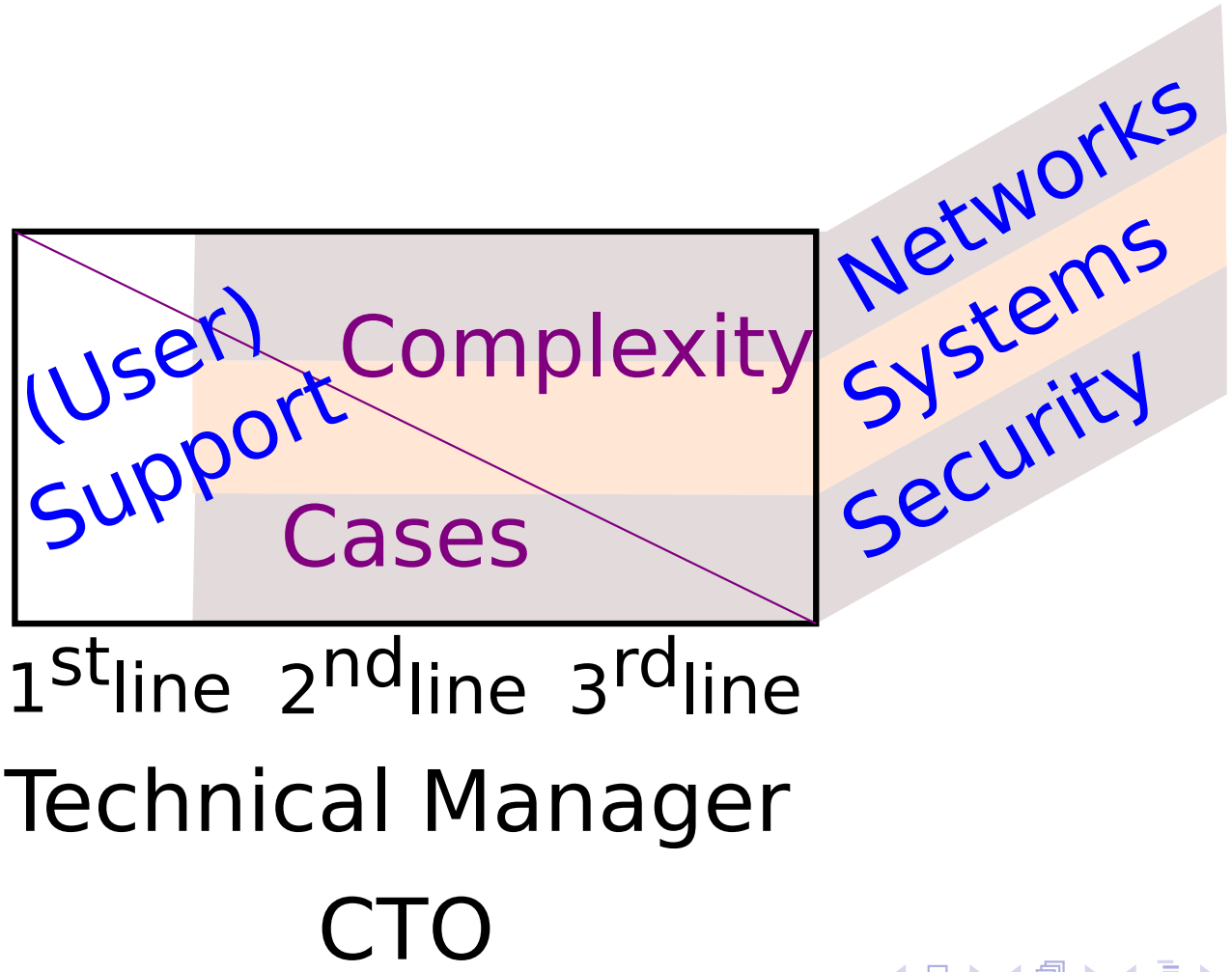
The Team



Technical Manager

CTO

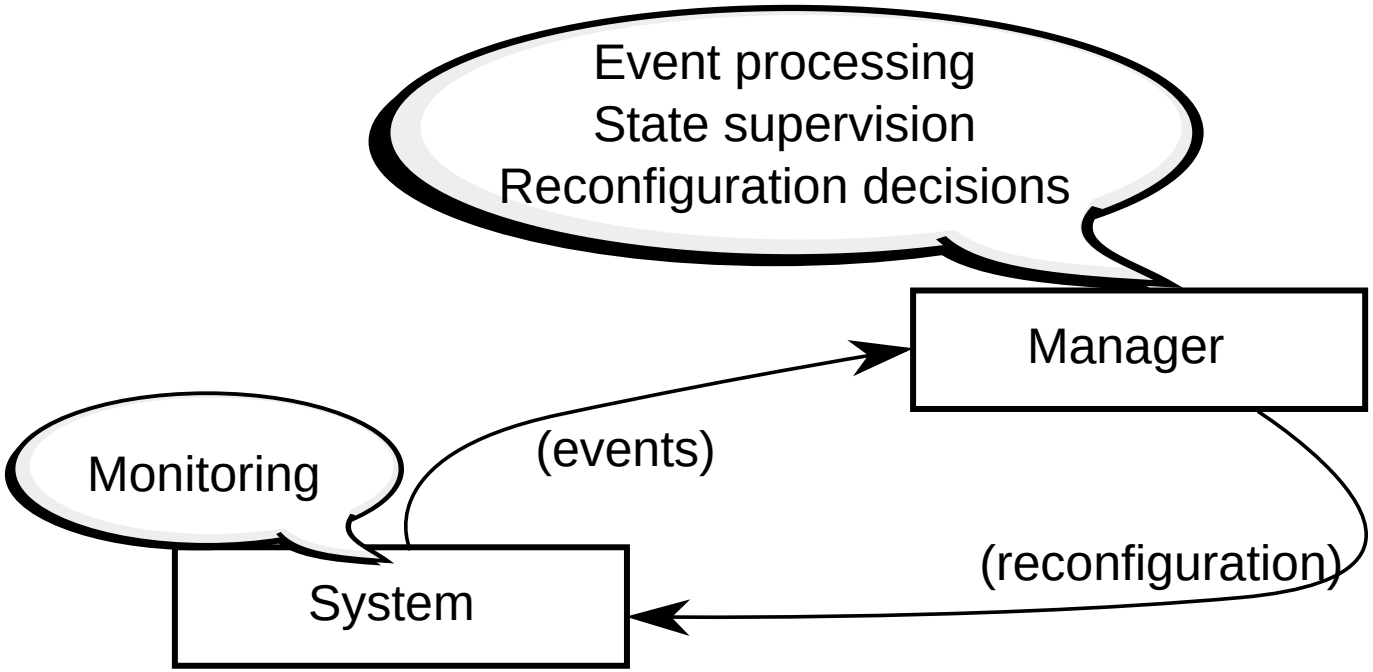
The Team


(User) Support
Complexity
Cases
Networks
Systems
Security
1st line
2nd line
3rd line
Technical Manager
CTO

Adaptation

- Borders on the drawing depend on the organization and adapt to:
  - To the expertises of the team members
  - To the business
  - To the number of members of the team
  - To the infrastructure and services

The Management Life Cycle



Decisions

Supported by:

- Strategy
- Politics
- Tactics

Decisions

Strategy

- Long term view
- High uncertainty level
- Reflects decision makers view
- Occasionally revised when conditions change
- Starts at planning

Strategy Example

All system users must be identified in a way that difficult identity theft

Decisions

Policy

- General rules implementing the strategy
- Should start at planning

Policy Example

- Passwords must have at least 8 characters and changed every 90 days
- Evidence must exist that the password is changed by the user

Decisions

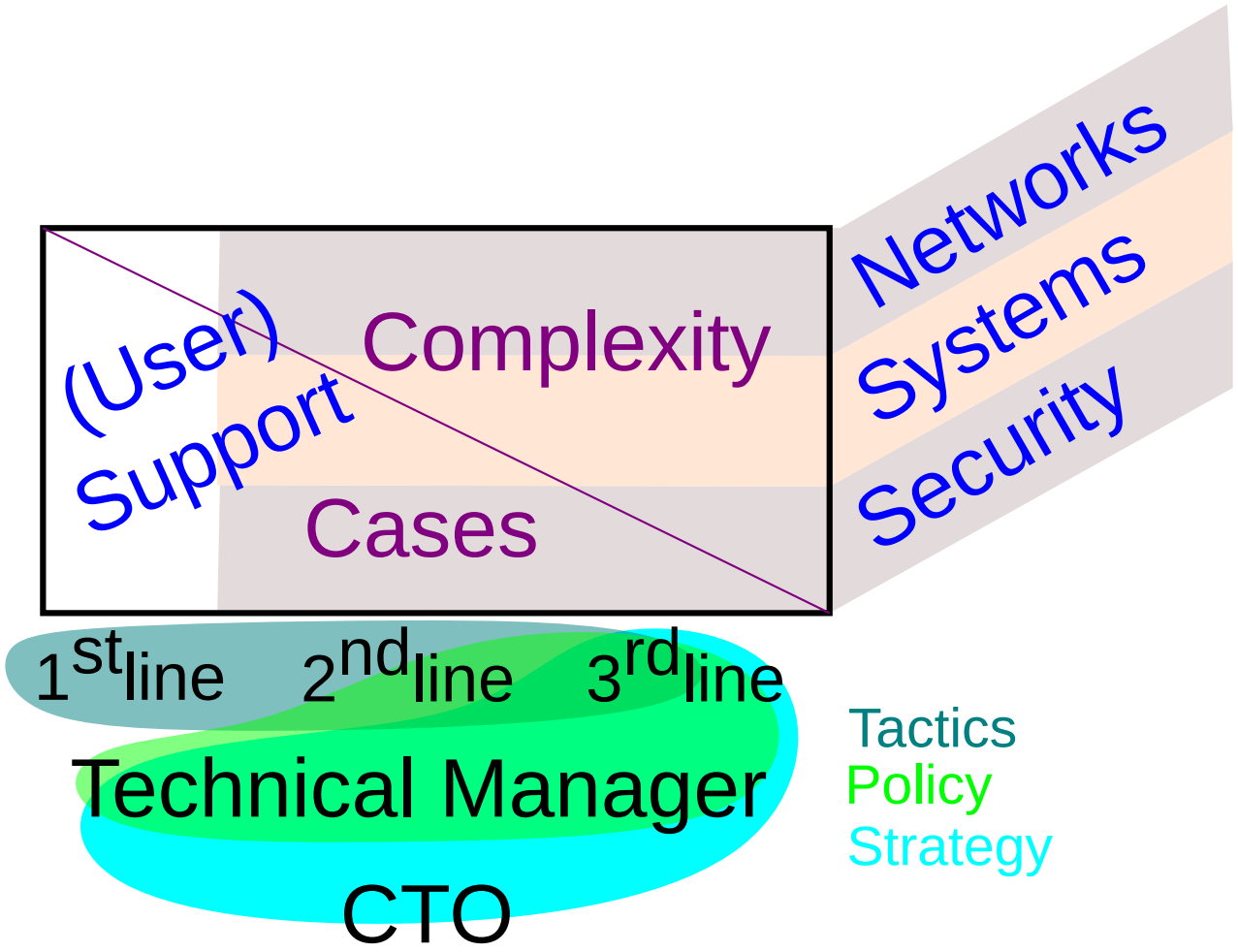
Tactics

- Immediate and applicable view of the policy
- Reaction to unexpected events according to the policy
- Found on operation system stage

Tactics Example

- Configure Active Directory so that passwords have at least 8 characters and changed every 90 days
- Decide what to do when a password of a user abroad expired

The Roles of Team Members in Decision Making



Tools

- Support
  - the knowledge from one area to another
  - help to keep track of pending issues
  - facilitate the flow of information from one area to another

Tools

Ticket Trouble Service (TTS)

- Gather issues (tickets) created by users
- Typically integrated with e-mail
  - Web management
- Team can
  - Reply to the users
  - Assign to other members/groups of members
  - Add notes to tickets
    - Visible or not by the user
- Permanently stores the history of tickets
  - Statistical information

Tools

Example (TTS)

- OTRS
- GLPI

Tools

Monitoring Framework

- Gathers information from the system
- Provides to the team a consistent view of what is happening
- Alerts team members when problems are detected
- Can gather information created by the team
- To be discussed latter in detail

Tools

Example (Monitoring Frameworks)

- Nagios
- Zabbix

Tools

Knowledge Base

- Wiki like framework allowing to store information
- Keeps an historical record of
  - what has been done
  - why was done that way
- Supports
  - Problems diagnostics
  - Historical search/archive

Wrap Up

- Systems born, live and die
- Management is a complex and busy activity
  - Always something happening
- The team must have:
  - Different specializations
    - Including "talk to humans"
  - Roles well defined
  - Well-defined guidelines and procedures
    - Saves time
    - Avoids mistakes
    - Protects members