GENERAL NOTES ABOUT INFORMATION SYSTEMS THEORY

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ERP (Enterprise Resource Planning)

Three main aspects:

- Data sharing: modules have access to same data, no data replication as in legacy systems. This can be done automatically by DBMS
- Modularity: software modules can be added to add certain functionalities, it can be good to make costs lighter and spread over time
- Prescriptivity: same modules are sold to different companies

Pros:

- Modules are tested and should be very robust
- No need to create specific software for certain tasks, but just buy what is needed
- Faster, because no development time, but only installation and training time
- Support is guaranteed and should be efficient
- Costs can be spread over time (buy only needed modules at first and then the other ones)

Cons:

- The same technology is used by many different companies, so this should be avoided if a company wants to mantain an internal know-how

CRM (Customer Relationship Management)

Indicates all processes (software or not) involved in managing customer relationships (sales, support, advertising, ...)

Characterized by a multichannel organization:

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- Web               ---+
- Call center          |        All data accessible through these channels
- Physical person      |        by a customer must be consistent
- E-mail            ---+
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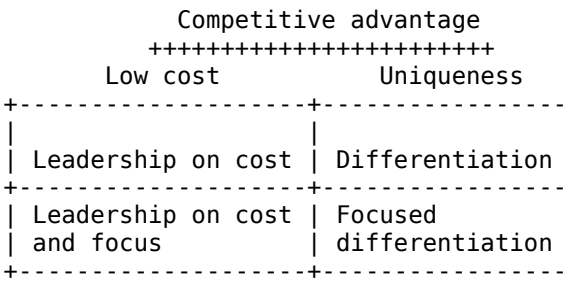
Company strategies

It's the definition of actions that need to be performed in order to reach goals.
Technological innovations may have great impact on strategies
(for example Kodak vs Fuji, same field of digital pictures, but different technological specializations)

Porter's generic strategies describe how a company pursues competitive advantage

across its chosen market scope:

- Cost Leadership: lower costs than competition,
  can be achieved by process improvement, high asset utilization,
  minimizing production costs in some ways such as outsourcing,
  minimizing supply costs (for example ordering large quantities
  of raw materials to gain a discount)
- Differentiation: differentiate the products/services in order to compete successfully
- Niche: focuses on a few target markets, can be coupled with previous ones



Examples to clarify:
Dacia is using a cost leadership, because produced cars are very cheap,
while Ferrari or Lamborghini have a niche strategy (target only few people).
Apple is using a differentiation strategy, especially on the design of its products.

Business-IT alignment is a dynamic state in which a business organization is able to
use information technology (IT) effectively to achieve business objectives.

@@@ TODO: internal / external

Organization Structures

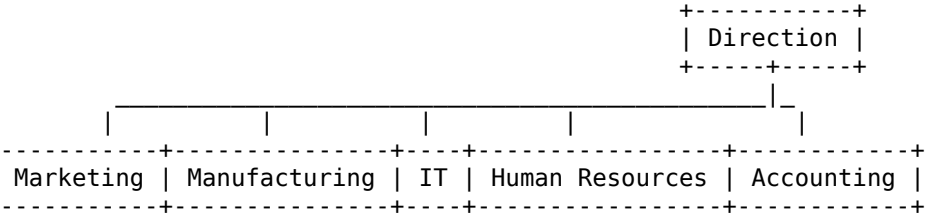
Three main structures:

- Functional: employees are grouped according to their skills, so for example
  there is a branch only for R&D, one only for manufacturing and so on
- Divisional: employees are grouped according to product,
  skills can be replicated in different branches.
  For example, FIAT plants producing different car models
- Geographical: employees are grouped according to geographical placement of branches.
  Skills can be replicated in different branches

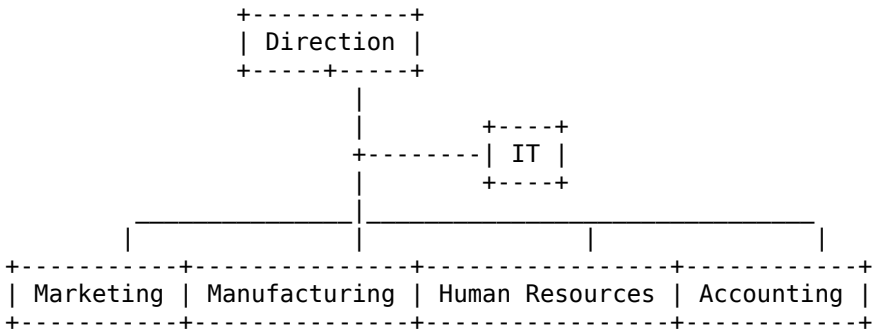
Organizations and IS

IT Area in an organization can be placed in three main different ways:

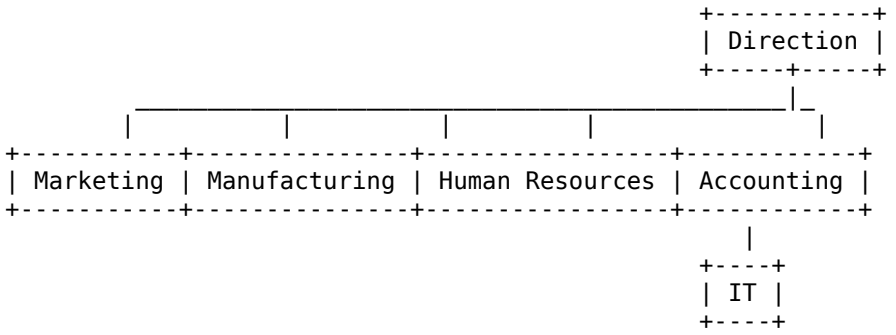
- As line function: IT department is one of the main areas of the company,
  on the same level of marketing, manufacturing and so on



- As staff function: IT department is seen as a support area,
  "detatched" from the main department of the company



- As sub line function: IT is seen as a sub-area of a main one
  (e.g. finance and accounting area), many IT departments can be present for different areas



Centralized IT (line and staff function):

Pros:
- Data sharing
- Uniformity of applications and formats

Cons:
- Could be hard to reach by other areas in case of problems (bureaucracy)

Distributed IT (sub line funcion, IT below each main area):

Pros:
- Easier to reach by a certain area, because IT is part of that area itself

Cons:
- No data sharing
- Each IT departmept could use different applications and different formats,
  so there is need to translate data every time

Roles in IT:

- CIO (Chief Information Officer):
  -> top level manager responsible of IT area, usually reports to top management (CEO)
- CTO (Chief Technical Officer):
  -> responsible of technology scouting and technology choices, reports directly to CIO or CEO
- CEO (Chief Executive Officer)
- COO (Chief Operation Officer)

TCO (Total Cost of Ownership) is a financial estimate intended to help buyers and owners
to determine the direct and indirect costs of a product or system.
Usually there are 4 main steps in the life-cycle of a system:

- Construction:..cost to contact producers and buy needed assets
- Deployment:....cost to start production, configure assets, train personnel
- Operation:.....manteinance cost
- Dismissal:.....cost to dismiss the system once it isn't needed anymore or when it needs to be
replaced

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######################################################################
#                                                                    #
# COBIT (Control Objectives for Information and related Technology) #
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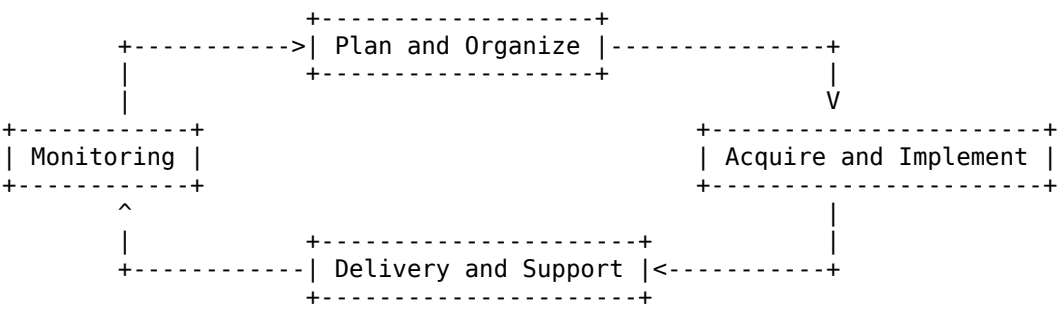
It's a model used to verify if IT processes involved in a company are well governed.
The model can be seen as a cube, where the 3 dimensions represent:

- IT resources: all assets involved in the company (people, infrastructure, applications, data, ...)
- IT processes: all processes that can be found in a company. There are a total of 34 different processes, that can be grouped in 4 main categories:



- Information criteria: criteria to evaluate processes (efficiency, defectiveness, reliability, security, compliance, ...)

The model is used in this way: a table having processes on rows and resources/criteria on columns is filled, in order to know which criteria are satisfied and for which resources.

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###############
#             #
# Outsourcing #
#             #
###############
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Axes:

- Activity/Service: which part of the company can I put in outsourcing?
  - IT infrastructure
  - Application(s)
  - Business process(es)
- Unicity: how is the outsourcing performed?
  - Dedicated:....outsourcing solution is for one or few customers only (for example a software developed explicitly for a company)
  - Shared:.......outsourcing solution is shared by many customers (ERP)
- Location:
  - On-site:......outsourcing takes place inside the company (for example developers from external company called to work inside)
  - Off-site:.....outsourcing takes place outside the company
  - Near-shore:...outsourcing takes place outside the company, but always in the same country or continent
  - Off-shore:....outsourcing is very far, e.g. indian call centers working for english firms

Definitions:

- Hosting: assets and assets management is all outsourced
- Housing: assets are mine, but they are housed by another company and management is outsourced

What can be outsourced?

- Strategic processes should never be outsourced
    (for example FIAT, whose main process is producing cars,
    couldn't outsource its production or it would just become a "reseller")
- By looking at COBIT and its main process categories,
    we can say that "Plan and Organize" processes and "Monitoring" processes can't be outsourced.
    This is because these 2 categories are essential in order to know what to outsource and
    to check what the outsourcing company is doing.
- Thumb rule of Levy: "if you can really write the whole job down on paper, then someone else can do it"

SLA (Service Level Agreement)

It's a part of the contract in which particular aspects of the service
(scope, quality, responsibilities) are agreed between the service provider and the service user.
Note responsibilities: this means who takes responsibility
                       if one or more aspects of the SLA aren't fulfilled.
An example: for a web hosting, the provider will guarantee an availability rate of 99,99%.

When performing an outsourcing operation it is important to keep in mind also hidden costs,
which are costs not explicitly defined, but that could happen if something goes wrong,
for example if a webserver goes on fire, how much will it cost in terms of data loss,
time to restore everything and so on? How much will it cost to conver data?
Better to agree on a standard in the SLA and so on.

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####################################
#                                  #
# KPI (Key Performance Indicators) #
#                                  #
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They evaluate the success of an organization or of a particular activity in which it engages.
If possible, always state the used unit of measure.

- General KPIs:

    Input volume
    Output volume
    Human resources
    Non human resources (plants, machines, facilities)
    Inventory
    Other resources

- Efficiency (cost) KPIs:

    Cost per unit:.............can be calculated or estimated
                               (employee cost / number of "products" completed)
    Productivity of resources:.number of "products" / number of employees needed to complete them
    Utilization of resources:..effective working H with respect to paid ones (same for machinery)

- Service KPIs (times):
    Response time, Lead time
    On time
    Perfect orders
    Flexibility toward customer

- Quality KPIs:

    Conformity (defects)
    Reliability
    Customer satisfaction

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#                                 #
# CSF (Critical Success Factors) #
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Element that are necessary for an organization or project to achieve its mission.
In other words, they are general objectives that the company wants to reach.

        - Corporation:

                Brand recognition, image
                Dealers network
                Equipment of cars
                Reliability of cars
                After sales service

        - Function (manufacturing):

                Production costs
                Quality of product
                Environment issues
                Relationship with trade unions

        - Manager (quality manager):

                Reputation with regard to other functions/roles
                Skills of technicians
                Process certification
                Technology for monitoring quality

Critical Success Factor vs. Key Performance Indicator (KPI):

        - Critical success factors are elements that are vital for a strategy to be successful
        - A critical success factor drives the strategy forward,
          it makes or breaks the success of the strategy
        - Strategists should ask themselves 'Why would customers choose us?'.
          The answer is typically a critical success factor

KPIs, on the other hand, are measures that quantify management objectives,
along with a target or threshold, and enable the measurement of strategic performance.

An example:

        KPI = Number of new customers.
              (Measurable, quantifiable) + Threshold = 10 per week
              [KPI reached if 10 or more new customers, failed if < 10]

        CSF = Installation of a call centre for providing superior customer service
              (and indirectly, influencing acquiring new customers through customer satisfaction).

In other words, CSF are more general factors, which are evaluated by using KPIs.




############################
#                          #
# BSC (Balanced ScoreCard) #
#                          #
############################

It's a strategy performance management tool, supported by design methods and automation tools,
that can be used by managers to keep track of the execution of activities by the staff within their
control
and to monitor the consequences arising from these actions.

It uses a "4 perspective" approach to identify what measures to use to track the implementation of
strategy:

   - Financial:.....encourages the identification of a few relevant high-level financial measures.
                    In particular, designers were encouraged to choose measures
                    that helped inform the answer to the question "How do we look to shareholders?"
                    Examples: cash flow, sales growth, operating income, return on equity
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- Customer:.....encourages the identification of measures that answer the question
  "How do customers see us?"
  Examples: percent of sales from new products, on time delivery,
  share of important customers' purchases, ranking by important customers.

- Internal
  business
  processes:.....encourages the identification of measures that answer the question
  "What must we excel at?"
  Examples: cycle time, unit cost, yield, new product introductions.

- Learning
  and
  growth:.....encourages the identification of measures that answer the question
  "How can we continue to improve, create value and innovate?"
  Examples: time to develop new generation of products,
  life cycle to product maturity,
  time to market versus competition