

Engineering Management Methods BMEVITMAK47

Electrical Engineering BSc Major

Software Engineering BSc Major

MANAGEMENT FUNCTIONS AND ROLES

From project managers to CEO-s

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INTERPRETATIONS OF MANAGEMENT

according to the subject of management

1. Managing organizations (companies, institutions, etc.):

- Management of activities arranged into organizations
- Characteristics: formal relations, hierarchy, exercising power
- Objective: organizational result (profit, market share, etc.)

2. Leading people, group of people:

- Guidance: a guide is a person, who guides others, who is on the leading edge, leads on (leader, leadership)
- More personal (informal) than formal management of an organization
- Characteristics: informal relations, authority, influence, trust
- Objective: satisfied community

3. Governing corporations:

- Decision making board (5–11 persons) representing the owners
- Governance, right to vote
- Characteristics: cooperation, compromise, aiming at balance
- Objective: satisfaction of claims of interest groups, achieve majority

DEFINITION OF MANAGEMENT

several approaches, definitions

In business: *the performance (profit)-oriented perception is general, where the **essential elements** of management (as an activity):*

- assignment of *objectives and tasks* necessary to achieve objectives
- influence on *people* to the direction required by the management
- generation of *positive (effective) changes* in the organization
- altogether: *to achieve **success in business***

Characteristics:

- *Dependent on the organization:* type, size, state, owners
- *Dependent on the environment:* legal, economic, institutional/market state (competition or monopoly, boom or recession)
- *Dependent on position:* level of position (project manager ... CEO)
- *Systemlike:* regulated processes and a lot of routine and standards
- *Not fully standardizable:* unique cases and decisions
- *Limited rationality:* decisions with the lack of enough time and information
- *Complex:* technical, economic, organizational, legal – regulatory, human
- *Developing and adaptive:* changing environment, more experience, learning
- *Dual:* combines the retention and changes in the organization (preserving the values and innovation in the creation of them)

BALANCE AMONG THE THREE APPROACHES OF MANAGEMENT

The task of the management is to establish the **dynamic balance** proper to the state and environment of the organization.

SYSTEMS, PROCESSES

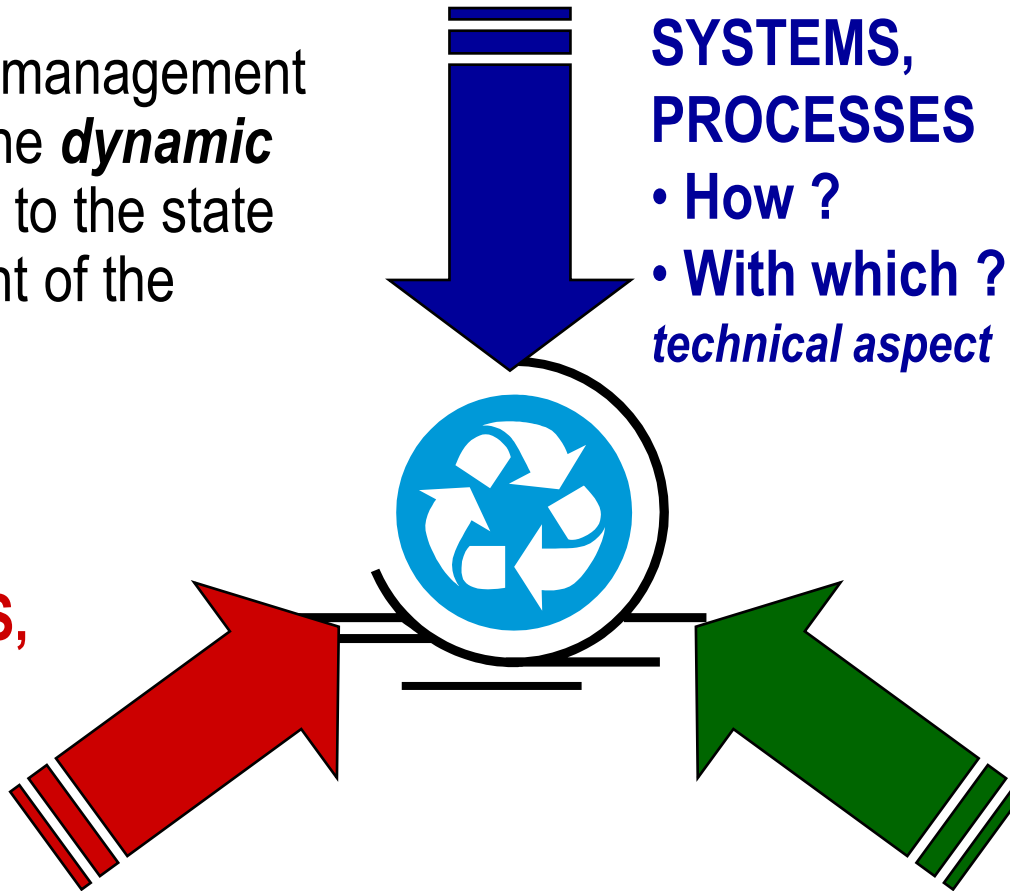
- How ?
 - With which ?
- technical aspect*

OBJECTIVES, RESULTS

- short term
 - long term
- economic aspect*

PEOPLE, ABILITIES

- Responsible for?
 - Working with?
- human aspect*



COMPONENTS OF THE MANAGEMENT ACTIVITIES

„The 7 caps of the managers”

(Taking care of) People

(education, help, coaching, assessment)

Communication

(oral, written, informal relation, negotiation, image)

Action

(things to happen, workload and conditions)

Administration

(planning, conciliation, report, certificate of performance)

Business

(assurance of business performance, developing business)

Direction

(guidance, focusing, change, taking responsibility)

Anxiety

(taking care of deadlines, budget, risks)

| Proj. | Med. | High level | Top |
|----------------|------|------------|----------------|
| Manager | | | |
| | | | |
| | | | 15% 5 .. 30 |
| | | | |
| | | | |
| | | | |
| | | | 30% 25..70 |
| | | | 10% 5..40 |

MANAGEMENT FUNCTIONS AND ROLES

– Partially overlapping 18 functions –

- O1 Planning
- O2 Organization
- O3 Rule making
- O4 Coordination
- O5 Supervision, monitoring
- O6 Controlling
- O7 Performance evaluation
- O8 Division management

Operative man.
functions

-
- S1 Strategic management
 - S2 Staffing
 - S3 Governance

Str. man.
roles

-
- E1 Decision
 - E2 Exercise power
 - E3 Information management
 - E4 PR, in-house communication

Elementary
man. roles

-
- P1 Security, troubleshooting
 - P2 Innovation management
 - P3 Project management

Peculiar
man.
functions

Operative management functions:

General (elementary) management tasks:

- **planning, organization, rule making, coordination,**
- **supervision, controlling, evaluation,**
- **all the above for an organizational unit**

O1. Planning

- ***Objectives*, determination of the *ways and methods* towards the objectives, *results* to be achieved**
- **Plans and documents classified**
 - ⇒ ***by time interval*: yearly, rolling through several years, daily/weekly/monthly/quarterly „to do”-s**
 - ⇒ ***by nature*: comprehensive (with milestones) and detailed; operative, action plan, project plan**
 - ⇒ ***by form*: business (financial) plan, professional plans (eg. development/investment, labour, increase of salaries), action plan (task, deadline, responsible person)**
- **Not deputable, direct managerial roles: set the objectives and approaches, approval of the plans**

O2. Organization

Formation and continuous *development of operation* to have *everything in order, clear and effective*.

Examples:

- ⇒ ***Building up and developing organizations (the framework):***
tasks, competence, responsibility and hierarchical conditions of different units (groups, departments, divisions, etc.) within a company (Regulation of Organization and Operation, ROO)
- ⇒ ***System organization: coordination of the elements (eg.: development-production-sales) of a corporate system,***
- ⇒ ***Organization of processes (and operation):***
interconnection of jobs of people/org. units, arrangement of activities, can be potential basic principle
- ⇒ ***Organization of jobs (and activities):***
what, how and with what to do
- ⇒ ***Outsourcing: activities organized to outside, purchase of activities/services from outside***

O3. Rule making

Organization of *repeated, foreseen processes and activities* by regulation, direction and interest.

- **Comprehensive: Regulation of Organization and Operation (ROO)**
- **Procedural regulation: who, how, when and what to do, sanctions (eg.: CoS: Code of Studies at a university:**

https://www.kth.bme.hu/document/2365/original/BME_Code_of_Studies.pdf);

who, how and when can initiate, who can have opinion, who decides (eg. new ideas, modification of procedures, distribution of resources);

- **Technological directions, norms of input material**
- **Chapters of budget: direct, indirect interest**

O4. Coordination

Composing teamwork, coordination of jobs of people co- and/or subordinated

- **Formal (vertical): coordination of activities of units (eg. at manager meetings)**
- **Ad-hoc committees, projects (horizontal, diagonal)**
- **Expert team coordination around the top managers**

O5. Supervision, monitoring

Tracing and monitoring the operation

- Reports, summaries (for projects, weekly, monthly, etc.)
- Quality control: service quality, acceptance of equipment
- Accounting: accounting registry, yearly statement
- Statistical data collection and analysis (corp. and state level)
- State level accounting, supervision, accreditation:
tracking laws and rules, tax payment, service quality

O6. Controlling

Strongly connected to supervision (freq. considered as its part)

In case of errors, significant deviations of plans: analysis of reasons, managers' actions, intervention, modification of plans

In complete systems: harmonized control of processes,

development of operation on uniform basis including IT,

⇒ *Corporate controlling*: control of techno-economic processes, including: planning, supervision, performance evaluation

⇒ *Quality assurance*: to processes of production and services

Conceptions of management: TQM/TQL

Operation followed by continuous attention, index numbers, intervention if needed (quality development program)

O7. Performance evaluation

At individual, team and business unit/division levels

The leader qualifies the employees' work and results

Performance evaluation and setting objectives done together regularly (eg.: yearly) or limited to an event

Connected to the system of salaries, bonuses, premia, promotion

Evaluation at corporate level: by economic indicators and stock exchange (eg.: rate of stocks, profit relative to property, customer/employee)

O8. Division management

Comprehensive (including business administration) and complex management activities aiming at operative issues of parts of a company (departments, divisions, etc.):

- planning, ensurance and distribution of resources;**
- organization of work, decomposition and distribution of tasks;**
- controlling – input into processes, performance evaluation, etc.**

Strategic management functions

S1. Strategic management

- **Strat. state and trend analysis (SWOT: strengths, weaknesses, opportunities and threats), determination of strategic objectives and policies**
- **Development, realization and tracking of strategy**
 - ⇒ **controlling of changes, transformation of the company**
 - ⇒ **enterprise cooperation, alliances, acquisitions**
- **Enterprise (internal) values, priorities, vision, strategies, action plans**
- **Leadership-like, upper-medium level management function**

S2. Staffing

Selection of the management team members and the closest colleagues: preconditions, capabilities, trust

Sources: personal relation, internal selection, tender, personnel consultant, head-hunters

Rearrangement in power structure ~ conversion of the management team

S3. Governance

In case of several (hundreds, thousands of) owners the board (of 5-11 members) representing the owners administers the organization and makes the strategic decisions.

The agenda is prepared and submitted by the management. At least the CEO (chief executive officer) participates (other management members can also participate) the board meetings.

Variations to participation and voting rights at board meetings:

- CEO is the only participant from the management team**
- Several members of the management team are invited**
- CEO has voting right**
- CEO and board president in one person**
- Beside CEO several (upto 3: e.g. CFO, CIO, CTO, CSO) members of the management team have voting right at board meetings.**

Elementary management roles:

E1. Decisions

- **Obvious consequence of practical management activities:**
there can be several different but correct solutions to a problem from which one of them should be selected/decision made
- **Types of decisions:** binary (Y/N), selection from a choice, allocative
- **Procedure of decision:**
 - ① **exploring the circumstances of decision (preparation);**
 - ② **discovering and analyzing the possible choice of decision**
 - ③ **consideration and decision (individually or in team);**
 - ④ **follow-up, modification if needed.**
- **Principle of subsidiarity, IT support for decisionmaking procedure**

E2. Exercise power

- **Authority and capability of influencing the organization**
- **Resources:** competence, power (from hierarchy and ROO), influence, respect
- **Content:** engagement; disposal, right for instruction; rewarding, sanction; right to declare; modification/restructuring the organization; establishing alliances; influencing decisions; selection of information, etc.
- **Struggle in management:** in the form of different aspects of business policy

E3. Information management

Preparation of management decisions:

**understanding and exploiting the business power hidden in info
Personal/organizational issues, technological and business
decisions:**

- **opportunities to rationalize and increase efficiency**
- **technological forecast, risk of change**
- **marketing, survey of the market, customer satisfaction**
- **Personal information collection, observing novelties, attending conferences, exhibitions**
- **Making analyses and impact studies**
- **Utilizing R&D&I activities**

E4. PR, in-house communications

➤ **Internal (in-house) communications:**

Statement on management's purposes, influence, motivation

Involvement of staff, endorsement with the company

Fora, meetings, committees, circular letters, intranet, press

➤ **Public relations (PR):**

• **Brand communication (company commercial):**

to professionals and/or public, lobby, image development

• **Marketing communication: management of**

products/services, advertisement, commercial, promotion

Peculiar management functions:

(Team building functions, special leadership roles, engineering management tasks, etc.)

P1. Security, troubleshooting

- **Danger in business / moral, financial loss: losing a segment of the market, failure of a product, bankruptcy of a business partner, withdrawal of a permission, changing of regulation, failure of the information system (hw, sw, database, network, power supply), virus, cybercrime, etc.**
- **Recognition and forecast of danger, preventive solutions, contingency plans, protection and security plans**
- **Significant role of information and network security in e-world**

P2. Innovation management

Enrichment, exploitation and protection of organizational knowledge.

Types:

- **Technological/product innovation**
- **Management (marketing, organizational) innovation**

**Based upon R&D (research and development) and technological forecast
Knowledge management (KM), protection and exploitation of intellectual property (IP) (patents, trade marks, know-how, etc.)**

Forms: technological transfer, incubation, foundation of start-up and spin-off enterprises.

P3. Project management

The tasks of realization of the strategic objectives are different in time and content from the operative management ones, typically well-defined, complex and unique problems (eg. introduction of new manufacturing capacities, introduction of new products to the market, informatization of enterprise control).

Project (in general): single (unique), complex task defined by:

- **the result as its objective (of fixed and controlled quality),**
- **the duration of execution,**
- **the budget of execution.**

To achieve the objectives project management focuses on:

- **the human and technical resources,**
- **information, tools of methodology.**

Project manager: person of competence and responsibility

SUMMARY: BALANCE OF MANAGEMENT FUNCTIONS

**SYSTEMS,
PROCESSES**
• How ?
• With which ?

O2 Organisation
O3 Rule making
O5 Supervision, monitoring
O6 Controlling
P3 Project management

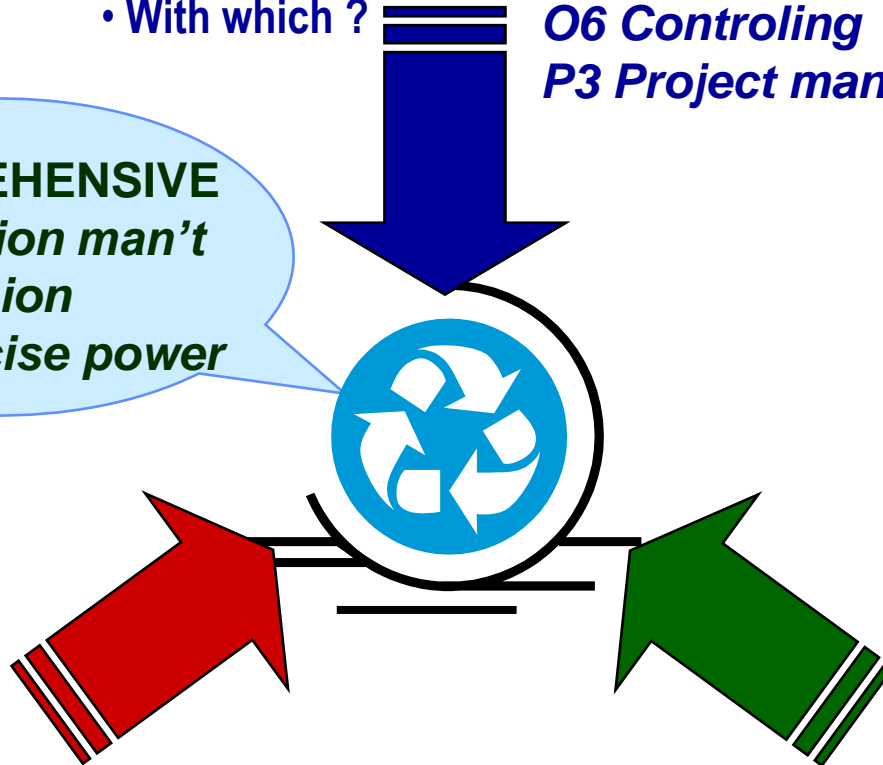
COMPREHENSIVE
O8 Division man't
E1 Decision
E2 Exercise power

**OBJECTIVES,
RESULTS**
• short term
• long term

O1 Planning
S1 Strategic man't
S3 Governance
E3 Information man't
P1 Security, troubleshooting

**PEOPLE,
ABILITIES**
• Responsible for?
• Working with?

O4 Coordination
O7 Performance eval.
E4 PR, in-house communication
S2 Staffing
P2 Innovation management



Thank you for your attention!

See you next Wednesday!