Business Modelling Basics, ISO 9000 and CMMI

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System Notion

A **system** is

> ▷ a *whole* composed of *parts*
> ▷ with a *specific purpose* (a *main useful function* – MUF),
> ▷ which results from the *interaction* of the functionalities of the parts as an *emergent function*.

Systems thus have a structural, a functional and an operational dimension.

System Dimensions

The **structural dimension** (structural organisation) is especially important for understanding the system as a white box (i.e. its implementation).

The **functional dimension** is a specific, complexity-reducing form of both the description and the real-world organisation of complex functional processes (procedural organisation) using the principle of encapsulation, which is also widespread in computer science.

In the **operational dimension**, the functions are linked with the resources required for their functioning and thus functions are transferred from a pure potentiality into a (potential) reality.

Operationality means that not only the MUF of the system is constituted from the functionalities of the parts in the way described in the procedural organisation, but that the system also creates the operational conditions for the functioning of its parts.

Self-Moving Systems

In this sense, the *world of technical systems* (lecture) is itself again a system, although structural and procedural organisation at the system level are largely unknown in terms of description. This system is a "self-moving automaton" in the sense of Marx's statement

> [. . .] *set in motion by an automaton, a moving power that moves itself; this automaton consists of numerous mechanical and intellectual organs, so that the workers themselves are cast merely as its conscious linkages."* (MEW 42, ch. 13)

This system functions "by itself" because the parts mutually produce their respective necessary operational throughput conditions. That system has **no external standpoint of planning** for this, but it does draw on external material and energetic resources.

Shchedrovitsky on Organisation

Shchedrovitsky distinguishes three dimensions

▷ Organisational work
▷ Organisation as the result and means of organisational work
▷ Organisation as a form of life of the collective

Organisational work: A designer collects a set of elements in a particular way, establishes some kind of connection and relations between them, in this way imposing some organisational form on these elements.

Shchedrovitsky on Organisation

Organisation as the result and means of organisational work as **artificial entity**.

It depend on the *goals and objectives of the organiser*. It has a *purpose* and can be considered, as can any structure, in terms of the *functions* that it, the organisation, must provide.

As a tool, as a means, **as an artificial entity, the organisation does not and cannot have goals**.

Shchedrovitsky on Organisation

Organisation as a form of life of the collective.

The organisation has been created, and it has begun to live its own life. Generally, something quite different begins, inasmuch as this **organisation begins to live its own life**.

When the organisation is seen from a natural viewpoint, it is not yet the means, but the **form**, the **condition** of the life of the collective (the people) who work in it.

Shchedrovitsky on Management and Leadership

Management is only possible in relation to objects that have self-propulsion.

Leadership is only possible within an organisation, within the framework of special organisational connections. The essence of leadership is the **setting of goals and objectives for other elements**.

The person who **occupies a certain position** gives up their own goals and objectives, their own self-propulsion (by the fact of occupying that position).

Leaders not only lead, but also need to manage, because their subordinates do not always entirely surrender their own goals ...

Systematic Management in Organisations

Thus **Management** means to *control* the processes taking place in the (living) organisation with the *goal* to implement the *purposes* of the organisation in an efficient way.
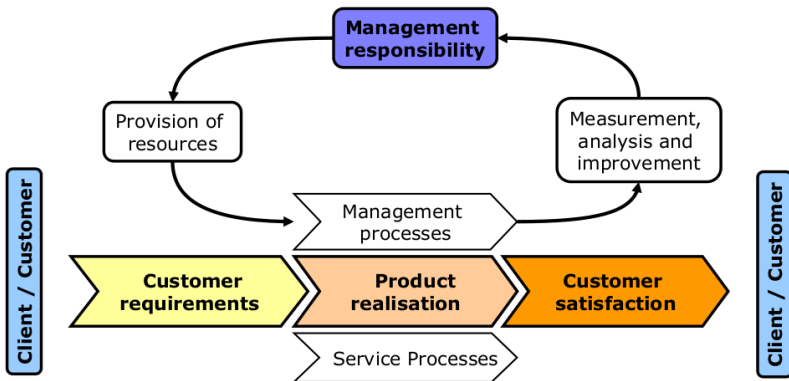
Management is usually divided into several relatively autonomous levels

> ▷ Strategic management
> ▷ Middle management
> ▷ Operational management
> ▷ Infrastructure management and support

which are themselves in systemic system-subsystem interrelations and thus in a co-evolutionary relationship which is best processed via a control loop designed as a feedback loop.
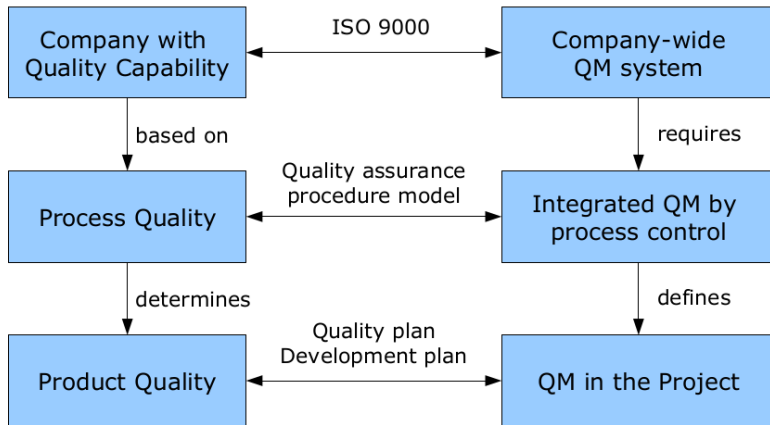
Control Loop in a Process Model

**Control loop of the modified
Process Model of ISO 9001:2008**

Management responsibility

Provision of resources

Measurement, analysis and improvement

Management processes

Service Processes

Client / Customer

Customer requirements

Product realisation

Customer satisfaction

Client / Customer

ISO 9000

ISO 9000 is a set of general quality assurance standards to **assess** the process quality of enterprises. It is a descriptive standard and not directed towards improvement of process quality (although can be used for such an improvement in combination with other tools).

Models and Metamodels

Quality Assurance according to ISO 9000

Company with Quality Capability	←— ISO 9000 —→	Company-wide QM system
based on ↓		↓ requires
Process Quality	←— Quality assurance procedure model —→	Integrated QM by process control
determines ↓		↓ defines
Product Quality	←— Quality plan Development plan —→	QM in the Project

Managing Organisational Development

Management is only possible in the context of a clear understanding of the structural and procedural organisation of the organisation. In order to capture this in descriptive terms, a **separation of functions and resources** is necessary. In particular, "human resources" are removed from the description and replaced by the term **role**.

In this way, a *functional decoupling from the resources* is achieved at design time – only at runtime this position must be connected "just in time" with a qualified resource that was produced beyond the horizon of the concrete planning processes.

Managing Organisational Development

Only with such a decoupling (and only at the level of such a decoupling) it is possible as management to take an external standpoint on its own activities. Only in this way is **structurally driven organisational development** possible. There are other culturally driven approaches such as TQM, which will be discussed separately (the Toyota model).

Systematic management through structurally driven organisational development means above all the creation and improvement of conditions for the management of well-structured processes.

Managing Organisational Development based on CMMI
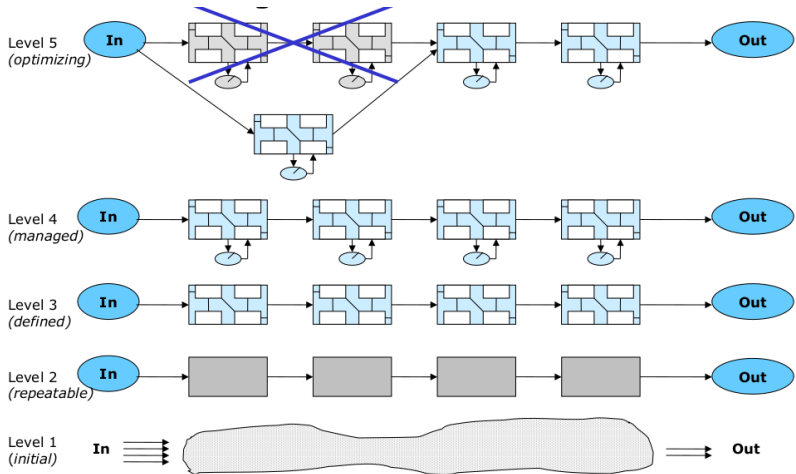
Increasing maturity of structured project management
within CMM(I)