MCA-504:
(Business Information Systems)

UNIT-III & UNIT-IV

The Process Phenomenon

- A process is structured change, i.e.there is a pattern of events which an observer may recognize across different actual examples (or occurrences) of the process, or which may be made manifest, or implemented, in many different occurrences.
- The process may be a description of occurrences, or it might in fact shape these occurrences.

The Process Phenomenon

- **CHANGE** is variously viewed as both a strength and a weakness of the organization process.
- Reluctance to effect change can arise because the reasons underlying the process are obscure, so there is a very real possibility of change having undesirable impacts.

The Process Phenomenon

- Natural Processes: changes occurring naturally, e.g., a natural process changing the state of the real world is that of fossilization.
- Artificial Processes: do not simply occur as do natural processes, they need to be articulated by an agent of some kind to effect the transformations. E.g., the process of law, which minimizes the occurrences of undesirable human behavior.

The Process Phenomenon

- Where agent is a machine, there is a regularity, predictability and determinism in the process which permits relatively easy and precise description.
- With human agents, there is no guarantee that an anticipated event will in fact take place. They are non-deterministic.
- Organizational processes are artificial processes, usually hybrid, in that some parts may be articulated by humans and other parts by machines.

The Process Phenomenon

- The mechanism in which we are interested is the one that involves a progressive change of state.
- Within the group of organizational processes, our primary concern is with information processes, those that manipulate data or information, rather than those that manipulate materials in the well-known factory production processes.

The Process Phenomenon

- Process Views:
  - **Functional**: considering what process activities are being performed, and the relevant flows of information entities
  - **Behavioral**: considering when they are performed, as well as aspects of how they are performed
  - **Organizational**: considering where and by whom in the organization the activities are performed
  - **Informational**: considering the informational entities, including structure and relationships produced or manipulated in the process

Kinds of Process

- Operational Process or Production Process:
  - *This is the process that directly sets out to achieve organizational objectives.*
  - *All operational processes in organizations have outputs which are either physical or textual objects, or a behavior (i.e. a service) which is of value to someone else either within or outside the organization. (GOAL-ATTAINING process)*

Kinds of Process

Control Process:

- *The goals are continuously to maintain a state which relates to another process, rather than to achieve a specific state and then conclude.*
- *It must have certain specific features, such as some provision for feedback, for its analysis, and the means of manipulating the operational process to achieve desired results.*
- *In addition it can be an intrinsic component of the operational process, as well as exerting overarching control over all aspects of an operational process.*

Kinds of Process

- **Generic Process:**
  - *A generic process exists only as a model, as it does not possess sufficient information for it to be used directly in the real world.*
  - *However it can be adapted and associated with, or bound to, people and machines for carrying out the work of the process.*
  - *Generic process can be viewed as patterns: architectures of potential solutions to certain types of problem.*

Kinds of Process

- **Customized Process:**
  - *An adaptation of a generic process to suit specific objectives and using identified resources in an organization.*
- **Enactable Process:**
  - *A process which is defined in such a way and in such a medium that it can be executed using process technology such as process-centered environment.*

Kinds of Process

- **Meta Process:**
  - *The term was first used in the domain of software process modeling. The prefix implies* **about**,*and this can be interpreted as a process that is concerned with another process or processes.*

Associated concepts

- **Activity:**
  - *is an item of behaviour which is of interest. The granularity of the behaviour has a very wide scope, form the elemental movements of an individual to the behaviour of a whole organization.*
  - *A* **TASK** *is a managed activity.*
- **Agent:**
  - *is the means of accomplishing the activity or the task.*

Associated concepts

- **Behavior:**
  - *is usually taken as a synonym for activity.*
  - *Other views states behavior as an activity whose preconditions are too suitable to be usefully defined.*
- **Cases:**
  - *These are succeeding process occurrences for which certain aspects of the context are dissimilar and this require slightly different activity in order to achieve the desired outcomes..*

Associated concepts

Cybernatics:

- *The study of control and communication in natural and artificial systems.*
- *It is particularly focused on self-regulating, self-maintaining systems.*

Plan:

- *This is typically a chart of a route through activities for an instance of a process.*
- *A plan states or shows how an objective will be realized, not in terms of a general method or theory, although it may make use of these, but in practical terms.*

Associated concepts

- **Procedure:**
  - *is a process which is adopted under specific circumstances. It is usually short and expressed in narrative form.*
- **Production Line:**
  - *A permanent organization structure which is needed to coordinate people, tools and resources to handle multiple concurrent and continuously generated examples of a production process.*

Associated concepts

- **Project:**
  - *This is a temporary organizational arrangement to achieve a set of objectives by enacting a single instance of a process. Project make use of plans and procedures.*
- **Programs:**
  - *Software programs are examples of the most rigorous kind of process.*
  - *Programs determine behaviour, but computer systems do not determine the behaviour of the user organization, although they may strongly influence it.*

Process Representation and Models

- **Process Description**:
  - **Straightforward narrative**
    - *Might suffer from the inherent ambiguity of natural language and it can be semantically unclear.*
- **Models**:
  - **Models, either physical or graphical, provide a way of mapping and preserving a clear relationship between model and real-world subject.**
  - **Models are representations, expressed in some modeling medium, of something of interest.**

Process Representation and Models

- **Models:**
  - Four necessary things for a model to exist:
    - *That part of reality that is the subject of the model*
    - *The model itself*
    - *The relationship between them*
    - *An observer, user, or creator of the model*

Process Representation and Models

Models:

- The point in creating a model is to provide a way of studying certain features of the subject.
- What is present in the model and what is omitted is a decision of the modeler and is based on the model's purpose.
- A model has a structure which can be systematically related to structures in the real world.

Process Representation and Models

- **Models (aids in):**
  - Simplifying complexity: Models help people to understand more complex realities than would otherwise be possible.
  - Common understanding: A model representation can be semantically superior to, say, a narrative description and thus it can promote knowledge and learning.
  - Study of alternatives: A model assists in evaluating alternative shapes of reality at low cost.
  - Shaping of the real world: A model can be used as a part of reality to influence, control, guide or direct what happens in the real world.

Process Domains

The study of the organization processes (the coordination of human and software agents) is in many respects much less tractable than the study of manufacturing processes (the coordination of machine agents).

- This is the real world
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  a
  - The enacting process influences
    process
    performance,
    The performing process
    is an occurrence of an
    abstract process.
    's an example
    is bound to
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    the
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    may not
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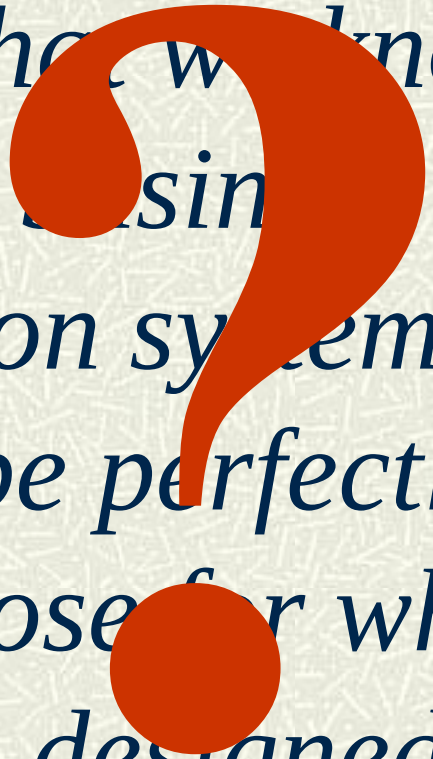
    ved occurrences, and
    may be based on historic
    information.
  local rules,
  experiences of teams.

This view of the distinct domains in which a process has different meanings enables us to appreciate the complexity of human-machine interactions, and so attempt to deal with it in a more systematic manner.

More about the Meta-Process

One thing that we know about any designed business process or information system is that it is unlikely to be perfectly suitable for the purpose for which it was designed.



More about the Meta-Process

Reason: *the fact that the processes can be context sensitive, and the tools at our disposal are not yet (and may never be) sufficiently adequate for representing the context of human behavior in all its subtle complexity.*

Engineering of Processes

- *"Science is concerned with understanding the natural world, and engineering with intervening in the natural world with artificial constructs for human benefit."*

  Simon, 1981

  The term engineering thus relates to a kind of problem-solving through the construction of artificial artifacts.

Engineering of Processes

Professional are becoming increasingly aware of the phenomena of complexity, of uncertainty, of instability, and of value conflict, which do not fit with Technical Rationality, and which they are ill-equipped to address.

Engineering of Processes

- **Design Strategies:**

  "Engineers are not so much interested in the steps needed to solve the problem as in the solution itself, the physical intervention which brings about the desired change, such that the real world plus intervention yields a better world."

Engineering of Processes

- **Design Strategies:**
  - **Engineering intervention is conventionally looked upon as having three distinct steps:**
    - **Understand the problem**
    - **Design a solution**
    - **Implement that solution in the real world.**

Engineering of Processes

Design Strategies (principal features):

- The requirement which are the specification of the problem may initially be neither precise or complete.
- A design is an abstract description of a target artefact which serves as a blueprint, a medium of criticism and experimentation and analysis.
- Designers are faced with the problem of bounded rationality; the limited capacity of people to make full rational decisions, and limited ability to grasp the full implications of such decisions, so they are always conjectural

Engineering of Processes

- **Design Strategies (principal features):**
  - **Design decisions are, more often than not, satisficing procedures.**
  - **Designers must treat as real the imagined future.**

    There is no single strategy to create a design. The activity is highly context-, skill-, and cognition-dependent.

Process Contexts

Process Contexts

- Problems in real world are rarely well defined. Usually the
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The implication of this is that process modellers need to understand the structure that underpins their involvement in a work environment, and that one of the earliest concerns will be to ascertain exactly what it is that the intervention in intended to achieve.

- Checkland and Scholes, 1990

Process Contexts

- By considering such questions at the outset, we hope to arrive at a statement which might provide a reference point to ascertain by just how much the perception of the project changes from its inception.
- It may be expressed as a desire to improve a process or to see if there is scope for improvement.
- However, the experience and learning of all participants during the course of the work allows the context to be revisited and revised if appropriate.

Process Contexts

- By establishing a context, or at least starting to
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n

The context statements thus created need to be revisited during the course of the intervention, as many aspects of the definition may change, both as the organization undergoes long-term translation and as the parties to the intervention interact, learn and understand what they are trying to do.

Process Contexts

- Establishing the context encourages communication and, at least in part, is a consensus-forming activity.
- Typically it will be performed through meetings, with a preponderance of effort at the outset, trailing off but possibly never quite completing.

Process Contexts (different issues: *Purpose*)

Purpose

- The problem owner frequently has an idea of the solution-hence the search for a process modelling solution.
- However this position has itself to be examined, and possibly corrected if the true nature of the problem is such that its solution is more likely to be accessible through some other means.
- We have to be more confident of the kinds of problem to which the process modeller can make a positive contribution.

Process Contexts (different issues: *Purpose*)

Typical reasons for intervention are:

- Perceived inefficiency: such as observed wasted effort, documents apparently not ready when needed thus causing delay, activities that appear to be duplicated unnecessarily.
- Confusion over seemingly complex activity, giving rise to questions about what it is doing or achieving.
- Inability to relate means to ends.
- Problems in managing the complexity of different systems.
- Desire to set up a framework to carry through process evolution
- Need to cut costs.
- As a kind of insurance to confirm existing approaches.
- The need for a second, possibly independent, opinion on an issue of concern.

Process Contexts (different issues: *Purpose*)

- In today's rapidly changing world it is clear that organizations must be much more adaptable than in the past.
- We may be able to address a problem by introducing a new system, but we also want a mechanism to be in place to identify issues and to handle change as they are needed without excessive disruption.
- The aim is not to seek to set up a project to produce a system to solve the problem, but rather introduce a way of working so that the organization is better equipped to deal with problems as they arise.

Process Contexts (different issues: *Deliverables*)

- This comprises the items that are needed to model and understand the process, and will constitute evidence of the modelling activity having been undertaken.
- If the modelling is carried out as a project, they will form part of the conditions for financial settlement.
- If the modelling is being done as ongoing activity integral to the operational process, such as support process, then deliverables might take the form of periodic reports.
- It is appropriate to agree among parties just what form they will take, when they will be required, and who is responsible for approval.

Process Contexts (different issues: *Scope*)

- This sets out to establish the boundary of the study. It may be clear or diffuse.
- If the process is confined to a single organization unit, then the boundaries might be clear; if, however they penetrate a number of units, then it will probably be an inexact boundary.If the latterm it will have to be revisited during the currency of the project.
- Another aspect of the scope is to position it relative to corporate history, and to place the intervention in the organizational context of other ongoing activities which may impact on the work.

Process Contexts (different issues: *Approach*)

- By describing the approach, the modeller seeks to give an account of how the investigation will proceed towards its objectives.
- For example, in addressing a particular situation a psychologist may select from different approaches such as cognitive, behavioral and developmental. A doctor may select from approaches such as medical, alternative medical and social.

Process Contexts (different issues: *Approach*)

- The process approach focuses upon interaction between agents, between agents and tools, and between agents and tools.
- In setting out the approach the modeller should try to account for how different perspective can be brought together.
- The aim of the process modeller is to facilitate modeling of the process, together with the wherewithal for users to adapt it as they seem fit in the light of their subsequent operating experience.

Process Contexts (different issues: *Stakeholders*)

- There may be different parties involved in the intervention, all with their own interests, their own agendas, and their own ideas about what would constitute a solution.
- **Interventionists** : s/w engg., modelers, IS designers and so forth.
- **Clients**: accountants, owners and participants
- These must be identified at the outset to allow communication channels to be established.

Process Contexts (different issues: *Stakeholders*)

Of course a single individual may represent different interests: the manager may also participate in the operation of the process. The same people may play several (or indeed all) of the roles.

Process Contexts (different issues: *Stability*)

- It is likely that in the contemporary business environment, the subject area will change during the course of the study.
- This can be difficult to capture but an overall strategy for ongoing change may be available from managers in the organization.
- The issue is important, if only to be aware that a time-limited process capture may pick up only a snapshot of a transient situation.

Process Contexts (different issues: *Budget and Resources*)

- Budget is important: what funds are available; how will they be used; where will they be used?
- Key people have to be identified, in particular those who are going to have responsibility for actually contributing to the process modeling.
- It may or may not be undertaken as a project.
- It may be ongoing activity, developing and implementing models, extending and evolving these models as an adjunct to normal business activity.

Context of the Process

- As the context of the process modelling

Issues such as following needs to be identified:

What is the process there for?

What does it transform?

Context of the Process

- The establishment of a definition can proceed by examination of documents, unstructured discussions with participants or workshops.

A definition based solely on an inspection of documents will be of limited usefulness.

- Many important, if not crucial, aspects of the process often only emerge through discussions with participants either in discussions or workshops.

like alternative views of the purpose of the process, or hidden dependencies whose existence is known only to participants.

Context of the Process

A more comprehensive and useful definition of a process is based on the idea of a root definition and Endeavour's to define the organization activity which is relevant to the study, by:

- Stating the objectives of the process.
- Stating the boundaries and interfaces of the subject process.

  What is provided by the process, and what is received into the process (or what is used by the process) and under what conditions.
- Categorizing the subject process.
- Illuminating what feeds the process, and what is fed by it.
- Determining performance criteria to be used in any evaluation, thus what is important and what is unimportant in the context.
- Identifying those who are going to carry out the study in the organization

Context of the Process

The process definition thus helps us:

- To determine what is required of the process.
- To scope the investigation.
- To perform an evaluation of the process.
- To minimize risk of failure.

This should also illuminate environmental conditions which have an impact upon the process.

Context of the Process - GOALS

- It may be that a clear and coherent statement of the process objectives can be quite readily obtained from the client or process owner.
- However it is still important to check this with the other parties (clients, owners and participants) as it is not uncommon for there to be disagreement about the significance and details of objectives.
- There may also be occasion to revise the statement as the intervention progresses.

Context of the Process - GOALS

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  c
- A
  c
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However, in practice the situation is always more complicated. Objectives may conflict, or they may interleave, such that a sub-objective contributes to the achievement of more than one higher-level objective.

Context of the Process - GOALS

- C
  - d
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  - p
  - c
- A
  - C
  - a
  - n

However, not all objectives are realized by a top-down imposition. Objectives may emerge from the process in a bottom-up manner, where others have made use of some of the outputs of the process, and these have to be integrated into overall objectives.

Context of the Process - GOALS

- As the general investigation of objectives proceeds, the modeller may want to start to think about the operational goals of the process.
- The modeller may ask, ‘When X and Y get together, what are the goals they each seek to achieve?’
- This is important as it will become clear later on that to think about interactions between people and the goals achieved through them is a very useful way of investigating organizational processes.

Context of the Process - Boundaries

- We have to define an interface between the area in which we are interested, and the rest of the world.
  - *What is provided by the process and what is received into the process?*
- Boundaries may be initially sketched out along organizational lines, i.e., the subject process might be constituted by the work done by the staff answerable to a particular manager.

Context of the Process - Boundaries

- It can be very useful to seek to categorize the process, i.e., to identify from clues the kind of generic process that it represents.
  - *As it prompts us to think about a pattern of activity.*
- Identification of an activity which might constitute part of such a generic process will encourage a search for other activities of that process.
  - *Care has to be taken not to prejudge the outcome and, if a process is seen to not fit any category then this has to be recognized.*

Context of the Process - Maturity

- It might be useful to supplement a contextual investigation with a maturity assessment.
- The maturity of a process is an indication of the predictability of its outcomes.
- An immature process is one which is very unpredictable. Few performance measures are taken during its execution and no one really knows the reasons for its success (or, more often, failure).
  - *If it is successful, it is usually as a result of heroic efforts by participants, and is not something that can be repeated very often.*

Context of the Process - Maturity

- The concept of maturity gained prominence through the **SEI's Capability Maturity Model** (CMM).
  - *This is a conceptual structure which is used by software-development organizations to improve their project capability.*
  - *This is a process-focused approach; no measures are actually taken of product quality.*
  - *It can be contrasted with the alternative **Spacelab approach** which attempts to relate product quality to process improvement more directly.*

Context of the Process - Maturity

- The essence of the CMM method is that an assessment is mad of the maturity level of the organization.
  - *This consists of an investigation of features which, it is argued, higher maturity processes must posses. (e.g., project tracking)*
  - *It follows that a maturity assessment supports an evolutionary improvement path. It is based on an appreciation that radical changes are fraught with risk which might be unjustified.*

There are studies underway to extend CMM to a more general form suitable for business in general.

Context of the Process – Route Map

Ideally then the modeller will set out a route map which deploys a study of documents as a supplement to one-to-one discussions and group workshops.

Context of the Process – Route Map

- The process will be one of mutual learning.
- The process modellers have to learn about the process and domain.
- The participants will learn about new perspectives upon the domain as well as learning about techniques of process modelling.
- Process capture can be particularly valuable learning experience.

Context of the Process – Route Map

- Granularity is an issue which should be commented upon at this stage.
- The modeller has many options. It can be the easiest thing in the world to become immersed in process capture whilst forgetting why it is being done.
- By thinking about an appropriate granularity for the model, the modeller is forced to consider what the model is being used for. The amount of detail must be justified.

Process Capture

Process Capture (Introduction)

- The most important thing to do when dividing the problem domain, is to try to break up the problem space into modules that are meaningful to the agents who take part in the process and, additionally, give a well formed set of modules that can be used in designing software product. These modules will be called as *roles*.
- The focus in the process capture will be to create a detailed description of the system that we are investigating.

Process Capture
(The What, the Why and the How?)

This describes how the model of the system, the model of goals and the model of method respectively represent *what*, *why* and *how* descriptions. The vocabulary used in creating these descriptions is then presented.

Process Capture
(The What, the Why and the How?)

Given a description of what interacts and why, a description can be developed of the way in which the goals are achieved. This is done by creating a model of the method which is used to show **how** *the goals are achieved.*

Process Capture
(The What, the Why and the How?)

- Vocubalary:
  - Agents
  - Interaction
  - Cardinality of Agents
  - Goals
  - Non-Functional goals
  - Dependency
  - States
  - Activities
  - Roles
  - Sub-roles

Process Capture
(The Modelling Notations)

Conceptual Models

(provide a very simple set of symbols. Their creation was motivated by many process modeling projects in which there was a need for a largely semantic free, flexible notation)

Role Activity Diagrams

(provide a way of representing coordinative behaviour. RADs allow behaviour to be subdivided into a number of modules. This modularization allows the description of complex behaviour in a highly legible way. The unit of modularization in a RAD is a *role*.)

Process Capture
(Managing the Modelling Exercise)

The concern is to address a number of questions that arise in undertaking the modelling exercise. Amongst its concerns are the goals that we hope to achieve in modelling, the relationship between as is and to be models and labelling conventions.

Process Capture
(The participation of Users)

This presents the rationale for establishing a high level of user involvement in the modelling exercise. It suggest how this can be facilitated and how it relates to the creation of the models through a series of dialectics.

Process Capture
(Creating the Model)

- **Modeling the System**: it sets out the means by which a simple description of interacting agents is developed. It includes advice about the creation of a further context model.
- **Modeling the Goals**: The concern is to take the model of the system and to create a simple description of the goals of the agents. It considers the different ways in which the modeler might divide up the organizational behaviour and how dependency might be denoted.
- **Modeling the Method**: The simple description of goals is developed into a model of how these goals are achieved. This is known as a model of method.

Process Design

Process Design

Here the focus is on how the models can be used to program the software support system for organizations and, through this, to shape the new behavior of the organizations themselves.

Process Design (Design Scenarios-three levels)

- Reflection:

  Is taken to be ad hoc, extemporizing change

- Refinement:

  Is more formal, of greater consequence and planned.

- Reinvention:

  Is radical change, starting with a tabula rasa and constituting a whole new package of behavior.

Process Design (Different aspects)

A software system in its real world domain of application can be thought of as a system within a system

Process Design (Different aspects)

- An ecology of software design: [cont…]
  - Some useful points of this simple model:

1. The systems interact.
2. The relationship between the systems can be described as that of served and serving systems.
3. Often the relationship between the systems is such that a change to one may affect the other in some significant way.

Process Design (Different aspects)

- An ecology of software design: [cont...]

The software system is a serving system and therefore ways must be found of preserving the quality of this service in the face of changes to the served system.

system is essentially static.

Process Design

"The artificial world is centered precisely on this interface between the inner and outer environments; it is concerned with attaining goals by adapting the former to the latter. The proper study of those who are concerned with the artificial is the way in which that adaptation of means to the environment is brought about – and central to that is the process of design itself."

-simon, 1981

Process Design (Different aspects)

- A solution as a state in an evolution:
  - It is in the interests of organizations to change. They seek to adapt to changing circumstances and to change their environment to their advantage. They innovate, rationalize, extemporize and replicate.

Process Design (Different aspects)

- A solution as a state in an evolution:
  - Organizations are immensely complex as well as dynamic. They are human activity systems and as such their purpose is ambiguous. A software designer cannot be certain of how a system will contribute to an organization.

Process Design (Different aspects)

- A solution as a state in an evolution:
  - Software systems should evolve in a way which is consistent with the evolution of the organization or, taking the argument further, should even provide a **means** for the evolution of the organization.
  - This means that design is not a one-off process. It is characterized by **uncertainty**. We cannot be certain what the consequences of some new software design or revision will be.

Process Design (Different aspects)

- The Politics of Designing:
  - Part and parcel of people working together is the sharing of ideas and the drawing up of agreed (implicit and explicit) agendas.
  - Recently, much research has come to focus on the immeasurable difficulty of ensuring that some system (e.g., an information system) satisfies the needs of many different users.
  - This is a political problem which is shared by complex design projects in all fields (e.g., architecture, roads, genetics).

Things to do!

Create models of the system and models of goals for some familiar activities. For example, consider the process of house purchase. What would the models look like? Design some models of method using Role Activity Diagrams to show how house purchase might be carried out.

Process Managing

Process Managing

- Is **NOT** …:
  - Planning, leading, trouble-shooting, or any other human-centered roles of the typical manager.

Process Managing

- But is …:
  - In narrower sense: monitoring the sate of the operational process;
  - monitoring influences relevant to this process (influences emanating from within the process and external to the process);
  - Assessing if the process definition ought to be changed and, if so, the instigating and carrying out of a change.

Process Managing

- An individual might be reponsible solely as a manager, remote from the day-to-day operation of the process, or they might in fact be one of the participants in the operational process who has this additional reponsibility.
- In the latter case, the individual would be responsible for two roles. The first relates to the operational process. The second relates to its managing process.

Process Managing

- In the process domain, we can study the processes with which managers interact, so-called management processes, not only to see how they can be supported to help enhance the performance of managers, but also to provide a basis for improvement.
- Quality concerns should not be restricted to the operational processes, and can be extended to the processes of management.

Process Managing

- Management process is a kind of control process.
- It uses feedback and feedforward as in classical control theory to manipulate process resources to achieve desired outputs.
- We are less interested in manipulation of process resources as manipulating the processes themselves, and our approach is to do that by manipulating the model that shapes real-world process activity.

Process Managing

- Similarities and differences between process-managing processes and operational processes:
  - *Operational processes have goals that involve the attaining of some state at which the instance concludes, whereas the goals of managing processes involve maintaining operational process performance within certain bounds on a continuous basis.*

Process Managing

- Similarities and differences between process-managing processes and operational processes:
  - *There may be very many instances of an operational process being controlled by a single instance of a managing process. Even if there is only one instance of an operational process there is still one instance of the managing process.*

Process Managing

- Similarities and differences between process-managing processes and operational processes:
  - *The products of the operational process can be objects, or services interpreted in terms of objects, and they have value to some customer or end user. The products of the managing process are changes which are ultimately applied to the enacting model of the operational process, and their value is less discernible.*

Process Managing

- Similarities and differences between process-managing processes and operational processes:
  - *The managing process is partly continuous and partly cyclical. There is continuous monitoring of the operational processes and the environment, but each application of change is a discrete instance.*

Process Managing

- In order to address the goal of satisfying the business objectives, the manager has to undertake at least four things:
  - Know what the current state of the process is, obtain information about inconsistencies between the modeled process and the desirable process.
  - Receive relevant information about the external environment.
  - Study all this information, map it quantitatively to stated objectives, and if necessary, seek to correct any apparent or emerging adverse circumstances by:
  - Setting new of revised objectives for the operational process.