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## **DO WE NEED CAPABILITIES IN OUR MANAGEMENT SYSTEM?**

To be agile and adaptive, the production systems need to be able to meet the changing market requirements regarding product characteristics, quantities, on-time delivery, and cost. Most of the production companies in Europe have or have pretended to be certified for management systems ISO 9001:2015 (Quality Management), ISO 14001:2015 (Environmental Management) and OHSAS 18001 (occupational health and safety management system specification) as well. On top of that, asset-intensive companies are implementing ISO 55000:2014 (Standards for Asset Management), that enables them to assure that they use corporation assets correctly. All these management systems are complementary and are the base for business process management. When a company has documented processes, it becomes the valuable asset for analyses and optimisation. The current article arguments that the business process management, including risks, qualifications, objectives, opportunities, etc. are not enough for smooth enterprise management without capability planning and management. Authors suggest that in addition to ISO demand companies must have documented and managed capabilities.

### **1. INTRODUCTION**

Price, quality, and delivery determine the scalability of supplying products and services. Customers require goods and services of given quantity, characteristics to be delivered or be available on-time and for the price which reflects value for money.

From the company's point of view, customer satisfaction is the result of business process (operations), fulfilled by company employees who deliver the product and service that is consistent with customer expectation. Thus the effectiveness of the organization depends on how well these factors are integrated. Internal customers are also important. These are the people, activities, and functions of the company, which are the clients of other people, activities or functions [10].

Conflict frequently arises between the needs of internal and external customers because the processes are designed to meet the needs of internal clients.

Successful companies focus on its customers, and to do that; the leadership has to be involved and focused on improving employees and all business processes.

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Customer focus as a discipline, supported by ISO series, means that company should predict consumers' behaviours - purchases decisions, preferences - and determine its quality expectations. On the other hand, companies, having process focus, should predict process behaviour (outcomes, variations) and determine optimum process results. Taking into account the results of both focus points, they improve process and validate it to meet customer expectations.

## 2. PROBLEM FORMULATION

Companies want to achieve ISO 9000 series certificates (ISO 9001, ISO 14001, OHSAS 18001, ISO 55000, etc.) as proves that it fulfils certain criteria the in company. ISO standards can be considered as best practices which directing the companies to adapt certain mindset in management focusing on continuous improvement. ISO 9001 guides to implement Plan-Do-Check-Act (PDCA) Cycle as follows [11]:

Plan: Establish the objectives of the system and its processes, and the resources needed to deliver results in agreement with customers' requirements and the organization's policies, and identify and address risks and opportunities

Do: Implement what was planned;

Check: monitor and (where applicable) measure processes and the resulting products and services against policies, objectives, requirements and planned activities, and report the results;

Act: Take actions to improve performance, as necessary.

Authors has discovered the gap between aligning of a process optimization and capability improvement in strategic planning literature, which leads to popular European standards an ISO 9001 and ISO 14001 Thus it has a big influence into the market. According to [5] "organizational capabilities are the abilities of an enterprise to operate its day-to-day business as well as to grow, adapt, and seek competitive advantage in the marketplace". Not having the overall concept of organization wide skill sets may lead to a situation, when during process optimization and service design the company may lose its focus from its core business.

Several researchers have covered that topics. Amuia et al. [1] have conducted a systematized literature review of the dynamic capabilities for sustainability. The mainstream literature was classified and coded, resulting in a framework with recommended guidance for future research. The importance of network capability has been analysed by Lenka et al. [18], as well as by Draulans et al. [6]. They defined it as the ability to manage and gain benefits from external relationships. Deloitte [5] states that "If companies want to improve their strategy execution success rate, the first place to start is to agree on what really constitutes an organization capability", Hosseini et al. [9] have determined that there is a need for an integrated capability framework. They proposed an open innovation capability framework (OICF) that compiles and structures capabilities relevant for implementing open innovation. Open innovation processes can incorporate knowledge from external sources and to increase companies' innovation potential. From a management perspective Bernarde et al. [2] is arguing that the sensing, seizing and

transforming meta-capabilities can act to external evaluation views and serve as a benchmark for the alignment of business processes and enable the operationalization of emerging demands through the dynamic adaptation of processes.

From companies who have the ambition to achieve ISO 9000 series certificates (ISO 9001, ISO 14001, OHSAS 18001, ISO 55000, etc.) it is mandatory to document and manage their business processes. To record their knowledge in operating model companies need to describe their value creation (products and services), organisational structure, competences, risks, objectives, KPI-s (Key Performance Indicators) and etc. In reality, companies frequently place recorded knowledge in a structured way into electronic documents: MS Visio models, MS Powerpoint slides, Wiki pages, etc. Quite rarely they put this information into repository based modelling tools, like Enterprise Architect, ARIS, CaseWise, Troux, etc. Usually, KPI-s are not the part of the process models, but enterprises handle them independently.

Our research hypothesis is that for effective process management and innovation, the capability mapping and management should also be the part of management system. Having well documented operational model with capabilities gives an opportunity to change and adapt existing value chain more smoothly to satisfy market demands.

The remained part of this article is structured as follows. In the third section, authors present the operating model concept with existing frameworks. Based on those frameworks the process decomposition framework is proposed, as existing frameworks are focusing on business areas, not the process decomposition aspects. In the fifth section, the authors introduce capability term. In the sixth section, researchers present the capabilities mapping and process decomposition framework, which is followed by a conclusion.

### 3. OPERATING MODEL

An organisation is a complex system. Operating model helps to understand the whole organisation. An operating model can describe the way the organisation does business today (as-is view) and communicate the vision of how the operation will work in the future (to-be view). It breaks organisation into components, showing how they are cooperated and can help those transforming an operation coordinate all the different changes that need to happen.

If the operating model describes how the organisation delivers value, it is a subset of the larger concept “business model”. A business model describes how an organisation creates, delivers and captures value and sustains itself in the process. The operating model focuses on the delivery element of the business model. There is no common understanding about the use of the words business model and operating model [25].

Some of the commonly used dimension combinations for operation model are:

1. people, process and technology,
2. process, organisation and technology,
3. process, organisation and people,
4. locations and buildings, information systems, suppliers and business partners, management system.

The concept of Enterprise Architecture Management is used to handle operating model, as well as business model. Enterprise Architecture (EA) is defined as an approach for the rational management such as blueprint development or implementation aimed to deliver a solution of the highest quality to the customer's satisfaction. It addresses big and small changes, whether in business process, organisation, IT systems or data. It helps to understand the current business and what it will look like in the future, where changes take place, and to create artefacts that model these changes everyone clear [28].

There are many well-known EA frameworks – The Open Group Architecture Forum (TOGAF) framework, U.S. Department of Defense Architecture Framework (DoDAF), British Ministry of Defence Architectural Framework (MoDAF), U.S. Federal Enterprise Architecture framework (FEA), Gartner Enterprise Architecture Framework, Computer Integrated Manufacturing Open System Architecture modelling framework (CIMOSA), Purdue Enterprise Reference Architecture (PERA), Treasury Enterprise Architecture Framework (TEAF), TeleManagement (TM) Forums eTOM/New Generation Operations Systems and Software (NGOSS), Center of Excellence of Enterprise Architecture (CEISAR) approach, Generalised Enterprise Reference Architecture and Methodology (GERAM), Supply Chain Operations Reference model (SCOR), ISO/IEC 42010:2007, Reference Model of Open Distributed Processing (RM-ODP), Spewak EA Planning Methodology, Pragmatic enterprise architecture Framework (PeaF), etc. [14].

The foundation on these EA frameworks is to analyse the current business situation and to define appropriate future goals to reach.

In addition, there are:

- McKinsey 7s framework is a management model to assess and monitor changes in the internal situation of an organisation. The McKinsey categorised even interdependent factors that are as either “hard” or “soft” elements in his 7-S model. “Hard” elements are easier to define or identify and management can directly influence them. These are strategy statements; organisation charts and reporting lines; and formal processes and IT systems. “Soft” elements can be harder to describe, they are less tangible and more influenced by culture. However, these “soft” elements are as important as the hard elements, if the organisation is going to be successful [21].
- Lean management is longer term process of continuous improvement. The core idea is to maximize customer value while minimising waste. Simply, lean means creating more value for customers with fewer resources. A lean organisation understands the value of the client and focuses its key processes on increasing it continuously. The ultimate goal is to provide perfect value to the customer through an absolute value creation process that has no waste. Lean applies to every business and every process. It is not a tactic or a cost reduction program, but it is a way of thinking and acting for an entire organisation. The word transformation or lean transformation is often used to characterise a company moving from an old way of thinking towards lean thinking. It requires a complete change of the way how a company conducts business [19],[30].
- Balance scorecard, that is a strategic planning and management system used extensively worldwide to align business activities to the vision and strategy of the organisation, to improve internal and external communications, and to monitor organisation performance against strategic goals. It was originated by Dr. Robert

Kaplan (Harvard Business School) and David Norton as a performance measurement framework that added strategic non-financial performance measures to traditional financial metrics to give managers and executives a more balanced view of organisational performance [15].

- Business Transformation Management Methodology (BTM2) that provides a holistic and integrative methodology to address the difficulties in all kinds of transformation projects. Business Transformation Academy (BTA) is the developer of the method [28].

#### 4. PROCESS DECOMPOSITION FRAMEWORK

“Although” documented knowledge is structured, it is not easily manageable. Every document has owners; companies classify documents as procedures, instructions, regulations, etc. The content of those documents can vary a lot. Researchers have analysed more than 500 different normative documents from six different companies operating in energy domain and identified that there is no clear distinction between document types.

Based on Total Quality Management our research team proposes to use following process decomposition logic (Fig. 1):

- Task level – level that describes responsibilities to perform tasks (operations). This level describes the tasks’ sequence, needed instructions, operational resources, competencies, required information assets, IT applications, risks, documents, related task-specific business rules roles that carry out them, inform the technical responsible. When an enterprise generate documentation based on the operating models, they require business terms that make document content understandable for reader.
- Activity level – is a legitimate group of tasks that describes managerial responsibilities and guarantees expected outputs (e.g. level of supervisors, senior master, head of group). It describes the sequence of activities, their value creation, and expected inputs, that are needed to perform an action, risks, interconnections with other process phases and the business rules, that users should follow while performing the activity tasks and that are activity specific. Unlike from SIPOC, authors have developed an approach that forces to document business decision points with list of available choices together with the data required to make decisions. These are quality points that determine process quality.

Research groups suggest using Event-Process Chain diagrams (EPC) that can also record starting and finishing events for the tasks or activities. When an enterprise plans the process optimisation, the durations of specific tasks and activities should be determined and documented.

- Process phase – the logical group of activities that describes managerial responsibilities as the level of department head that guarantees expected outputs of activity. This level describes the sequence of phases, their value creation and expected inputs that are needed to perform process phase, risks, objectives and related key process performance

indicators, key influence indicators with target measures, business rules that users should follow for all activities and their tasks and which are process phase specific.

- Process – the logical group of process phases that describes managerial responsibilities to guarantee the expected process outputs (e.g. head of the division, board members, corporate level managers). This level describes the sequence of processes, their value creation and expected inputs that are mandatory to perform process, objectives and related key process performance indicators and key influence indicators with target measures, business rules which users should follow for all process phases and key decisions/control points. The sequence of main processes can be considered as enterprise value chain. In addition, there are managerial processes, product/service development, research and auxiliary processes, which all have predefined decomposition.

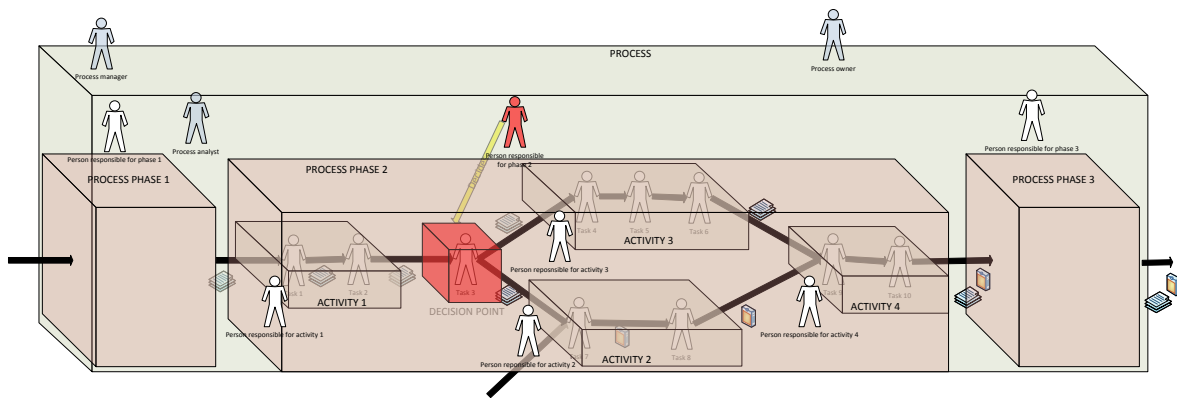


Fig. 1. Process documentation framework decomposition logic

- Enterprise process map (value chain) group is a sequence of interconnected processes that specifies how the enterprise is managed and how the company achieves objectives via processes. Authors suggest to categorise processes at the company level as value chain processes, management processes and supporting processes (Fig. 2), but there are also other grouping options, that depends on company top management concept.

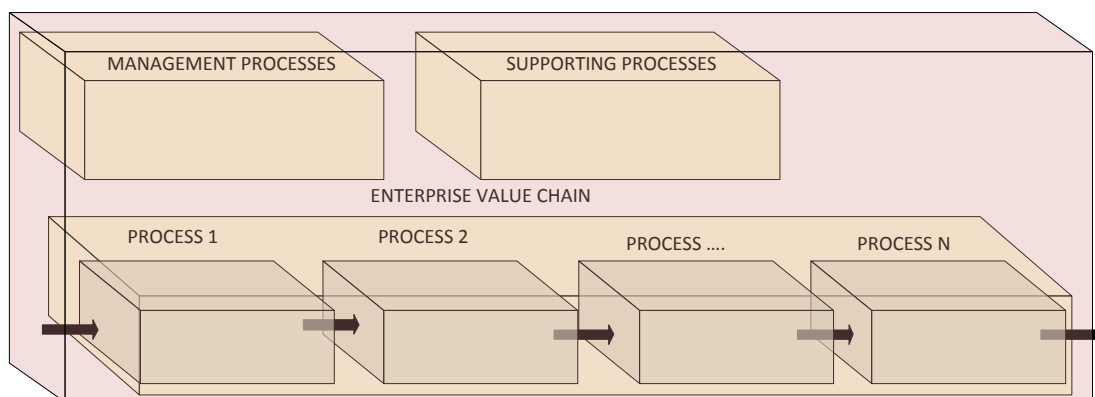


Fig. 2. Company process map

In case of Partner Networks or corporation, there’s an additional grouping level where the management can view the group of processes as corporate value chain level that describes corporate-level officers’ responsibilities.

On top of these processes, there are enterprise business managerial principles or rules, that determine the general rules, that business users should follow while designing and implementing processes.

Such a systematic approach helps the companies to elicit, organise and document all the business actions and related responsibilities, to establish business rules and maintain the process performance in everyday work (Fig 3). Additionally, it is a valuable tool for process audit.

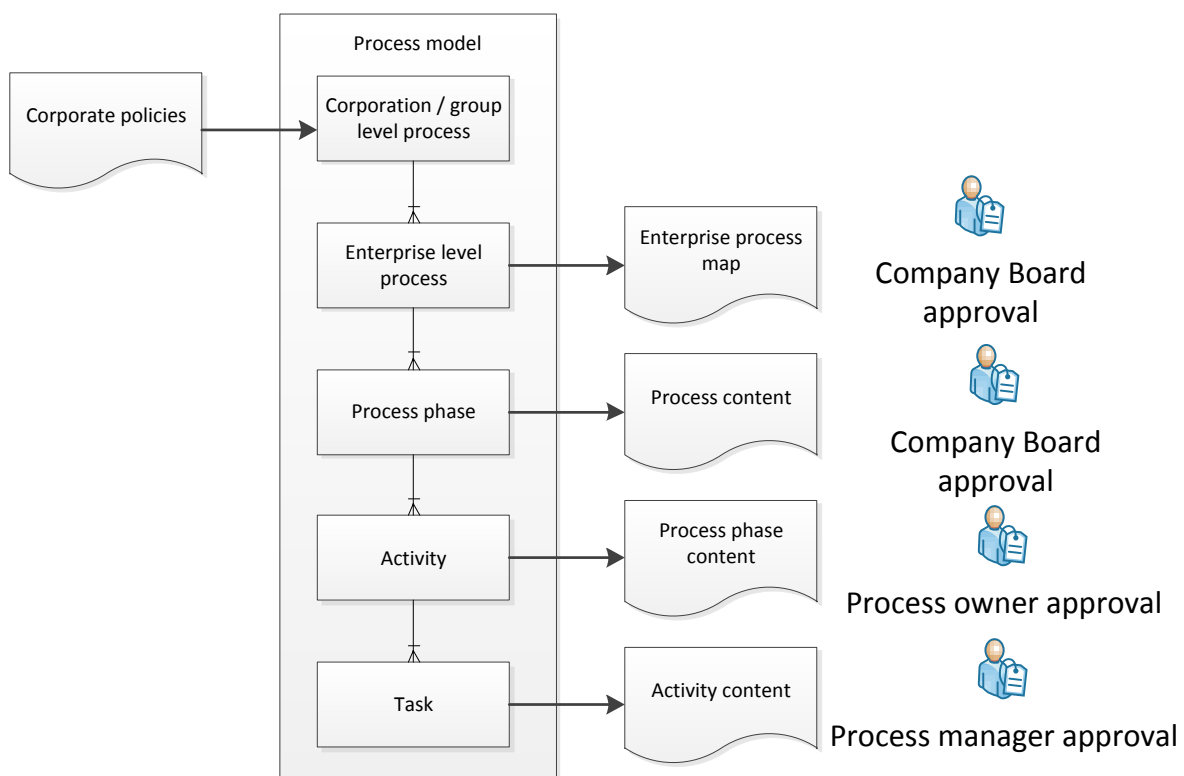


Fig. 3. Process model and process documentation

When compared to document-based approach, which require a considerable amount of manual verification activities, the tool-based approach has several advantages. It is mainly dealing with model data verification in sense of inputs and outputs; and modelling rules that verify that enterprise has documented required information in the model. Also, the model-based approach is indispensable in the multilingual environment to ensure the correspondence of content and structure of normative documents in other languages.

Depending on the enterprise maturity, sometimes the company print out the process manuals, sign and store as normative documents after it approved the model. More mature enterprises publish approved model-based information into intranet, where the information is collected based on the stakeholders need to be informed.

Each documentation level has the agreed content and generalization level for individual focus groups. Management board approves the enterprise process map document and process content, process owners the process phase level content, and process manager and activity content. Thus, depending on management level, it is easy to search for the required information by the documents consumers, as it is evident what kind of information it includes.

## 5. CAPABILITIES

Capabilities concept at the organisational level is equal to the skills term at the individual level. The capability is the ability to achieve the desired goal under specified performance, standards and conditions by performing combinations of operations and tasks sets performed by specified resources. Capabilities describe the desired architecture of functionality.

According to Holmström [8] “a manufacturing system’s capability is an inherent ability of the manufacturing system to perform a change in the properties of material to achieve tangible products”. Järvenpää [13] has broader view. He states that “capability is the inherent ability of a resource or system to perform change in the properties of materials, parts or assemblies, or to perform activities which may be required to modify the properties of materials, parts or assemblies, to produce tangible products”. Authors consider them as basic-level capabilities.

Researchers separate capabilities into two categories – dynamic and static capabilities [13]. Dynamic need to create, coordinate and orchestrate resources and basic-level capabilities [29]. It represents the ability of company to build, integrate and reconfigure resources and capabilities in the context of changing environments [26]. Thus, the company’s portfolio of dynamic capabilities is considered to consist of the structures, knowledge, processes, and practices that support the recognition and exploitation of new opportunities, encourage strategic flexibility and promote organisational change [13]. The continuous innovation is required to take advantage of possibilities and match them to changing market. Ability to utilize knowledge efficiently is vital for successful new product development, while product innovation is crucial for survival and organisational renewal in changing business environment [4],[13]. Capability does not represent a single resource on other resources like financial assets, technology, or human resources, but rather a distinctive and superior way of resource allocation.

Dynamic capabilities should be specified accordingly to SMART guidelines (Specific, Measurable, Assignable, Realistic, Time-related) to avoid ambiguity, as objectives in business processes.

Dynamic capabilities are engineered or generated taking into consideration various dimensions that straddle the corporate functional portfolios. Every organisation has a different but similar set of dimensions. An example set could include personnel, research & development, infrastructure and facilities, concepts and processes, information management and material. Whatever dimensions are selected, these should be well explained and understood.



As a capability will take an extended time to deliver and frequently involve delivery of various increments of several projects, it is useful to break down the capabilities into increments that produce discrete, visible, and quantifiable outcomes as well as provide the focus for Transition Architectures and the deliverables from numerous inter-dependent projects. These outcomes are the Critical Success Factors (CSFs) for continued capability support (Fig. 4).

From above mentioned EA frameworks only TOGAF have the well covered concept of business capability management. Capability Management is the active in time administration of the portfolio of capabilities in the company - their development and depreciation in intelligent response to changes in the business environment. It is an approach that uses the organisation's customer value proposition to establish performance goals for capabilities based on value contribution. It helps to drive out inefficiencies in capabilities that contribute little customer impact and focus efficiencies in areas with high financial leverage; while preserving or investing in capabilities for growth. TOGAF also analyses capability based approach benefits [7].

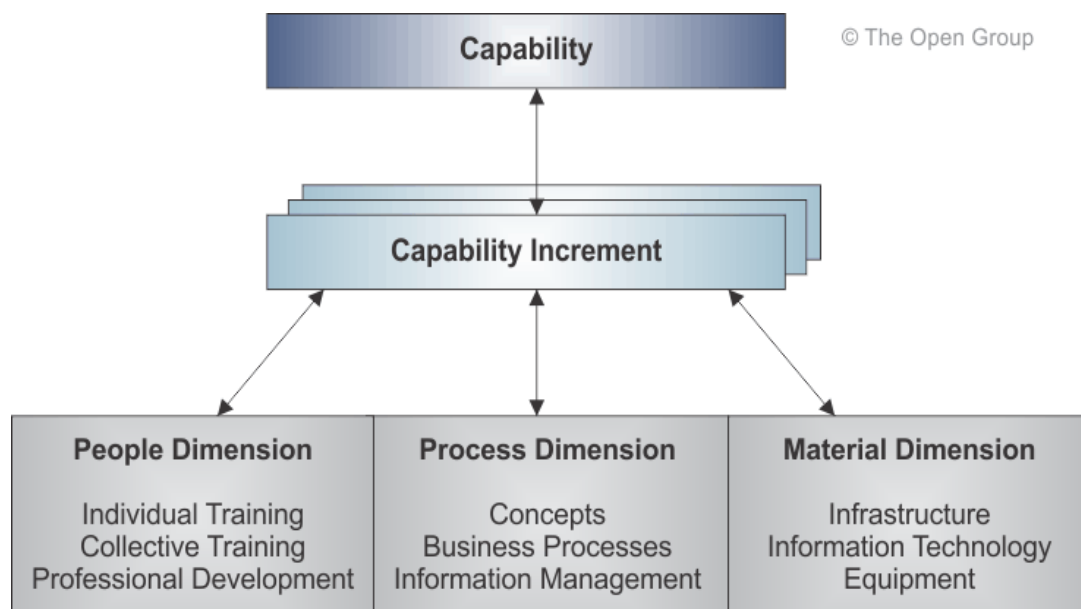


Fig. 4. Capability Increments and Dimensions [27]

The literature of strategic management typically uses the capabilities as an “umbrella” concept. Strategic management involves the formulation and implementation of the major goals and initiatives taken by a company's top management on behalf of owners, based on consideration of resources and an assessment of the internal and external environments where the organisation competes. It provides overall direction to the enterprise and specifies the organisation's objectives, developing policies and plans designed to achieve these objectives, and allocating resources to implement the strategies [16],[20],[24].

Capabilities must be measurable to estimate their conditions. The Capability Indices are used for capability management [22] as well as process performance indices or customer satisfaction indices, depending on capability and business area.

### 6. CAPABILITIES MAPPING

A well-structured and stratified Capability model provides the scope, context and high level content that is required for business process development. As company has process map, enterprise should also have a capability map that should be the base for enterprise architecture (Fig. 5)

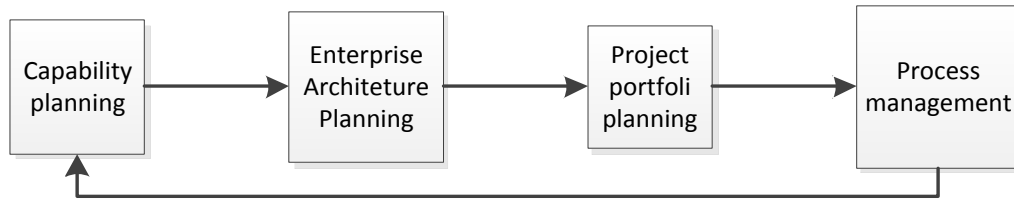


Fig. 5. Capabilities in strategic management

Based on proposed process documentation framework the process or function tree is easily generated where each process is composed of phases, phases are formed activities, activities consisting of tasks or operations. When authors apply similar approach to capabilities, the capability tree is created, based on layers proposed for process hierarchy. If both trees have similar concept, it is possible to map those two trees using the same logic (Fig. 6). If capability defines “what” business do as a core process, then functional view defines “how” or “where” the enterprise performs it.

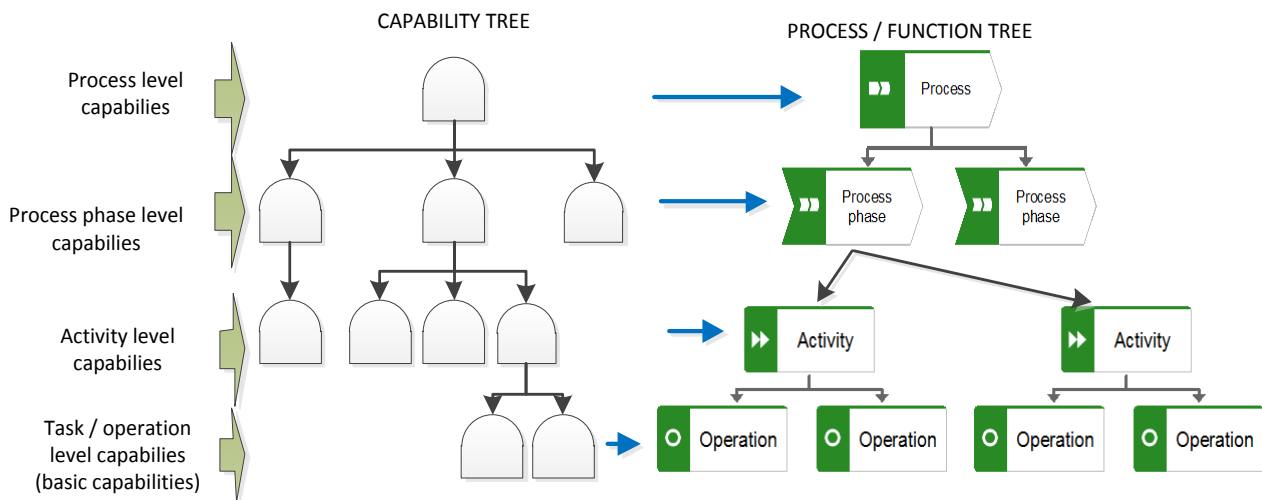


Fig. 6. Capability tree and process / function tree mapping

Having process documented and controlled as needed by management system, the enterprise can quickly analyse what activities it can be consolidate in different processes. After that, the company can verify either existing IT systems provide needed capabilities for consolidated activities (Fig. 7).

As business processes can be grouped into value chain processes, supplement processes and management processes, the capabilities can be grouped as core capabilities, supplemental capabilities and enabling capabilities [7].

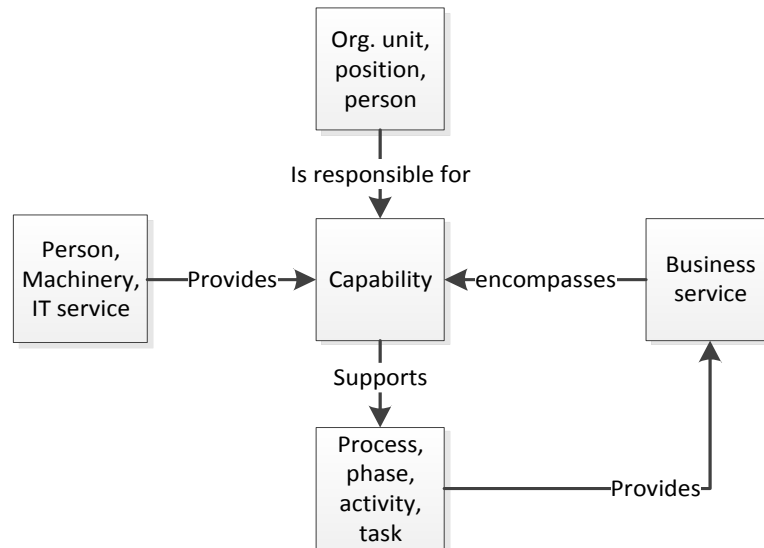


Fig. 7. Capability as a central component

According to Jantunen [12] “the company’s ability to renew its knowledge base and structures and practices that support operational flexibility, are positively related to performance indicators. Success in changing markets depends on the enterprise ability to convert knowledge into innovation, and consequently internal structures and capabilities have an important role in innovation activities”.

## 7. SUMMARY

Nowadays ISO quality management systems have the process based approach, basing Deming plan-do-check-act loop. They claim to manage risks, competencies, as well as process quality, opportunities, continuous improvement, audits, etc. At the same time, these standards do not cover capabilities that refer the power and ability of the organisation. The capability is more general than a precursor to competency, as the organisation has to be capable before of being competent. Concrete capabilities are required to develop competencies, to form and execute strategy and to create and sustain competitive advantage. The organisational capabilities derived from the skills and capabilities of the people inside of the organisation, organisational processes, and structures that collectively produce results for the business organisation [3].

The organisations have nowadays lack of understanding how to document their process based knowledge in documents on the regular base. Developed process

documentation framework enables to systemize knowledge documentation. It can be applied both for model based documentation as well as for document-based approaches.

The research present in this article how to integrate process documentation framework with capabilities. To conclude, every company will benefit from documented capabilities in a strategic planning phase, as well as in the process optimisation as it gives a systematic overview of resources and activities related to capabilities through the organisation. Thus, research group came to conclusion that ISO 9000 series standards should also include capability management as a cornerstone of companies' innovation planning and innovation.

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