Partner Network and its Process Management

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Abstract: Business processes define how the organizations operate, deliver products or services and interact with customers; how they support their corporate strategies and enable companies to react to changes more rapidly. Business process management empowers the business analysts to define, manage, analyse and optimize their processes. The current article specifies the principles to describe the processes in a Partner Network to ensure efficient information exchange. As fluent cooperation is based on processes and depends on process maturity, the maturity estimation model is proposed in this article.

1 INTRODUCTION

Globalization has created a world market driven by fierce competition among companies that are located in different parts of the world though producing similar products. To be more competitive, the organizations require flexible manufacturing systems and Partner Networks (PN) to meet customer demands. In order to achieve customer satisfaction, to increase productivity and to reduce the involved costs, there is a need for analysis, modelling, design and optimization of these systems that primarily means optimization of business processes (Miers, 2006).

Thus, companies in better financial and market position (called Focal Players (FP)) are forming a new ecosystem in order to be more competitive and flexible. Building an ecosystem means that the necessary companies are initially recruited among the partners and are employed as subcontractors for the necessary tasks by the FP as the general project manager. In case the needed competencies are not represented in the PN or they are not of a sufficiently high quality, the external companies will be asked to participate in the Virtual Organization (VO). Therefore, to be able to quickly respond to market needs and to not have to invest too much time to develop necessary network competencies and processes for each new business opportunity, in many cases companies wishing to participate in the VO will establish a core network. Such a network is mostly a long term strategic alliance. In addition to the strategic alliances, there are also the goal-oriented networks, which can be considered as extensions of the strategic alliances when essential competences / resources are missing or are not reachable (Kangilaski, 2010a).

2 DYNAMICS OF VO

When the PN has been developed, the FP starts to search for new business opportunities. The identification of the business opportunity by the FP or a PN member will activate the necessary processes to start the project. Based on its competence, the FP will analyse the business opportunity to find out whether it is worthwhile to launch a new project. This includes business planning, which leads to the development of an integrated business model including business concept (processes, communication, skills, resources, etc.) and financial model (flow of funds, responsibilities, compensation of participation). When the companies are formed and Virtual Organization (VO) is created, the actual operation, which may range from design to manufacturing and retail, will start. The successful accomplishment of the operation leads to the desired business impact, after which – unless there is a directly succeeding order – the project will be terminated. The termination means the ending of the unique group of companies and their employees to make space for the next upcoming business opportunities (VOSTER

project consortium, 2004).

Such a PN based approach converts ordinary place-centric enterprise structures into highly virtualized and customer-centric structures, but it is highly dependent on business processes.

3 BUSINESS PROCESSES

To form VOs and to handle all legal issues regulating business roles and responsibilities, financial topics, cooperation problems etc, the business processes are the key elements that accelerate time critical activities.

Business processes are the essence of the business. All companies are basically established using the same architecture – every company has a business model, processes and IT applications. The business model describes what products or services are produced for which markets as well as who are the customers and business partners and which is the company's plan for the future (Polyantchikov et al., 2012).

Processes are elaborated for each company basing on the business model. Each process exists at varying level of maturity – from ad hoc and manual processes to well documented and automated processes (Paulk, 1994). The backbone of the layer of processes is IT, which ensures the business processes have the applications and data they need.

In PNs, which consist mainly of SMEs, the companies' business model changes frequently because it has to be adaptable. New products are launched, new market shares have to be gained, new companies will enter into the PN, some companies will leave – this all directly impacts the company's processes.

Keeping the process model up-to-date is a permanent task. The working processes have to be modified and the new processes have to be established. Processes from the new PN members or from an acquired organization have to be aligned and integrated. Also, the IT landscape has to be adjusted. That means that the existing applications have to be changed, the new applications have to be introduced and the acquired applications have to be integrated.

The problem is that this adaption is not very fluid in case of the most organizations because the business model, the process layer and the IT applications are not well connected, frequently they are disconnected. If the strategy changes, it will be complicated to realize which processes are affected and how they should be changed to support the new

processes. Once the processes are implemented at the application layer, it is almost impossible for most of the organizations to prove that all processes support the new strategy.

With such a disconnection between strategy, processes and applications, it is difficult to adapt quickly to the changing business models and the new market conditions.

To stay agile and competitive, the enterprises should concern about how fast they can adjust to the business model changes and how fast their process landscape and supporting applications landscape can be adjusted.

The tools and techniques for process improvement are best deployed systematically as part of a process improvement such as Lean, Kaizen, ISO 9001:2008 and Six Sigma (Polyantchikov and Shevtsenko, 2010).

The process governance consists of policies and processes that define the way the organization's business processes are managed. The key elements of good process governance include transparency, responsibility, flexibility, accountability, commitment to the organization's business goals and fast realization through automation. Governance processes are modelled just like any other processes (Polyantchikov et al., 2012).

4 DESCRIPTION PRINCIPLES

To establish a PN control model, the modelling principles have to be settled. According to our approach, there are at least three types of views needed – objective view, product/service view and process view.

The objective view is needed to describe PN's objectives and companies' objectives that belong into PN. Via these views, it is possible to analyse companies' objectives' alignment.

The product/service view is needed to analyse which company produces which services/goods and as well to understand which services/goods support which objectives. The second objective is to realize which services/goods a company needs to provide its services/goods.

The process view is needed to learn which processes produce which services/goods and who are responsible for these processes, as well as who are the consumers/providers, the participants, what are the inputs/outputs, normative documents etc.

For companies' level, there is an organizational aspect needed to be modelled.

4.1 Modelling Objectives and Product/Services

The modelling objectives derive from PN strategies. Every PN has its product/services to bring to the market. These objectives will be then distributed and accepted by Partner Network Steering Group (PNS) and basing on these objectives the companies will create their own objectives according to which they will support PN activities.

Being related to objectives, the product/service tree will be developed and services will be divided between companies who are capable of supporting these services.

To simplify such a model, it is reasonable to combine these services into several service groups and to model these objectives and services via product/service groups (Fig. 1).

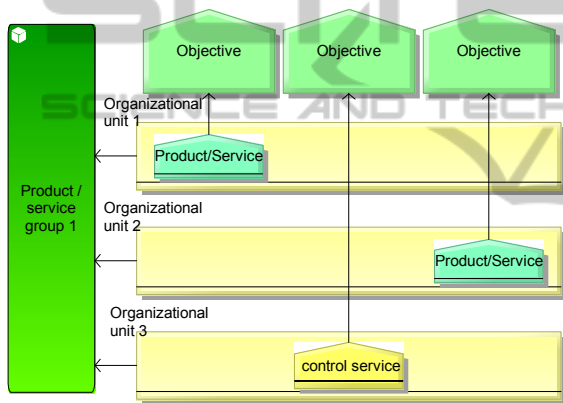Figure 2: Objective diagram at Company level.

Figure 1: Product group goals and companies' product / services that support it.

Companies will develop their objective trees based on Company politics – all objectives will support some Company politics (Fig. 2).

In addition, the goals that are aligned with PN product group goals should be also modelled, as it is valuable information to PNS and for companies' employees to understand the whole PN objective tree and value chain. All objectives will be supported at least by one process and by KPIs.

4.2 Modelling Processes

Several known notations exist for process modelling like IDEF family, Value Added Chain diagrams (VAC), UML modelling notations, BPEL, BPMN, etc. Each of them has their strengths and weaknesses. Our team has good experiences with VAC and Event-Process Chain diagrams (EPC) from previous projects (Kangilaski, 2010b, 2012).
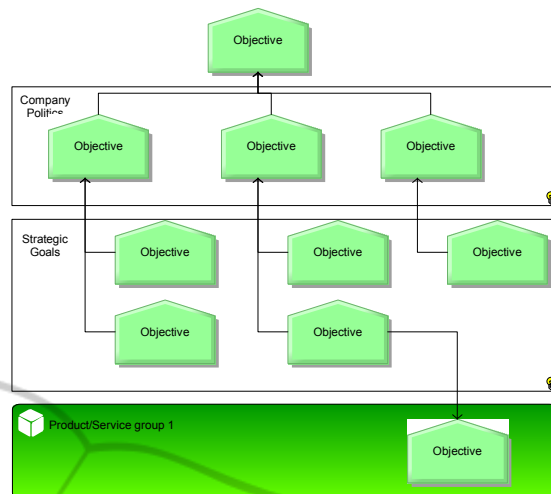
From the process modelling perspective, the processes are differentiated into three process categories:

1. Main processes – the company creates value via these processes;
2. Auxiliary processes – these are processes which are supporting the main processes and control processes (e.g. financial services, human resources, purchasing);
3. Control processes – these are processes that are used to control all companies' processes. Sometimes the control processes include also the developmental processes which will create new production capabilities for the main processes. Sometimes the developmental processes are considered as separate process groups.

In addition to the process categories, our team's experience proves that there is reasonable to model PN through the five modelling layers where the four levels are for a company and one for PN. (Fig. 3):

Level 0 – this is the level where all PN strategic alliance companies' main processes and their interconnections (via consumed/produced goods and services) at high level are represented and interconnections are modelled. If information is accessible, then the goal oriented alliance companies' information is represented. If PN has some certain product/service groups it offers to the market, then that should be shown at that modelling level. Owner of this model is PNS.

Level 1 – this is the first level which describes the company's business processes including control (developmental), main and supporting processes at a high level. The process owner will be assigned to the

processes at the level of company management. The processes supporting PN value chain should be mapped with level 0 processes to have an integral view. When there are products/services modelled at the 0 level, then these processes have to be linked with the processes which produce these outcomes. Process goals and KPI-s should be synchronized with the company objectives model. The owner of these models is company's CEO.

Level 2 – at this level the procedures belonging to the process are represented. Each procedure's inputs/outputs and consumed services are named more precisely. At the same time the product/service tree will be modelled. At that level, the owners of procedures are named via occupations – these are mostly the head of departments. The owner of this model is a company board member.

Level 1 and Level 2 are modelled via Value Added Chain's (VAC) notation. When there is a need to model more information at the generalized level, the separate VAC model is created for a certain process or procedures where needed information is presented (e.g. normative regulatory documents, other participants at the level of departments or companies, connected information systems). All procedures have their goals and KPIs, which are related to the process goals and KPIs.
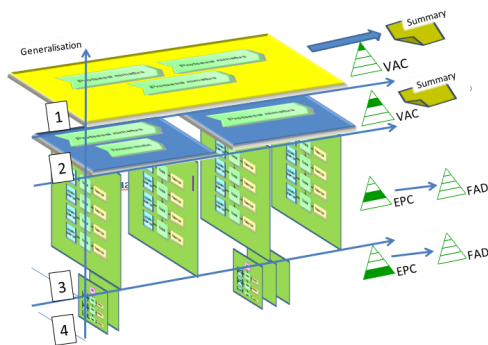

Figure 3: Process modelling levels for a company.

Level 3 – this level describes all activities and events related to the procedure. Each activity will have its inputs and outputs and the performer. If all processes are described, the performers' job description can be generated. In our case, the procedures are modelled in EPC notations. EPCs will start and end always with business events. The owner of this model is usually the head of department/head of group.

Level 4 – this level describes procedure activity at the instruction level. That level will be modelled by EPCs. If this is already modelled, the owner of

this model is mostly the same person who is responsible for level 3 corresponding process views. At the levels 3 and 4 we suggest to use Functional Allocation Diagrams (FAD) to hide complicity from the reader at these levels to describe all input and output documents if these are many, as well as the participating roles, IT systems etc. FAD hides the complicity from EPC view but keeps all needed information in model.

Based on these models, the influence analyses, role activity analyses, product/service consumption analysis etc. can be performed.

5 PROCESS MATURITIES

When the modelling principles are settled, then it is needed to estimate in which maturity level the processes are.

In level 1, each company has at least 10 main process steps, 5 control processes and 7 supporting processes. In second level, every process has at least 4 to 10 procedures which mean that if PN consists of 10 companies then it is already ca. 1000 procedures to evaluate the maturity of the processes. According to our experience we propose the following principles – the primary focus should be on the main processes, the second focus should be on those supporting processes that influence the critical main process steps and lastly the focus will be given to the control processes and all remaining processes. After the maturity level is estimated, the PNS or company management can prioritize those processes which maturity should be raised and the way how that should be done.

A question about the necessity for maturity based approach frequently is arises in companies. The executives often see their processes as a 'black box'. They don't know the details, but somehow the processes produce outcomes. The executives suppose that these processes may not be as efficient or as effective as they could be (quality and rework are not measured), but at least they work, and managers are afraid to change anything because a change might disrupt these fragile 'black box' processes, to solve a problem is more complicated when the problem is unclear. Automating the 'black box' is therefore easier, because it becomes a project and businesses 'do' projects.

As in many others above mentioned frameworks, we use five maturity levels to identify companies' and PNs' processes maturities (TutorialsPoint, 2013). These levels are the initial, the awareness, the defined, the managed and the optimized level.

5.1 Level: Initial

The goal of the initial level is to be aware of the importance of the business processes, to define the rules and principles to continue with process based approach and to have the description of the approved processes at level 0.

The main activities are related to FP actions that should force PN members to understand the need to have process overview from 'helicopter' view. This means that companies' management, belonging to PN, has decided to support that initiative (Fig.4).
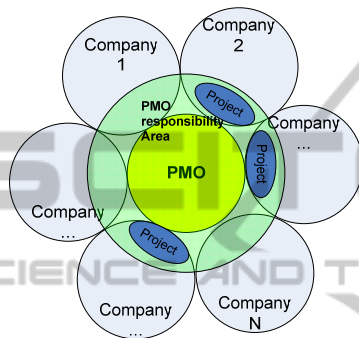

Figure 4: PMO Responsibility area.

During this phase, the FP has to choose the toolset and agree in the modelling principles to be used in supporting these modelling activities.

From the organization's perspective, there should be a group of persons that will form the initial Process Management Office's (PMO) structure, which will take the responsibility for these initial modelling activities. When documenting PN's level 0 processes, there is need for a support from companies' side – in some cases it is formed by companies as a project, which is supported by PMO. As PMO is responsible for methodology, it also performs trainings for modellers and extends the documentation rules if needed. In addition, it is responsible for keeping modelling environment in operation, checking its content and publishing in PN intranet all the modelled information.

To conclude, the most important aspect in order to reach the next maturity level is to have the level zero's processes agreed and signed by companies' management belonging to PN strategic alliance, and if possible also by its goal oriented network companies' management. The proposed criteria's and their measures to exit the initial maturity level are presented in Table 1.

Table 1: Criteria's for entering maturity level Awareness.

Nr	Criteria	Measure
1	Modelling tool is obtained/procured with needed licences	FP decision and its costs
2	PN companies have understood the importance of processes and have decided to implement the process based management model	There exists PNS' decision and companies board' decision
3	Modelling rules are developed and implemented	Modelling rules are approved by PNS
4	Modelling rules are managed and updated according to needs	PMO is formed (1-2 persons), process for rules management are established
5	Periodical modeller's consultation and training about modelling rules	PMO's consultation plan is approved by PNS
6	Validating the modelling rules' usage in practice	PMO models' validation rules are established
7	Model publishing for PN companies	Published periodically by PMO
8	Stakeholders are trained to use the models.	Companies understand the models
9	Level 0 is modelled	Level 0 is approved by PNS

5.2 Level: Awareness

The goal of the awareness level is to ensure that the companies by their management have documented and approved the first and second level process maps.

The processes between the companies' partners are described at the third level (process flows). PMO has to have a developed and agreed process analyse methodology and the agreed process maturity evaluation rules. Companies belonging into PN strategic alliance have to periodically evaluate their processes, estimate the processes` maturities and attempt to improve process maturities in areas where smooth cooperation within VO-s is most frequently needed.

Critical is the way how PMO is working with stakeholders. Stakeholders must understand how to use process models for their benefit and how they could extend its usage.

From the process landscape view, crucial is that all companies belonging to PN has their first and second level process models, have modelled the processes' results, their consumers and their

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demands for outcome as well as inputs and their providers.

From the process management perspective, it is essential that every process has its Key Performance Indicators (KPI), which are measured periodically and are approved by companies' management. There should be a certain person who has the responsibility to collect these KPI measures from processes.

From the organizational point of view there is a huge cultural change comparing with the previous maturity level – every process and procedure has to have an owner (for procedures of level 1 and for level 2), who is responsible for the process/procedure and who has the permission to change it when needed. In addition, every process has to have a process analyst whose responsibility is to find out process improvement potentials. One of the process owner responsibilities is to inform its processes members about process goals, KPIs and their roles in process. These role descriptions will be the bases to the job descriptions.

At the end of this phase, the PMO should if possible to be separated from FP and Board of Process Architecture (BPA) should be created. The BPA responsibility is to evaluate and plan the major business process changes inside PN. BPA will be the board who must evaluate PMO work productivity.

To conclude, in order to reach the next maturity level, the most important thing is to define the first and the second level processes and their KPIs, to assign process owners, analysts and to form BPA which will optimize PN agility to form more quickly VOs to respond to market demands. The evaluation criteria's are presented in the Table 2.

5.3 Level: Defined

The goal of this level is to get all business critical processes as well as all control and main supporting processes described and structured.

This means that the third level activity diagrams are modelled (EPC). The most critical part is to check whether the modelled processes correspond to the real life activities. In reality it means that there are the audit plans for organizations to check their processes' correspondence to the model. This is important as the models are used by the management as the business tool to make the business decisions.

For the PN model, the most important fact at this maturity level is that all processes have to be modelled in a way that the processes interconnections' were also determined through the model – i.e. through services / goods / data / documents / oral communication or IT solutions.

Table 2: Criteria's for entering maturity level Defined.

Nr	Criteria	Measure
1	Levels 1 and 2 are modelled. Major cooperation points are modelled at level 3.	Models of the level 1 and 2 are approved by companies' management and by process owners
2	Process analysis methodology is developed	There exists procedures which describe analysis methodology and is approved by PNS
3	Final process maturity estimation model is developed	Maturity model and its criteria are approved by PNS and by companies management
4	Periodical processes maturity estimation and process improvement is are proceeding	Process Auditing plans are developed and approved by PNS and by companies Management.
5	Stakeholders interested in process optimisation are trained	Training plan is approved and fulfilled
6	Process results and their consumers and process inputs and their suppliers are modelled	Processes at level 2 are modelled via inputs/outputs and connected with processes which provide/consume these
7	Customers' requirements for process outcomes are modelled	Product/service tree is modelled and connected with customer requirement and processes
8	Process has KPIs which indicate customer's satisfaction with process outcome	Processes at level 1 have approved objectives and KPIs by companies' management
9	Process KPIs are measured periodically	Company management checks KPIs periodically in management meetings
10	There is assigned person who is responsible for collecting process measures.	Company's head of departments have assigned the persons to processes to collect process measures.
11	Process owner and process analyst are assigned	Companies management has assigned these roles to certain persons
12	Process participants are informed about process goals and measures.	Process goals are part of participants' job measurements.

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At this level inorder to improve communication, it is suitable to define the templates for documents as it gives further possibilities to automate all processes because documents are just information carriers between the process participants or for the process analysts or the auditors.

To be aware about the duration of processes, the processes should be determined standard performance time. This is estimation, but it gives for the VO formers important information about probable duration when they prepare proposals for market demands. At the same time, the companies have to work to collect the real measures about the process performance. And this is the valuable information to the process analysts. Mostly this leads to the need to document also all IT solutions and their contents that support the business processes.

From the organizational point of view, the process participants' job descriptions should be synchronized with the processes in which they participate. In addition, the amount of personnel needed to perform the processes have to be determined.

5.4 Level: Managed

The goal of this level is to manage the process goals and to risk in systematic way.

When the processes and their KPIs are handled, then it is time to align processes' goals with the companies' and PN's overall goals. As the goals are SMART (Specific, Measurable, Attainable, Realistic, Time-related) (Doran, 1981) then the alignment of the process goal and organizational goals and PN goals is a complicated task (Kangilaski, 2008). Those alignment activities cannot be done at earlier phases because when the processes are not provided by measurable KPI-s, then there could be a considerable risk that the goal alignment process will end up with 'endless' discussions that organizational KPIs cannot be aligned with process' KPIs.

As PN is generally the customer oriented network, then at this maturity level the processes' KPIs have to be extended with risk dimension. This means that there should appear the measures within the processes measures that will estimate the negative business scenarios when customer's demands are not handled as planned or agreed before.

During this phase, the process KPIs have to be measured regularly to value drifts from planned

ones. From the organizational perspective, the process participants' KPIs have to be aligned with the process KPIs to measure the employees' commitment and to influence the process efficiency and quality.

Modelling the negative business scenario KPIs, the major process risks are documented. Having this information, it is also necessary to have risk management scenarios in place to control these determined risks. The process risk manager should be specified. These risk managers should have an access to all information concerning determined risks through all PN companies participating in analysed process.

To conclude, in this phase the main focus is in the risk management which influences mainly the organizational aspects of organization as well as of PN.

5.5 Level: Optimized

The goal of this level is to have an effective risk management settled while supporting the process based management in PN-s and VOs.

One of the major part to minimize risks is to collect the improvement proposals from customers, suppliers, and process participants. This should be the process that will be carried out periodically. As there is a major amount of information collected for the processes, it makes possible to perform profound process analyses taking into account different scenarios, risks, their probabilities and influences. In addition, such possibilities give option to improve the risk control effectiveness.

To understand how well a network operates, performing benchmarking is needed – firstly to benchmark the similar companies or processes inside the PN strategic alliance, secondly to benchmark the similar companies or processes inside the goal-oriented partner network and after that in external companies.

The main challenge here is to determine how to motivate companies' employees to think how to improve the business processes in a way that they were more effective. In some companies there are motivations schemas implemented to motivate continuous improvement approach.

To conclude, within this phase the major focus is on the risk management via continuous improvement.

6 IMPLEMENTATION FOCUSPOINTS

As described above, when the modelling principles are settled, there is a need for framework to estimate at which maturity level the processes are. When the PN level processes are modelled and having such checklist for every maturity level (shown in tables 1, 2) it is easy for the companies to estimate their processes maturity. Such information will be helpful for FP and PNS for planning a further cooperation with existing partners in PN and also to evaluate the new companies entering into PN.

The value of this process maturity estimation and further maturity improvement leads to more flexible cooperation, risk management and to set priorities for certain focus points.

A crucial point here is that the project team and business are seeking to understand the current processes – the main risk here is to document too much. Once a process is clearly understood and documented, the further documentation must be stopped as this is already in enough detail. If there has been made an agreement with the company's management that the process models may be used for documentation and training purposes, then an agreement about the level of modelling detail has to be made separately.

The main obstacle to implement before described process evaluation mechanism for PN is that some executives try to not change the processes. The executives do not want or cannot deal with processes' efficiency nor with the maturity estimation. Instead of searching problems' root cause, the focus will remain on symptoms. Even if there is detected process inefficiency, these organizations prefer to obtain new technology rather than to deal with the science of transforming business processes.

7 CONCLUSIONS

Business Process Management considers processes as strategic assets of an organization that have to be understood, managed, and improved to deliver the value-added products and services to the clients. Companies have realized that they need to make significant changes to apply the power of processes, but managers are unsure about what exactly needsto be changed, by how much, and when.

Thus, in PN there is a need for a toolset that could help the FP to learn the PN companies'

process maturities as the PN's agility and speed is assured through flexible processes.

In our research we have developed maturity evaluation checklists, which will provide understanding about the processes' maturities.

As our team has not performed any maturity evaluation projects, the proposed approach is theoretical, but is based on that approach we are currently in the preparation phase to implement such an approach for PN operating in oil-shale energy industry domain. The project will be launched in this year. Our team is convinced that behind the processes, there is a huge potential for efficiency.

ACKNOWLEDGEMENTS

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