IT Service Management and Normatively Regulated Activities

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Abstract: - This paper describes basic concepts of information technology service management and its association with theory of normatively regulated activities. Normatively regulated activities are characterized by precise objective or purpose, participation of actors as role-holders, and norms and rules that govern the performance of these activities. At the same time primary objective of service management is to ensure that the information technology services are aligned to the business needs. Some of similarities and interfaces between these two disciplines are presented. Also an example of incident management in network operation centre is presented as part of service support processes.

Key-Words: - service support, service management, normatively regulated activities, incident management

1 Introduction

Increasing pressure to align information technology with business has driven many organizations to better understand the availability and performance of underlying IT Services, and the business impact of any potential service interruption. Information Technology Infrastructure Library - ITIL has developed today into the most powerful and widely accepted set of guidelines for achieving best practice in IT Service Management. Some authors argue about correctness of ITIL definition as "common" rather than "best" practice [1]. Following comprehensive framework of approaches for achieving business success, ITIL helps organizations to improve service delivery and reduce the cost of IT operations. During implementation of ITIL in the organization it is necessary to adopt certain steps. One final step is the implementation of metrics, which will further develop into clarification of Service Level Agreements (SLAs). Many organizations are facing problems in the implementation by achieving needed metrics and providing requested SLA. It can be noticed that problem is very well defined in the theory of normatively regulated activities and possible usage of results can help in better service provision. Specially regarding fact that critical analysis of the ITIL model from a formal point of view is missing. In the organizations always exist general rules and norms for performing certain actions. But in the practical situations activities are not usually performed according to the strict rules and expectations. It can be caused because of different

problems that are indicated during performing of organizational activities as: inaccurate and incomplete definitions of activities, different perception about competence and responsibilities, different interceptions of the rules and norms to perform activities etc. This is always presented in the case of IT service management as lack of full understanding of business process and business needs. In this paper we are working on the class of the organizational activities that are normatively regulated, called normatively regulated activities NRA, with specific instance of IT service management in call centres – incident management. This activity like all other NRA activities has a defined goal and task, time of realization, responsible actors and definition of particular norms and rules of performing that are in effect. Norms, rules and obligations of the actors in the activities have to be aligned with rights of all activities and to protect specific category of subjects. In such cases when these activities are not performed according to the norms and rules, NRAs are marked as irregular and their results are cancelled. To understand meaning of one activity, it is not enough to know that something has happened and that it has particular result (i.e. "Service call assigned", "Service call reassigned") but it is also important to better understand process itself: did all actors perform according to their role and their authority, was the process performed in expected phases and was it finished in expected time, was the legitimate procedure taken into consideration, etc. After that it is decided whether the activity was regular and whether all activities were legitimate.

In this paper problem of service management is described with description of incident management and usage of intelligent system in particular environment. Next section presents basic model of service management. Third section gives short overview of the incident management in call centre. Fourth section describes functional components of the intelligent system and probes of each of these components in order to improve process of service management. At the end directions for the future improvement, that accounts formal analysis of the other aspects of ITIL model, especially in the part of service delivery, are presented.

2 IT Service Management

The ITIL (the IT Infrastructure Library) is today the most widely accepted approach to IT service management in the world. It provides a comprehensive and consistent set of best practices for IT service management, promoting a quality approach to achieving business effectiveness and efficiency in the use of information systems.

ITIL is based on the collective experience of commercial and governmental practitioners worldwide. This has been distilled into one reliable, coherent approach, which is fast becoming a de facto standard used by some of the world's leading businesses [5]. ITIL is closely aligned with the BSI standard BS 15000 and Code of Practice (PD0005). An approach is adopted by organizations such as Microsoft, IBM, HP, Barclays, HSBC, Proctor & Gamble, and British Airways. There were expectations that BS 15000 will be integrated into ISO 9000 and ITIL becomes accepted and official standard for service providers.

There are many examples of companies' decision to move toward ITIL framework. Starting a metrics program and defining a service strategy with various service levels, the organizations are able to become self-supporting [7]. An important conclusion is that the use of ITIL service support has helped to develop a better customer focused approach, which is considered as the most important critical success factor for a professional, self-supporting maintenance organization. Even ITIL is more implemented than any other IT governance tool, there are still only 25% service providers according to some surveys that have fully implemented framework, and 50% only some part of it [8].

Service Management is heart of framework, and is divided into two main areas: Service Support and Service Delivery.

Service support has six main areas:

-Configuration Management: it covers the identification of all significant components within the IT Infrastructure and it provides comprehensive information about all components in the infrastructure that enable all other processes to function more effectively and efficiently.

-Change Management: covers the process of IT changes, from request for change to assessment, scheduling, implementing, and finally reviewing.

-Release Management: undertakes the planning, design, build, and testing of hardware and software to create a set of release components for a live environment

-Incident Management: main task of it is to restore normal service as quickly as possible following loss of service, and to minimize the impact on business operations.

-Problem Management: trying to identify root cause of incidents and then initiate actions to improve or correct the situation.

-Service Desk: differs from the other areas of Service Management in fact that it is not a process but is the central point of contact for users to report questions or complaints.

Service Delivery has five main areas:

-Service Level Management: it is responsible for whole processes of Service Level Agreements (SLAs), which is the basic for controlling relationship between service provider and customer.

-Financial Management for IT Services: it is dealing with budget, IT accounting and charging

-Capacity Management: define the long-term strategy of the business by providing information on the latest technologies ideas and trends

-IT Service Continuity Management: it is responsible for taking risk reduction measures to reduce the chances of major disasters occurring and for the production of an IT recovery plan

-Availability Management: it deals with the design, implementation, measurement and management of IT infrastructure availability.

3 An Example of NRA

In this section one particular NRA and application of the intelligent system will be presented. It has been already mentioned that typical examples of NRA are the processes in the call centres. To be familiar with one of these activities we will present only one segment of operation in the service call centre, which is incident management. This activity is very complex and we will only describe the most substantial part. Network control centre is

responsible for continuous monitoring of data and communication links of organization and registration of any incidents. Main tasks are:

-monitoring systems using available monitoring tools

-receive call from remote location

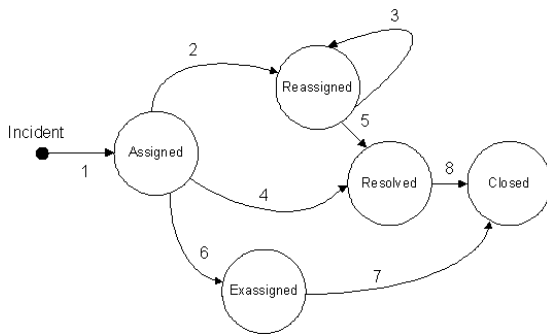-receive mail from remote location

Fig. 1 Workflow of activities during service call management

Activities from figure 1 are:

1 - Collection and registration
2 – Reassignment by operator
3 - Reassignment by technician
4 - Resolved by operator
5 - Resolved by technician
6 - Reassignment to external provider
7 - Resolved by service provider
8 - Solution checked and ticket closed by operator

Operator can be aware of incidents by monitoring tools or be informed from user by e-mail or by phone. Each incident has to be recorded into system and status "assigned" is given to incident.

After incident collection operator is responsible to manage incident furthermore using guidelines about knowing incidents and knowledge base. Operator can, according to type of incident:

-reassigned incident to one of technical groups responsible for specific area

-assign to external support and to one of his own service providers (status called "extassigned")

If operator manage to solve incident after it has been assigned to him, he can change status to resolved and than to closed. If he is not able to solve it after some time, he has to assign it to one of

technical groups responsible for specific area or to external support.

When technical group receive assignment of incidents they can:

a) Resolve it by identifies cause or finding the fastest workaround, status of incident is changed to "resolved". Operator is responsible to change status to "closed". This workflow allows operator to control updated knowledge base, to learn from incident collection and to be able to solve problems in the future without additional re-assigning and re-routing. Each incident has saved history that senior management can analyze further and see number of incidents that could be resolved by operator, but have been reassigned

b) Assign it to other technical group to which problem is more relevant. The other technical group than follows the same workflow as it is assigned by operator. Management can analyze later incidents history and see are there too many incidents going back and forth between technical groups.

Status of cases assigned to external support have to be monitored and updated by operator or by technical group, because external support and service provider don't have access to internal incidents records of organization. After provider send notification about resolution of problem status is changed to "solved" and than to "close". Incident has to have record with information about external number case, and solution given by provider. This statistic allows management to keep record of incidents with particular provider.

Intelligent system should be implemented in run-time phase. It should be able to coordinate, control and determine regularity of this NRA. Different statistics and analysis will help to improve business process. Some of these statistics are:

-How many times action 3 from figure 1 has been performed. Identification of high number can point to delay of incident resolution and can require control of knowledge base and competence of actors who processed the incident

-Difference in number of actions 2 and 4. Main goal is to have higher number of incident resolved by operator. This would reduce time of incident resolution and improve business process. Increase of actions 2 compare to actions 4 can indicate lack of knowledge transfer and missing updates with proper incident solutions.

4 Elements of ITIL in the NRA

Normatively regulated activities are social actions directed to the members of a social group in which actors share common values and norms. Actors belong to a social world by accepting and justifying common norms and by establishing legitimate interpersonal relations complying with these norms [2]. In this paper we will consider groups that are role-playing subjects in processing of service call and service management in one organization. In the case that service management processes does not comply with norms, its outcome is not considered valid. Validity of process can be expressed with particular metrics. Any significant difference in metrics can affect efficiency and effectiveness of performance of this process. The success of a normatively regulated action is basically determined by its lawfulness, its normative validity and rightness, irrespective of its efficiency [6].

For description of NRA it is necessary to define the following basic concepts: actions that are performed by actors who are role holders, states or phases which the action is executed through, rules for bringing about the actions i.e. transition from one state to the other, resources and document [3].

During the execution of the event, it is important to respect temporal constraints. Temporal constraints are different rules that regulate the time component of business process. Temporal constraints are classified as basic temporal constraints (also called duration constraints), limited duration constraints, deadline constraints and interdependent temporal constraints

In the practical situations activities are not usually performed according to strict rules and expectations. Reasons for aberration are different problems that are indicated during performing of organizational activities as inaccurate and incomplete definitions of activities, different perception about competence and responsibilities, different interceptions of the rules and norms to perform activities etc. Problems that are the most often present during the performance of NRA, and in our case in the case of IT service management implementation come in the two important phases: during the planning of the activity and during the performance of the activity

The criterions of the quality in the performing of the activities are efficiency of the realization (finishing activity as soon as possible), effectiveness of the realization (archiving the aim under existing constraints) and regularity of the action performance (according to regulated norms). The fist two measures can be found in all models of decision-make processes and it depends of the process itself

which one has higher significance. The third measure, regularity of the action performance, had an essential importance for the activity and presents the most difficult part of process. Defining in the particular state by actor in IT service management process leaves lot on the regularity. In the performed empiric research, regularity of the activity became the main criterion for the successful activity performance. Primary motive in the designing of the computer support is assistance to activity actors to achieve bigger effectiveness and efficiency of the activities [4], and also to help in the realization of the "regular activities". Using formal model to define a type of activity and monitoring instances based on that model, higher regularity and legality and also consistency of some instances are accomplished as well. The main issue here is how to apply formal model and at the same time make easier conduction of the activities for all actors. For that purpose it is proposed to develop software system that will allow assignment of different types of the activity in the form of the formal model and in the way that is most suitable for natural way of presentation. Software systems that give support to this type of the activities are usually called intelligent computer system. In IT service management some of this functionality is implemented in the service desk.

This paper is reviewing incident management in one call centre and analyse possible formal presentation. It is very important to meet all requirements of one intelligent system as are described in this model.

Coordination is always determined by starting the activity, assigning the tasks, remaining of the deadlines, alarming using applications or e-mail. Control is determined by control of the process flow, process deadline, process duration, access rights, and established protocol of the behaviour. Respect of the norms, rules, authorization and time constraints determines regularity. Besides to what is stated above, intelligent system has to be able to:

-Determine assignment of the right actors to the roles

-Determine actors according to the parameters of the case for the specific case

-Creation of the classification of incident for the actors

-Enable selection from the classification list

-Enable usage of the resources

-Route the case

-Monitor and control of the case progress

-Stimulation of the case resolution

-Assist in the case resolution using cases knowledge base

-Negotiation and reporting to the management

-Reasoning about all future states

-Allocation and management of the resources

Each activity is performed several times and it is possible to gather some knowledge about the duration of the each activity in one particular state, when it will be terminated, who are the actors and also what are the problems in the performing of that activity. System will keep all relevant data about each instance and it will be possible to perform different statistics and analysis that will enable to:

-Discover number of the processed instances of the case according to different criteria

-Determine optimal number of the actors

-Determine efficiency of the actors

-Determine the priority of the case

-Determine complexity of the case

-Determine the mean time for the resolution of the instance

-Determine the probability of the particular state

-Usage of the resources etc.

Additional demands on this system are:

-Control and self-control of the employees (which requires some social aspects of analysis)

-Enable view and search for valid documents

-Use key organizational words to effectively search case bases

-Ability to use internal documents from knowledge base and shearing these documents among groups

-Additional estimation of the regularity of the instance that are finished according to all parameters (who was handling case; how much time each phase took to resolve case; was there any link between user and support).

It is obvious that this system will improve the performance of the IT service management process in all segments of service support and service delivery. All these elements are already integral part of some IT governance tools.

5 Conclusion

In this paper the concept of the service management and incident management is described as one example of normatively regulated activity. Using any elements of formal model, system can be analysed easier and any statistics that improve system performance can be conducted. The findings presented in this paper can be used for further analysis of NRAs in reference model, especially in other parts of service support as release management and problem management.

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