# SERVICE OPERATION MANAGEMENT IN IT DOMAIN. COMPARING TWO IT COMPANIES PROCESSES, FLOW AND RESULTS

## Mădălina ALBULESCU[a], Nicolae BIBU [b*]

[a] West University of Timisoara, Romania
[b] West University of Timisoara, Romania

## ABSTRACT

*The IT business companies are in continuous development, in the best way they can. As the market is always growing and keeping customer satisfaction at a high level usually consumes a lot of resources, it becomes more and more clear that there is a need of best practices for managing services in supported environments.*

*This paper offers guidance on how to maintain stability in service operation, allowing for changes in design, scale, scope and service levels. Organizations are provided with detailed process guidelines, methods and tools for use in two major control perspectives: reactive and proactive.*

*Managers and practitioners are provided with knowledge allowing them to make better decisions in areas such as managing the availability of services, controlling demand, optimizing capacity utilization and avoiding or resolving service incidents and managing problems.*

*Included in this paper is a case study on a big IT company located in Timisoara, where we analyzed the processes and functions in place for the current service operation delivery. The second study case is made on a medium IT company located also in Timisoara, which has a different abordation of the Service Operations processes. By the end of the paper we compare the two companies, highlighting some solutions in order to improve the delivery.*

**KEYWORDS:** *delivery, management, methodology, process, service operations.*

## 1. INTRODUCTION

Service operation lifecycle management scope is to carry out and coordinate the processes and activities required to manage and deliver services to customers and users, respecting the agreed contractual levels. Service operation is considered a critical stage of the services lifecycle.

The day-to-day operations activities are closely connected to the service operation processes. An organized and well implemented plan of activities will simplify the entire processes of the service operation.

Staff involved in the service operation stage of the service lifecycle should have processes and support tools in place that allow them to have an overall view of service operation and delivery.

## 2. PROCESSES IN SERVICE OPERATIONS DELIVERY COMPANIES

There are several key Service Operation processes that, implemented together within the company can provide a good structure of the IT support.

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* Corresponding author. E-mail address: nicubibu@yahoo.com

## 2.1 Event Management

"An event can be defined as any change of stat that has significance for the management of an IT service." [Fry, Malcolm "ITIL lite: a road map to full or partial ITIL implementation" (2010)]

Usually in the IT service management there are 3 types of events:

a) Informational – an informational event does not affect or impact the end user. This kind of events are offering a hint or informing the user that some change has been made

b) Warning – this is an event that is generated when a service or device is approaching a threshold. Warnings are intended to notify the appropriate person, process or tool so that the situation can be reviewed, and the appropriate action taken to prevent an exception

c) Exception – an exception is an event that means that a service or device is currently operating abnormal and the business has been impacted.

Event Management brings value to the business by the early detection of incident or potential incidents, often allowing rectification before adverse impact occurs. Another reason why EM is very welcome in a company is the acceptance and support for automation, which allows the business to exploit technology for competitive advantage.

## 2.2 Incident Management

An incident can be defined as an interruption of a service or functionality without a planning. The incident can be generated either internal or external, because of an end user unplanned action or error. The reduction of the IT support quality can also be interpreted as an incident.

Once the Incident Management is well implemented, there will be a better ability to detect and resolve incidents more quickly, and the business and support costs that are caused by the incidents generated will both reduced. It will be also easier to identify a potential service improvement, based on the solutions found when solving the incidents.

## 2.3 Request Management

The term "service request" is very often met in the IT operations domain. A service request is a description of a demand that may come either from the customer or from internal employees, asking for a minor change of settings upon the IT environment. Usually for these requests the risk is very low, with a small time of implementation, the costs are decreased, and it can also be some query requests (request for information).

"Using the request management in an IT service company will increase the ability to provide quick and effective access to standard services that business staff can use to improve their productivity or the quality of business services and products" (The Stationery Office "Operational Support and Analysis ITIL Intermediate Capability", 2010). The bureaucracy involved in requesting and receiving access to new services will also be decreased, together with cost of providing these services.

## 2.4 Problem management

A problem can be defined as a root cause of one or more incidents. The problem management process is a completion of the incident management and it is responsible of coordinating the problem tickets through their lifecycle. The problem management process is used when a solution is needed for multiple similar incidents reported by the users.

"The purpose of the problem management process is to manage the lifecycle of all problems from first identification through further investigation, documentation and eventual removal, to minimize the adverse impact of incidents and problems on the business that are caused by underlying errors, to proactively prevent recurrence of incidents related to these errors and to get the root cause of incidents, document and communicate known errors so that actions to improve or correct the situation can be initiated" (Colin Rudd "ITIL V3 Planning to Implement Service Management" 2011).

A problem can be defined as a result of either proactive or reactive action. Once there is a big incident reported, a problem ticket can be opened. This is called reactive problem management. In case of several incidents with smaller priority, there can be a proactive action and activities to improve services.

## 2.5 Access management

"Access management is the process of granting authorized users the right to use a service, while preventing access to non-authorized users. It has also been referred to as rights management or identity management in different organizations. Access management provides the right for users to be able to use a service or group of services. It is therefore the execution of policies and actions defined in security and availability management" (Claire Agutter "ITIL Perustason Kèsikirja [PDF]: [Finnish Translation of ITIL Foundation Handbook]"2013).

This process is executed and handled by all technical teams and it is recommended to have a single control point of contact and coordination for this action.

As Tudor (2010) argues, "having an access management process in place in an IT company can increase the confidentiality of its information. It also increases the ability to audit use of services and to trace the abuse of services, to revoke access rights when needed – an important security attention ".

**Functions in service operation management**

If the processes are implemented alone, they will not result in good and profitable Service Operation delivery. Together with these processes, several groups of skilled people are also needed, as well as a stable infrastructure. To achieve this, it is recommended to have several groups of skilled people, all focused on using processes to match the capability of the infrastructure to the needs of the business. These groups create the four big functions in the Service Operation management. "In larger organizations, a function may be broken out and performed by several departments, teams and groups, or it may be embodied within a single organizational unit. In smaller organizations, one person or group can perform multiple functions" (Gary Hardy "Interfacing and Adopting ITIL and COBIT [PDF]", 2016).

Gary Hardy (2010) found that „for service operation to be successful, an organization will need to clearly define the roles and responsibilities required to undertake the processes and activities identified. These roles will need to be assigned to individuals, and an appropriate organization structure of teams, groups or functions established and managed."

## 2.6 Service Desk

The Service Desk team is one of the most important parts of an IT organization. The team should be the single point of contact for the customers and the internal employees. The Service Desk team is also known as the 1st level support, the technical colleagues contacted by the customer when a new incident is announced, or a new request is raised. Some of the main responsibilities of the SD team is to create the incidents in the ticketing tool, prioritize the incidents based on some specific questions, escalate the incidents if they are not properly handled, manage service requests, answers questions. The SD provides an interface also for other activities such as maintenance contracts, software licenses, manages services requests and answers questions.

Some of the main activities of the service desk are mentioned below:

- Creating incidents and service requests in the ticketing tool, together with prioritization of the topic.
- Offering first line support
- Resolving incidents and SRs they are able
- In case there are incidents and SRs that they cannot resolve within timescale, the SD team escalates to the 2nd level.
- Keeping users and customers informed of progress

- Resolving and reporting incidents, SRs and other calls
- Keeping customers informed of incident progress, notifying them of agreed outages or changes unplanned.

The performance of the Service Desk can and should be evaluated at regular intervals. This can be done using metrics. It is important in order to assess the maturity, health, efficiency and opportunities to improve the service desk performance. All the metrics that are used to measure the performance should be valid, realistic and easy to follow. They should be the main indicators of performance.

## 2.7 IT Operations Management team

The team or group of people responsible for performing the organization's day to day operational activities is representing the "Operations Management" term.

Operations Management has the following characteristics:
- All the work made in order for a system, process or device to work or run is made by the OM.
- OM team turns the plans into actions.
- Focus is made on building repeatable, consistent actions that ensure success over time.
- The value of the organization is always measured and delivered.

As Malcom claims, "in a similar way, IT Operations Management can be defined as the function responsible for the ongoing management and maintenance of an organization's IT infrastructure to ensure delivery of the agreed level of IT services to the business".

There should also be an IT Operations Manager, which has the overall responsibility of the operators, activities, shifts.

## 2.8 Application Management team

Rudd claims that "Application Management is responsible for managing applications throughout their lifecycle. This function is performed by any department, group or team involved in managing and supporting operational applications. It also plays an important role in the design, testing and improvement of applications that form part of IT services" (2011).

Below are mentioned of the activities of the application management team:
- Identifies the software resources needed in the delivery of IT services.
- Develops any solution that can extend the Service Portfolio of the company.
- Creates and organizes trainings for the Application Management teams

The Application Management department (or team) is structured considering the categories of activities performed: HR applications, financial, health care, sales, etc.

The Application Management performance can be measured using metrics. Usually the metrics used for measuring Application Management performance reveal the percentage of users that access the specific application, the response time, number of recorded incidents.

**Study case 1: Managing service operations in company Atos IT Solutions and Services located in Timisoara**

For the first study case we chose an IT profile company that provides IT solutions for global customers with a number of 2000 employees. The company is located in Timisoara.

The base layer of providing services is the control and monitoring.

For the Event management, Atos applied the full automation. That means that specific monitoring tools are implemented within the operational department and these tools generate different event notification: information, warning or exception. For the information and warning events, some pop-ups are displayed internal for each stakeholder, while in case of exception the notifications are routed directly to the 2nd level technical teams, to be checked and solved. If the exception is severe, the technical teams get in contact directly with the affected user and provides the needed help in order to avoid creating an incident. There are also situations where an exception can generate an incident.

Atos has a very close connection between *Event management* and *Incident management*. If an event may create an incident or any other person reports an incident (including customers), there is an IM team of 54 people in place. The team members are split geographical depending on the area from which the customers belong. The role of an Incident manager is to handle an incident through its lifecycle, ending with a solution. Incidents are reported using the ticketing tools implemented and prioritized based on a series of questions.

Once the ticket is created in the tool and assigned to the responsible technical team, in case of a priority 1 incident an Incident management is activated via phone or e-mail and a meeting is created with all the stakeholders. The Incident manager moderates the meeting, coordinates the technical teams when finding a solution and in parallel is keeping a contact with the customer providing the status of the implementation.

The meeting ends once there is a solution for the incident, the solution is mentioned in the ticketing tool and the incident is officially closed. For the priority 2 and 3 the ticket is only routed to the responsible team, without the involvement of the Incident manager. If the service level agreement is not respected for the priority 2 and 3, the Incident manager can be activated and then start the same process followed at priority 1 incidents.

In the following diagram it is described the Incident management flow implemented in Atos company.
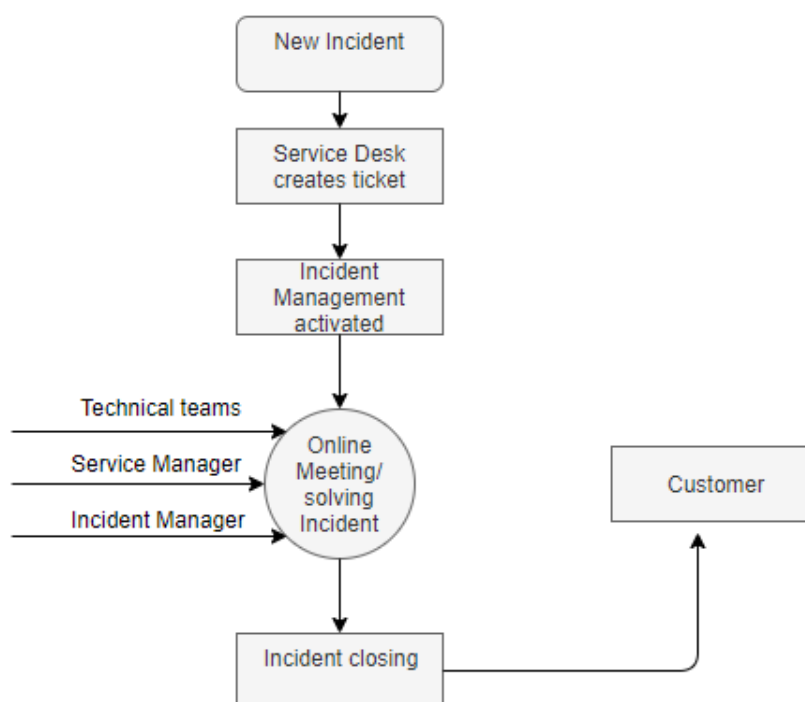


**Figure 1. Incident Management process in Atos company**
*Source:* authors

The *Request management* process is partially automated. The requests may come either from the customer or the employees. In both cases the requests are handled in the ticketing tool, where the change request template is applied, and the new changes created are routed to the technical teams. Usually there are categories that make the routing easier. Depending on the topic of the request, a specific category is selected, and the responsible team is automatically assigned to the request. There are situations where some requests are repetitive.

This means that for the same customer, the users may come with the same modification or activity, but on different environment. If there are more than 3 similar requests from the same client, in order

to reduce the efforts, a standardization can be implemented within the process. For the standardization of the change process and also for the checking of the correction and implementation of the requests, the company has a 28 employees CM team located in Timisoara.

The standardization of the change process is one of the main responsibilities of a Change manager, together with the tracking of the implementation, closing of workflow tasks, respecting agreed contractual service level agreements. In order to have a clear overview of the Change management process on a customer, there are scheduled some weekly meetings named CAB (Change Advisory Board). The Change manager is the moderator of this meeting and the attendees are the Service managers working for the specific customers. During these meetings all the requests are analyzed, the tickets created in the tool are checked and the change manager proceeds with the approval of the implementation. If the change has no approval from the change management team, the request cannot be implemented.

In the following diagram you can see the Request management process flow implemented in Atos company.
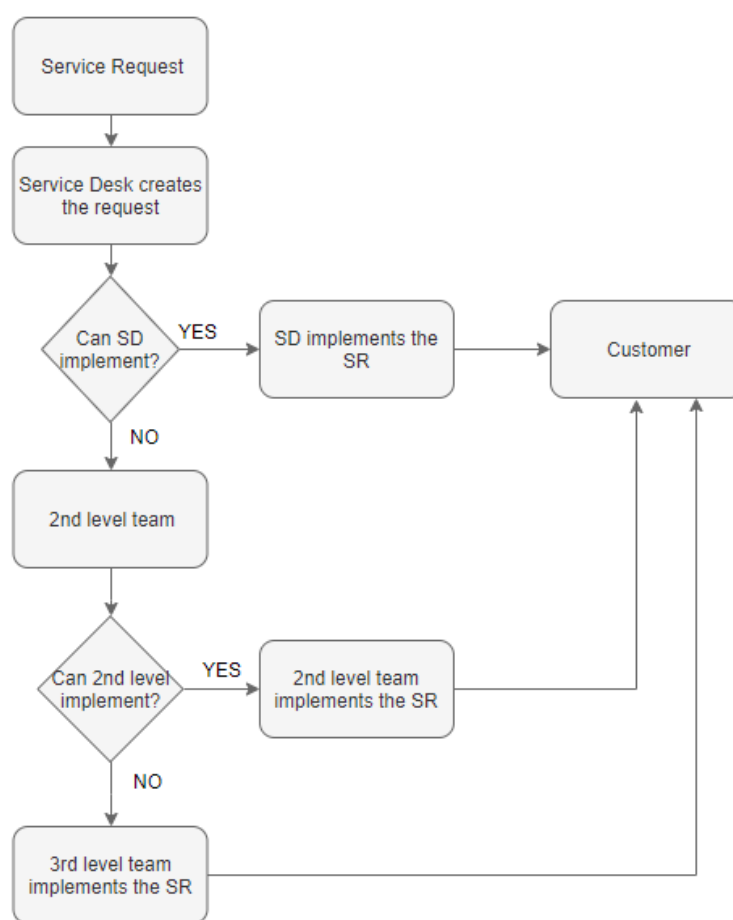


**Figure 2. Request management process flow implemented in Atos company**
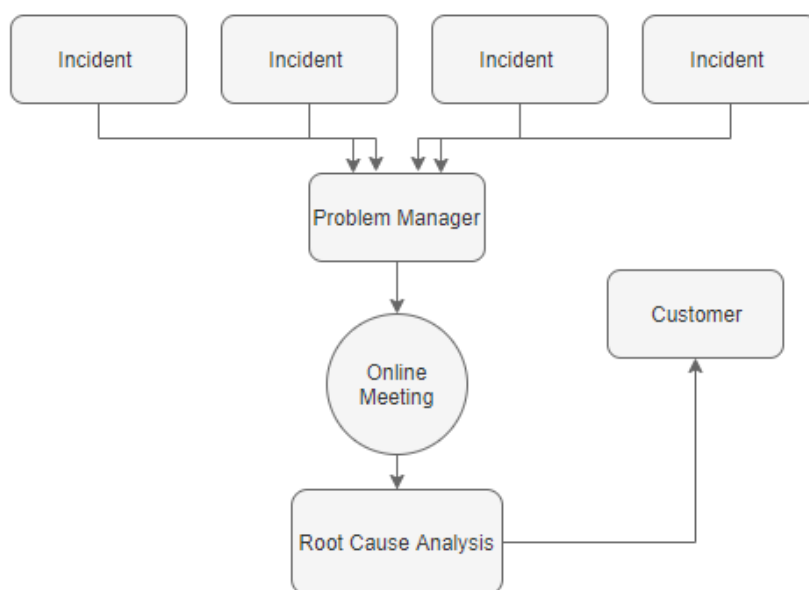*Source:* authors

For the *Problem Management* process, ATOS company does not have a PM team located in Timisoara, but it is closely working with the PM team located in Poland. The PM teams is in a constant connection with the IM team from Timisoara. In case of some repetitive incidents reported internal or by the customer, the Problem managers are informed, and they start creating a problem ticket, which they are responsible of through its lifecycle.

Once a problem ticket is open (using the same ticketing tool as for incidents and requests), some series of meeting are created where the problem manager, the incident manager and all responsible technical teams are involved. The scope of these meetings is to have a final solution implemented that can be applied for the future similar incidents.

During the meetings there are specific tasks for each stakeholder so that by the end of the month all the problem tickets have a solution. The workarounds and the final solutions for the problem tickets are all saved on a share point and in case of other similar incidents that may happen, the technical teams can check the evidence and proceed directly with the implementation. All this process reduces the time and the resources spent on incidents. The PM team is located in Poland and has 15 employees.

In the following diagram it is described the PM process implemented in the Atos company.



**Figure 3. Problem management process flow implemented in Atos company**
*Source:* authors

Comparing to the Service Operations processes, the Atos company combined the Access Management with the responsibility of the technical teams. There isn't an AM team in place for this process, but the technical teams working on different technologies are also having role of access providers. When a new customer is in place, the technical teams receive main access on the servers and in case of new stakeholders they are the responsible people of providing future access. The technical teams also take responsibility if an external person receives access and further incidents are created. In order to have a clear overview of access management, there are some official documents uploaded on the general share point where an evidence is kept with all users and access. The technical teams meet also once per month and updates the evidence, especially when new colleagues join the company or others are leaving the teams.

The functions are also very well defined within the company. The Service Desk team is in place, but not located in Timisoara. As well as the PM team, the Service Desk is located in Poland and it is closely working with the 2nd level technical teams from Timisoara. The main responsibility of the Service Desk of ATOS firm is to handle the requests from the customers. The SD has a 24/7 schedule and they are always available to take the calls or e-mails from the stakeholders and process them either as changes, events or incidents. Once a call is received by the customer, the SD creates the incident, prioritize it together with the customer and assigns it to the correct technical team and in case of a prio1, activates the Incident management team or Major Incident manager. The

prioritization of the incident is made based on some specific questions that the engineer asks the end user. The Poland SD team has more than 120 employees. Because they are in directly contact with the customer, the members of the team are split by geographical regions of the customer and one of the skills is speaking different languages. The first level support engineer can also handle the simple requests, based on documentation with predefined steps. The technical documentation is usually provided by the 2nd level team, with all the steps and diagrams needed for the engineer to solve the topic. There is also a specific list of simple issues that can be fixed by the SD team, if the subject is not included in that list, the ticket is directly routed to the next level.

If the requests have a bigger complexity and the SD engineer cannot process it using the documentation in place, the 2nd level team located in Timisoara is activated either via e-mail (during business hours) or via phone, as the engineers are working on on-call program. The 2nd level team has also role of operations and application team. The responsibilities are split based on technology and once they are assigned on a customer or environment, they take care of the daily operational topics together with application handling (if the customer requires it). So, following the Service Operations guideline, the company combines the last two functions in one big technical team with specific roles.

There are also cases when the requests are more complex and the 2nd level teams are not able to process them. In this case, another experienced team is activated using the same process. This is the 3rd level support team and it's the most experienced technical team. The members are also distributed depending on the technology and they are all located in Timisoara. These members are working during normal business hours and they have the on-call support, in case of priority 1 incidents or requests, they can be activated by phone. This team does not have access management role, but they are also part of the IT operations management function. They are also responsible of delivering day to day IT support, together with the 2nd level team.

**Study case 2: Managing service operations in company Romanian Business Consult in Timisoara**

Romanian Business Consult is a company located in Timisoara with a number of 257 employees. The company provides IT services for a large number of customers in the retail area.

Even if RBC is also an IT service delivery company, the way of implementing requests, handling incidents and managing services is different than the ones described in the previous study case.

*Event Management* process is followed using a third party which handles the IT infrastructure of the company. If there are any patches or actions needed, the vendor informs the employees and in case of specific help, they are providing support. The notifications are displayed on each station and in case of a warning, a phone number is also mentioned so that the RBC employees can call the support. There wasn't any case until now when the event management has reported an incident.

The *Incident Management* process is also in place within the RBC company, even if it is different than the one described for the Atos company. When it comes to RBC, the incidents can be reported either by the customer or by the employees of the company. Usually users are sending an e-mail to the 1st level support team named also call center. The team opens a ticket in the ticketing tool and routes the ticket to the 2nd level team. The 2nd level team activates also the 3rd level team and there are different discussions and meetings to fix the issue. This way of work can lead to delays and waste of resources. After the incident is routed to different teams and the solutions is implemented, the customer is informed by one of the teams and the ticket can be closed.

The internal discussions and the process of fixing the issue is not coordinated by any manager or team responsible. The technicians are in full charge of finding a workaround, implementing the solution, closing the ticket and informing the customers.

In the following diagram it is described the incident management process implemented in RBC company.
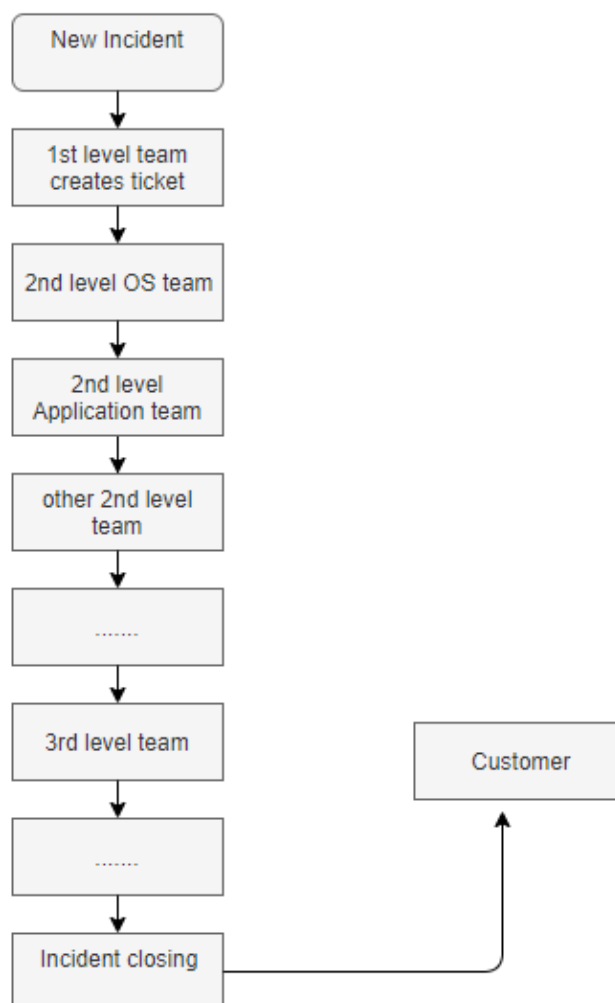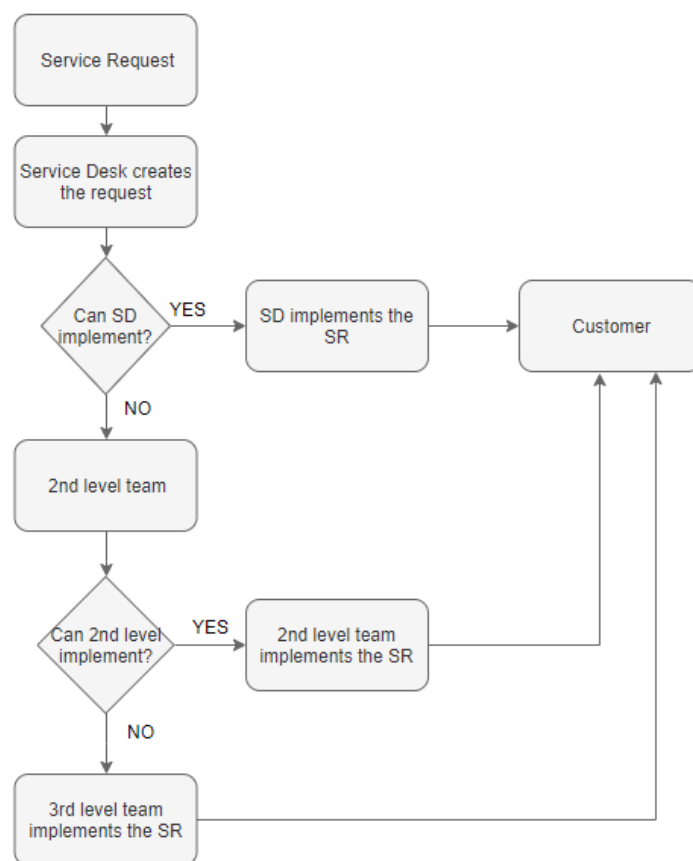
**Figure 4. Incident management process implemented in RBC company**
*Source:* authors

Customers are asking for different requests directly to the technical teams. Requests are coming via e-mail, where the user is contacting the software developer or the technical support team and asks for different changes or new implementations. This way, the technical colleagues are in continuous contact with the customers/users, discussing specifications, estimations and details about the coding process. When the request is successfully closed, the technical teams inform the customer and in case of any changes needed, they will be activated again and will proceed with the corrections.

The responsibilities of a new service request are not split by knowledge. If a 3rd level technician is contacted by the user for a small change, the colleague needs to assign the ticket to the team that should proceed with the implementation.

In the following diagram we can see the request management process implementation within the RBC company.

118

**Figure 6. Request management process implemented within the RBC company**
*Source:* authors

The Problem management process is not implemented in RBC company. When fixing an incident, beside the workaround, the teams are also trying to find a final solution so that the specific kind of incident will not be reported again. But this thing does not always work. A root cause plan is needed so that a final and stable solution can be found. Usually together with the ticket closing there is also an explanation presented to the customer, which partially substitutes the root cause document.
Following the service operations model, RBC does not have all the functions in place.
The access management team is not part of the company. All the tool and processes accesses are managed by the third party also responsible with the Event Management. The IT support vendor provides access for each employee to some specific tools that are needed for them. The access request is made using a specific template sent to their support e-mail address. Once the access is provided, the employee is informed.
We can make a parallel between the Service Desk team mentioned in the literature review and the 1st level support team from RBC. Even if the SD has a full coverage of support, the call center department from RBC provides service between 08:00 and 18:00. If there are any other incidents reported outside these hours, the incident is placed in a pipe and will be handled the next day.
Teams are split by knowledge and technologies. There are different teams created for system administration, others for software development, for testing and for on-site IT support services. All these teams together provide the support needed for more than 100 customers.

**Comparing:**

Now that we have an overview of the structure of both companies, let us bring some solutions for the medium one (RBC) in order to increase the productivity, having as example the Atos company organization.

Even if RBC has good customer feedbacks, the delivery time is not as good as required. This is also because of a lack of resources and an unclear responsibilities chard. It is recommended to have a clear division of responsibilities, especially when it comes to technology roles. Currently in RBC the technical teams do not have only technical activities, they are in continuous contact with the users, they are handling incidents, creating documentations.

Even if the Event Management process is handled by a 3rd party when it comes to RBC and does not follow the example of Atos where there a fully automated process, the events are well displayed, handled and no incident was reported. Still, it may be a good idea to follow the automated example, considering the costs for the long time.

When it comes to Incident Management process, comparing to Atos, one missing resource in the RBC company is the Incident Manager. Since there is no responsible person for the incident management role, the incidents are reported to the 1st level support and then moved from one team to another until the correct group will take care of the issue. Having an incident manager in place can improve the process by reducing the response time and fixing the issue faster.

As mentioned above, the service requests are reported directly to the 2nd and 3rd level team. One of the proposals is to involve also the first team and copy the incident management process flow. This way, the service requests can be reported to the call center team, they can create a service request in the same ticketing tool and assign the ticket to the correct team, depending on the topic.

This way the technical teams will not receive any requests via e-mail, will not be tracked by the customers directly and all the time spent on these actions can be redirected to the technical topics.

Moreover that, for the topics that do not require software implementation or advanced involvement, the 1st level team can be trained to close some of the easy requests. Even if at the beginning this may take some time for the 2nd level team to write some technical documentation, on the long ride this solution can reduce the total time spent on small service requests.

If the call center will be responsible of routing the requests, the solving time will also be reduced since they have a clear overview of the technical teams and roles. This way, the ping-pong will be avoided, and the solution will be delivered faster.

Another difference between the two companies is the Problem Management process. While there is a flow for finding root cause of the issues within the Atos company, the RBC does not follow this process. This fact increases the number of tickets reported. Because some of the tickets are reported with the same issue and do have the same fixing, it is a good idea to implement a problem management process, with a responsible problem manager that will gather together all the similar incidents and start a flow where a root cause document will be created and a final solution will be applied.

Another aspect that may affect the delivery of RBC services can be the Service Desk (call center) team organization. Having a specific time frame when they are active can reduce the response time and can also affect the production of the customers, in case of late reported incident that may have to wait for a solution until de next day. It is recommended to extend the work hours for the Service Desk team.

To have all the new roles in place, some teams or departments need a restructuring, so the human resources team can be also involved. Hiring new colleagues may also be needed.

## 3. CONCLUSIONS

Reducing costs and unplanned labor in the IT operations process is one of the main scopes of a Service Delivery company. All the best practices mentioned in this publication are recommended in order to increase the customer satisfaction, to improve the delivery process and to create a positive difference when it comes to profit and costs. All the practices offer an optimized management of service outages, methods of identifying their root causes, frequency and duration of service outages. This way, the company receives full advantage of the value and results created by the services provided.

The service operation process provides also operational results and data that can be used by other processes to improve services continually and provide justification for investing in ongoing service improvement activities and supporting technologies.

Our case study reveals that ATOS company follows part of the Service Operation best practices, respects all the processes and covers the functions. The RBC company does also have some of the processes implemented, but because of the structure and missing roles, the implementation of the processes do not follow the recommendations.

Having service operation in place provides quick and effective access to standard services which business staff can use to improve their productivity or the quality of business services and products.

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