

Institute of Computer Science

MTAT.03.231 – Business Process Management

Regular Exam – 17 June 2012

Notes:

- *The exam is open-book, open-laptop, open-Internet. You can consult any course material during the exam and browse the Web. Of course, you are not allowed to share information with anyone during the exam, so e-mails and chats for example are prohibited.*
- *You may submit your exam on paper or electronically using the “Submit” button in the course web page. If submitting electronically, the allowed document formats are Word and PDF. If submitting multiple files, put them in a single “zip” file.*
- **You may write your answers in English or Estonian.**

Scenario

We consider the following process performed by an IT helpdesk that handles requests from clients. The clients are employees of a company. There are about 1000 employees in total. A request may be an IT-related problem that a client has, or an access request (e.g. requesting rights to access an IT system). Requests need to be handled according to their type and their priority. There are three priority levels: “critical”, “urgent” or “normal”.

The current process works as follows. A client calls the help desk or sends an e-mail in order to make a request. The help desk is staffed with five “Level-1” support staff who typically are junior people with less than 12 months experience, but are capable of resolving known problems and simple requests. The hourly cost of a Level-1 staff member is EUR 40.

When the Level-1 employee does not know the resolution to a request, the request is forwarded to a more experienced “Level-2” support staff. There are three Level-2 staff members and their hourly cost is EUR 60. When a Level-2 employee receives a request, she evaluates it and assigns it a priority level. The job tracking system will later assign the request to the same or another Level-2 staff depending on the assigned priority level and the backlog of requests.

Once the request is assigned to a Level-2 staff member, the request is researched by the Level-2 employee and a resolution is developed and sent back to the Level-1 employee. Eventually, the Level-1 employee forwards the resolution to the client who tests the resolution. The client notifies the outcome of the test to the Level-1 employee via e-mail. If the client states that the request is fixed, it is marked as complete and the process ends. If the request is not fixed, it is resent to Level-2 support for further action and goes through the process again.

Requests are registered in a job tracking system. The job tracking system allows help desk employees to record the details of the request, the priority level and the name of the client who generated the request. When a request is registered, it is marked as “open”. When it is moved to level 2, it is marked as “forwarded to level 2” and when the resolution is sent back to “Level 1” the request is marked as “returned to level 1”. Finally, when a request is resolved, it is marked as “closed”. Every request has a unique identifier. When a request is registered, the job tracking system sends an e-mail to the client. The e-mail includes a “request reference number” that the client needs to quote when asking questions about the request.

The helpdesk receives approximately 50 new requests per working day.

The current process is known to be error-prone. The most frequent types of errors include:

- Many requests take too long to be processed. Clients need to call often to remind the helpdesk that their requests are still unresolved
- When the client asks what is the status of a given request, oftentimes the helpdesk gives an incorrect answer. In other words, the Level-1 helpdesk staff are unable to accurately determine what is the status of every request.
- When reviewing the list of open requests, the Level-1 staff often find many requests marked as "open", but these requests are in fact already resolved.

Tasks

Task 1 [10 points]. Model the above "as is" process in BPMN. Keep in mind that the purpose of this BPMN diagram is to serve as a means of communication between the employees in the helpdesk, the clients of the helpdesk, and the business and IT analysts who have to re-design and automate this process.

Task 2 [5 points]. Classify the activities in this process into three categories: "value adding" (VA), business value-adding (BVA) and non-value-adding (NVA).

Task 3 [5 points]. Calculate the cycle time efficiency of the “as is” process assuming that:

- Submitting and registering a new request takes 5 minutes on average.
- Requests spend on average 1 hour waiting for a Level-1 staff to check them. This applies both to new requests and to re-submitted requests.
- Checking if a new request is “known” takes on average 10 minutes. In 20% of cases the request is known. In this case, it takes about 5 minutes for the Level-1 staff to communicate the resolution to the client. Once this is done, the request is marked as “closed”. On the other hand, if the request is not “known”, the request is automatically forwarded to Level 2.
- New requests spend on average 2 hours waiting for a Level-2 staff to evaluate them. Level-2 staff take on average 20 minutes to evaluate a new request.
- Level-2 staff take 5 minutes to prioritize a request.
- The time between the moment a request has been prioritized, and the moment the request is picked-up by a Level-2 staff member is 20 hours.
- The time required to research and resolve a request is on average 2 hours.

- The time to write the resolution to a request is on average of 20 minutes.
- Once a Level-2 staff has written the resolution of a request, it takes on average 20 hours before a the request is fetched from the job tracking system by a Level-1 staff.
- It takes on average 20 minutes for a Level-1 staff to send to the client a problem resolution previously written by a Level-2 staff.
- It takes on average 20 hours between the moment a resolution is sent by the Level-1 staff , and the moment the resolution is tested by the client.
- It takes the client around 10 minutes to e-mail the test results to the Level-1 staff.
- In 20% of cases the request is not resolved, and it needs to be forwarded to Level-2 again. In this latter case, it takes about 2 minutes for the Level-1 to forward the request to the Level-2 staff. Unresolved requests that are forwarded in this way are automatically marked as “prioritized since they have already been prioritized in the previous iteration.

Hint. Cycle time efficiency is equal to theoretical cycle time divided by total cycle time. To calculate theoretical cycle time, only take into consideration time spent in “actual work”, excluding waiting times and non-valued-added activities.

Task 4 [10 points]. Write an issue register for this process.

Task 5 [10 points]. Propose a set of changes to improve this process. Give a justification for each change.

Task 6 [10 points]. Draw a "to-be" BPMN model that incorporates your proposed changes

Acknowledgment

The scenario used in this exam is inspired from a scenario by Sue Conger, Handbook of Business Process Management, Volume 1, Chapter 6 (“Six Sigma and Business Process Management”).