

A New model Approach for Moodle - OTRS Integrated MTTR calculation

Shilpa Parlikar [Research Scholar]
Asst. Professor,
MES'Institute of Management & Career
Courses (IMCC)
Email: ssp.imcc@mespune.in

Dr Ujwala Dange
Dean, Academics
J D College of Engineering
Email: ujwala_dange@rediffmail.com

Article Info

Volume 83

Page Number: 10551 - 10558

Publication Issue:

March - April 2020

Article History

Article Received: 24 July 2019

Revised: 12 September 2019

Accepted: 15 February 2020

Publication: 13 April 2020

Abstract

MOODLE is an open source Learning Management System. OTRS is a ITIL compatible service desk tool. This paper focused on integration of Moodle and OTRS. Data in different queues are received after integration. This data is processed and results are included in the paper.

Introduction

Moodle: It is Open source Learning Management System. Moodle stands for Modular, Object- Oriented, Dynamic Learning Environment. We can create different courses and different types of evaluation can be defined under Moodle. Students can enroll for the course. We can define different roles in Moodle like teacher, assistant teacher, student etc.

OTRS: OTRS (Open source ticket Request System), Perl based trouble ticket (or issue management) system, used as the basis for our applications. It has two main constituents one is ticket and other is queue & its status.

The tickets are organized into several queues that can be created by the

administrator and connected to particular users with defined rights. During its lifetime, each ticket goes through series of states. A state is property completely orthogonal to the queue and can represent important turning points in its history – external update, timeout or closing reason [1]. It is open source ITIL compatible tool. ITIL is a framework for Information technology service management. It provides the guideline for the end to end service (Service provider to customer). The main focus of the service provider is to keep promise of service made available to agreed period and agreed conditions. For this purpose a document is created called Service Level Agreement (SLA). The document is signed by service provider and customer. Any change in this

agreed terms and conditions, laid to issue that creates a ticket in OTRS system [2].

Related Work:

Rebouças, R., Sauvé, J., Moura, A., Bartolini, C., & Trastour, D. (2007, May)

designed a decision support tool for change management, For this they studied a whole day working of Change Manager and analyzed. Their tool suggests what decision a change manger should make while supervising the change management process.

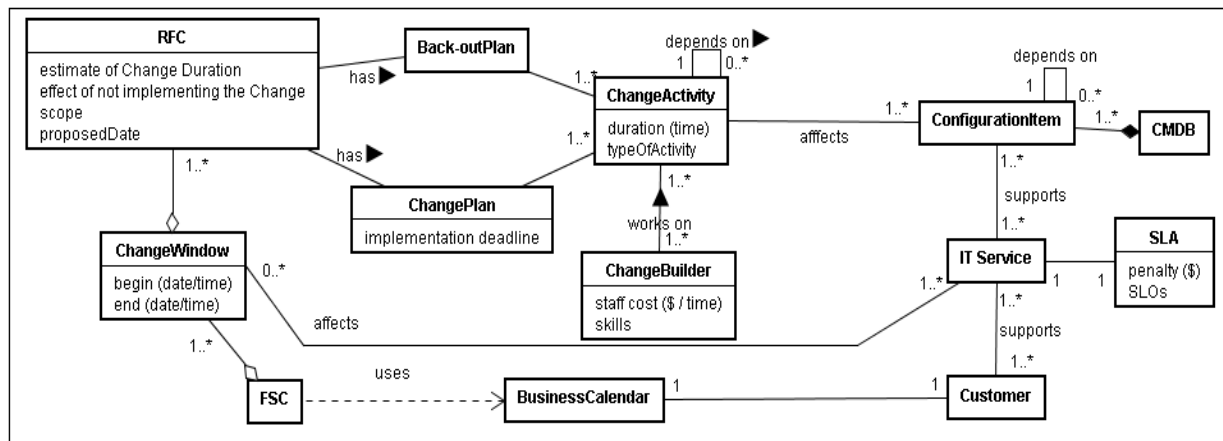


Fig. 1: Change Management conceptual model [3]

When request for change submitted, it is change manger allocates priority. First it is searched that whether for the change can follow standard path of execution, accordingly change manager follow steps for that.

Step 1: "Change dependency definition"

Step 2: "Change window allocation"

Step 3: "Change scheduling".

Rebouças, R. and team [3] focused on Change Scheduling. In this paper we presented a methodology and a software prototype for decision support to optimize scheduling of IT changes driven by business considerations. They gave an account of the analysis and design phases in the inception of our change scheduling prototype, and presented a deep dive into the formalization of the decision problem

that our tool solves: how to define a schedule for allocating changes to pre-negotiated change windows while minimizing the expected negative impact of service disruptions on the business that the IT department supports.

Schaaf, Thomas, and Michael Brenner. [4], focused on a development of platform independent service level management solution after studying different tools that can be integrated. They wanted to provide solution that will consider SLA specific issues and management related tasks. They found the gap between setting up an integrated, tool-based management system to support the tasks of SLM which is not been addressed sufficiently. In order to fill this gap, an architecture to effectively support the design and development of concrete IT-supported management systems was presented by them.

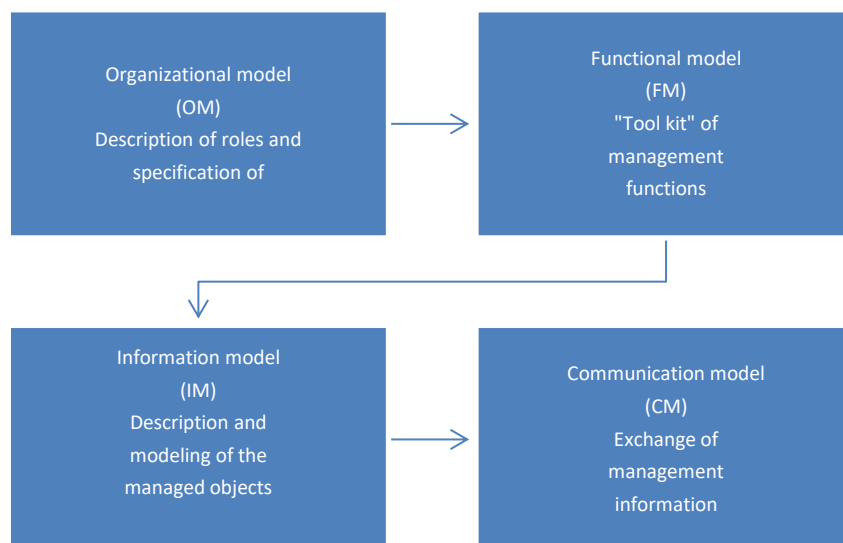


Fig 2: Components of a management architecture

Figure 2 shows the core part of their suggested architecture.

Vicente, Marco and teach [6], In this paper we focused on this architecture's value, on identifying and modeling its valuation concepts and instances. With these we are able to better represent ITIL processes from an EA point of view, and to use architecture-based methods to perform ITSM value analysis. We argue that by decomposing ITIL processes on capabilities, we can assess how effective

are the as-is resources providing these capabilities, weighted by their importance to the organization.

Therefore, the processes to implement will be the ones that have important capabilities that are less present on the organization. In future work our plans are to search and evaluate other ITIL valuation methods to complement our resource/capability approach and define an effective way to assess the value of ITIL processes under an enterprise architecture perspective.

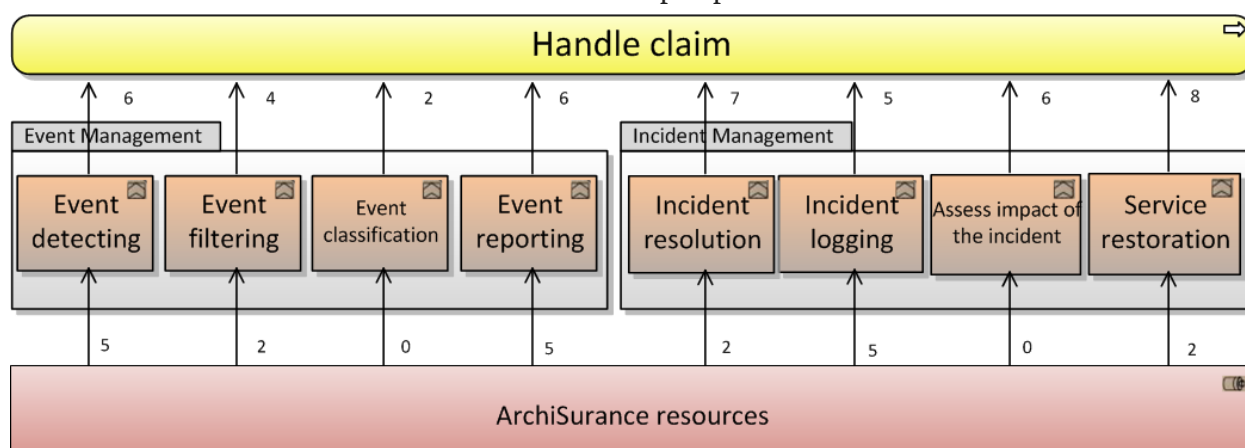


Fig 3: Adaption of Bedell's method to value ITIL capabilities [6]

Figure 2 is a model that represents the effectiveness of the ArchiSurance (it is a fictitious example developed to illustrate the use of the ArchiMate® modeling language) actual resources to deliver the capabilities of ITIL Event and Incident Management processes, along with these capabilities' importance to the handle claim process. The arrows from the resources to the capabilities carry the values of how effective are current enterprise resources to deliver these capabilities.

Also, the value in the arrows that connect capabilities to the handle claim process represents the importance of each capability for the business process. These values are based on our individual interpretation in this reference. In a real situation, and as already mentioned, the effectiveness values could come from Key Performance Indicators measurements and importance could come from stakeholders

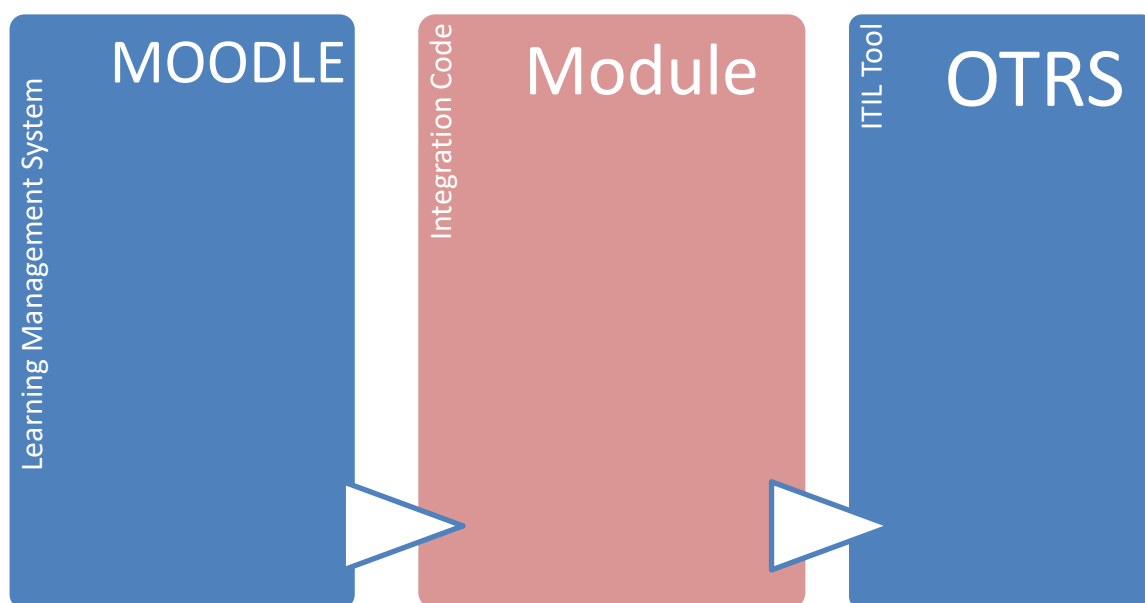
interviews or workshops. However, the selection of rules and associated techniques to assign the input values should be aligned with the desired way of working and thinking of business and IT management [5].

Model Approach:

The study was aimed to find out the importance of e-Learning software and its integration with OTRS – ITSM tool. The researcher intended to find out the information technology infrastructure Library (ITIL) framework implementation in e-Learning software - Moodle.

Open source Learning Management System - MOODLE and open source ITIL framework compatible tool OTRS were integrated. The software is implemented on linux platform. After implementation the data are obtained. The data in the form of different queues created in OTRS are obtained.

DATA MODEL:



For the experiment, “service desk” function is selected. Here is where users communicate by default. It is a single point of contact (SPOC) of a system. It is point where request is categorised as incident, problem, simple request etc. Priorities are also assigned here. Based on the categories, different queues are generated.

There are different queues related to Front office, certification enquiry, online learning, sales etc. Sales queue is considered to calculate MTTR as it directly affects the service availability. It is analyzed. It is possible to calculate MTTR (Mean Time To Repair) based on data obtained from Moodle-OTRS integration. Agreed target is mentioned in the Service Level Agreement with the customer. Mean Time To Repair (MTTR) refers to the amount of time required to repair a system and restore it to full functionality.

Data Source: QLog Management Systems, an IT company provide online training, cloud solutions, open solutions, shared solutions and mobility solutions.

The company made data available for research to the researcher. The researcher got access to data from 2011 to 2017. The data received was entered in the implemented model and results are drawn.

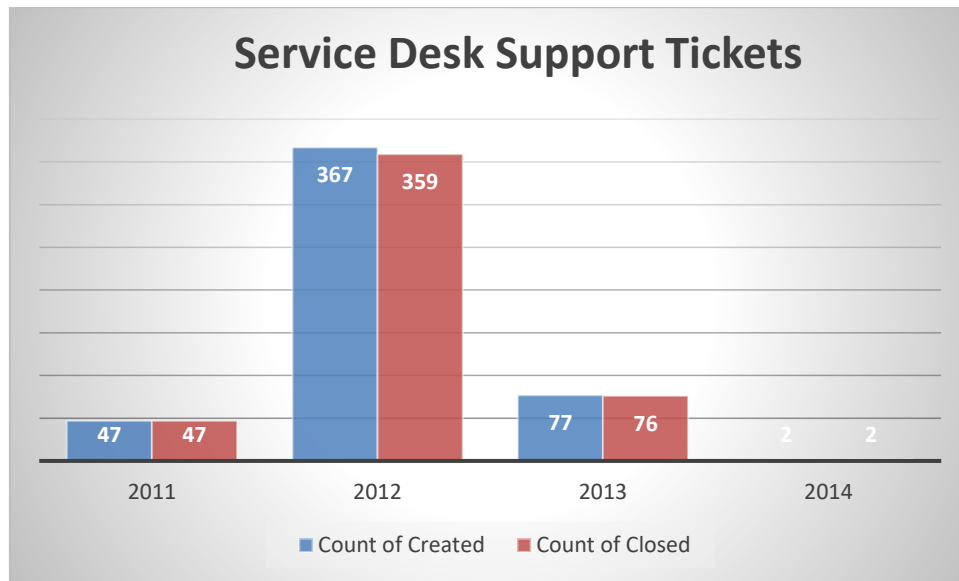
Experimental Analysis:

The data model is implemented. From OTRS data received in the form of queues. Tickets are categorise in these queues. Using the provided data ,the researcher exercise different calculations. Below are the results of compared with earlier years.

Service Desk Support Queue is used to determine whether by integrating OTRS with MOODLE, customer queries are reduced or not.

The tickets are generated for queries. Some of the queries are resolved at service desk point. This is a single point of contact (SPOC) of the system. Based on common observations, query is solved at entry point. Such solutions are stored in a database. These are called workaround solutions. All such queries are grouped here.

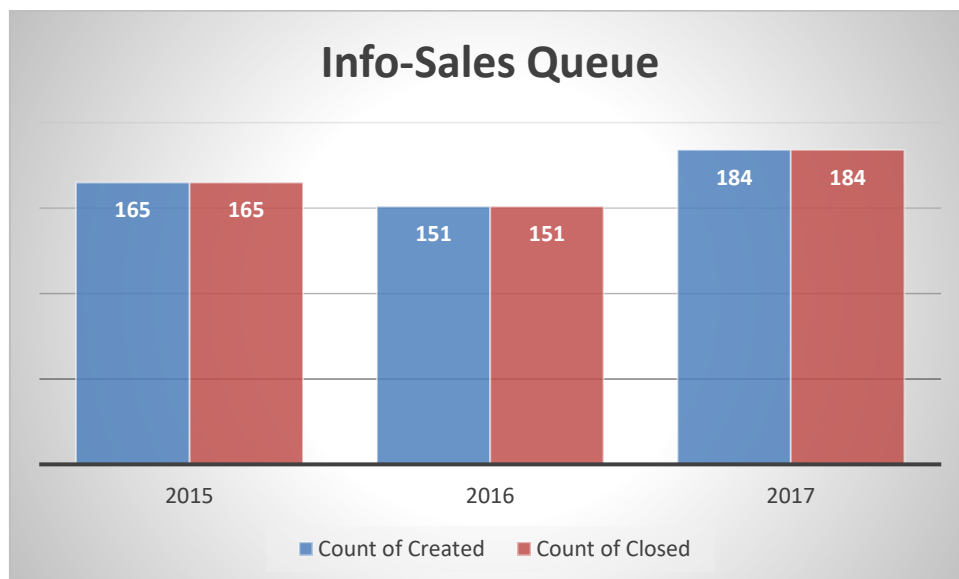
Service Desk Support	Count Created	of Count Closed
2011	47	47
2012	367	359
2013	77	76
2014	2	2
Total	493	484



Info-Sales Queue:

The queue is related to the information about sales. Number tickets generated are closed successfully in the successive years.

Info-Sales	Count Created	Count of Closed
2015	165	165
2016	151	151
2017	184	184
Total	500	500



MTTR - Mean Time To Repair: IEEE Std 982.1-2005 definition states “The average time taken to repair a Configuration Item or IT Service after a Failure. MTTR is measured from when the CI or IT Service fails until it is repaired. MTTR does not include the time required to Recover or Restore. MTTR is sometimes incorrectly used to mean ‘Mean Time to Restore Service’”.

As we all aware that equipment downtime has direct impact on bottom line of any company so it becomes very important to track and analyze MTBR, MTBF and MTTR. It is used to find out reasons behind the short and long time break down duration. MTTR can be calculated from history details of breakdowns.

The researcher has analyze 250 records of ‘Info-ITIL-sales’ queue. Out of 250 records following are the observations:

	Solution In Minutes	Solution Difference In Minutes	Total Up Time
Total Time (in Sec➡)	77263	5322737	5400000
Avg in min	309.052	21290.948	21600
Avg in hrs	5.150866667	354.8491333	360

Therefore MTTR = 5.150866667 Hrs. The SLA agreed up time is 5.25 Hrs. Therefore 97.14% availability is achieved.

Conclusion:

Previous work carried on ITIL solution tools was based CI and KPIs architecture suggestion. The researcher defined a module that integrated Moodle and OTRS.

Based on the experiments carried out on the data received for the period year 2011 to 2017, it is observed that number of tickets submitted in the system got reduced. Also the percentage of closing the ticket was high, For any company sales is more important. Therefor researcher select sales queue to find mean time to resolve the query that is MTTR (Mean Time To Repair). After studying 250 records of sales queue, service availability to the customer mentioned in a service level agreement (SLA) was 97.14%.

References

1. "OTRS: CSIRT WorkFlow Improvements" (PDF). Cesnet.cz. 2010. Retrieved 14 February 2013.
2. <https://www.itil.org.uk/>
3. Rebouças, Rodrigo, et al. "A decision support tool to optimize scheduling of IT changes." 2007 10th IFIP/IEEE International Symposium on Integrated Network Management. IEEE, 2007.
4. Schaaf, Thomas, and Michael Brenner. "On tool support for Service Level Management: From requirements to system specifications." 2008 3rd IEEE/IFIP International Workshop on Business-driven IT Management. IEEE, 2008.
5. D. Quartel, M. W. A. Steen, and M. Lankhorst, "It portfolio valuation- using enterprise architecture and business requirements modeling," pp. 3–13, 2010. [Online]. Available: <http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=5630226>

6. Vicente, Marco, Nelson Gama, and Miguel Mira da Silva. "The value of ITIL in enterprise architecture." *2013 17th IEEE International Enterprise Distributed Object Computing Conference*. IEEE, 2013.