

Incident Management System using the GeneXus platform

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Abstract

This article describes the development of a software tool that allows customers of a certain company to report any incidents to present his system, often by small easily fixable errors. The tool manages the incident through the area of technical support through a ticket service. To meet the need of the company was necessary to develop a responsive web application, access is from their website and also from the GRP system, taking control of incidents presented in all systems under warranty or systems that have support contract technical, shortening waiting times and improving performance RightNow some existing applications such as Unica, Sage CRM, Salesogix, SAS, Microsoft CRM, large and widespread analyzed. This project is specific for each user roles are defined and functionality that correspond to perform the job, the system is based on ITIL best practices for incident management are enabled. The application generates statistics and graphics incidents in PDF format. In addition to having at all times the client informed with email notifications. After an analysis it was decided to use GeneXus for the development of responsive web application. GeneXus is a well structured robust tool that increases productivity and development time thereby making it profitable software business. Also in this work the features of this tool are described Ticketing and results to be implemented in medium software development company

Incidents, ticket, support, GeneXus

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Introduction

Nowadays the use of Information Technology has become a central component of any company or business that seeks sustained growth. The Information Technologies allow the company to offer and distribute services and finished products. In order to be effective, an organization must possess techniques to evaluate the quality of its finished products, as well as for marketing, sales, distribution and for the management of after-sales services to customers. One of the after-sales services to customers is the remote technical support.

This article describes the problem of software companies, when providing remote technical support, the incidents are reported by calls or email but are not always attended immediately, the control of incidents are concentrated in an Excel spreadsheet, which is shared between the technical support area and developers, which has generated a conflict, in the process of recording incidents and solving them.

The proposed solution to the problem is the development of the "External Incident Management" system. For the development of the application were used various technologies, GeneXus development platform, Java programming language, Apache-tomcat Web Server 8.0.21 and SQL Server 2014 database manager system.

In order to keep users informed in real time, there is a need to design and develop a web page that allows you to record incidents and view the status of the incident in a responsive way -deployed on computer screens, smart phones and tablets-.

Methodology

An analysis of functional requirements was performed.

- Authentication of users for their access to the roles that correspond to the role, through a user account and password
- Customers may register an issue with their software product
- The system will save the incident data and generate a registration record
- The System will allow to assign incidents at two levels. Level 1 to support technicians, level 2 to the technical project leader who sends it to a programmer.
- The System will display the catalog of customers that the company has. As well as registering new customers and modifying information.
- The System will show an interface component that will describe the solution to the incident and the observations on the incident, besides attaching files that evidence the incidence was solved.

The Incident Management System will allow you to indicate a status of termination to the incident through an interface component. Termination states are as follows: terminated, not applicable, test error.

- Displays a list of completed issues to validate.
- Validate incidents

- Notify the client and approve the incident.
- The System allows to generate reports of incidents by: priority, functionality, for a specific period of time or date and generates graphs. See figure 1

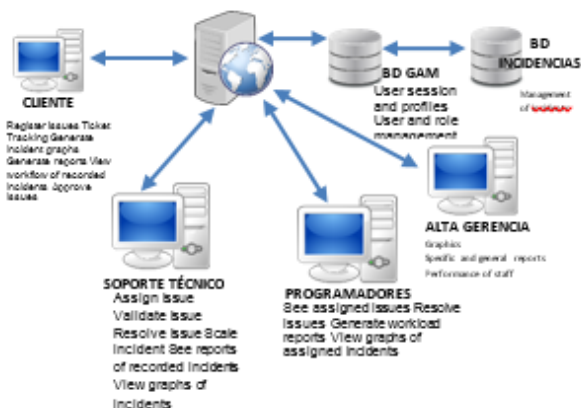


Figure 1 Outline of the functions of the system of incidents

Proposal to solve a problem: customer-oriented process

Figure 2 shows the flowchart to give solution of incidences. Detect and record the incident, to be later classified by the technical support area, if the system has warranty and technical support contract then proceed to an investigation and diagnosis, if it is a problem of configuration or software update is solved in the first level "technical support", in case the incident proceeds to perform a codification this incidence escalates to a second level of care "Development" where a programmer will be responsible for giving solution to the incident and notifying at the first level that it is resolved to proceed to the closure of the incident.

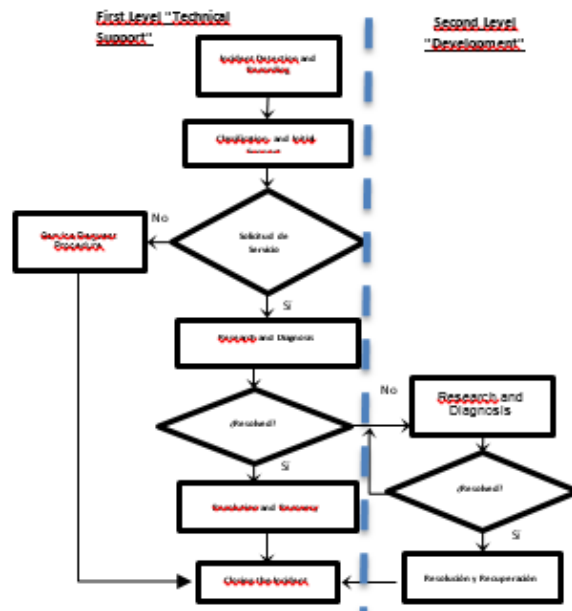


Figure 2 Flowchart: proposal for solution of incidents

We identified actors and their functions, which are specified in figure 3.

Head of Support, Technical, Tester, Technical Project Leader, Programmer. General Manager. Head of Project Management. Head of Project Management.

Incidents are recorded by the user from the website, which can also track their incidence through the service ticket, after the registration technical support performs a research and diagnosis and assigns the incident to the corresponding area for solution, validation and stay pending approval by the client.

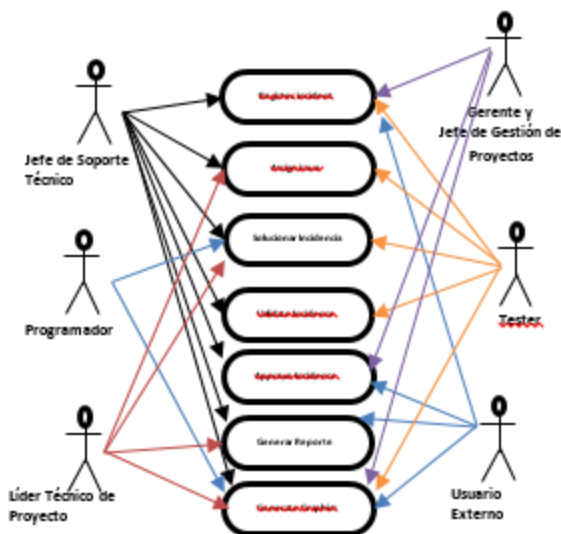


Figura 3 Use case: Process of incidences registration

Environment with the GeneXus development platform

The development environment of the application on the server required GeneXus, Apache Tomcat-8.0.21 and SQL Server 2014 to present the following characteristics.

GeneXus™ is the development platform that creates applications for Web, Windows, mobile devices and legacy platforms, automatically generating and connecting all the functionalities, services and databases that are required. Both client and server side, applications are generated in the desired language, with the optimal data structure.

GeneXus Apps run on:

- Android, BlackBerry, iOS, Windows 8 y 10 (as native apps)
- Amazon Web Services, Windows Azure
- IBM, Linux, UNIX, Windows
- Windows NT, 2000, XP, 7, 8, 10

All browsers and platforms

Apps languages:

- Java for Android, Java for BlackBerry, Objective-C for iOS, WinJS, HTML5 & CSS 3 for Windows 8
- Java, .Net
- HTML 5, CSS3 & Javascript
- Supported databases
- IBM DB2
- DB2 para iSeries - System i
- Informix
- Microsoft SQL Server
- MYSQL
- Oracle
- PostgreSQL
- SQL Server CE
- SQL Lite2

Apache-tomcat-8.0.21

Apache Tomcat® software is an open source implementation of Java Servlets, Java Server Pages, Java technologies WebSocket of Java language and Expression. The Java servlet, Java Server Pages, Java and Java language expression WebSocket specifications are developed under the Java Community Process3.3 SQL Server 2014

Microsoft SQL Server 2014 Express is a free, reliable and powerful data management system that provides a reliable, content-rich data warehouse for desktop applications and light websites⁴

Database design

A database with thirteen tables was designed, see Figure 4. KB -Knowledge Base - was configured on the Genexus application platform. Apache Tomcat services are started. Establish connection with the SQL-Server 2014 database handler.

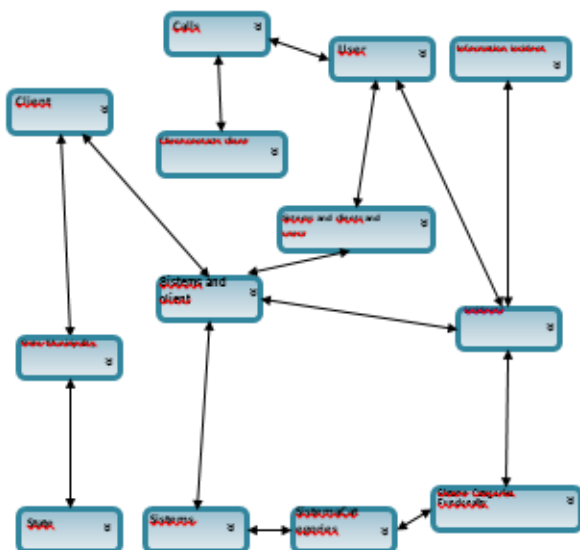


Figure 4 Database design

Incidence record ticket generation

Registration of an incident is made by a telephone call or email, a service ticket is generated, which is obtained from an incremental self-ID, System Id and according to the type of Incidence: Warranty or Technical Support Contract.

The registration ticket is made with the instruction:

```
IncidenciasTicket=getTicket.Udp(STSis
temasIdI,IncidenciasTipo)on beforeinsert;
```

By means of the service ticket you get the user name, his mail, as well as the following incident data, Customer name, System name, Registration date, Priority, Solution deadline, Description, Menu, Functionality, User that recorded.

The client is notified by email of the incident record:

```
NotificacionUsuarioExterno.
```

```
Call (IncidenciasId) on afterinsert.
```

The incident is assigned, this is a function available to the Head of Technical Support and Project Leader. The incident can be solved by the Tester, Head of Technical Support, Project Leader or Programmer.

Security is an essential part, in every application in Figure 5 it is possible to observe the security administration process, user registration, assign their corresponding role and depending on whether it is external user or internal user to the company the Corresponding permit is assigned.

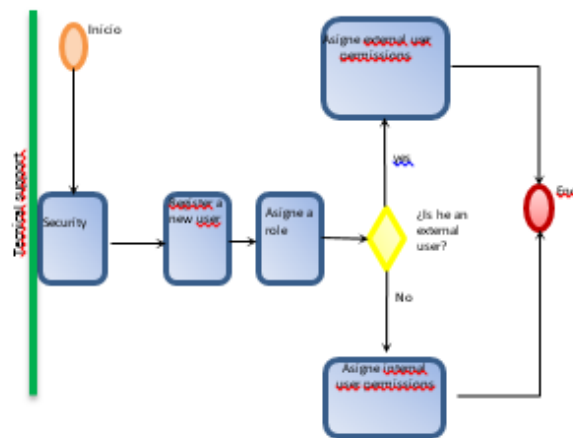


Figure 5 Security administration process

Quality of the Incident Management System

The Incident Management System is a quality software product, which is why it was subjected to Unit Tests.

Objective. To detect errors in data, logic and algorithms. Exception routines, error routines, parameter handling, validations, ranges, message deployment and reporting of results were considered.

Method. White box.

Integration Test

Objective. To detect interface errors and relationships between components.

Method. White box, Top-Down y Down top

Functionality Test

Objective. To detect fault errors in the implementation of requirements

Method. Functional, Black box, smoke stress, security

Acceptance test

Objective. To detect failures in system implementation.

Method. Functionality.

Results

At the end of the implementation process what was obtained is a web application flexible enough to adapt to the different workflows of the company as a case study.

As well as offering a simple interface where you can check at all times the status of the services offered, customer satisfaction and the times used for it and where the customer can consult and even provide new information on the incidents already created.

An evaluation system was set up to determine the extent to which action is being taken. A sample of incidents was taken to calculate time, effort, errors and time needed for attention. To improve the process of attention of the incidents that present the software products. For this case study it was possible to increase the level of customer satisfaction by 80%.

The tool presents a logical design of modules, user authentication, role creation and permission assignment, attention of allocation processes, solution, validation and approval of incidents, registration processes and generation of service tickets from a responsive web page by enabling a dedicated server. Figure 6 shows the interface for entering the incident management system

The necessary tests were carried out to check the operation of each of the system options. However, the following recommendations are made:

- Enable a server specially dedicated to Incident Management System
- Perform continuous backups of logs of recorded incidents
- Update system catalogs continuously.
- Preventive and corrective maintenance of the system



Figure 6 Interface

Conclusion

The evolution of software products has brought the need for customer satisfaction at all times. This application is customer oriented and allows an SME to track its software products by measuring customer satisfaction with respect to the software product.

A suitable tool for an SME will have the options that your support center needs today and within the next two or three years. Today there are incident management tools which present options and functions that are not needed. This article presents a methodology and the GeneXus development tool that will allow you to considerably reduce the implementation time and cost required by your incidence management system.

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