Function Point Analysis Depot

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The Function Point Analysis (FPA) Depot is a web application originally designed by one of the NE-C3 branch's engineers, Jamie Szafran, and created specifically for the Software Development team of the Launch Control Systems (LCS) project. The application consists of evaluating the work of each developer to be able to get a real estimate of the hours that is going to be assigned to a specific task of development.

The Architect Team had made design change requests for the depot to change the schema of the application's information; that information, changed in the database, needed to be changed in the graphical user interface (GUI) (written in Ruby on Rails (RoR)) and the web service/server side in Java to match the database changes. These changes were made by two interns from NE-C, Ricardo Muniz from NE-C3, who made all the schema changes for the GUI in RoR and Edwin Martinez, from NE-C2, who made all the changes in the Java side.

Nomenclature

FPA	=	Function Point Analysis
NE-C3	=	System Software Engineering
NE-C2	=	Operations & Support Software
NE-C	=	NASA Engineering Control and Data Systems Division
LCS	=	Launch Control System
GUI	=	Graphical User Interface
RoR	=	Ruby on Rails, a web application framework for the Ruby language.
Java	=	a general-purpose, concurrent, class-based, object-oriented language

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Introduction

Function Point Analyses measure how much work a developer thinks that a particular functionality might be. Those function points are used to create estimates for labor hours, how long they think it will take to complete the task from design to implementation to integration and sustaining. For example, if I am doing a task that I estimate to have 2 function points, it might take me 6 hours total of work. Once the task is completed, we can record the actual time it took to do the task and use that to improve the estimation for the next time. If I have 2 function points and thought it would take me 6 hours but it really took me 8, I know to adjust the algorithm that generates the estimate so that estimates are a little higher for the next time.

Description of project

During the internship, I worked together with another intern from the Puerto Rico Space Grant Consortium, Edwin Martínez, who had a similar assignment, to upgrade the Function Point Analysis Depot application to the new 5.1 version. In this version we managed to change the application to the new 5.1 database design in the Rails side and in the Java side. This change contained the new tables development activities, developers, computer software configuration items, function point analysis versions and actuals, which is a name change for the old table points.

Sign in page

Sign In Page creates a session to use the application.

When entering the URL, if you are not signed in, it will take you to the sign-in page. This login session will only recognize users who have access to the application. The sidebar appears in the sign in page, but is disabled until the user is signed in. When the sign-in is successful, it will take you to the home page.

FPA Depot v5.1

Signed in as tUsername. Not you? Sign out

DA's

CSCI's

FPA's

Model Packages

Analysis

Signed in successfully.

Welcome to the Function Point Depot application. Please select a category.

The first page, as all the other pages, contains a sidebar which lets you choose which information you'd like to see. The first option is the list of all Development Activities, also known as DA's, which shows all the current projects that are on development. The second option is the list of all Computer Software Configuration Items, also known as CSCIs, which shows all the different groups that are working on development activities. The third option is the list of all the Function Point Analyses, known as FPAs, and shows all the function point estimates of each single part of code from a specific developer. The fourth option is Model Packages, which shows groupings of function points to be used with labour-hour estimation.. The fifth and last option is Analysis, which are the estimates and the best-fittings for the model packages and the actuals. There is also a sign-out link, which will destroy the current user session and redirect the user to the sign in page.

Development Activities Show Page

FPA Depot v5.1

Signed in as tUsername. Not you? Sign out

DA's

CSCI's

FPA's

Model Packages

Analysis

Show DA

ID: 2

Number: 661234423

Name: FPA Depot App

CSCI's:

- CSCI 1
- Testing
- CSCI 15

Edit | Index

The Development Activities show page is used when selecting a DA. It shows the ID, the number of the DA (used for internal recording purposes), the name of the DA and a list of all the CSCIs assigned to that specific DA.

Computer Software Configuration Item Show Page

FPA Depot v5.1

DA's

CSCI's

FPA's

Model Packages

Analysis

Show CSCI

ID: 4

Name: CSCI 1

Weighted Total: 1

DA: FPA Depot App

Developers:

- Ricky
- Edwin
- **Jake**
- **Adam**

Edit | Create a Developer | Index

When selecting a CSCI, the user is taken to the CSCI show page. CSCI page has the ID, the name of the CSCI, the total weighted function point count (which measures the weighted complexity of the software), the DAs assigned to that CSCI, and the developers who belong to that CSCI.

Developer Show Page

FPA Depot v5.1

DA's

CSCI's

FPA's

Model Packages

Analysis

Show Developer

ID: 3

Name: Ricky

Username: rmunizro

CSCI: Testing

FPA's:

- FPA Testing
- FPA 10
- FPA 5

Edit | Index

The developer show page is rendered when the user selects a developer from the CSCI. Some of the fields are the ID, the name, the username, the CSCI to which that developer belongs, and the FPAs from that developer.

FPA Depot v5.1

DA's

CSCI's

FPA's

Model Packages

Analysis

Show Function Point Analysis

ID: 2

Name: FPA 10

Creation Time: 2011-07-27 15:23:07.78

Requirement: testing

Granularity: low-fi

Developer: Ricky

FPA Versions:

- 2011-07-28 13:38:39.1

Edit | Create an FPA Version | Index

The FPA show page can be accessed by selecting an FPA from a developer or by selecting an FPA from the FPA index page (in the sidebar). Some fields for FPA are the ID, the name, a creation time, the requirements, if any, a granularity, which has two options (low-fi and hi-fi), the developer from that specific FPA and all the versions of that FPA organized by date.

Function Point Analysis Versions Show Page

FPA Depot v5.1

Dev Activities

CSCI's

Developers

FPA's

FPA Versions

Actuals

Model Packages

Analysis

Manage Users

Show FPA Version

ID: 1

Notes: Fpa Version 1

Timestamp: 2011-07-28 13:38:39.1

FPA: FPA 10

		Simple	Average	Complex
External Inputs	Input Screens	1	1	1
External Inputs	Interactive Inputs	1	1	1
External Inputs	Hardware Inputs	1	1	1
External Inputs	Batch Stream Inputs	1	1	1
External Outputs	Screen Reports	1	1	1
External Outputs	Printed Reports	1	1	1
External Outputs	Media Outputs	1	1	1
External Outputs	Software Outputs	1	1	1
External Outputs	Hardware Outputs	1	1	1
External Inquiries	Request Response	1	1	1
External Inquiries	Menus	1	1	1
External Inquiries	Context Sensitive Help	1	1	1
External Inquiries	Embedded Computer Inquiries	1	1	1
Internal Logical Files	Application Data Groups	1	1	1
Internal Logical Files	Data Tables	1	1	1
Internal Logical Files	Shared Data Files	1	1	1
External Interface Files	Reference Data	1	1	1
External Interface Files	Fixed Messages	1	1	1
External Interface Files	Shared Data Files	1	1	1

Edit | Index

The FPA Version show page shows an ID, a notes field, the time and date that the FPA Version was created, the specific FPA to which the FPA Version belongs, and the subfields of that FPA in that specific version. The subfields are External Inputs, External Outputs, External Inquiries, Internal Logical Files and External Interface Files. Each of these subfields has subfields to be completed. Some of these are Input Screens, Interactive Inputs, Hardware Inputs, Batch Stream Inputs, Media Outputs, Software Outputs, and Hardware Outputs. The quantity and the complexity of each assignment can be evaluated with the Simple, Average and Complex fields. This is one of the most important parts of the project and is the way to evaluate each piece of code from each piece of software that is being developed.

Results

We accomplished our assignment to have an application which can manage the new Function Point Analysis Depot schema. We added basic log-in functionality for the users that are allowed to use the application. We also added the new classes needed for the new schema. I think that we did a good job for a ten week period internship.

Conclusion

This project helped me in the understanding of how applications communicate each other through XML. It also helped me on developing my programming skills in the Ruby on Rails and Java languages. The most important, with this project I managed to see how is to work in a real project and also learned how important and advantageous teamwork is in NASA.