Business Enhancing Automation Tool

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Business Enhancing Automation Tool

Major Project

Submitted in partial fulfillment of the requirements

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Master of Technology in Computer Science and Engineering

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Certificate

This is to certify that the major project entitled **"Business Enhancing Automation Tool"** submitted by **Shreyansh Upadhyay (Roll No: 15MCEI30)**, towards the partial fulfillment of the requirements for the award of degree of Master of Technology in Computer Science and Engineering of Nirma University, Ahmedabad, is the record of work carried out by him under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination. The results embodied in this major project part-I, to the best of my knowledge, haven't been submitted to any other university or institution for award of any degree or diploma.

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Statement of Originality

I, **Shreyansh Upadhyay**, Roll. No. **15MCEI30**, give undertaking that the Major Project entitled "**Business Enhancing Automation Tool**" submitted by me, towards the partial fulfillment of the requirements for the degree of Master of Technology in **Computer Science & Engineering** of Institute of Technology, Nirma University, Ahmedabad, contains no material that has been awarded for any degree or diploma in any university or school in any territory to the best of my knowledge. It is the original work carried out by me and I give assurance that no attempt of plagiarism has been made.It contains no material that is previously published or written, except where reference has been made. I understand that in the event of any similarity found subsequently with any published work or any dissertation work elsewhere; it will result in severe disciplinary action.

Signature of Student

Date:

Place:

Endorsed by

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Acknowledgements

Abstract

Business Enhancement Automation Tool (BEAT) is an automation tool designed to address the requirements of the shareholders(Graphics engineers and managers) and to track inventories of an organization. Whenever an issue is filed by any OEM/ODM, it is stored in a database. Any issue has to go through various stages before it is declared closed. In order to keep track of issue while going through various stages, it becomes time consuming for engineers and managers to follow the mail chains. So, to enhance the efficiency of a graphics team, BEAT provides a GUI support along with some extra support(like tool has it's own local database and it provides customization in terms of request for a better user experience). Also a track of all the inventories which are spread around the organization can be kept using this tool. Hence, BEAT not only saves a lot of time but also also saves a huge amount of cost involved.

Abbreviations

BEAT	Business Enhancement Automation Tool
HSD-ES	High Speed Database - Enterprise System
CE/AE	Client Engineer/Application Engineer
OEM	Original Equipment Manufacturer
ODM	Original Design Manufacturer

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Chapter 1

Introduction

All OEMs/ODMs file issues related to Intel Graphics within a standard portal. This standard portal can be accessed by all the customers and CEs. These issues are then pulled by respective CEs into the local database. But since the amount of issues are huge in number, it becomes almost impossible for the CEs to keep track of the mail chain of all the issues. Since, there are various stages that an issues goes through, throughout its lifecycle, at any given point of time there may be several issues stuck in various stages. So, it becomes very difficult and time consuming for the CEs to cater to all the issues within a short period of time.

1.1 Current Scenario

The issues filed by OEMs/ODMs are comprised within a single database known as HSD-ES. Every issue contains a unique ID, so that it can be tracked using it. The CEs then provide these IDs to replication engineers via emails.

The replication engineer then tries to replicate the issue and reports back the findings using the same mail chain. Within this period, the replication engineer has to go through various problems like finding the system on which the replication has to be done and finding other technological tools(like WiDi/Miracast, Bluetooth Device, etc.) that are required for replication. For these the replication engineer has to rely on either the CE or the lab admin.

After Replication is done, the issues is passed onto the next stage (it can be either Debug or deferred). For this, the CE has to look for every mail in order to keep himself updated and has to go to HSD-ES every time to update the status of the issue. So, for a CE

to be updated on every issue and also to keep the record updated is a clumsy and time consuming task.

Another problematic task for a CE is to keep track of all the replication engineer, i.e., either they are free or occupied in another replication process. So, CEs had to keep on asking them if they would be able to do the replication or not. This make the process of replication more difficult. Also, time of the CEs and replication engineer is not utilized properly.

Also, since the data regarding the whole process of replication is not accumulated into a single place, it becomes impossible to keep a precise track on the statistical data. All Replication engineers will have to manually create a report of the number of issues they have replicated and all the CEs will have to keep track on those issues.

HSD-ES is an enormous database, so querying it every time for every single issue takes away a lot of time. Also, since there are large number of issues under a particular CE, so for querying issues will take a huge amount of time which is not feasible.
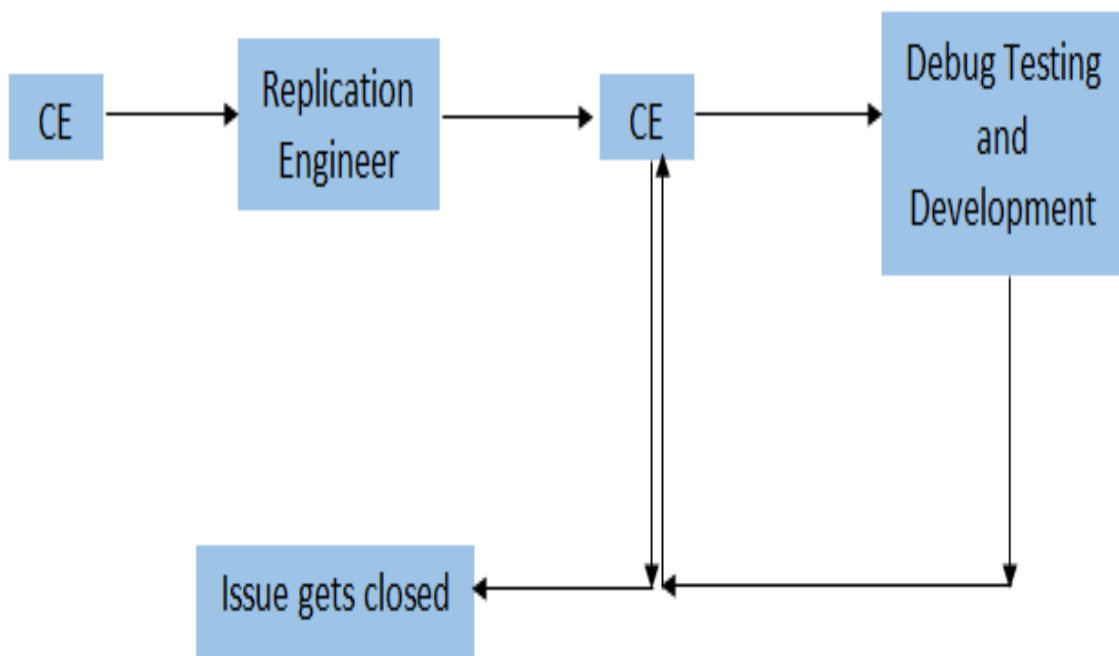

Figure 1.1: current scenario

1.2 Proposed Scenario

In order to overcome all the above issues, BEAT has been introduced. It is a web based tool designed in way such that it will not only save time but has an easy to understand and use interface.

The proposed scenario involves introduction of Leads, who will be distributing the issues. A replication engineer Lead has been assigned, who will monitor all the replication engineers. Using BEAT, the CEs will be able to file all the issues that they require replication for. The replication engineer lead will receive the request in the tool as well as an email. Using the tool, the lead can track the number of issues a replication engineer is currently working on and also the total number of issues he has already worked on. The engineer with the least number of issues will be assigned the latest issue. When the issue is assigned, both the replication engineer and the CE would receive the emails and the details regarding the issue will be updated on the tool (i.e, it is in the replication stage). Also, the CEs will be able to sort out all the issues that he/she requested for replication along with the current stage they are present in. Using the tool, the CEs can directly search for the issue and all the information regarding just with a single click.

Filters have also been provided, in order to make the search more refining. CEs can use these filters and get the desired results. The filters provided are Customers, OEM/ODM, platform, OS, etc.

An Asset Tracking Page is also being implemented, from where the CEs can view the location of all the assets. The Lab Admin will be updating this page just by uploading the excel-sheet he maintains and the data under the required fields will be displayed over the page. This will prevent wastage of time that happens between replication engineer and the CE for tracking the customer systems.

Not only CEs, but it becomes difficult for Managers also when it comes to keeping tracks of emails. This tool also helps them to filter out escalations being send to them contained in the GUI.

Managers and CEs are required to show reports and statistical data based on some factual. BEAT provides information in the form of statistical charts that can be used for analysis as long as the tool has been used. This will drastically decrease the pressure over

the CEs and the Managers who are expected to perform year long. Not only that, this will also save a huge amounted of time and also will help them focus on other activities.
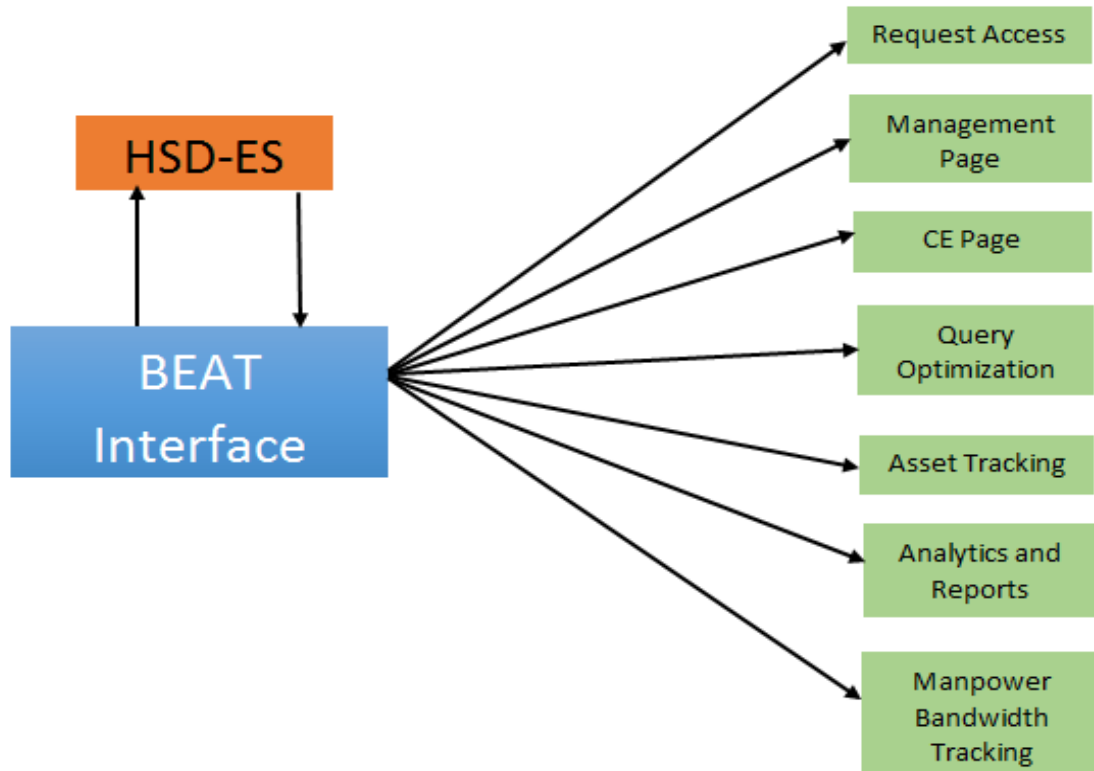

Figure 1.2: proposed scenario

Chapter 2

Literature Survey

The tool is built on ASP.NET framework. For this, I had to ramp up on

- Bootstrap3 framework, Jquery, HTML, CSS3 (for frontend)

- `C#`, stored procedures and APIs for HSD-ES database in order to query using the tool

- Learned to use Microsoft Visual Studio and SQL Server Management Studio.

The major part of the literature survey was to understand the functionality of the CCG-CCE-GPS team and to know each and every field of the HSD-ES database and how to effectively use the APIs for HSD-ES for querying them.[1]

HSD-ES is a high speed database. It is designed in a more secured way. It is Intels own database management system. Only authorized applications are allowed to query the database using the API. Only applications based on C and `C#` are currently able to use these API.

Some HSD APIs

1. get_records_by_eql –

```
{
  "requests": [
  {
     "tran_id": "1234",
     "command": "get_records_by_eql",
     "command_args": { "eql": "select id, title where hsd-es.issue.title contains 'test'"   },
        "var_args" : []
  }
        ]
  }
```

Figure 2.1: HSD example 1

2. insert_record

```
{

    "requests": [
            {
            "tran_id": "123456789",
            "command": "insert_record",
             "command_args": {
            "subject": "issue",
            "tenant": "hsd-es"
                    },
             "var_args":
                    [
                    {"owner": "cdorland"},
                     {"title": "AppStore testing"},
                     {"priority": "3-medium"},
                     {"send_mail": "false"},
                     {"description":"added by Appstore"},
                     {"component":"HSD-ES MT"},
                     {"component_affected":"HSD-ES MT"},
                     ]
            },
        ]
}
```
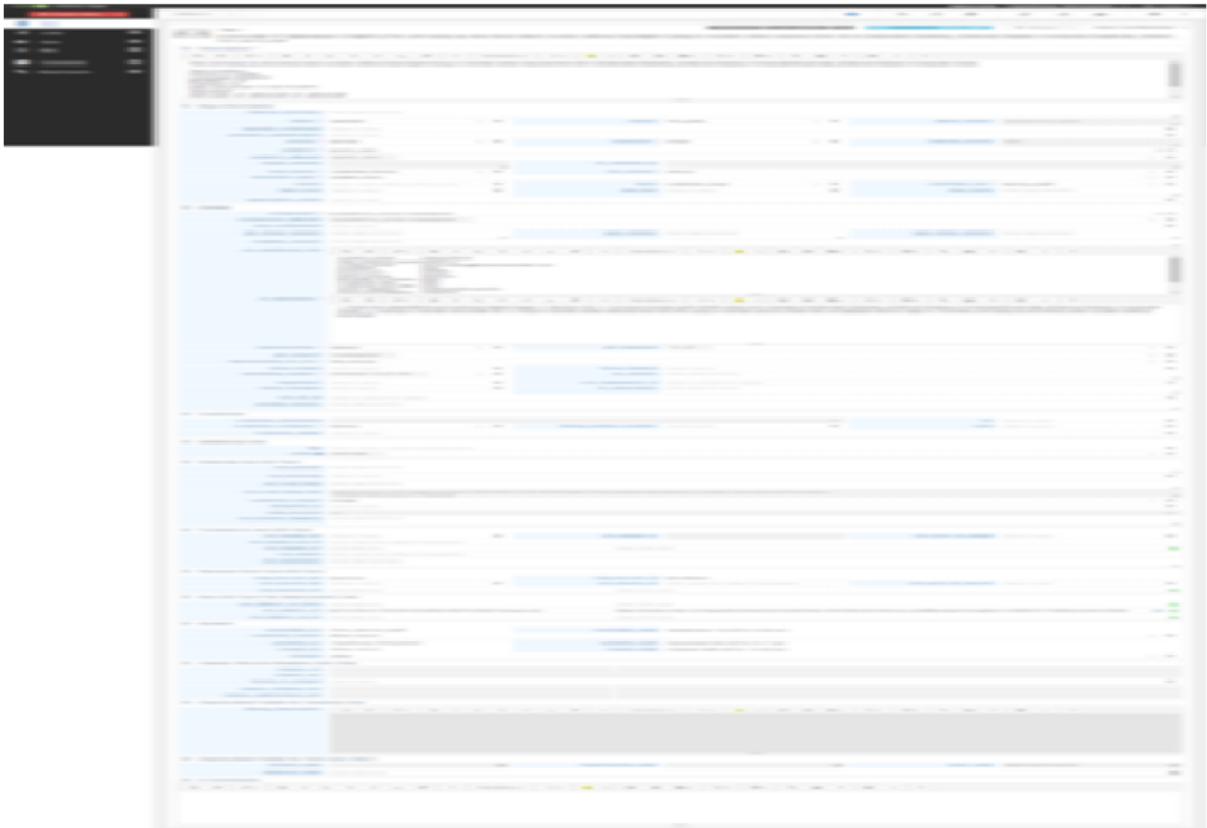
Figure 2.2: HSD example 2

Figure 2.3: HSD-ES

Chapter 3

Technical Requirements

Tools and Technologies being used for the development of BEAT are:-

1. ASP.NET Framework

2. Programming Language: `C#`

3. Frontend: HTML5, Bootstrap3 and CSS3

4. Backend: Microsoft SQL Server

5. Tools: Visual Studio Professional 2013 and SQL Server Management Studio

6. APIs to query HSD-ES database

Chapter 4

Implementation

BEAT is already being used by all the stakeholders (Managers, CEs and replication engineers). The BEAT can be accessed using the browser. The tool is purely an example of Access based user management system.

Every individual in a team is categorized under different roles. An individual, can be a replication engineer and a replication engineer Lead at the same time. Depending upon the role of the individual he/she will be given access to the tool.

4.1   Request Access

In order to use the tool, the users upon their first time visit to the tool have to register themselves. The registration request then goes to the tool admin for verification. The user name and region will be automatically fetched from the Intel database. The user will only have to provide its role and the reason for using the tool. Based on this the admin will Grant or Deny access to the user.

Figure 4.1: Request Access

4.2   Admin Page

Only the tool admin is allowed access to the page. This is the main controller page through which the task of updating the tool is done (like updating the filters, Granting or Revoking user access). Also, statistical data regarding tool usage (such as the number of times an individual has used the tool, how many requests have been send using the tool, etc.).
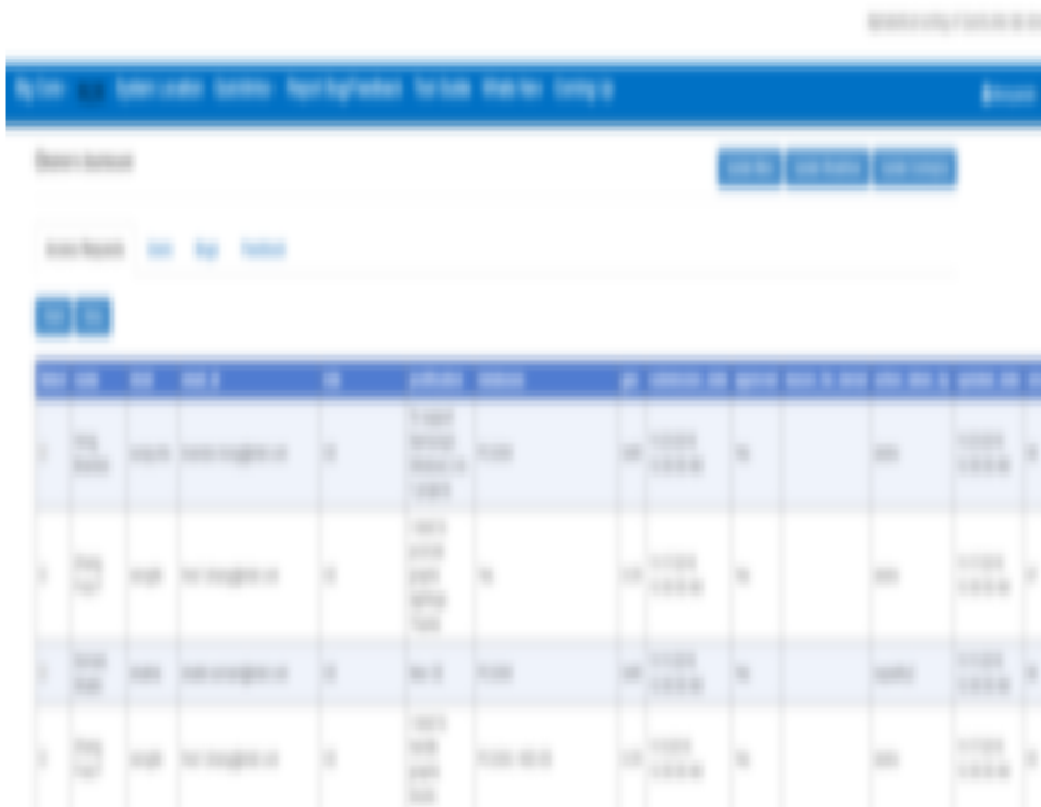
Figure 4.2: Admin page

4.3 CE Page

This page allows CEs to query the database just by using the filters. CEs can request admin to update the filters, whenever new field values have been introduced to HSD-ES. Since, here every field is being fetched from HSD-ES, the CEs are shown only the required fields that they generally use.

4.4 Management Page

The Managers face a tough time managing a team along with expecting the result out of it. This page has been created so as to ease out the stress that is present on them. Through this page the managers can track all the escalations that were send out to them by CEs or customers and can reply to those. Also, they can generate statistical analysis of data in the form of charts, which will help them to analyze certain things closely and react to them.

Figure 4.3: CE page

Figure 4.4: Management page

4.5 Replication Engineer Page

The replication engineer Lead and the Admin is only allowed to access this page. The Lead can assign the issues for replication using this page. Also, he can track the workload of each of the replication engineer through this page.

Figure 4.5: Replication Engineer Page

Chapter 5

Conclusion And Future Work

5.1 Conclusion

BEAT is already working and running successfully. Also, the performance of the team has increased since the introduction of the tool.

Since, the tool was designed to bring automation and increase the efficiency of the team, some more query optimization is required to fetch the results faster.

BEAT is growing fast along with its functionalities. It is also been appreciated by Managers as it is becoming handy for them in obtaining the Statistical Analysis of Data revolving around the team.

5.2 Future Work

Future work includes addition of few more modules to the tool:

1. Asset Tracking

   A page that would allow the CEs to track the location of their respective systems and whether it is free or not. The Lab admin will be able to update the page just by uploading an excel-sheet. This will help replication engineers to directly take system from the system location without spending any time in communicating with the CEs or Lab admin.

2. CE Dashboard

   Through this page individual CEs will be able to keep track of all the requests being

send by them per day/month/year. Not only this, but the CEs will also be able to generate analytical charts of the data, the tool possess.

3. Kit Requests OEMs/ODMs require some customizable systems on which they require the replication to be done. This page will allow them to send request to the replication engineer Lead to prepare such a system and perform replication.

Along with these tasks some more tasks have already been decided but are yet to be finalized.

Bibliography

[1] Internal Resources