iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** VI **Month of publication:** June 2021

DOI: https://doi.org/10.22214/ijraset.2021.35862

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue VI Jun 2021- Available at www.ijraset.com

Heuristic Evaluation of Upgradation of Magic XPI Dashboard Web Application

Ganesh Bhutkar[1], Chinmay Chikode[2], Sudeep Masare[3]
[1, 2]*Department of Computer Engineering, Vishwakarma Institute of Technology, Pune, India*
[3] *Magic Software Enterprises, India*

Abstract: Magic Monitor is the product developed by Magic Software Enterprises. It is an upgradation of the old Magic XPI dashboard. Currently this new product has all the functionalities which old product possesses along with some additional functionalities. The main objective of this product was to make the product/dashboard more interactive than older one, also to make Graphical User Interface more effective & informative. Hence, we decide to evaluate the product to identify usability issues and the efficiency of the product. To evaluate this product, we decided to use Heuristic Evaluation method since it is quicker and simpler to implement. It is an expert-based summative evaluation method, which also facilitates web-app redesigning and versioning. The product`s efficiency could be determined by it showing lesser time and space complexity and additional functionalities to the older product. It has got some usability problems which are mainly related to user not being aware about hardware underlying the product and entire journey of the messages/requests to be processed, generated by the product. This usability will be resolved soon but currently this product seems to be more efficient than older one.
Keywords: Magic XPI, Heuristic Evaluation, Usability, Web Application, Graphical User Interface, Likert Scale

I. INTRODUCTION

Magic XPI Integration Platform is a comprehensive integration tool designed & developed by “Magic Software Enterprises” which delivers simple and fast integration and orchestration of business processes and applications. Magic XPI integration platform provides XPI Studio which is an IDE (Integrated Development Environment similar to Eclipse/NetBeans) graphic design & development tool. It provides the code free environment which allows user to just drag and drop the different component to develop business logic.

For Example, user can create the business logic using different connectors/components/utilities provided in the Magic XPI Studio which will transfer all the incoming files on the server from source location to the destination without human intervention. You can create multiple business logic in a same project.

Magic XPI integration platform uses a Magic Monitor Dashboard/Tool where user can monitor all the activities happening on the servers with respect to running projects. It enables user to track the execution of your project by giving you accurate information about your projects in a single intuitive and easy-to-use dashboard. User can view the information for whole projects, or you can select different levels within projects, and you can use filters to display production activities in timely manner. The information displayed is updated regularly to keep the system in sync with the production environment. Magic XPI provides the speed and consistency by automating your business logic resulting in eliminating repetitive and manual tasks.

Magic Monitor is the product which has been developed by Magic Software Enterprises with all rights reserved. It allows user to monitor all the activities happening on the server with respect to running projects. It shows user the execution of logic which has been developed in the Magic XPI studio and how it is performing on the server side. It makes easier for the user to analyse the results and take the business decisions on the basis of it.

A. Features of Magic Monitor

1) It lets you control the execution of the project on the single click.
2) It shoes graphical representation of number of activities performed by user in the different timelines.
3) Project may have multiple business logics. User can decide which logic to be used by simply enabling or disabling logic on a click.
4) User can keep the track of all the component’s status which are used in project.
5) User can download the files which are getting created at the runtime by project.
6) Also, it allows user to download the status of the components of the project which are displayed in the tabular format.

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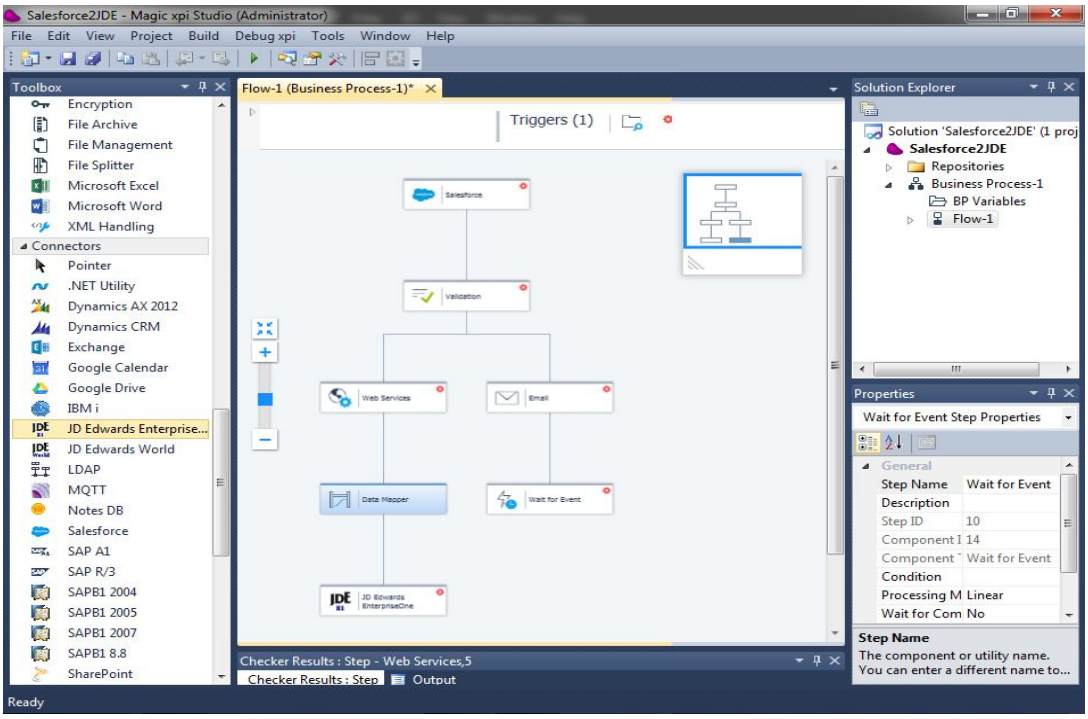

Figure 1: Magic XPI Studio Integrated Development Environment

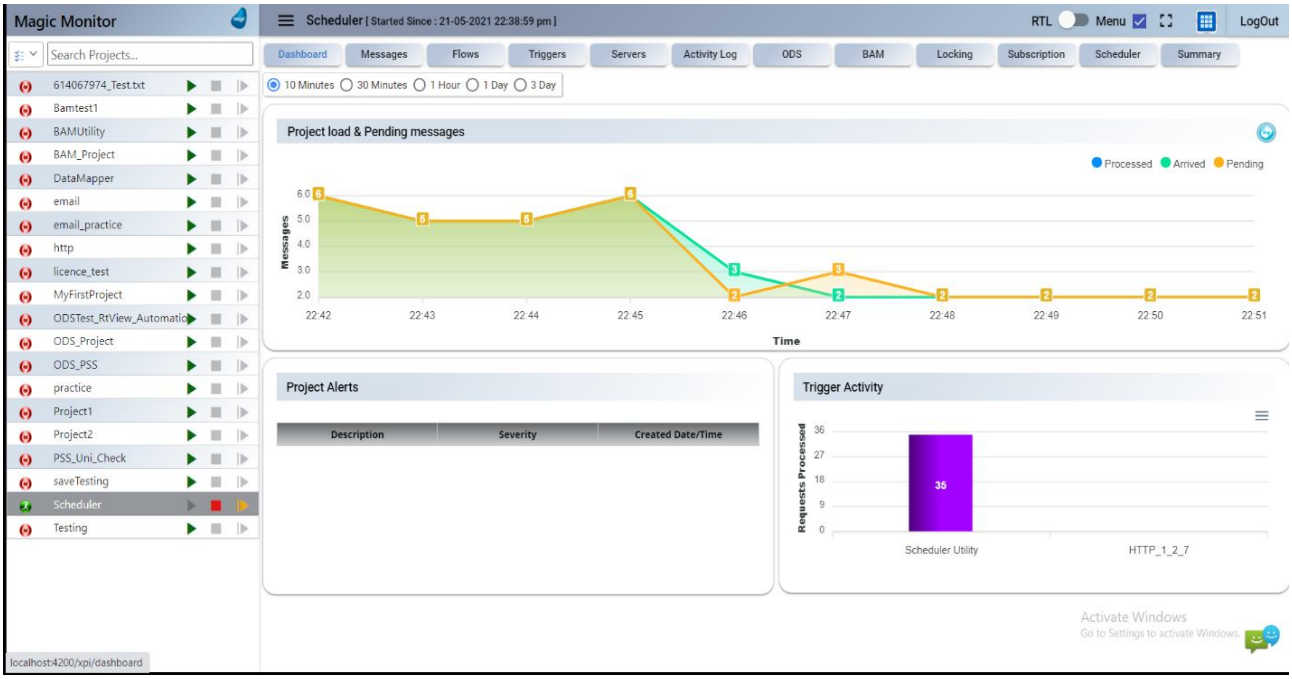

Figure 2: Home Screen of XPI Monitor Web Application

II. RELATED WORK

Heuristic Evaluation is an approach which is used to evaluate user-friendliness of the web or mobile application. In the literature work. Article's focus is based on the evaluation performed by experts and identifying usability problems regarding web application. Prof. Ganesh Bhutkar, Aditya Mehetre, Uday Sagale [1] have performed heuristic evaluation on Android app Eye+ V2. It identifies the usability problems on based Heuristic Evaluation and discuss them in detail.

This study allowed us to look at our application not only from design perspective but also from functionality perspective, that is why in the paper we have listed usability problems based on the design as well as functionality and discussed them in detailed. Severity scaling has been used in the evaluation ranging from -2 to 2 where -2 refers high severity problem and 2 refers to appreciation.

Mureen Allen, Leanne M.Currie, Suzanne Bakken, Vimla L.Patel, James J.Cimino [8] have performed Heuristic Evaluation on Web-based clinical information system. It describes the methodology to develop simplified heuristic evaluation (HE) suitable for the evaluation of screen shots of Web page. We had to use the screenshot to perform heuristic evaluation since it's a commercial & proprietary company product, so this work backed us to go for screenshot based evaluation.

Mohd Kamal Othman, Muhd Nur Shaful Sulaiman, and Shaziti Aman [7] studied two sets of heuristic to identify usability problems in a mobile guide smartphone app for a living museum. Five experts used the severity rating to determine the severity issue of the usability issues. The study states that it is important to utilize domain specific usability heuristic in the evaluation process. In this paper, we decided to find the usability problems domain specific since it is commercial product.

Jukob Nielsen and Rolf Molich [3] conducted 4 experiments regarding choosing evaluation team's approach. They concluded that evaluation done individually turned out to be bad results. They also concluded that aggregate evaluation from several evaluators to a single evaluation do really well even if it consists team of 5 evaluators, that's why we decided to evaluate the web application together instead of everyone doing separately to increase the efficiency of the evaluation.

III.USABILITY EVALUATION OF MAGIC XPI MONITOR

Magic XPI Monitor is designed & developed by Magic Software Enterprises it. It is an upgradation to the old Magic Xpi Dashboard. Old version of the XPI Monitor which had some both design and functionality limitations hence this new dashboard has been designed & developed to overcome these limitations. New functionalities identified on the basis of interaction with the client. The aim of the product is to make user interface more interactive, informative, to perform all the functionalities which older product does supports along with some new functionalities to enhance the product. Although it is business product, still design part also plays important role, so we decided to do heuristic evaluation of the product to identify usability problems and make changes in the design according to it.

A. Inclusion of experts

The Research & Development Team of the Magic XPI Dashboard product consists of the core team members of the company who are well versed with In & Outs of the entire system. Two authors of the paper have developed the product and still working over it, so we decided to be a part of the team to evaluate this product since many terminologies are related to Magic Software Enterprise's products. Another expert who is also the author of the paper has expertise in "Human Computer Interaction", and base paper referred for this evaluation is written by him along with his team members. Two more people from IT industry who have been testing this product have been included in the evaluation team.

B. Selection of Heuristic Evaluation Method

Heuristic Evaluation is an approach which is used to find the usability problem in the web/mobile app design. This evaluation is performed by the small group of experts and judge the product on the basis of the domain and scope of the product. There are 10 defined heuristics, which are listed in the table below. These heuristics have been applied on the Magic XPI dashboard web app to evaluate the product. Parameter which is set for the evaluation is 5-point Likert scale having range from -2 to 2, where the value '–2' indicates that the problem severity is high and '2' indicates the high-level appreciation for related heuristics. From the table below it is observed that product covers most of points but still there is some scope of improvement is needed in some areas.

C. Heuristic Evaluation of XPI monitor web App

Heuristic Evaluation is an approach which is used to find the usability problem in the web/mobile app design. This evaluation is performed by the small group of experts and judge the product on the basis of the domain and scope of the product. There are 10 defined heuristics, which are listed in the table below. These heuristics have been applied on the Magic XPI dashboard web app to evaluate the product. Parameter which is set for the evaluation is 5-point Likert scale having range from -2 to 2, where the value '–2' indicates that the problem severity is high and '2' indicates the high-level appreciation for related heuristics. From the table below it is observed that product covers most of points but still there is some scope of improvement is needed in some areas.

TABLE I
Heuristic evaluation for magic monitor web application

Heuristic	Evaluation	Scale
Visibility of system status	• User is notified whenever system interruption occurs along with its status and severity. • Desired summary of each table on the same screen. • Pop-up message is displayed when project is started or stopped. • Flow of the message from the start to end should have been shown.	1
Match between system and real world	• Synonymous words adoption as per product. - Terminologies used in the IDE have been used in the design. • Right to left layout facility is provided to facilitate easy comprehension to people who are habitual to this way of reading. • User can shift from one screen to another easily.	2
User Control and Freedom	• User can start, stop or restart the project or flow from the UI. • User can make use of filtering to see desired data only and also can hide navigation, task bars and project list for broader view. • No separate setting option is provided to change the themes and web-app settings.	1
Error Prevention	• User is notified about system hardware performance immediately after web-app is opened.	2
Consistency and Standards	• All the tables on the different screen have been provided with similar functionality such as filtering, summary, provision of downloading the data in 3 different file formats. • There should be Consistency in the font-family and font-size throughout all the web pages.	1
Help and Documentation	• Softcopy of the product is provided to user and also training to use this software is given to the client/user. • Chatbot functionality needs enhancement.	1
Aesthetic and minimalist design	• Graphs and charts are shown to generate the summary of the component instead of textual data. • Summary of each table data is shown on top of it along with separate summary page is dedicated for entire project. • Color Shading can be improved.	1
Recognition rather than recall	• Reduction in memory load due to code optimization. - Bigger size files get fetched only when user requests it is resulting in less time and space consumption. • Good use of universal icons for project running status along with grid menu, toggle menu, full screen etc. options.	2
Flexibility and Efficiency of use	• Faster webpages loading time than older version. • User can manually allot some server space to run project smoothly.	2
Help users to recognize, diagnose and recover from error	• User is notified about the issues raised on the server. • If database connection gets lost or node failure is there in the cluster, user should be able to determine which node has been failed and history of the node's status.	1

IV. USABILITY PROBLEMS IDENTIFIED IN XPI MONITOR WEB APPLICATION

After performing heuristic evaluation on web application several usability problems were identified. Then considering their severity, major usability problems were identified with respect to business product. Those problems have been listed in the table below.

TABLE III. Ordered list of major usability problems identified by heuristic evaluation

Sr. No	Usability Problems Identified in XPI dashboard web app
1	Journey of the message from cradle to grave should be represented in the graphical format.
2	No provision for user to see graphical representation and historical data about the health of the cluster.
3	Some scope of improvement is there in Graphical User Interface.
4	Enhancement is needed in RASA Artificial Intelligence powered chatbot.
5	Setting area is not mentioned separately for the web application.
6	ELK (Elastic Search, Logstash, Kibana) Stack integration is in progress to make the product more powerful & efficient from performance perspective.

A. Journey Of The Message From Cradle To Grave Should Be Represented In The Graphical Format

User should be able to see journey of all the messages/request generated by the project in detailed manner via Graphics/Charts. It should talk about when the flow of message was initiated, how long it was being processed and when it was ended. It helps user to identify the factors which are affecting or helping the product to process the requests faster. Also, having this journey in the chart format would make it easier for user to understand timeframe.

B. No Provision For User To See Graphical Representation And Historical Data About The Health Of The Cluster

Currently there is no provision for the user to see status of the clusters i.e., nodes containing in it. This feature will allow user to see which clusters/nodes are getting failed frequently, when they are failing. This would be feasible for the user to maintain the cluster by replacing some nodes or making some other logical changes resulting in the less failure. Sometimes database connection gets broken due to node failure which results in the missing the data on the web page, and often user/client not being aware about its cluster management find herself/himself clueless about hardware problem.

C. Some Scope Of Improvement Is There In Graphical User Interface

Color combination for displaying summary of the table in flex layout should be improved. For disabled/enabled flow red/green combination is used, but the intensity should be changed so that it would match with other content on the screen along with the other summary value's flex. It would make the webpage to look more attractive.

At the few components of the web app, same font-family and font-size has not been used. All the screens should be having same font-family and its size for the all-similar components of the web-app.

D. Enhancement Is Needed In Ai Powered Chatbot

Provision of chatbot facility allows user to find the help on the web app only. She/he does not require to open the softcopy to understand the product. But there is still some scope for enhancement. User may not follow certain pattern as each user has different way of speaking, hence more sample's training set is needed to be considered again to have higher rate of success. Machine learning concepts could be used in it.

E. Setting Option Is Not Mentioned Separately For The Web Application

This is the important feature which is needed to be added in the web app. In the current version of the web app, settings for the particular page have been given on that page only. But there must be provision of separate setting option which will allow user to make the changes at once for all the web pages. Also, some more features in the setting option are needed to be added such as dark themes.

F. ELK stack integration is still in progress

ELK stack makes the product more efficient and powerful from performance perspective. Being business product, performance is the key. Hence, ELK stack integration should be completed sooner. It will allow centralised logging capabilities, allowing users to aggregate logs from increasingly complex cloud environments into a single searchable index. The user will be able to visualize data in real time resulting decreases time-to-insights, supporting a variety of use cases and driving organizational agility and informed decision-making.

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V. RESULTS

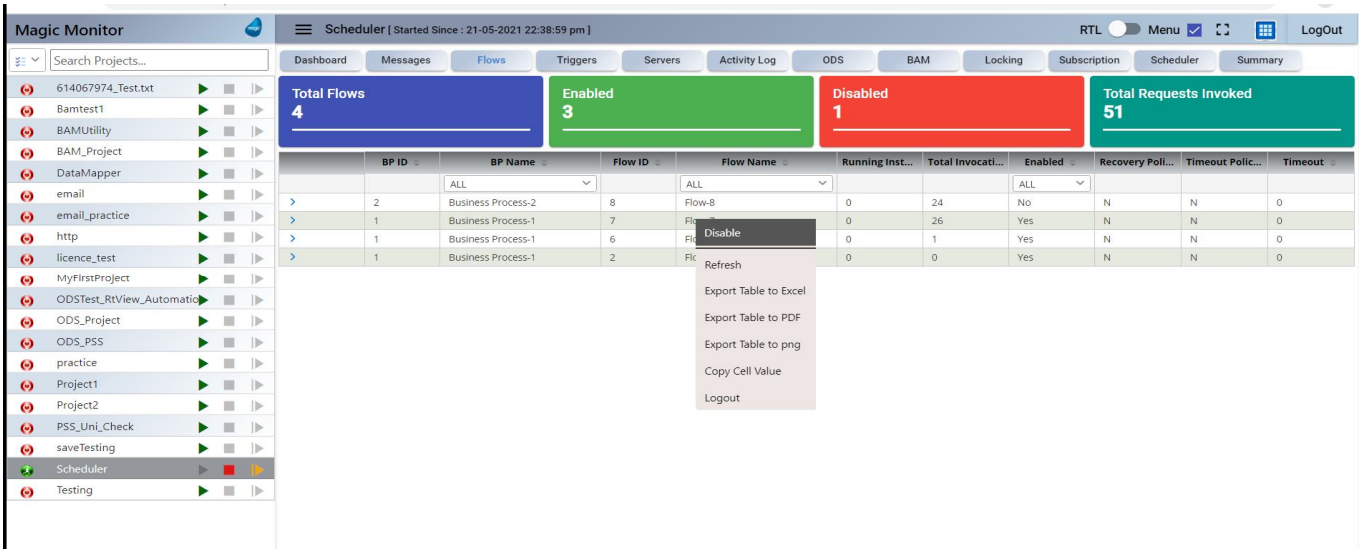

Fig. 3 Example of summary of the table data getting displayed on top of the table and table data download options

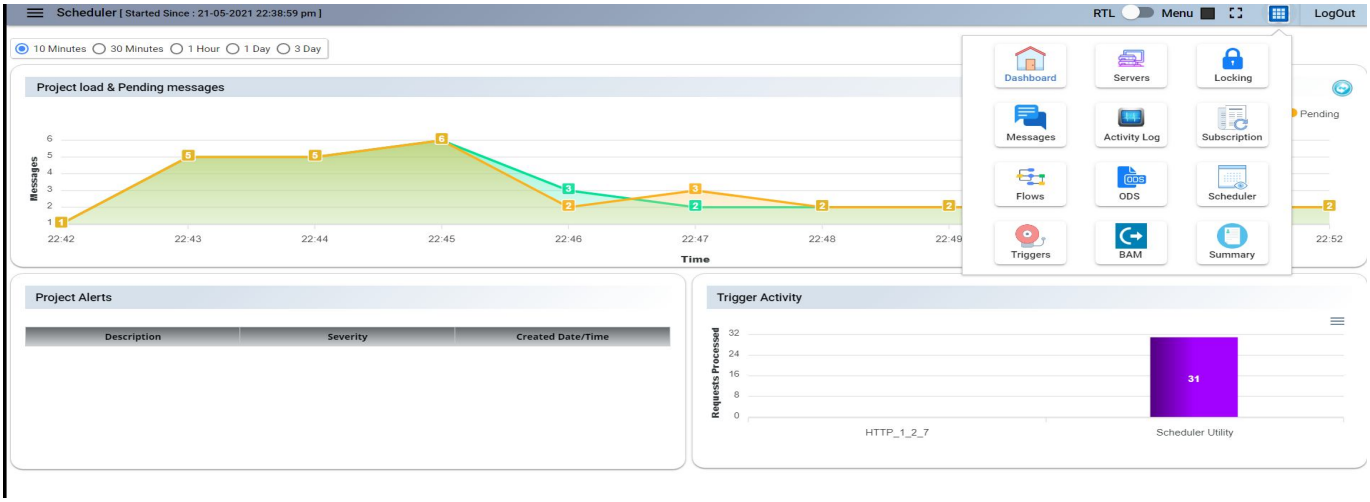

Fig. 4 Example of grid menu view instead of traditional navigation

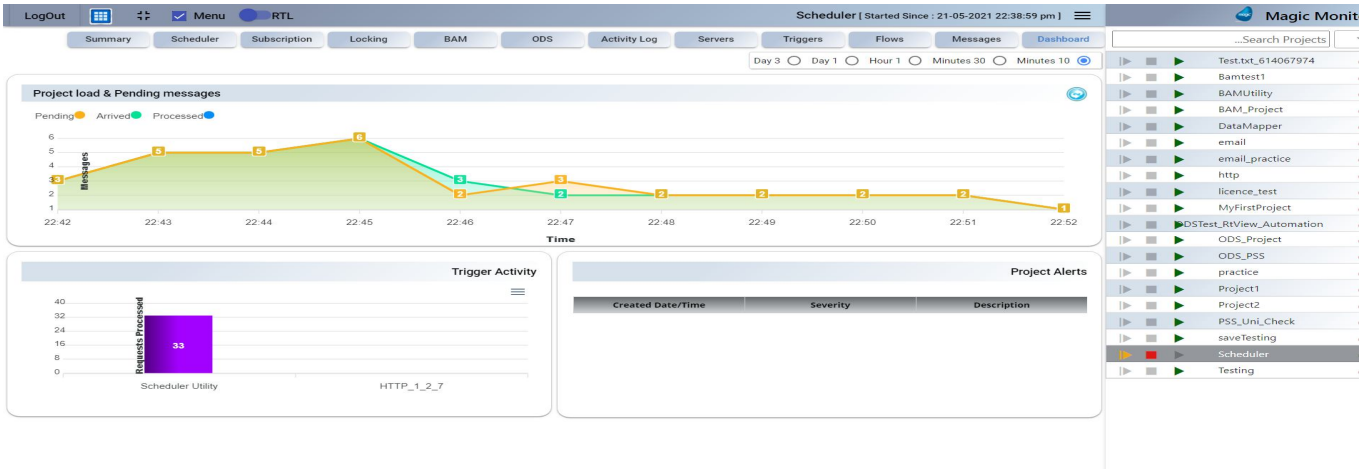

Fig. 5 Example of Right to Left view

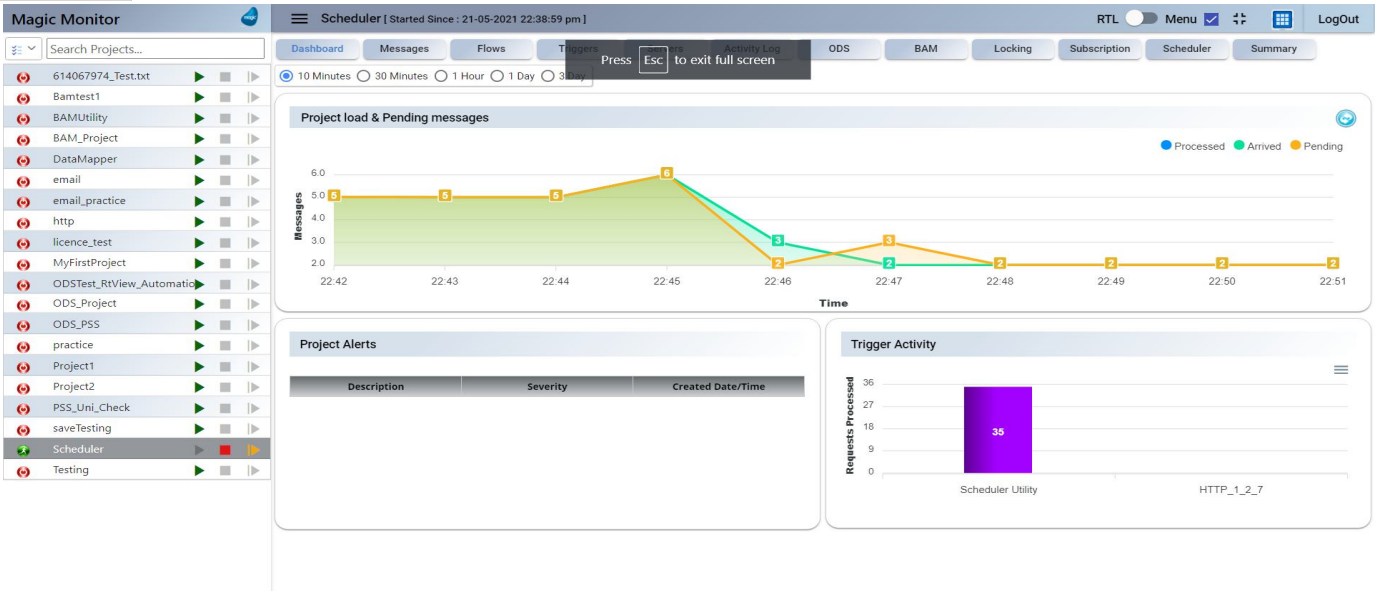

Fig. 6 Example of full screen view by disabling task bars of windows and web browser

VI. CONCLUSION AND FUTURE WORK

Evaluation team observed that web application meets all the functionalities which were existing in the older version along with additional functionalities. It has got better time and space complexity than previous version of it. Overall product seems to be well developed as far as functionalities are concerned. Still there is a scope for an enhancement in graphical user interface to make it more attractive & informative though it is business product. It would be better if user is notified about hardware architecture whenever database connection is broken. But only system administrators can handle these issues. RASA Powered AI Chatbot facility is getting used by many websites nowadays, so enhancement in it would boost the flexibility of the product. In future, the findings of this web application evaluation could be also used to propose new heuristics for business products.

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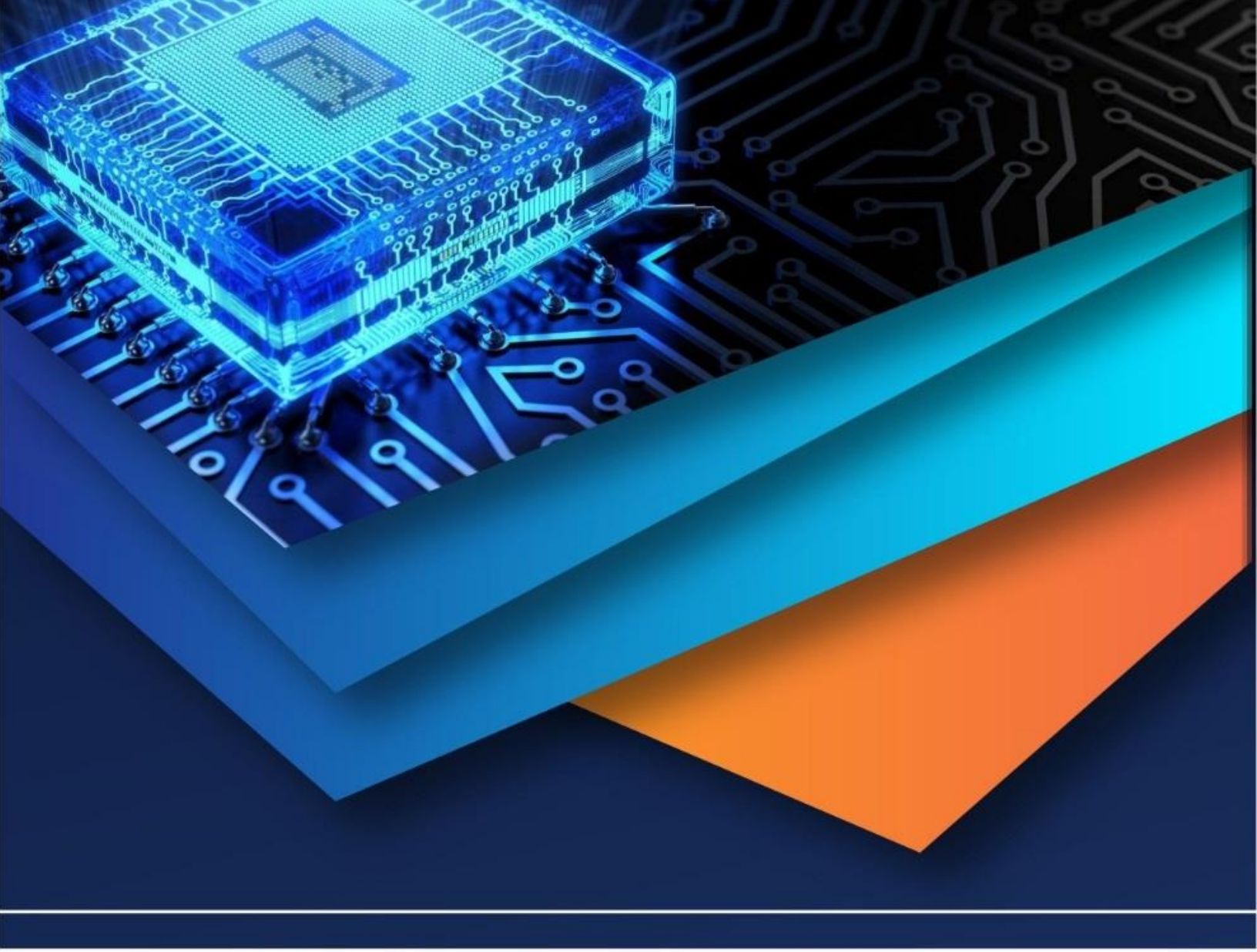

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