

# Auto-Resource: A Digital Platform to Automate & Collaborate Resource Management Processes at Real Time using Genetic Algorithm

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**Abstract**— Rapid digitization of processes in many areas like manufacturing, agriculture, construction and compliance has paved way for unprecedent growth. Organizations are exploring new ways to adopt digital technologies and leverage the benefits of same. Educational organization have also initiated to inculcate the digital ways to improve student teacher learning approach, but other crucial processes that coordinate the day to day functionalities are still manual. These manual processes like resource handling are indispensable parts, for swift and smooth functioning of organization. This proposed work will bring all the process related people and entities on common digital platform. This will allow user to communicate and collaborate with each other for efficient execution of process related tasks and reduce the hurdles in working of educational organization.

**Key words:** Digitization, Processes, Platform, Communicate, Collaborate, Resource

## I. INTRODUCTION

When organizations adopt digital platforms, based on standardized web technologies, they enjoy all the benefits of flexible, availability, shared infrastructure. The organization’s staff are able to find and share process information on any device and from any location, while the organization consumes standard IT utilities — platforms as a service (PaaS) — efficiently. [1]

This paper presents the proposed work of the project the will bring all educational organizational staff related to resource management [2] on a digital platform [3], [1], [4]. This will enhance communication and collaboration amongst users and ensure hassle free execution of resource management processes. [5] [6]

## II. EXISTING SYSTEMS

Existing processes in practice for management of resources of educational organizations are all manual. These tasks are heavily dependent on Usage of physical files, documents and papers for tracking and recording the information. Existing processes and their method of execution.

The resources are categorized as follows:

### A. Physical Inventory/Resource Management

This process is carried out over fixed interval of time. The purpose of this process is track every resource the organizations owns. This information is compiled and send to finance department of organization and predefined subsequent tasks are performed. The resource related staff of the organization has data about every resource in paper format. That person moves all around entire organization to update collecting and updating the data in physical document format. [7], [8], [9], [10]

### B. Dead Stock Register and Scrap

The purpose of this process is to record of the resources that are not functional anymore. A staff member examines and verifies the resource. If that resource is to be scraped then it is documented in the physical register known as dead stock register. [11]

### C. Maintenance

The process of repairing a machine so as bring it back to default functioning state is maintenance. In existing system, if a machine failure occurs it is first document and then communicated to higher authority. Higher authority takes more time to verify if there is need for maintenance or replacement and then the process continues. This process takes weeks and efficient use of that resource is reduced.

### D. Time Table Generation

This process is highly prone to errors. It includes hit and trial methods to generate a perfect schedule matching labs, classrooms availability, machines availability and teacher’s workload. [12]

Time table produced by this approach generates a lot of clashes in schedules and lead to inconvenience for students and teachers. [13]

## III. PROPOSED SYSTEM

In proposed system, the application will generate QR code for each resource. QR code will be generated by taking input from existing master data. This code, which is unique for every resource will be used to track and record it at any time. In the process of physical resource verification, the user will have to scan the QR using a web based scanner that will directly record the existence of resource and store it on centrally based database.

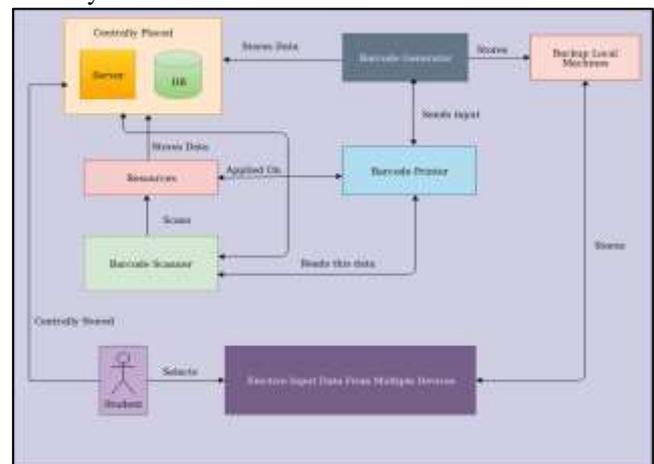


Fig. 1: Diagram of Proposed System

When a machine/resource needs maintenance or replacement the user will scan the QR code and send trigger of prompt maintenance message along with details to higher

authority. The higher authority will verify the maintenance request and take necessary action. The action will be informed to user through application.

In the process of time table generation, students will select their electives through forms. The application will read these forms and store student's electives. Finally, it will take teacher's workload for a week, check condition of resources in labs and apply evolutionary computing techniques to generate a error free time table. If any resource goes under maintenance, the time table will be updated dynamically.

#### IV. APPLICATIONS

The major use of this software system is by lab assistants and teacher to track asset status, asset details verification, preference based decision-making for elective choices and efficient automatic timetable generation. [14], [13], [15]

#### V. CONCLUSION & FUTURE SCOPE

Initially the project will be deployed at department level. After this implementation the project will be scaled up to other departments as well. A handheld QR code scanning hardware will be used to replace the web based QR scanner to increase the accuracy and speed of data transaction. A new redefined application interface will be developed that will allow to select their electives and the time table generated will be accessed through the mobile device itself. The application will be initially hosted on google play store and then on Apple App Store as well.

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