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Integration of Robotic Process Automation with E-Governance

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Abstract:- Electronic Governance (E-Governance) is basically government ONLINE. E-Governance in other words is easy governance and SMART government. Smart government means simple, moral, accountable and responsive Government. Many E-Governance projects have been successfully implemented worldwide but issues are there due to the implementation done by Business Process Management. RPA is light weight IT in terms of accessing and addressing applications through the presentation layer without disturbing the core business logic or data of the underlying applications .Robotic Process Automation enables business transformation of e-Governance projects with better accuracy and high-quality services, increased speed and agility, improved efficiency and reduced costs, easy integration, reduced delivery risk, reduced IT workloads etc. RPA also provides hassle free environment for e-Governance projects. This paper is an attempt to eliminate the drawbacks of implementation of e-Governance by using Robotic Process Automation (RPA). This paper describes the benefits of integration of Robotic Process Automation for e-Governance projects. Further productivity of e-Governance projects is enhanced with integration of Robotic Process Automation.

Keywords:- *E-Governance, RPA, SMART.*

I. INTRODUCTION

A. An E-Governance Approach

Development of a country is based on the fulfillment of fundamental rights of its citizens. Right to information (RTI) is an important aspect for the development of a country. For fulfillment of the fundamental rights and right to information, E-Governance is a major role player. Most of the countries are using E-Governance model to give better facilities to their citizens in all fronts. Information Communication Technology (ICT) plays a key role in successful implementation and working of E-Governance.

"E-Governance is the application of information & communication technologies to transform the efficiency, effectiveness, transparency and accountability of informational & transactional exchanges within government, between govt. & govt. agencies of National, State, Municipal & Local levels, citizen & businesses, and to empower citizens through access & use of information" [1]

There are three important categories that is identified for E-Governance projects. They are distinguished in their own areas. The group consists of Citizens, Business group and Government[2]. Interactions among these three categories are like the E-commerce concepts with some modifications as per the behavior of the group.

There are many services which must be taken care by the government for the welfare of the citizens and overall development of the country [3]. These services are:

- Government-to-Government (G2G)
- Government-to-Citizens (G2C)
- Government-to-Business (G2B)

The interactions of the group in E-Governance projects are based on the responsibilities assigned to them. They are interacted as G2B, G2C and G2G, which is described in the Figure below:

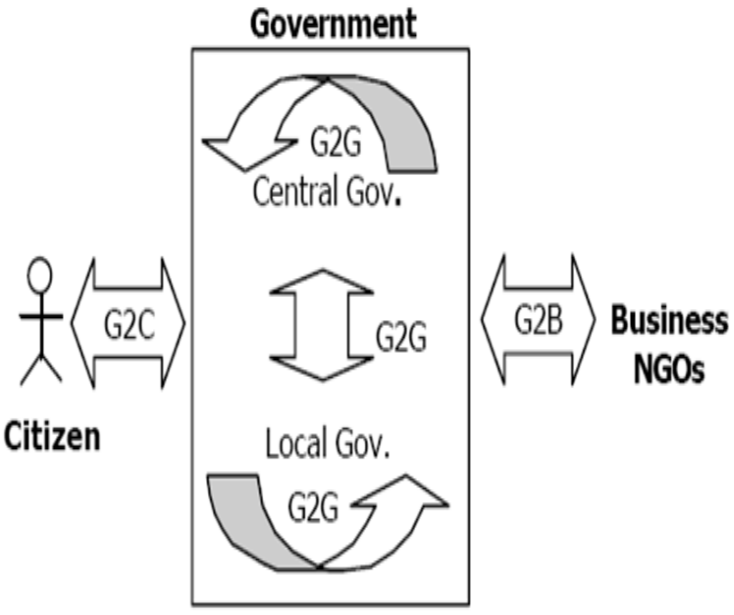

Fig 1:- E-Governance Model[2]

The use of Information Communication Technology in E-Governance results the following benefits[4]:

- Increase in speed
- Transparent system
- High reliability
- Effective interactions
- Better accountability
- Efficient activities

In the back office of the government the cost effective operations can be made by means of E-Governance.

B. Robotic Process Automation

Robotic Process Automation (RPA) is an application of technology that permits employees in an organization to configure computer software, or a 'robot', to capture and interpret existing applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems. RPA processes structured data[5].RPA is light weight IT in terms of accessing and addressing applications through the presentation layer without disturbing the core business logic or data of the underlying applications.RPA does not require IT involvement to get it up and running[6]. RPA is a software based solution that simplifies business processes, automates tasks, and makes predictions based on patterns, dynamic unlike the standard programs that are static and linear. RPA is classified in two ways as:

➢ *Assisted Automation:*

- Runs on user are desktop to support the manual activities of a user.
- Series of automated steps triggered by users across multiple applications that leverage robots on desktops[7].
- Enables reduction in the task handling times.

➢ *Unassisted Automation:*

- Processes performed by robots on its own .
- No user intervention involved except for scheduling and managing the robot workload[8].
- Enables processing of structured information with clearly defined rules.

RPA is built on top of the existing systems/applications [9]. It is easy and simple for creating, replacing or developing.RPA accesses the underlying applications through presentation layer.RPA performs structured tasks as done by humans previously (through the UI using a login ID and password).RPA never requires to modify programming logic of the underlying systems[10].

II. RPA INTEGRATION WITH E-GOVERNANCE

Robotic Process Automation will work for E-Governance with the help of RPA tools which includes Developer Tools, Robot Controller and Software Robot.

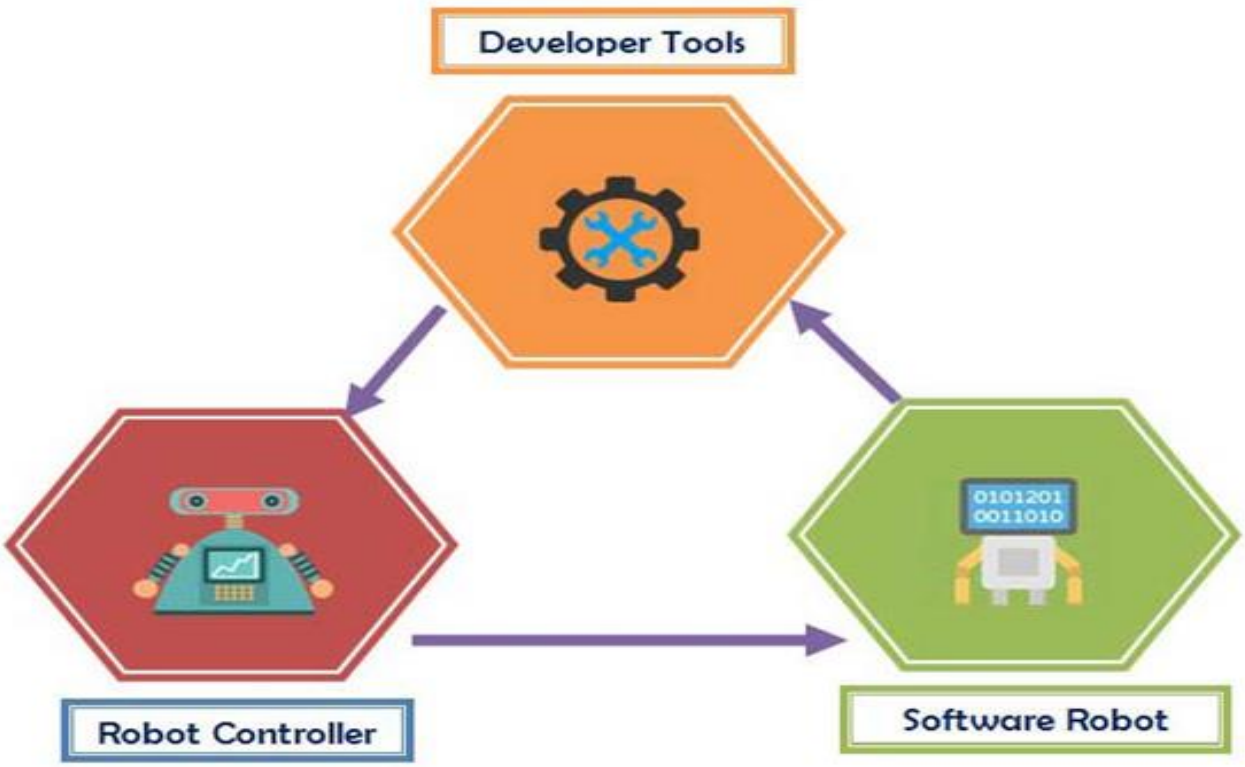

Fig 2:- RPA Integration with E-Governance

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Developer tools are used to define jobs and they focus on ease of use. These tools are hosted on the desktop and users, without any coding knowledge, can easily use the tool. They provide detailed instructions to robots. A layered design is used to visualize complex processes.

Layered design is where functionality and logic are separated into different parts that aid reuse. The impact of system-level changes is reduced. The layers include process: business rules, reusable business logic, ways to perform a task, individual screen interactions. They have drag and drop functionality, simple configuration wizards and process recorder.

The robot controller is the key enabler for process automation and is also hosted on the server. Three key functions serve as a master repository of defined jobs, store credentials of various business applications and provide them in an encrypted form to robots when needed.

Software robots are also known as Clients or Agents. Software robots reside on a desktop and carry out instructions by interacting directly with business applications. Agents interact with the user interface of a business application by identifying the elements such as entry fields and buttons, based on their labels in the underlying application code.

Robots are capable of interacting with a wide range of applications. Agents can record the details of actions performed and decisions taken, for process improvement or compliance and auditing reasons.

III. RPA WORKFLOW WITH E-GOVERNANCE

RPA workflow with E-Governance is shown in Fig-3 as the developer tools must specify detailed instructions to the robots for performing an action. Data is required to publish to the robot controller repository. The robot controller assigns jobs to the robots and monitors their activities. Robot located in a client environment (virtualized or physical) performs the specified actions. Business users review and resolve any exceptions or escalations occurring during the entire process. Basic operations are like opening emails and attachments, logging into web/enterprise applications, moving files and folders, scraping data from the web, connecting to system APIs.

RPA supports integration with mail servers, applications, and other systems to assist the users by assigning jobs to single or group of robots. Monitor and report on the robot's activities. Prioritizes work queue based on the robot's status and capacity.

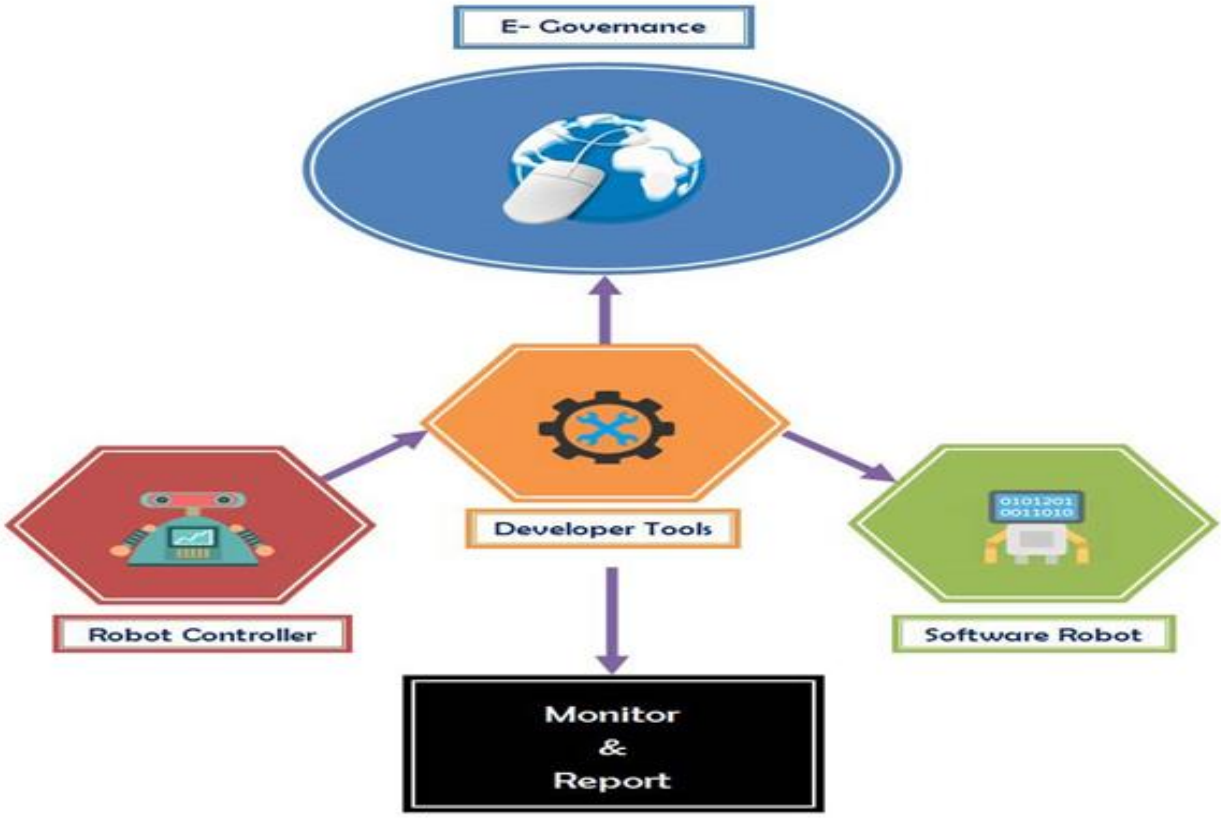

Fig 3:- RPA workflow with E-Governance

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IV. RPA ARCHITECTURE WITH E-GOVERNANCE

In E-Governance projects many applications are used to fulfill the requirement of citizen. User will interact with E-governance applications directly.RPA tool will be integrated with existing system. As per request of user, robot team will analyze the request and RPA server will process the data with the help of RPA database.

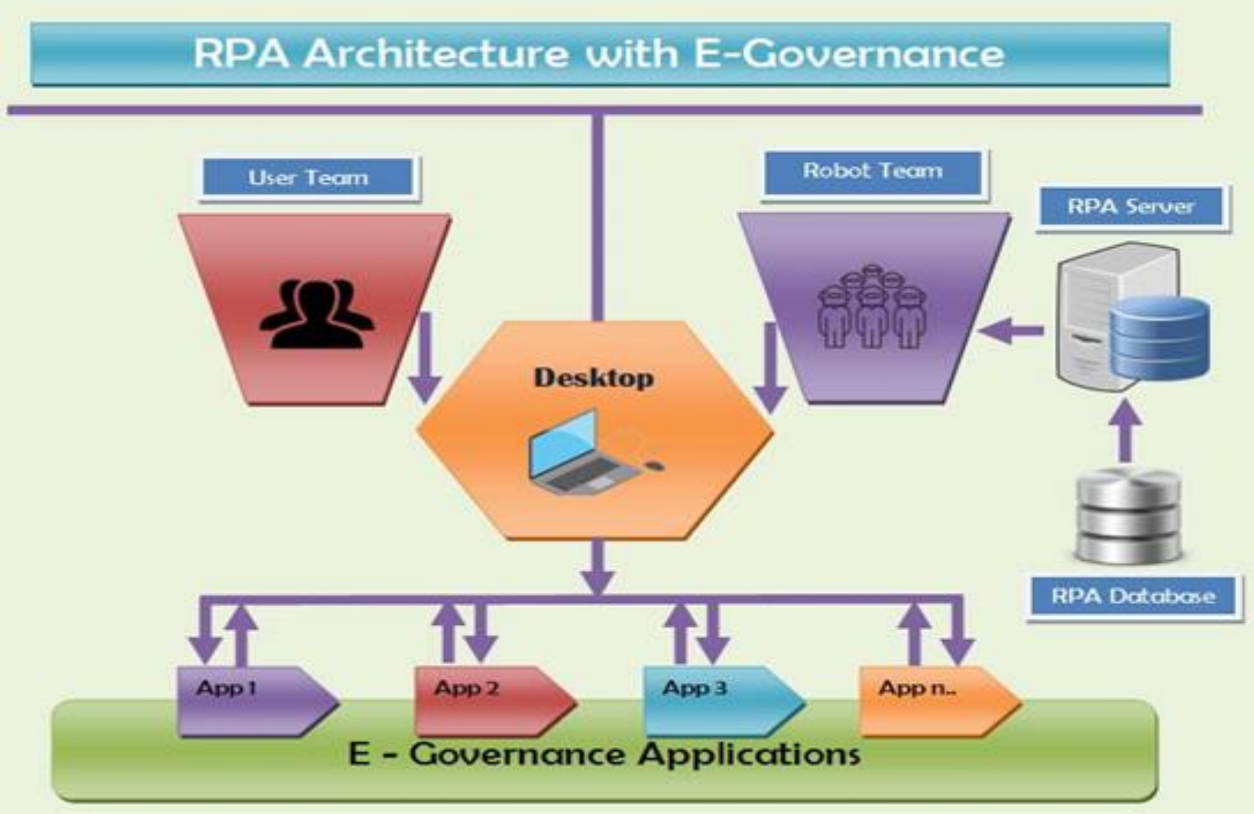

Fig 4:- RPA Architecture with E-Governance

Some of the leading RPA tools in the market like Automation Anywhere, Blue Prism, Ui Path and Pega systems etc are available for integration. For E-Governance, Automation Anywhere RPA tool is best suitable tool amongst all tools.

Automation Anywhere optimizes the time spent on task execution as it transforms a repetitive process to a single mouse click or keystroke, runs scheduled tasks anytime by using powerful task scheduling (even when the computer is locked),automates scripts that exist in different formats, manages automated processes easily across single or multiple machines, create automation tasks in minutes, manage users with a scalable server that enables easy collaboration.

The advantages of Automation Anywhere are making teams 30-80% more efficient, eliminating human error in data entry processes, improving collaboration between employees and divisions, increasing transaction speeds, reducing costs and achieving higher ROI, integrating multiple, different systems and data.

V. CONCLUSION

E-Governance is the backbone for overall development of a country. Most of the countries have implemented E-Governance but issues are there due to the implementation done by Business Process Management. Integration of RPA with E-Governance results many business transformations in terms of better accuracy and high-quality services, increased speed and agility, improved efficiency and reduced costs, easy integration, reduced delivery risk, flexibility and multitasking and reduced IT workloads.RPA integration may be successful for E-Governance due to its architecture, usability, integration, exception handling, security, configuration features, deployment features, vendor support and documentation. The integration of RPA with E-Governance is simple and easy with minimum overhead for IT workloads. The overall productivity may be increased by this integration. The objective of E-Governance may also be achieved in terms of monitoring and reporting. RPA is not a replacement of Business Process Management but is a compliment for E-Governance.

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