An Exemplification to the Effectiveness of Automation in Application Support & Maintenance (ASM)
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1. Abstract

Automation of routine work and creative/ad hoc work converted to routine work will continue to evolve over time to enable businesses to reduce operational and other costs. Businesses have upgraded to offshoring and outsourcing workforce business models, to leverage technology to automate mundane work. This shift helps businesses to harness treasured human efforts for creative work like research, creativity, innovation and further process automation, thus keeping operational cost low while increasing productivity at workplace. For over a decade, Robotic Process Automation (RPA) has been applied to Business Process Outsourcing (BPO) sector and it helped businesses achieve faster and more accurate results.

Hexaware’s Next Gen Application Support and Maintenance (ASM) has already been gaining momentum applying similar methodologies and has reached a matured stage within a few years. This paper delineates the implementation of automation in ASM using three case studies and explains how automation helps in achieving faster resolution of incidents. To conclude, the paper foregrounds the future of automation as discussed by industry veterans.

2. Introduction to ASM

Hexaware’s Shrink IT Grow Digital strategy, operates with a clear objective of infixing automation into the existing processes of an enterprise IT ecosystem, across varied technologies.

All the IT applications of our clients are maintained and supported by experts in respective technologies. The methodology to manage applications is rapidly changing with the advancement in technologies and the emergence of automation. Many companies are looking to adopt - automation and thus, reducing complexities, providing uninterrupted services, and increasing agility have become the strategic goals of their IT departments. We provide transformational solutions to such futuristic companies. In today’s densely connected and highly competitive technology landscape, many companies face challenges in delivering exceptional user experience, at an affordable cost. With fast evolving technologies, it has become the need of the hour to stay relevant and generate revenue with minimal operational cost.

Hexaware helps its clients to effectively manage their IT applications through a highly cost-effective, nearshore delivery model. Our expert support teams ensure a very secure, uninterrupted, and high-performance service delivery in application operations, service desk, maintenance & enhancement, production support and service management. We also help to optimize resource utilization, increase scalability for future technology demand and changes, and manage low costs by integrating related services. Constant monitoring and investigation by automated processes can lead to rapid problem solving for better process throughput. Capabilities of automation including RPA can improve service desk operations and monitoring of network devices. By separating scalability from human resources, you can handle impulsive demand without any need for additional recruitment or training.

The response in faster and has accessed multiple services in the background to provide you with accurate new information in a timely and reliable manner. Besides, every user has used his/her smartphone for quick response, thus avoiding the queue at the airport and saving time.

2.1 Traditional Application Support & Maintenance (ASM)

Until recently, many companies have been off-shoring and outsourcing their workforce to keep operational and other costs under control. Now, many of these companies seem to have reached a state where the scope for cost reduction through labor arbitrage practices has reached its maximum potential. Hence, they tend to be looking for newer avenues to control costs further. Additionally, traditional ASM seems to be resulting in high support expenditure for majority of the companies, as the need for digitalization is on rise. Traditional methodology requires many support experts, further adding to expenses of process optimization. To address these challenges and keep a check on expenditure, Hexaware has designed Next Gen ASM that can suit all.

2.2 Hexaware’s Next Gen ASM

Hexaware’s Next Gen ASM brings out faster resolution of incidents resulting in improved Mean Time to Repair (MTTR), increased agility, ameliorated customer experience and reduction in mundane routine work. Majority of business managers prefer adopting Commercial-off-the-shelf (COTS) and Software-as-a-Service (SaaS) products. Hence, a very diverse range of skills is required to support and maintain the ever-growing portfolio of applications. Hexaware’s Next Gen ASM provides flexible application solution which is designed to address the application support needs of SaaS, COTS, and various other custom application. Our Next Gen ASM can be customized to your company’s specific operational as well as strategic requirements and unique application landscape.

In order to provide automation solution, Hexaware has created its own end-to-end IT automation platform called ‘RAISE IT’, with the objective is to add value to your managed services. The platform enables your system, network, and application administrators and developers to gain true insights into modern infrastructure and applications. It supports the dynamic nature of next generation applications and underlying infrastructure and takes into consideration the relationship between different services of the applications. Our Next Gen ASM creates self-healing and automated resolution bots to help in the reduction of the manual work and reduce ASM cost.
3. Automation

3.1. Why Automation?

“As technology advances, it reverses the characteristics of every situation again and again. The age of automation is going to be the age of ‘do it yourself’.” - Marshall McLuhan

The age of automation has indeed become the age of ‘do it yourself’ where humans have more important and complex tasks to perform. Automation undoubtedly reduces the time and efforts required to do the same job, along with increase in efficiency and reduction in errors. A well coded and tested bot can smoothly perform any given task without any need for human intervention. This also saves costs on human training in performing these tasks.

Additionally, humans need an office and other facilities to perform a task, whereas a machine can do the same job in few minutes with just a server space. Also, machines are more predictable than humans and easy to monitor and control. In short, automation gives good return on investment of time, money, efforts, and resources.

The ease of automation does not come from reducing work but from what appears to be a cardinal law of knowledge work. Most types of work can be divided into ‘routine’ and ‘creative’. Routine work is a repetitive set of procedures that are well defined with manageable level of variation and requires no fresh solutions for exceptional circumstances. But how do we handle the exceptional circumstances?

On the other hand, creative work is highly variable and uncommon. Hence, the focus should be on automating routine work and human-handling only the creative work. Such creative work can be converted to routine work over time followed by its automation.

Computers or bots are a perfect choice to perform routine work because they are not bored of doing the same task repeatedly and they would not forget a step or become distracted. On the other hand, humans are very much likely to get distracted or commit errors, when given unengaging tasks. Hence, we strive to automate all the routine work as it not only saves money and increases work efficiency but also creates a more humane workplace that allows people to realize their intellectual potential.

3.2. BOTs for Routine Infrastructure Monitoring and Support Tasks

Automation of infra activities has gained momentum in recent times mainly because of two reasons – many of these can be very well executed using script and, some of the infrastructure incidents and service requests have common occurrence across different companies. For example, email exchange-related service requests (SR) like creation, deletion and upgrading of individual and group accounts are very common SRs across all companies. Hexaware’s automation platform has inbuilt BOTs on RAISE IT platform for such SRs and for routine infra monitoring and support tasks.

Automation using RPA for routine infrastructure monitoring and support tasks, can be very useful for BPS teams who perform such routine repetitive tasks. RPA enables you to process routine, rule-based and non-judgmental activities by accessing a wide range of current technology platforms. It also enables a transaction in an IT application to automate rule-based or routine work.

Furthermore, it automates process activities and tasks by simply mimicking human actions and rule-based decisions taken by people when they manually execute process steps. Apart from being free of code, RPA is also non-disruptive. Thus, it runs independently without changing existing application design, or enhancing existing systems through creation of new IT interfaces or APIs. Until few years ago, RPA was characterized as being non-intrusive. But with constant innovation in technology, RPA can now enter a system beyond the presentation layer and thus it gradually became intrusive.

RPA as a service has introduced us to a virtual workforce of IT software bots that gives new powerful capabilities to business workflows. RPA is deployed as a virtual, robotic workforce which brings high flexibility and scalability to all business processes. It is performed by recording and repeating the processes within BPS and Infra. Thus, RPA scripts can log into an application, enter required data, perform all complex calculations and log out of the application.

RPA maintains records, queries, calculations and transactions. It supports Citrix, .Net, Java, HTML and other compatible systems like SAP, Mainframe Terminals, Oracle, etc.

RPA comes with a host of benefits for Infra and BPS. It is highly accurate, helps to serve customers better while delivering great quality services. Also, it complies with faster completion of the business processes. Moreover, it is agile, reduces overheads and gives flexibility to business resources. RPA also provides comprehensive insights by digitizing and auditing process data. It reduces cost by eliminating human intervention to carry out manual or repetitive tasks, and increases team productivity. RPA technology has already shown its potential in BPS sector and hence, Hexaware’s Next Gen ASM automation is striving to achieve similar results. RPA software vendors include: Automation Anywhere, BlackLine, Blue Prism, EdgeVerve, HelpSystems, Kofax, NICE, Openspan (acquired by Pegasystems), and Verint.

However, overestimating RPA’s capabilities can lead to implementation failures. For example, very few RPA vendor tools have capabilities of automating Citrix. And still accessing the VPN with the security mechanism like entering instant RSA token is a huge challenge.
All support-related activities like incidents, service requests and change requests within the companies are logged as tickets in their respective ITSM tools. The reason for ticket analysis is to analyze the pattern of issue occurrence. The incidents are recorded in tickets as both structured and unstructured data. These include columns like timestamps, description and resolution. It is vital to analyze incident tickets in-order to manage support and keep the incidents within the accepted service level agreement (SLA). Service-level ticket analytics is essential to identify anomalies, trends and detect unique patterns in daily operations. It is not feasible to do such level of analysis manually, especially for big accounts. Hence, we use bots to do the job. Additionally, we also strive to eliminate the root cause for optimum incident resolution.

The purpose of ticket data analysis is to find out the issue category with the help of Hexaware’s proprietary tools. Furthermore, ticket data resolution helps us to find the automation possibility by giving better insights of the scenario. On a higher view, the purpose of ticket data automation is to identify and predict the tickets distribution w.r.t. application and scope of automation for an application. Analytically, it is difficult to find the linear relationship between different variables in the ticket dump and to detect anomaly patterns to suit a wide range of ticket volume volatilities. There is neither a fixed rule for detecting anomalies in ticket data nor a group of clustering algorithms that can solve the issue. Hence, a periodic ticket data analysis makes anomaly detection easier.

The variability of ticket resolution time can vary dramatically across ticket categories. This complicates the cross-category comparison because the mean resolution time is no longer as meaningful as it is, when the variability remains the same for all categories. In such cases, other metrics such as the relative effect score may be considered as possible alternatives.

3.3. Hexaware’s Approach to ASM Automation

Automation is at the core of Hexaware’s strategic objectives. We constantly innovate our ASM activities by automating mundane routine tasks and help our clients to achieve similar results by bringing innovation in their routine work. We strive to bring automation in eccentric activities, after having achieved successful results in automating routine work, with minimal to no human intervention.

3.3.1. Ticket Analytics using Bots

All support-related activities like incidents, service requests and change requests within the companies are logged as tickets in their respective ITSM tools. The reason for ticket analysis is to analyze the pattern of issue occurrence. The incidents are recorded in tickets as both structured and unstructured data. These include columns like timestamps, description and resolution. It is vital to analyze incident tickets in-order to manage support and keep the incidents within the accepted service level agreement (SLA). Service-level ticket analytics is essential to identify anomalies, trends and detect unique patterns in daily operations. It is not feasible to do such level of analysis manually, especially for big accounts. Hence, we use bots to do the job. Additionally, we also strive to eliminate the root cause for optimum incident resolution.
3.3.2. Creative Work

Though RPA is generally used for automating business processes, it can be equally effective in ASM automation as well to minimize efforts and maximize gains. Bots is an inevitable element of ASM automation and our intelligent monitoring tools help trigger such bots quite efficiently.

3.3.3. Automation Flowchart

At Hexaware, we mainly focus on automating support for level 1 and 2. As soon as the ticket arises from calls, web, alerts, mails and proactive monitoring tool, the issue category is logged in ServiceNow ITSM tool. Our RAISE IT platform then categorizes these tickets by using Natural Language Processing (NLP). If the issue is successfully categorized and a bot exists to resolve issues in that category, the bot is executed. If the issue is a relatively new type of issue, the ticket is passed to our L2 support team who updates the Shrink IT team about the issue and the platform creates the relevant bot, if volume of occurrence of such ticket is high. If the issue is rare, then it is passed on to our L3 team for resolution by L2 team.

Figure 1: Automation Flowchart
3.3.4. Sample Automation Success Stories

Before automating the process, we understand the process of the resolution of the ticket and then make a process flow using RPA tool. This helps us perform every step independently and debug the process at every stage.

3.3.4.1. ETL Automation using Bots

For one of our client, Hexaware was involved in automating their ETL process. The client retrieved feeds from external services such as Bloomberg and Reuters to calculate the overall market index. This is done with the help of an ETL tool. All the stock data first arrives in the landing folder. If the data is correct, it goes to the completed folder, if the data is wrong, then it goes to the error folder. The log file explains the error in the code. Support experts, open the error/archived folder, check the error file and the log file and search for the same record in the database, with reference to its unique ID key. Support experts look for the missing data, incorrect date format, data validation error etc. and those errors are fixed manually in the file. The log is then deleted and sent to the completed folder. Hexaware automated the whole process using two bots -the event watcher bot and the error correction bot. The entire process of monitoring the error folder, checking the file, checking the log file and fixing the error and then transferring the fixed file to the landing folder, was completely rendered by the bots. In a typical scenario, the event watcher bot checks for an error in the file. If in case there is an error in the file, the bot transfers the file to the error folder and creates a log file. A ticket is automatically created in the ITSM tool. Now the error correction bot takes over from here. It opens the file, fixes the errors and sends the file to the landing folder. From the landing folder, the event watcher bot transfers the file to the completed folder. This is how the entire ETL process automation solution flow was designed and implemented.

3.3.4.2. Automating Order Quote Cancellation

For one of our clients, Hexaware automated the complete order to quote cancellation process. We designed and implemented a Facebook Messenger bot that automatically connects to ServiceNow, creating an incident for the quote to be cancelled while providing a quote ID. The bot runs using Natural Language Processing (NLP) on the query and updates the category, the subcategory, the sales person’s name and the customer’s name. Now, fetching the data from the category and the subcategory, the ticket is automatically assigned to our corresponding RAISE IT’s service management engine. Using our RAISE IT platform, the bot calls different scripts. These scripts understand the incident and resolve it. The first script gets the incident details from ServiceNow and the second script cancels the order. After cancelling the quote, the bot updates the incident status as resolved and activity description is provided. Now, the status of the quote stands as ‘cancelled’ in the order processing application.

3.3.4.3. Change User Role using Bots

We developed a bot for changing user’s role for one of our clients. Hexaware’s chat-bot automatically raises an incident which demands user’s role change. In this application, a user is assigned as a system administrator who needs to change to WPS_View. The incident is then automatically assigned to our RAISE IT platform, which calls a RPA bot. The bot goes to the main application, searches for the user, and then updates the role as WPS_View. Once the incident is resolved, the bot updates the incident status to resolved, which automatically updates the corresponding status of the ServiceNow incident. Consequently, the main application will now state user role as WPS_View.

4. Future of Automation Technology

The highest possibilities of automation in ASM is for the service request and the lowest is for the incidents. But over a period, these eccentric patterns within the incident tickets can easily be converted to the routine automatable work. Bot workforce will be the future of technology as well as non-technology companies for one big reason — it saves time and investment in tasks that can be performed without human intervention.

RPA will incorporate artificial intelligence (AI) for inferencing and advance decision making. The top university in UK hypothesates that up to 35% of all jobs will be automated by 2035. In one of the TED (Technology, Entertainment, Design), a media organization’s talk hosted by University College London, David Moss, a technologist and thought leader, explains that digital labour in the form of RPA is set to revolutionize the service industry. He further elaborates that RPA will impact the cost model of the service industry by driving the price of the services and products down. The technology is likely to drive up the output quality and create increased opportunities for personalization of services. Professor Willcocks, Technology Work and Globalization at London School of Economics (LSE), in a research paper states that the automation bots brought about intellectual stimulation in machines, increased satisfaction at job, characterizing the technology as having the ability to “take the robot out of the human”. He explains that the robots will take over the repetitive and the mundane part of employees’ everyday workload, thus leaving them to perform more challenging jobs. Hence, the workforce need not be concerned about the dynamic changes in the marketplace, as new skills are needed to bring innovation and solve new problems.

For over half a decade, automation has completely transformed the Business Process Services (BPS) and similar trends have been started by Hexaware in recent times to automate ASM. Few years down the lane, Hexaware’s Next Gen ASM will reach its full potential in automating majority of its internal as well as clients’ routine processes.
5. References


6. About Authors

Sushil is currently responsible for Application Managed Services Practice at Hexaware Technologies Ltd. With over two decades of experience in IT industry, he has played many roles including delivery management, pre-sales & solutions and account management. In his current role, Sushil along with his team of consultants; helps customers in significantly reducing cost of application support and maintenance and improve service levels through automation led service delivery which goes beyond traditional labor arbitrage.

Prachi works with the ASM Pre-sales Team at Hexaware Technologies Ltd. on automation and application support ticket data analytics. She has 4 years of experience on Artificial Intelligence, CRM and Cloud computing technologies and possesses various certifications in Big Data Modeling, Customer Analytics, Growth Strategies, ISTQB, Agile, Data Science using Python, etc.

About Hexaware

Hexaware is one of the leading, global providers of IT, Application, Infrastructure, BPO and Digital services. Our business philosophy of Shrink IT, Grow Digital allows customers to significantly shrink commodity IT spend while partnering with them to embrace digitalization. The Company focuses on key domains such as Banking, Financial Services, Capital Market, Healthcare, Insurance, Manufacturing, Retail, Education, Telecom, Travel, Transportation and Logistics.

Hexaware focuses on delivering business results and leveraging technology solutions by specializing in services like; Application support, development and maintenance, Enterprise Solutions, Human Capital Management, Business Intelligence & Analytics, Digital Assurance (Testing), Infrastructure Management Services, Digital and Business Process Services. Founded in 1990, Hexaware has a well-established global delivery model armed with proprietary tools and methodologies, skilled human capital and SEI CMMI-Level 5 certification. For additional information logon to: www.hexaware.com

Safe Harbor Statement

Certain statements in this press release concerning our future growth prospects are forward-looking statements, which involve a number of risks, and uncertainties that could cause actual results to differ materially from those in such forward-looking statements. The risks and uncertainties relating to these statements include, but are not limited to, risks and uncertainties regarding fluctuations in earnings, our ability to manage growth, intense competition in IT services including those factors which may affect our cost advantage, wage increases in India, our ability to attract and retain highly skilled professionals, time and cost overruns on fixed-price, fixed-time frame contracts, client concentration, restrictions on immigration, our ability to manage our international operations, reduced demand for technology in our key focus areas, disruptions in telecommunication networks, our ability to successfully complete and integrate potential acquisitions, liability for damages on our service contracts, the success of the companies in which Hexaware has made strategic investments, withdrawal of governmental fiscal incentives, political instability, legal restrictions on raising capital or acquiring companies outside India, and unauthorized use of our intellectual property and general economic conditions affecting our industry.

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