

Digital Transformation in IT Asset Management Process

Omar A. Al-Shatri¹; Ahmed A. Al-Hejji²; Safran A. Safran³; Waleed A. Saglab⁴
Upstream Computer Operations Department
Upstream Digital Center Dhahran, Saudi Arabia

Abstract:- Information Technology Asset Management (ITAM) is a key process in the Information Technology (IT) sector. Since the late 20th century, maintaining a growing number of IT assets has become a challenging task. It requires technological advancements to streamline ITAM processes efficiently and cost-effectively. The digital transformation of ITAM processes can help organizations overcome many challenges. Digitalizing asset management processes requires a centralized repository for efficiently managing IT assets, such as workstations, laptops, and even software assets. This enhances security and ensures that assets adhere to security compliance. Technologies for digital transformation, alongside techniques such as process automation and the adoption of advanced Radio Frequency Identification (RFID) technology, can be utilized to improve ITAM. These technologies and techniques enable organizations to improve their asset management processes, meeting the organization's needs. This paper addresses the impact of digital transformation on IT Asset Management and explores areas for process improvement. Digital transformation impacts Asset Management by enabling faster asset-related decision-making, optimizing asset utilization, reducing maintenance costs, and providing greater transparency and asset traceability.

I. INTRODUCTION

In today's rapidly evolving technological advancement, organizations face challenges and difficulties in staying competitive. The market increasingly rewards organizations that adopt cutting-edge technologies and digital transformation initiatives, as these efforts can help streamline operations, reduce costs, and deliver optimal services to end-users.

IT encompasses numerous processes, including Asset Management, which is one of the most challenging process. This process involves managing assets lifecycle and maintaining an inventory of both hardware and software assets, a task that can be time-consuming and resource-intensive.

This paper aims to explore how organizations can enhance their existing process by implementing some practices to increase the efficiency and security of ITAM in a cost effective manner. These practices including the use of digital technologies such RFID and Cloud Migration would

help organizations to digitally transform their ITAM processes and outline the benefits that digital transformation can provide.

II. DEFINITIONS

A. IT Asset Management (ITAM)

IT Asset Management is the process of managing the lifecycle of organizations' technology assets. This process is a set of business practices that incorporates IT assets across the business units within the organization. It joins the financial, inventory, contractual, and risk management responsibilities to manage the overall lifecycle of these assets including tactical and strategic decision making. ^[1]

B. Digital Transformation in ITAM

Digital transformation is the integration of digital technology into all areas of a business changes fundamentally how you operate and deliver value to customers. It is also a cultural change that requires organizations to continually challenge their current situations, experiment, and get comfortable with failure.

In ITAM, digital transformation can change the way processes are implemented in order to optimize them in a cost-effective manner, and ultimately achieve users' satisfaction. ^[2]

III. THE HISTORY AND EVOLUTION OF ASSET MANAGEMENT

The evolution of Asset Management [ITAM] can be generally broken down into three distinct phases. The first phase began with the industrial revolution in the late 18th century and lasted until the early 20th century. This phase was characterized by a gradual shift from manual labor to industrial machine-based production when goods that had once been painstakingly crafted by hand started to be produced in mass quantities by machines in factories.

The second phase of Asset Management began in the early 20th century and lasted until the late 20th century. This phase was characterized by a move from paper-based Asset Management systems to computer-based systems. This transition allowed businesses to collect and store data more effectively, as well as to begin to analyze that data for insights into their operations. However, these early computer-based systems were often limited in scope and did

not offer comprehensive asset tracking or management capabilities.

The third and most recent phase of Asset Management began in the late 20th century and continues into the present day. This phase has been defined by a digital transformation of Asset Management processes and systems. This transformation has been driven by advances in technology and digital capabilities, including process automation and advanced RFID technology. These advances have allowed businesses to collect and store more data than ever before, as well as to analyze that data more effectively. As a result, modern Asset Management systems are much more comprehensive, allowing businesses to track and manage their assets more effectively than ever before. [3]

IV. BENEFIT OF DIGITAL TRANSFORMATION IN ASSET MANAGEMENT PROCESS

The implementation of digital transformation in IT Asset Management can bring significant benefits to organizations, end-users, and the environment. The amount of benefits may vary from one program to another or organization to another, depending on the implementation quality and technologies implemented. Below are the main benefits that experts agree upon:

➤ *Increased Efficiency and Productivity*

Some Digital Transformation technologies such as discovery tools and RFID can speed up ITAM processes by automating manual processes and hence increase the productivity and reduce human errors. [5]

➤ *Cost Reduction and Resource Allocation*

Certain Asset Management Processes enable organizations to have full visibility of resources, which will ultimately help to better manage the resources. Organization resources can be humans, hardware, application licenses, etc. As organizations are transformed, there will be excess staff who usually do manual tasks before the automation. Such staff can be allocated to other business processes.

To improve the management of hardware and software, organizations can reassign unutilized or under-utilized resources to different users to optimize their utilization. In addition, organizations can monitor the utilization of hardware and software which can help them in planning the exact amount of resources required to meet organizations' needs. This not only reduces costs but also frees up resources for more strategic investments in IT infrastructure. That will help IT Asset Managers to make informed decisions about which assets to keep, upgrade, or phase out. [4]

➤ *More Resiliency*

The incorporation of digital technologies will build a digital culture in the organization. The digital culture will help the organization to quickly adapt to any changes or distribution. This resiliency will help the organization to better sustain any business ups and downs. [5]

➤ *Enhanced Asset Discovery and Inventory Management*

One of the fundamental aspects of ITAM is knowing what assets an organization has. The discovery tools can scan an entire network and identify devices and software, even those that may have been overlooked or forgotten. This comprehensive asset discovery ensures that no critical asset goes unaccounted for and to ensure monitoring their utilizations. Moreover, discovery tools can categorize assets, providing granular information about their specifications and configurations. This newfound visibility into the IT landscape allows for better decision-making and resource allocation. [4]

➤ *Real-Time Monitoring and Predictive Analytics*

Discovery Tools can help in monitoring asset performance and usage in real-time, flagging any anomalies or issues as they occur. This proactive approach allows IT Asset Managers to address problems swiftly, reducing downtime and improving overall system reliability. This can be achieved by utilizing endpoint management tools. Furthermore, discovery tool-driven predictive analytics can forecast future asset needs based on historical data, enabling organizations to plan for upgrades or replacements in advance. This proactive strategy minimizes disruptions and ensures that resources are allocated efficiently. [4]

➤ *License Optimization and Compliance*

License management is a critical aspect of ITAM. Discovery tool can track software usage patterns and recommend optimizations, preventing over-licensing and minimizing costs. Additionally, it can monitor license compliance in real-time, alerting IT teams to any potential violations, thereby reducing the risk of expensive legal consequences. [4]

➤ *Security and Risk Mitigation*

In an age of increasing cyber threats, security is essential. Discovery tool can help identify vulnerabilities in IT assets and infrastructure, proactively removing disconnected devices from Active Directory, flagging potential risks and recommending security patches or updates. By proactively addressing security concerns, organizations can significantly reduce the risk of data breaches and associated costs. [4]

V. METHODS TO DIGITALIZE ASSET MANAGEMENT PROCESS

➤ *Build a Comprehensive Asset Inventory*

An IT asset inventory is a complete list of all IT assets within an organization's IT environment. A well-managed inventory provides a central repository to track items and ensure that they're being used effectively to support business processes.

Building a comprehensive asset inventory is the first step to kicking off the IT Asset Management process. Having a complete and detailed inventory will allow organizations to correctly filter, prioritize, and categorize their assets according to their status or risk. The inventory should include details such as the brand and model of each

device, its serial number, who use it, and where it is located. It should also include information about any software licenses associated with the assets.

There are two main types of IT assets: hardware assets and software assets. Hardware refers to all tangible items in the IT environment such as computers (laptops and desktops), printers, monitors, and network devices such as routers and switches. Software refers to all the intangible items in the IT environment, such as operating systems, applications and virtual machines.

➤ *There are Two Ways to Build the Asset Inventory.*

- **Do it by Hand (Manually):** This is the most basic method for creating an inventory of IT assets which requires Asset Management staff to register the information into the asset system manually. This method is very time-consuming but it is essential and considered as a complement to other methods, especially for devices that cannot be discovered by other methods such as stand-alone devices. This method can be enhanced by developing some scripting and workflows which expedite the importing and updating of assets if the used asset system supports that.
- **Using Discovery Tools:** This method gives an automatic inventory for all devices connected to the network. There are two techniques for discovering IT assets in the organization network; agent-based and agent-less. In agent-based technique, an agent is installed on the devices that runs periodically to collect information about the device. In the other hand, agentless technology is the use of a machine's native, embedded management functionality to retrieve information. Each technique has its own advantages and disadvantages, but it is advisable to use a combination of both to achieve the best results. This method allows collecting huge information about discovered assets such as configuration and installed software, which makes it an indispensable choice. In addition to that, some discovery tools come with other capabilities and features to allow them to manage discovered devices and such tools are called endpoint management tools.

Reviewing and updating the inventory on a regular basis is crucial for effective Asset Management. As assets are added, removed, or changed, the inventory must be updated in frequent basis to reflect these changes. Maintaining an accurate asset inventory is an important goal for any successful organization.

Asset Management staff should conduct regular review schedule to verify and update the asset inventory to ensure it is up-to-date. The same exercise, which was done to build the comprehensive asset inventory, should be repeated frequently with less effort to ensure the accuracy of the asset inventory. Having a good discovery or endpoint management tool will help to automate and expedite the inventory accuracy verification as it can provide real-time information about assets connected to the network. However, the manual (physical) inventory is an essential to

complement the automated discovery especially for devices that cannot be discovered by other methods such as stand-alone devices (e.g. TVs, projectors, ...etc.). There are some tools that can speed up the physical inventory process and reduce human errors such as using barcode-tags that can be discovered by RFID scanners. ^[6]

VI. CENTRALIZE ASSET MANAGEMENT DATA SOURCES

The Modern IT Organizations are utilizing a variety of technologies to manage their assets including Procurement System, End-Point Management System, Discovery System, Software Management System and other systems. Each technology comes with its own database which can lead to redundancy in asset data sources, potentially impacting the accuracy and integrity of the Asset Data. It is very important to build a centralized asset repository leveraging all data available in all Asset data sources. Below are number of steps that can be used to centralize the asset data source:

- Identify all assets' data sources.
- List all attributes for each asset data source.
- Develop an integration strategy to integrate the multiple data sources
- Develop normalization rules to normalize the data and make it consistent with other data sources.
- Define the precedence rules among the different data sources.
- Develop reconciliation rules for each attribute in different data sources based on the precedence rules defined in the previous step.
- Schedule the update job to be run on a regular basis.

VII. TRACK THE COMPLETE ASSET LIFECYCLE

Process automation in the asset lifecycle is a necessary step to achieve digital transformation. An asset lifecycle is the sequence of stages that an asset goes through while it's owned or leased by an organization. The asset lifecycle can be broken down into four main stages (Planning Stage – Procurement – Operation and Maintenance – Disposal Stage). Process automation can help IT Asset Management in a number of ways, including increasing efficiency, reducing operation cost and other benefits. Below are examples of methods that can be used in each stage in the asset lifecycle:

A. Planning Stage

Planning Stage is an essential step to any organization's overall IT strategy. A well-developed IT asset management plan will help maximize the value of the organization's IT resources while minimizing the risks associated with inadequate IT asset management. Below are number of areas in the planning stage that can be automated:

➤ Forecasted Growth

Collecting the forecasted assets growth is a difficult task that requires coordination efforts and communications with all organizations that are supported by ITAM. In traditional organizations, collecting the forecasted growth is

conducted manually through emails ending up having inaccurate results. Digital transformation can be injected in this task using a system workflow. Below is an example of forecasting process that can be automated using a system workflow (Figure-1).

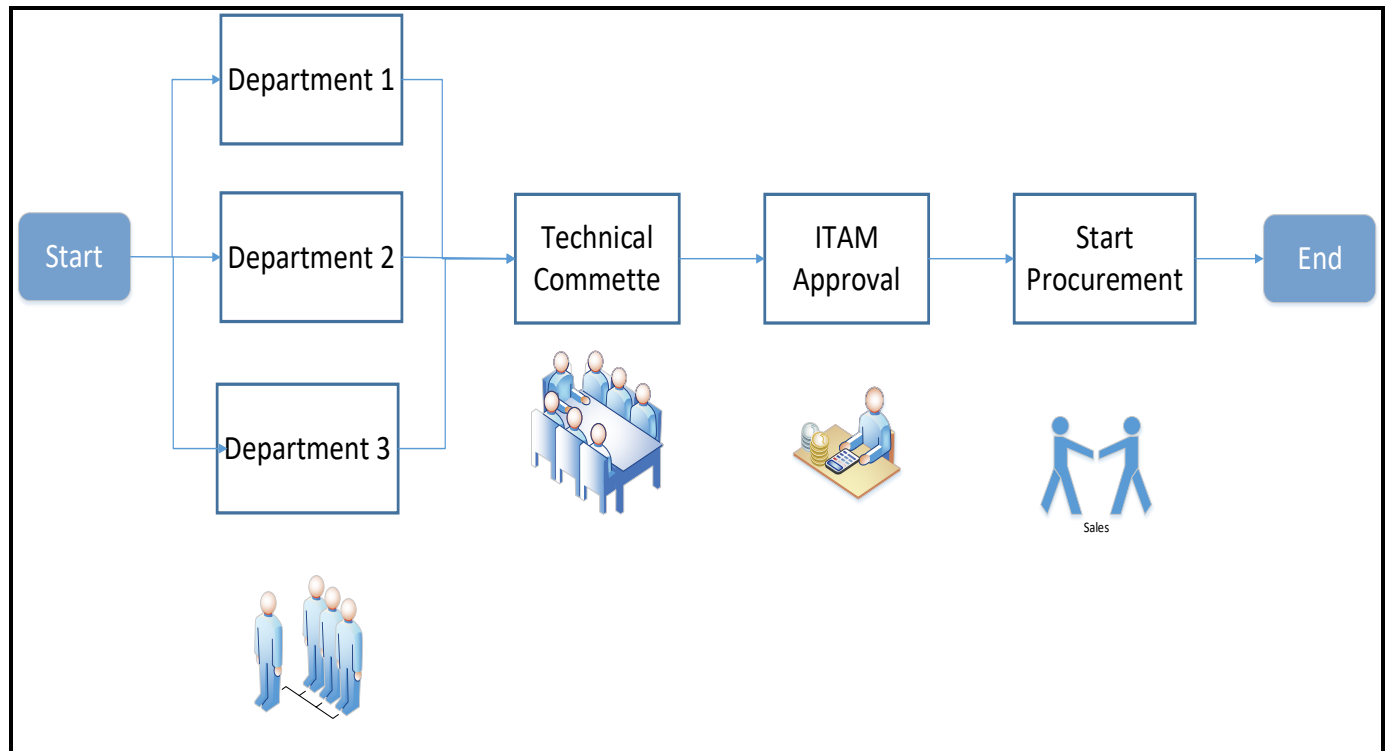


Fig 1: Forecasting Workflow

In this workflow, a process is triggered automatically at the beginning of every year. The workflow will go to all departments' asset representatives to put their expected growth and hardware requirements for the next year. When all department representatives submitted their plan, the workflow should consolidate the data and send the workflow to the technical committee. Technical Committee will review the plan and send the overall plan for Asset Management Approval. Upon Asset Management Approval, the procurement process should automatically start to procure the approved plan (Figure 1).

➤ Replacement Projects

Considering the replacement project is also important during the planning phase. Replacement Project is an important exercise that replace the old IT asset with new and advanced IT assets. The replacement project aims to support the users with latest technology. ITAM should develop an automated scheduled reports to be generated every year. The report should include the number of IT Assets that will be out-of-warranty in the next year. This report will give ITAM an understanding on the amount of IT Assets required for future replacement projects.

B. Procurement Stage

Based on the previous planning stage, the procurement process should be initiated in timely manner to ensure the availability and the readiness of the assets whenever they are needed. Procurement process should be systemized and should go through number of phases starting from submitting a purchase requisition (PR) until receiving the hardware and entering hardware information into ITAM System.

➤ Submitting Purchase Requisition (PR)

This task is a manual task where it requires human-intervention to manually enter the required information in the PR. This task can be automated using the following system workflow (Figure-2).

- Workflow should be triggered after the following scenarios:
- ✓ Collecting the forecasted growth and replacement Project.
- ✓ When stock availability reach to 10%
- The request should go to ITAM for verification and approval.
- The request will finally go to Procurement Process to purchase the assets.

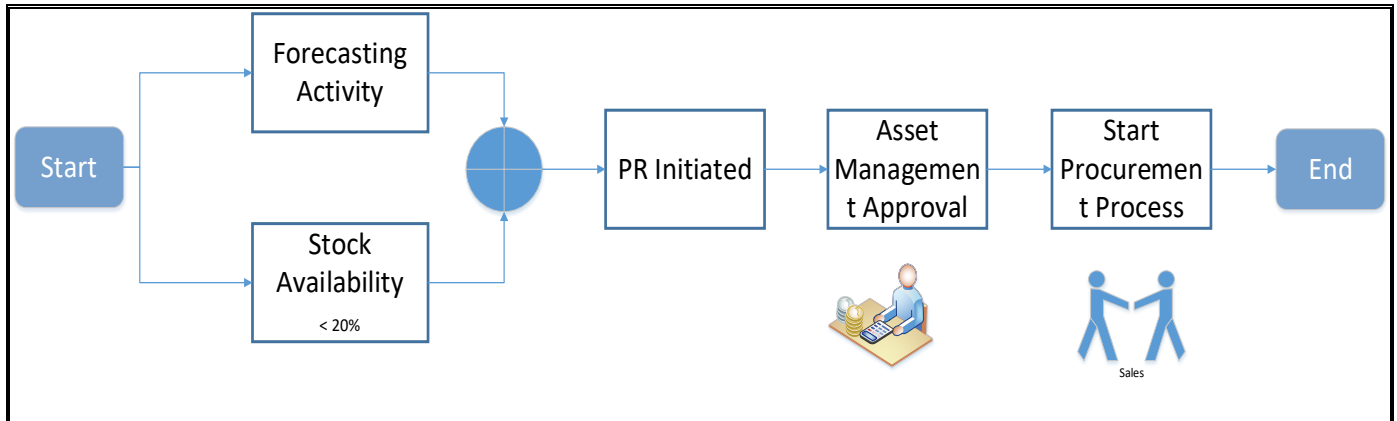


Fig 2: Purchase Requisition Process

➤ Receiving Hardware

Receiving the hardware is important part in the procurement cycle where it requires human intervention for:

- Verifying the hardware model and specifications and to ensure the received hardware are what the organization requested.
- Tagging the hardware with the organization ITAM standard labels that support RFID Technology.
- Import the hardware data and tag numbers into ITAM system.

C. Operation and Maintenance

After an asset is purchased and received, it enters the third stage of its lifecycle which is operation and maintenance. This is typically the longest phase of an asset's life cycle, as it involves ongoing care and maintenance to keep the asset in a good working condition and to ensure ITAM system is up-to-date with assets' information. In the operation and Maintenance Stage, Below are some areas that can be improved to help organizations move toward digital transformation.

➤ Optimize Itam Workflows

IT Organizations can optimize their ITAM workflows in a number of ways including automate human decision making, Remove unnecessary approval, merging the duplicated activities. Digital transformation can help in this automation by leveraging assets data to automate the human decisions. That could be achieved using the below steps:

- List all ITAM workflows such as procurement, installation, relocation and etc.
- List all activities associated in each ITAM workflow.
- Identify the activities that require human decisions.
- Identify the condition of the human decision.
- Determine if the decision can be automated by the system to avoid human interaction.

For instance, requesting new workstation for new hire is a common asset workflow in any IT organization. Usually, this workflow has multiple activates starting from initiating the request until hardware deployment task. ITAM is usually involved in this workflow to verify if the user does not have active workstation under his name. This type of verification can be automated by the system to verify the user profile and action the request based on the result (Figure-3).

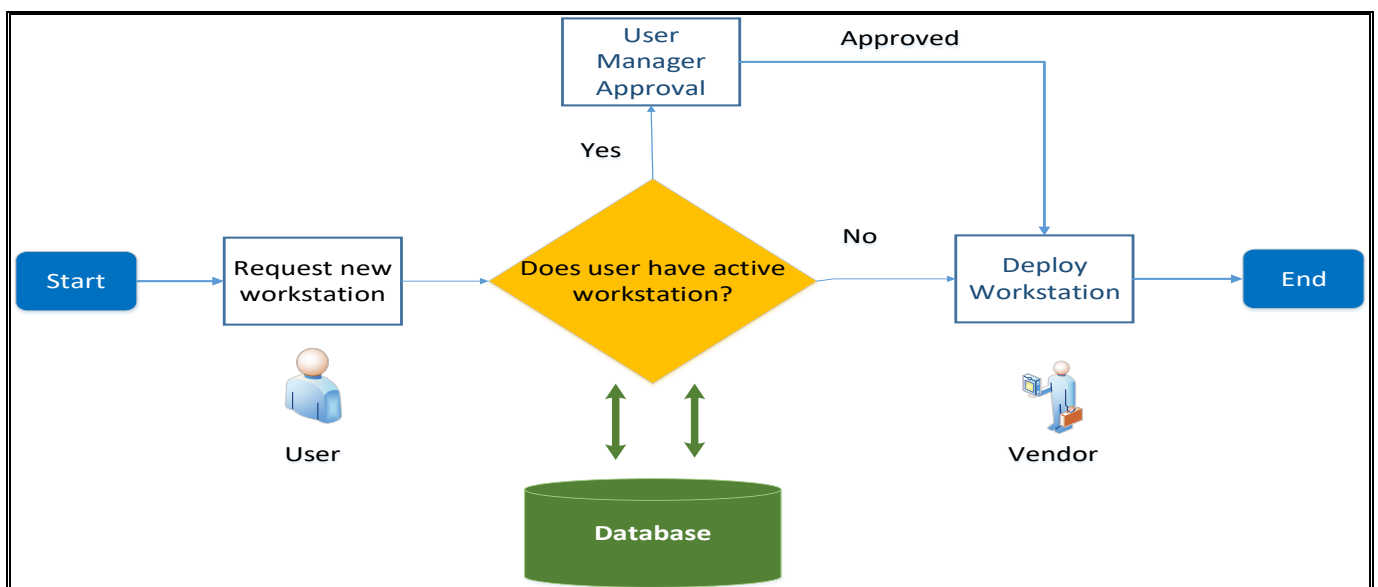


Fig 3: Request New Device Workflow

➤ *Proactive Maintenance (Hardware & Software)*

Proactive maintenance is a maintenance strategy to fix the issues before they appear to users. ITAM can achieve the proactive maintenance using an Endpoint Management Tool.

➤ *Below are Examples of Proactive Maintenance Scenarios.*

- Develop an automated action to delete the temp folder if disk utilization exceeds predefined threshold.
- Develop an automated action to re-install software if software file is corrupted.
- Automate updates to software once older version is discovered.

➤ *Optimize Hardware Usage*

ITAM can significantly optimize the usage of its assets by generating regular utilization reports which can be used to re-certify the needs for the IT assets. For instance, workstations that have not been used for more than 3 months could be considered as unutilized resources which can automatically trigger a return request to return the workstation to stock so that it can be redeployed to another user. Below are a number of steps to optimize the hardware usage:

- Identify the criteria for the unutilized assets.
- Generate a utilization report for the organizations' assets.
- Identify the unutilized assets based on the predefined criteria.
- Communicate with users to re-certify the need for the assets.
- Return the unutilized assets to stock if they are no longer needed.

➤ *Improve Security and Compliance*

Organizations can also improve their security aspects by ensuring the adherence of their hardware and software

resources to organizational and global guidelines. This could be achieved by utilizing end-point management tools that is installed in each workstations to collect hardware and software data and compare them with the predefined compliance criteria. If the adherence is not met, an action/automated script can be triggered to correct the situation.

➤ *Automate Software Management*

- This automation could be achieved by using a Software Management Tool that is integrated with an end-point management tool and Service Portal. The integration can automate the software deployment, removal and management. The following examples can be used to achieve this automation:
- When end-user request to install a new software through service Portal, the request will perform a compatibility check. After that, the request will go for Management Approval in case of the software is licensed Software. After that, the software installation will start.
- When there is an installed software that has been unused for certain duration (Definable), the workflow will be triggered to uninstall the software and free the license. This will help to optimize the usage of license software.

D. Disposal Stage:

Once an asset reaches the end of its life, it must be decommissioned and disposed in a safe and responsible manner. Digital workflows can help ITAM to automate some of the manual task to enhance the disposal process and improve security. For example, automate removing disposed windows computers from Active Directory. ITAM can automate the task of removing the computers from active directory server and disabling network access using end-point management tool. This automation will prevent the workstations from connecting to organizations again (Figure-4).

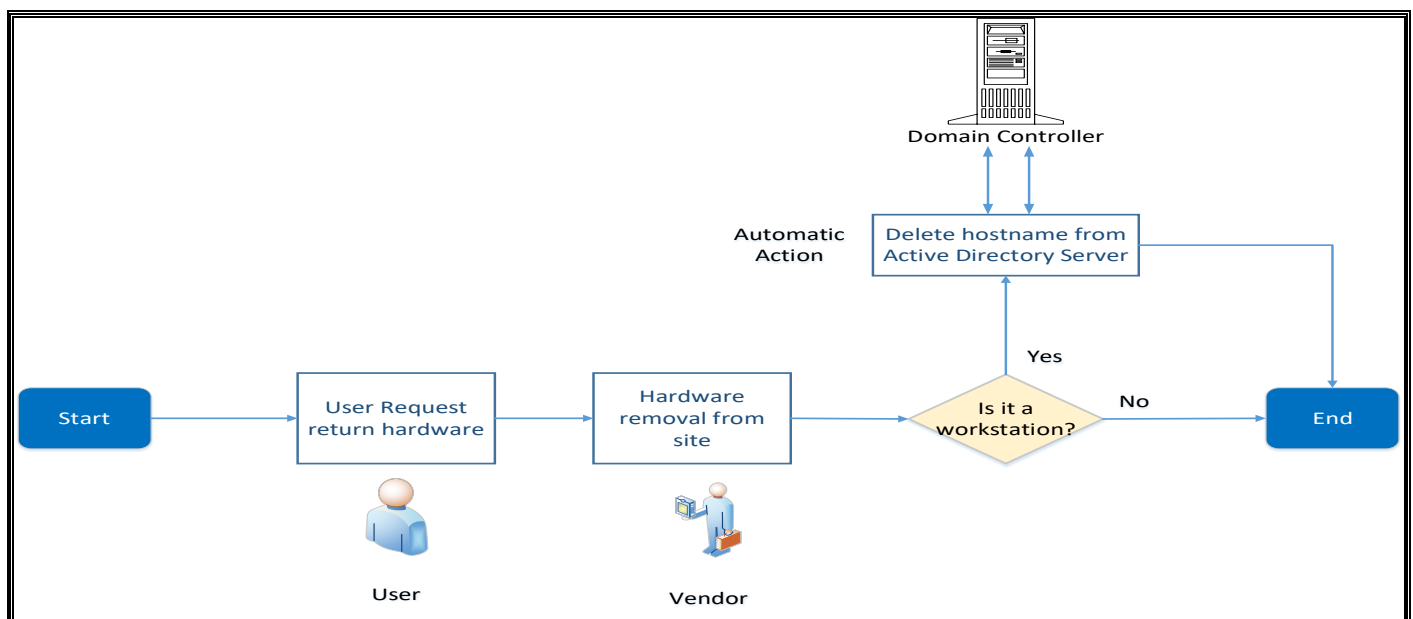


Fig 4: Removing Computer from Active Directory

VIII. MAKE ITAM WORK WITH OTHER ITSM PROCESSES

Even though ITAM is a separate discipline from IT Service Management (ITSM), they are heavily interrelated and interdependent and deliver greater value and enterprise impact when combined. IT assets are the foundation upon which all IT services are built. The ITSM different processes, including Incident Management, Change Management, and Service Request Management, frequently require interaction with ITAM. Tying assets to incidents, problems, or changes helps the technician to analyze the issues and resolve them easily.

From a technical perspective, combining ITSM and ITAM on a single common platform results in a lower cost compared to achieving and maintaining the necessary level of integration between separate systems. In addition, both ITSM and ITAM rely heavily on similar data. Maintaining the required data to support both disciplines in one repository residing on a single platform reduces many problems that are likely to occur when synchronizing separately maintained repositories. Synchronization of separate repositories usually causes errors in accuracy, timeliness and consistency that compromise data integrity and prevent achievement of desired benefits.

Digital transformation and ITSM tools help organizations to improve services, customer satisfaction, and the speed with which IT can react to and proactively address business needs. Digital transformation is not a transition phase – it is a continuous process and a long-term commitment. It needs to cover all the three aspects; people, processes, and technology to be successful.

- **People:** Organization should have or develop the right people, with the right mindset and skills and assign them to the right roles to be able to effectively collaborate with others and to work with the automation. Technology can deliver great results, but only in the hands of the right people. To keep up with digital transformation in ITSM, people have to be willing to change and adapt while bringing new ideas and honest feedback to the table.
- **Processes:** Processes should be revised to get benefits of the new digital technology capabilities of the new ITSM tools, such as chatbots as the first point of support for end users, and virtual agents that increase the knowledge and capabilities of ITSM staff. The focus should not be only on resolving employees' issues but to reduce employee friction and to increase their productivity.
- **Technology:** Technology needs to seamlessly work with improved processes and people capabilities. The used technology (ITSM tool or platform) should have the basic capabilities such as workflow automation and should have the advanced capabilities such as:
 - ✓ Self-service and self-help capabilities—backed by automation.
 - ✓ AI-enabled capabilities such as chatbots and virtual agents.

- ✓ Integrated Business Intelligence as a way to understand trends and improve analytics.
- ✓ Low-code platform-based capabilities that allow IT to quickly create new apps to support employees with their workflows and work. ^[7]

IX. MOVE ASSET SYSTEM TO CLOUD

IT Organization can gain several benefits from migrating their systems to the Cloud. Cloud Migration could contribute significantly in the success of the organization's digital transformation journey. ITAM system is one of the core applications in any IT organization where it needs to work hand-on-hand with other systems, such as Ticketing System, Knowledge Management, Workstation Discovery Tool and other systems. In addition, moving ITAM system to the cloud will enable ITAM Team to utilize the available cloud capabilities to enhance ITAM process such as Artificial Intelligence Services, Data Mining Tools, and other services. By moving Asset System to cloud, IT Asset Group can focus on improving ITAM practices, rather than on implementing and maintaining the ITAM system. For example, they might focus on finding ways to reduce inventory carrying costs, boost production line effectiveness, or minimize unplanned downtime. At the same time, organizations gain a scalable, reliable, secure, and accessible solution that enables them to take advantage of modern data analytics and maintain compliance with changing regulations.

➤ *Below is an Essential Guide to Follow to Move ITAM System to Cloud*

- Understand the purpose: ITAM should start by defining tangible business purposes for the migration and set clear expectations from the migration project.
- Choose the cloud target: This is the "where" of a cloud migration project. Once an application is selected for a cloud migration, the business can select the cloud deployment model -- such as public, private, hybrid or multi-cloud, as well as Infrastructure as a Service (IaaS), Platform as a Service (PaaS) or Software as a Service (SaaS) -- that is best suited as the destination.
- Select a proven cloud partner: It's important to consider cloud targets carefully to ensure that the provider has a proven track record and will be in business for the foreseeable future.
- Evaluate migration costs and needs. A cloud costs money, and any migration project must consider the costs of migration. This typically includes per-month fees for a SaaS, per-user fees for a PaaS and the various costs of IaaS resources and services.
- Create the migration plan: ITAM should create the migration plan which includes provisions for detailed data migration; testing and validating dependencies first, such as the required databases; moving the intended target workload; and then performing all final testing and validation. The plan should also have clear cutover process to turn the local workload off and turn the newly migrated cloud

workload on. In addition, there should be consideration of rollback processes for failed or problematic migrations. Any migration testing should include detailed attention to access and security.

- Perform the migration. With all the pieces and plans in place, the business can migrate data and workloads in accordance with its migration plan. This is where all of the movement and detailed testing takes place. Business and technology leaders -- and often workload owners -- should see initial performance reporting to ensure adequate performance and security under full load. Cautious migration plans might run the cloud and local workloads concurrently for a short time, syncing data and opening the cloud workload to systematically more users until the cloud deployment is fully validated and cutover.
- Follow monitoring and reporting: Cloud workloads are typically instrumented with performance monitoring services to track workload availability, access, health and performance as it runs in the cloud. Stakeholders should verify that reporting is available and KPIs meet expectations.
- Follow-up and organizational changes: There might be some outcome to a cloud migration. At the technical level, the local resources -- such as servers and storage -- previously utilized by the local workload might be freed for reuse or decommissioned to save power and cooling costs for the business. At the business or organizational level, the movement of a workload into the cloud might result in some staff reassignment. ^[8]

X. CONCLUSION

It is important for organizations to recognize that digital transformation is not just about utilizing new technology. It's instead about having better business and addressing business pain points along with the opportunities for increased revenue. Digital transformation is more than a one-time project; it is an ongoing journey that alters traditional ways of working. This journey requires organizational change management tools and techniques to bring employees on board with minimal resistance. Viewing digital transformation as a continual process involves cultural change, adopting new technologies, and continuously improving processes to enhance organizational capabilities.

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