

SUPPORTING PATIENT CENTRIC CARE WITH INTEGRATED ASSET & SERVICE MANAGEMENT



EXECUTIVE SUMMARY

Healthcare providers are under increased pressures to enhance patient care and improve clinical outcomes while reducing costs and ensuring compliance to a wide range of applicable regulations.

To meet these seemingly divergent objectives, Healthcare Administrators are seeking ways to reduce cost through operational effectiveness while managing an increasingly sophisticated mix of Clinical, Biomedical, Facilities, Engineering and Health Information Technology assets.

Healthcare Executives are seeking new opportunities to reduce capital expenditures, decrease service cost, extend asset longevity and maximize service delivery. Standardization and proactive management of assets and facilities ensures their availability and peak performance through the entire lifecycle, thereby lowering capital and operational expenditures associated with these increasingly complex assets.

Integrated Asset, Service and Facilities Management solutions provide key capabilities that Healthcare Executives should leverage to:

- ▲ Improve uptime to support patient centric care
- ▲ Control costs for procurement, maintenance, labor and materials
- ▲ Extend asset longevity
- ▲ Redirect operational savings to improve patient care
- ▲ Support regulatory compliance and reporting activities

This White Paper provides personal experiences from IBM Maximo® Asset Management adopters in Healthcare Provider organizations who have successfully implemented solutions and are on their way to utilizing Integrated Asset, Service and Facilities Management (IASFM) to support Patient Centric Care.

ACKNOWLEDGEMENTS

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- ▲ Deidra Armstrong, Support Services Supervisor/Maximo Administrator, University of Utah Healthcare
- ▲ Shyue-Ling Chen, Director of Medical Engineering, Lifespan
- ▲ Tom Lentz, Assistant Director, The Johns Hopkins and Health Systems, Facilities Department



INTRODUCTION

Modern healthcare delivery has become increasingly reliant on a sophisticated mix of medical devices, technologies and facilities. These new technologies are entering medical practice at an increasing rate. They include a wide range of diagnostic, surgical and therapeutic systems as well as life-safety equipment, facilities in the environment of care as well as health information technologies and related IT infrastructures.

According to the World Health Organization (WHO), “the ‘side-effects’ resulting from the introduction of new, often-complex technology in health care can be considerable—both for patients and health professionals.”

In addition, the proliferation of this indispensable medical technology has created a strain on capital investment and operating budgets for healthcare providers and hospitals. As a result, providers are looking for ways to extend the asset longevity by managing these assets more efficiently and effectively. Integrated Asset, Service and Facilities Management (IASFM) solutions can provide greater control and visibility across the multiple asset classes that are available in a hospital environment.

Leading healthcare providers are utilizing IASFM Management systems to provide visibility across departments and sites. Pooling assets and resources across the organization allows them to leverage economies of scale, lowering capital and operational expenses, which can be redirected to patient care.

In previous Whitepapers in this series we explored the benefits of managing smarter and connected healthcare operations utilizing a unified approach to IASFM to administer all healthcare assets classes with a single solution, as well as recommendations for “Managing Smarter and Connected Healthcare Infrastructures.”

This White Paper compiles findings from interviews with IBM Maximo adopters in Healthcare detailing how their organizations are benefiting from their use of Maximo software solutions.

Themes discussed throughout the interview process included:

- ▲ Redirecting operational savings to improve patient care
- ▲ Driving equipment standardization
- ▲ Reducing cost through operational effectiveness
- ▲ Improving vendor management / contract management
- ▲ Increasing visibility across the entire organizations
- ▲ Supporting tighter regulatory compliance requirements
- ▲ Risk Mitigation in light of increasing number of recalls (ECRI integration)

“the ‘side-effects’ resulting from the introduction of new, often complex technology in health care can be considerable-both for patients and health professionals .”

World Health Organization (WHO)



DRIVING STANDARDIZATION

Standardization of equipment has emerged as a primary initiative healthcare providers are undertaking. Indeed, this measure has been used effectively by other industries including aviation and automotive.

Suppose, for example, that all cockpits in a particular airplane were designed according to the specifications of the captain. This would result in an unlimited number of design variations. For safety reasons this does not happen.

The diversity and variation in medical technologies between healthcare providers, hospitals and even within departments in the same hospital are astonishing and costly.

Standardization is key in reducing service costs and provides staff with the ability to provide safer and better care to the patients.

According to the World Health Organization, there is significant value in developing a standardized methodology for the evaluation of medical devices. However, new equipment and instrumentation should not be introduced without a thorough evaluation of its functionality (Technical Evaluation), followed by monitoring its use in clinical practice (Health Technology Assessment).

This approach could result in:

- ▲ Improvement of patient care and clinical outcomes
 - ▲ Minimizing opportunities for error
 - ▲ Increasing focus on the patient
- ▲ Reduction of the overall cost of providing high quality healthcare
 - ▲ Realizing economies of scale
- ▲ Improving service management
- ▲ Ensuring supporting compliance with all applicable regulations

Standardization has been a key in reducing service costs and providing the staff with the ability to provide safer and better care to the patients according to the asset management administrator at a Northeastern hospital system using IBM Maximo to support their Standardization Initiative.

The organization is working to standardize medical equipment, to facilitate user familiarity and ease to service. They expect that standardization will help improve patient care, lower costs and achieve operational efficiencies.



Benefits expected to be achieved from this program include:

▲ Improved patient care:

By knowing what type and quantity of medical equipment they have, they have been able to suggest to departments what others are using and occasionally provide them with demo units. This has resulted in an increase of standardizing medical equipment. The staff is more familiar with the units as the equipment is the same in various locations; this provides safer and better care to patients. This also allows service techs an easier time to repair and troubleshoot, which also means less downtime.

▲ Lower costs:

By increasing of standardized medical equipment and better managing the assets that they own, the hospital has been able to send techs out to training, which in return has resulted in a reduction of costly vendor service contracts. They are also able to better manage parts inventory, which results in shopping around for parts from 3rd party vendors at a fraction of the cost that the OEM charges.

▲ Achieve Operational Efficiencies:

The use of IBM Maximo Asset Management software allowed the hospital to keep track of all that is related to their assets, PM's, software revisions, upgrades, service repairs, rentals, loaners, etc. They can determine if the equipment is faulty or not and how much it costs on an average to maintain. In addition, it helps ensure that high quality service is provided with the current staff while doing more with less.

DOING MORE WITH LESS

Healthcare providers are confronted with the need to improve clinical outcomes and providing high-quality patient care at the same time working to:

- ▲ Reduce the overall cost of providing high quality healthcare
- ▲ Ensure compliance with all applicable regulations
- ▲ Treat lower / no reimbursement for hospital acquired conditions and readmissions
- ▲ Deal with changes in funding as provision of Healthcare Reform are implemented

To achieve these seemingly conflicting goals, Healthcare Assets, Service and Facilities Management leaders are leveraging technology to meet the challenge.

Operational Savings can be redirected to improve patient care.

Healthcare executives are seeking innovative approaches to lower capital and operational expenditures to redirect these funds to improve patient care.



Leading Healthcare providers are utilizing IASFM systems to provide visibility across departments and sites. Pooling assets and resources across organizations allows them to leverage economies of scale lowering capital and operational expenses savings, which can be redirected to patient care.

“We need to do more with less, so we are looking at ways to become more effective.” commented Tom Lentz, Assistant Director Facilities, Johns Hopkins Health System. “Tightening budgets are forcing us to look beyond the stereotypical low lying fruits at other ways to reduce costs by making employees more productive and managing contractor costs,” he added.

Johns Hopkins is shifting to proactively managing assets to ensure their availability and peak performance through the entire lifecycle, thereby lowering capital and operational expenditures associated with these increasingly complex assets.

To support this initiative, Johns Hopkins is:

- ▲ Using a time standards based approach to measure employee productivity
- ▲ Review of invoice and workflow to ensure that contractors are paid for the right work, at the right time, with all work being complete.

“We need to do more with less, so we are looking at ways to become more effective.”

Tom Lentz,
Assistant Director Facilities
Johns Hopkins Health System

At the University of Utah Healthcare, the ability to track history and failures of assets is supporting improved patient care. IBM

“With a focus on preventive measures, we’re able to track costs and failures against assets that allow us to plan for future expenses”.

Deidra Armstrong,
Support Services Supervisor
University of Utah Healthcare

Maximo allows the organization to manage workloads effectively and to respond to patient care needs and issues timely. Now the focus is towards preventive measures rather than reactive. “With a focus on preventive measures” Deidra Armstrong, Maximo Administrator, University of Utah Healthcare commented, “we’re able to track costs and failures against assets that allow us to plan for future expenses.”



MANAGING COST ACROSS THE LIFECYCLE

Healthcare executives are seeking new opportunities to lower capital expenditures, extend asset longevity and maximize service delivery. IBM's Maximo Asset Management software has enabled leading healthcare organizations to proactively manage their assets to ensure their availability and peak performance through the entire lifecycle, thereby lowering capital and operational expenditures. To this end, Healthcare Administrators are looking to evaluate 'total cost of ownership', rather than 'initial purchase cost'.

"A comprehensive and robust equipment management system can provide us with the right data and analytical tools to make informed decisions".

Shyue-Ling Chen,
Director, Medical Engineering Services
Lifespan

Capital medical equipment selection and acquisition is a collaborative team effort according to Shyue-Ling Chen, Director of Medical Engineering Services at Lifespan.

"Medical Engineering is part of a multi-disciplinary task force in the equipment replacement planning process. Our challenge has been to make the right recommendations for products based on acquisition cost, technology, safety and quality standards, age, and maintenance requirements and costs. A comprehensive and robust equipment management system can provide us with the right data and analytical tools to make informed decisions," added Mr. Chen.

He continued: "As the clinical engineering resource at a large healthcare delivery system, we need to be prepared to answer these types of questions on a daily basis:

- ▲ Which Ultrasound Imaging System should I recommend to purchase?
- ▲ Give me a recommendation of a 5 year capital equipment replacement plan!
- ▲ How much should I budget next year to service rigid and flexible endoscopes?
- ▲ Which vendor can provide the best quality of services at reasonable cost?
- ▲ Are we paying too much for equipment service contracts?
- ▲ Should I renew it, run it on T&M or do it in-house?
- ▲ Where is the infusion pump, asset# 12345, which was involved in a patient incident?



- ▲ How do I locate all 1,800 devices that are on the FDA's recall list?
- ▲ How productive is my staff? Are they competent and busy?"

In the Spring of 2006, Lifespan made some modifications to their Maximo software configuration and implemented it to meet all of its operating requirements. "Since then, we have been very disciplined in collecting technical and financial data through our daily workflow. Now we can easily and quickly answer these questions and become a strong performer within our organization," Mr. Chen concluded.

VENDOR AND CONTRACT MANAGEMENT

The ability to manage vendors and maintenance contracts is key to cost savings in the management of assets.

To support this transition, leading Healthcare providers have eliminated departmental maintenance budgets. Instead, they pool maintenance funds into a single budget.

This approach has enabled more efficient use of maintenance funds by:

- ▲ Implementing a self-insurance model for some asset classes
 - ▲ Base on asset maintenance history data
 - ▲ Secure maintenance contracts for selected assets
 - ▲ Bid contracts to OEM and 3rd party providers
 - ▲ Purchase replacement parts from reputable providers on the open market
- ▲ Centralizing service contract negotiations
 - ▲ Leverage larger asset pool across multiple sites to obtain
 - ▲ Volume discounts
 - ▲ Multiyear discount
- ▲ Consolidating labor management in a single asset management system
 - ▲ For internal and outsource services
 - ▲ OEM and 3rd Party service providers provide service report within 24 hours of service.
 - ▲ Pay for performance model closes the loop between work performed and payment through service reports.



Shyue-Ling Chen, Director of Medical Engineering Services at LifeSpan noted that “As healthcare resources tighten, we are held responsible for delivering equipment services cost effectively while maintaining the highest safety standards. We rely heavily on our system to provide the analytical data to make appropriate adjustments on maintenance requirements; to seek alternative resources such as third party labor and parts vendors; to renegotiate service contracts based on true repair occurrences; and to utilize our in-house staff to take on more responsibilities rather than relying on expensive OEM services. When you have information at your fingertips and know your bottom line, you become very powerful at the equipment planning or vendor negotiation table.”

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Shyue-Ling Chen,
Director, Medical Engineering Services
LifeSpan

OPERATIONAL EXCELLENCE AND REGULATORY COMPLIANCE

The ability to provide documented evidence that healthcare assets are maintained in accordance with regulatory requirements should be a requirement for IASFM systems. However, operational excellence does not result from a primary focus on regulatory compliance. Regulatory compliance should be a natural outcome of the well-designed and executed processes. Therefore, it is critical for Healthcare providers to shift from a compliance and CMMS approach to look at ways to improve and focus on operational excellence without sacrificing regulatory compliance.

Regulatory compliance should be a natural outcome of the well-designed and executed process.

Another issue impacting the industry is the need to manage risk associated with alerts and recalls of clinical and biomedical equipment.

A Hospital Administrator noted that: “We seem to be dealing with the always increasing number of product recalls,” through Preventive

Maintenance (PM) Management, the hospital has a better handle on service recalls and a good understanding of assets, resulting in not only meeting but occasionally exceeding regulatory expectations.

Shifting from CMMS to IASFM has enabled healthcare organizations to improve patient outcome, while at the same time lowering costs. The ability to predict asset availability leads to improved patient care and lower costs. Proactively managing assets, rather than



responding to asset failures resulting in break/fix work orders, minimizes downtime and reduces maintenance costs.

In addition, the integration with ECRI Alerts Tracker provides a solution to address medical equipment alerts and recalls in real-time.

Deidra Armstrong of the University of Utah Healthcare commented, “Maximo allows for easy documentation of compliance. It also helps to manage the required preventive maintenance needed to be compliant, allowing us to schedule and prioritize tasks based on compliance requirements.”

IASFM platforms can also support operational excellence, lean and Six-Sigma activities by providing visibility needed to improve product quality and financial performance, while continuing to meet regulatory requirements.

CONCLUSION AND RECOMMENDATIONS

Increasing pressures to “Manage Healthcare Costs” call for changing business, technology and regulatory models traditionally used in the industry. Integrated Asset, Service and Facilities Management solutions can help healthcare providers improve care while controlling costs.

Healthcare executives are seeking innovative approaches to lower capital and operational expenditures to redirect these funds to improve patient care. Leading Healthcare providers are using IASFM systems to provide visibility across departments and sites. Pooling assets and resources across the organization allows them to leverage economies of scale, lowering capital and operational expenses and redirecting the savings to patient care.

Healthcare delivery dynamics are driving organizations to seek innovative approaches which provide the highest quality patient care and improve clinical outcomes while at the same time reducing the overall costs of providing this care. They must manage the proliferation and complexity of the medical technologies needed to provide the highest quality of healthcare; all while ensuring compliance with all applicable regulatory requirements.

IASFM Platforms enable healthcare organizations around the world to lower the cost of healthcare from inside out.

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To support these initiatives, organizations should shift from a compliance documentation approach to an operational excellence model. In this paradigm, compliance becomes the natural outcome of well-designed and executed processes; healthcare providers must focus on operational excellence without sacrificing regulatory compliance.



Asset convergence is blurring the line between the traditional classification of assets and calls for the availability and use of a single asset management solution to manage facilities, engineering, biomedical, clinical as well as IT networks and infrastructure that are required to make these work. Healthcare providers would benefit from the use of integrated systems to manage all asset classes with a single solution.

Finally, healthcare providers are seeking ways to attain real-time visibility from assets in real-time. Real-time location technologies can enable cost reductions by limiting equipment losses, increasing asset availability, and minimizing equipment purchases.

This approach can yield:

- ▲ A coherent approach to data collection and analysis
- ▲ The ability to identify patterns and trends across multiple facilities before they become issues
- ▲ Reliable action plans that meet regulatory requirements and improve patient care
- ▲ A consistent platform to provide a uniform asset, service and facility management approach

Integrated Asset, service management enables healthcare providers to enhance patient care and improve clinical outcomes while reducing costs and ensuring compliance with all applicable regulations.

RESEARCH APPROACH:

Axendia conducted one-on-one interviews with current IBM Maximo® Asset Management users in the healthcare ecosystem to assemble information and identify trends on the current state of implementation of Maximo based solutions within their organizations. Axendia also gathered information from published literature and other sources to support this research.

RELATED READING AUTHORED BY AXENDIA:

[Integrated Asset and Service Management for Healthcare Providers
Managing Smarter and Connected Healthcare Infrastructures](#)

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