

SOLUTION BRIEF

GLASSBEAM SOLUTIONS FOR THE MEDICAL DEVICE INDUSTRY





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A.T. Kearney is projecting a margin erosion of up to 8% between 2014 and 2020 for the medical devices industry as manufacturers struggle to maintain prices. This is partly borne of the fact that today 98% of the hospitals use some kind of GPO (group purchasing organization), and these GPOs account for 72% of their purchases.

INTRODUCTION

In today's cost-conscious environment, health care providers must ensure that their equipment and facilities are used with the greatest efficiency possible. Devices such as CAT scanners, robotic surgical devices, molecular diagnostic equipment, or MRI machines can cost in the hundreds of thousands, even millions, of dollars, and generate tens of thousands of dollars daily in revenues. With so much at stake, it is essential that manufacturers and end-users keep these technology-intensive pieces of equipment at maximum uptime and efficiency.

Glassbeam's machine data analytics solutions can help medical device manufacturers and their customers maximize product performance by tapping the power of machine data to improve customer service, better understand product performance, anticipate and avoid problems, lower costs, and design better products.

TURNING MACHINE DATA INTO INSIGHTS

What is "machine data," and how can it be used? Machine data is a wide variety of information about an intelligent, connected piece of equipment, generated by the equipment itself. For a high-end device such as a CAT scanner or electrosurgical equipment, for example, this can include basic information like model and serial number, location, age and software version; and operating information like the number and types of procedures performed, errors or interruptions, and even the number of times each button is pushed or feature engaged.

All this information is stored in logs, and the amount of data can be quite large for a manufacturer or customer with a large installed base—as much as terabytes a year.

Machine data—when properly collected, stored and analyzed—can provide valuable insights into how products are being used, where potential problems can be averted, and how the user experience can be enhanced. The insights contained in machine data are of value to customer support and field support teams, product managers and end-users, and can assist in areas such as capacity planning, asset management, problem resolution and operational efficiency.

The key to achieving these benefits is the process of turning huge amounts of raw machine data into actionable insights in as short a time as possible. It is in this process that Glassbeam provides unprecedented breakthroughs.

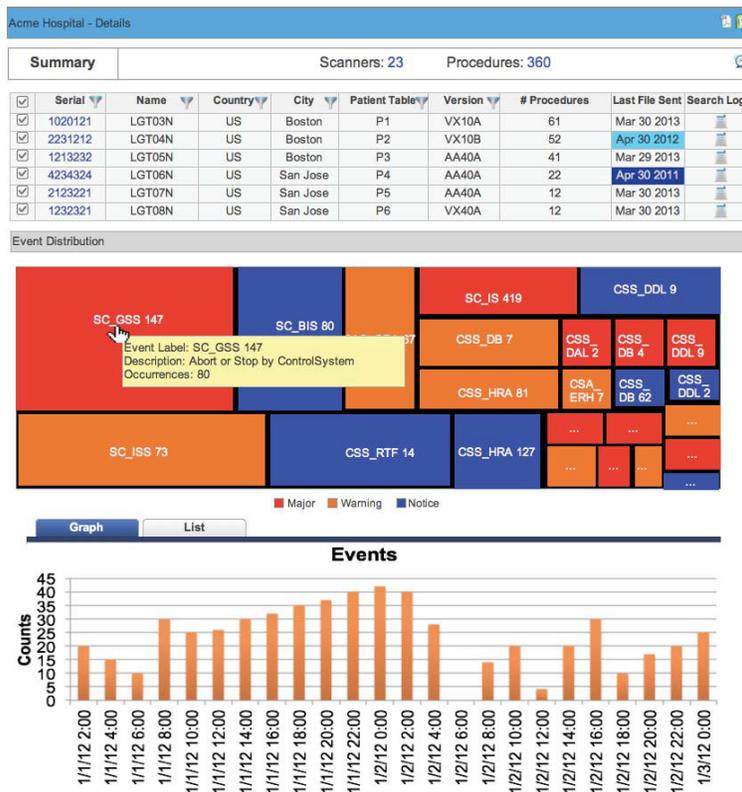
Each machine continually generates data about its usage that can be collect-



Services represent a significant percentage of revenues for medical device companies. Real-time problem diagnosis can optimize truck rolls for maintenance purposes. By tracking inventories and machine status in real time, existing service contracts for owned devices could be executed at lesser cost.

ed by the manufacturer as frequently as they desire. The data is used most frequently in the context of a customer-support case, where a technical support or field service engineer is attempting to diagnose a problem. In these situations, time is of the essence, because backlogs in patient testing interfere with critical diagnostic care and prevent the provider from generating revenue for the services for which the device was purchased.

The answer to the critical questions—what’s wrong, and how do we fix it—can be found in the machine data logs. But that’s easier said than done when the only tools the support engineer may have are home-grown parsing scripts, or Notepad applications to open complex logs and conduct primitive searches on data strings. It’s not unusual for a couple of hours to go by until an answer is found.



Let’s look at what the Glassbeam solution delivers. To begin with, all of the manufacturer’s machine data is uploaded to Glassbeam Cloud, which maintains a centralized log management repository that is accessible anytime, anyplace via a Web browser. And not just machine data can be stored. Other valuable information, from sources such as bug databases, knowledge bases or CRM applications, can be incorporated into the repository.

But much of this data can be either unstructured or multi-structured (that is, having either no obvious context for understanding it, or many different



Mid-sized medical devices companies can provide superior support across multiple geographies by leveraging cloud-based analytics, thereby overcoming limitations in human resources, infrastructure and cost.

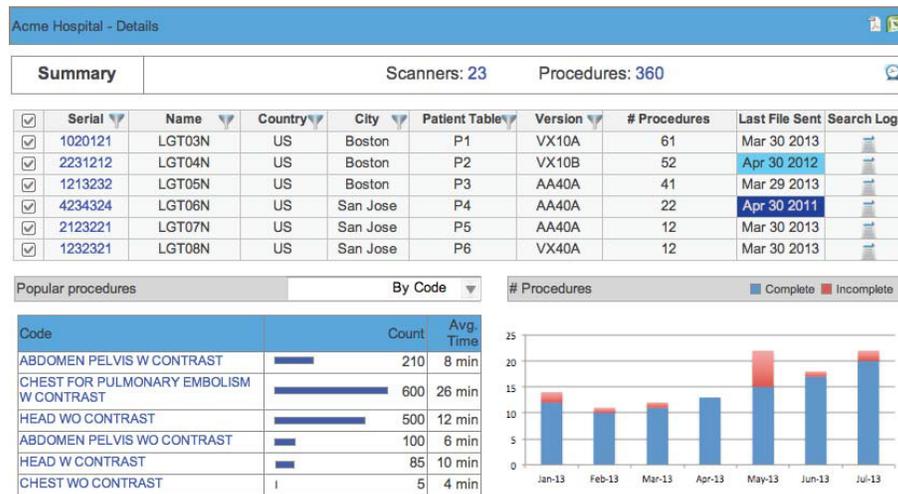
contexts).

This can make it hard for business professionals to easily draw insights or conclusions from the data.

Glassbeam solves this problem through unique search, analytic and reporting tools that deliver a highly detailed view, from multiple perspectives, of the performance of the connected machines.

Depending on how the manufacturer or end-user wants to use the data, the results can be presented in an easy-to-understand dashboard that highlights the metrics most readily important to the user, with further levels of detail available as desired.

In time-critical customer-support cases, Glassbeam tools can be used to perform sophisticated, multivariable searches and analysis that comb through huge amounts of log data and identify the probable root cause of a problem. In most cases, what took up to 90 minutes to solve manually is achieved through Glassbeam in less than five minutes.



Glassbeam solutions are used by manufacturers of medical devices in a variety of functions, including customer support, product management, sales and marketing, and professional services. Here are just a few examples (among many) of how a medical device manufacturer can use Glassbeam solutions:

Customer Support

- ▶ Give support engineers instant and easy access to the entire performance history of all installations of a particular product, searchable by any number of metrics (e.g., customer name, customer site, software version, number and



In industries such as diagnostic imaging, sales of new equipment is slowing due to low utilization of installed machines. IoT provides the ability for an OEM to implement pricing per procedure, thereby shifting CAPEX sales towards leasing and rentals.

mean time of procedures performed, etc.).

- ▶ Resolve a customer-support issue in less than 5 minutes by finding the “needle in a haystack” – for example, the otherwise obscure correlation of an error message, the software version running on the machine, and the sequence of procedures carried out.
- ▶ Analyze the number and severity of errors across all procedures and all customers to identify any patterns that might possibly suggest the need to update software, issue new guidelines, replace parts or take other actions that can prevent failures or errors from occurring.
- ▶ Track replacement part rates across the installed base to give customers better guidance on when to expect maintenance will need to be performed.
- ▶ Set up a process by which e-mails or texts are sent when certain thresholds are exceeded (e.g., number or type of error messages, aborts of procedures, or variances in operating temperatures).

Product Management

- ▶ Produce highly detailed information on how product features are being used (or perhaps ignored) by customers, segmented by such factors as customer size, location, procedure volume, or any number of other metrics.
- ▶ Track the number and length of procedures conducted by hospitals and doctors over different periods of time and across various geographies.
- ▶ Understand the battery capacity required to perform a certain number of procedures, as a means of better matching product features with customer needs.
- ▶ Understand the frequency of different tests performed in order to optimize device features for more accurate and faster results.

Sales and Marketing

- ▶ Produce valuable usage reports on important factors such as consumables, shelf-stock lifecycles, expiration dates and component failures.
- ▶ Identify the different SKUs used for specific categories of surgical procedures, allowing account managers to better understand a hospital’s usage profile.

Professional Services

- ▶ Identify potential operational efficiencies for a customer by noting, for instance, that its mean time to perform a procedure is significantly higher than the mean time for that procedure across the installed base of all such machines.
- ▶ Generate a new revenue stream by offering customers a “health check” service that (powered behind the scenes by Glassbeam) reviews the entire installed base of equipment at all customer sites and documents, in detail, how performance and operating efficiency can be improved.



Sensorized medical devices that transmit machine data would make it easier to detect potential recalls earlier. Machine data monitoring also allows upgrades or changes to software on the fly using air updates.

COMPELLING ROI THROUGH MACHINE DATA ANALYTICS

Measuring the impact of these capabilities produces a dramatic return on investment. Consider the following example (based on actual experience with a major multinational medical equipment maker).

The equipment in question are highly sophisticated, computer-controlled devices costing six to seven figures and used throughout the world for a wide range of diagnostic testing. The manufacturer has an installed base in the tens of thousands, and a hospital or clinic may have as many as a dozen units.

An analysis Glassbeam performed for this manufacturer showed a 5x to 6x return on the annual cost of the Glassbeam solution. This ROI was achieved through several means, including:

- ▶ Reduced time to open a customer support case, made possible by pre-configured thresholds that result in alerts.
- ▶ Reduced time to resolve a case, thanks to faster diagnosis of root causes made possible by easy access to the centralized repository of log data.
- ▶ Reduced exchanges of parts and/or rework by customer support engineers, made possible by earlier and more accurate identification of the root cause of the problem.
- ▶ Savings in hardware, software and personnel costs by uploading machine log data to Glassbeam Cloud instead of storing on-site and developing home-grown data management tools.

Time-and-motion studies performed as part of this analysis showed that for a variety of common field support issues, the Glassbeam solution reduced mean time to resolution an average of 88%.

CONCLUSION

Whether you're a manufacturer of CT scanners, molecular diagnostic equipment, MRI machines, robotic surgical equipment, X-ray machines, or any other intelligent network-attached medical device, Glassbeam's machine data analytic solutions can add enormous and immediate value in several ways: enhanced customer support, more insightful product development, increased service revenues, and lower support costs.



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