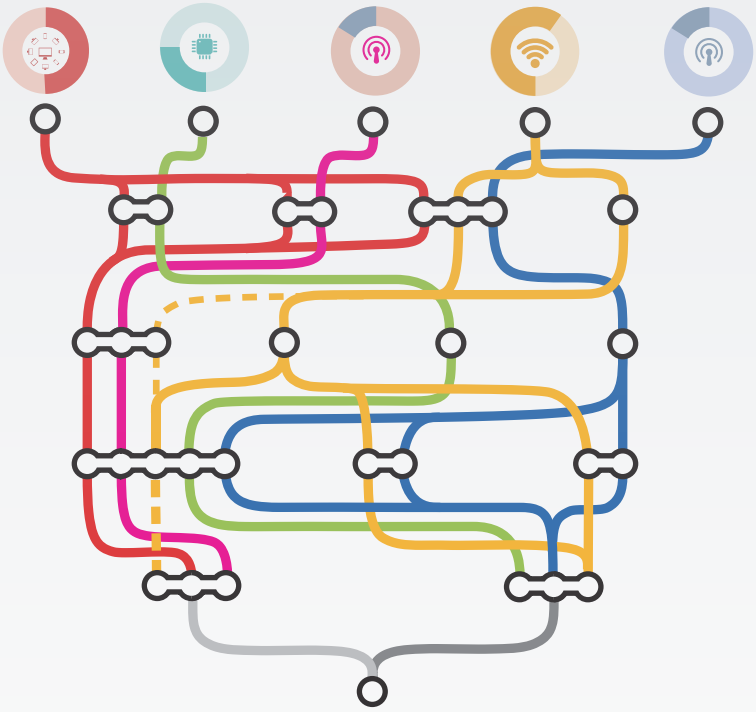
how glassbeam is driving internet of things machine data innovation

machine data analytics drive new values



glassbeam

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technology innovator perspective

Harbor Research

Glassbeam recently announced two revolutionary products for the Internet of Things (IoT) analytics market. Glassbeam Studio™ is the IoT's first data transformation and preparation tool focused on automating the daunting process required to convert raw machine log data into actionable information. Glassbeam Edge™ offers sophisticated IoT machine data analytics at the "edge" through a lightweight platform that enables device manufacturers to perform mission-critical activity in near-real time without the costs or latency involved in sending data back to a central cloud.

Both offerings take a refreshing approach to organizing the many challenges in machine data analytics. Glassbeam sidesteps the current market noise and obsession with the IoT by viewing core machine and device manufacturers' analytics needs as a unified challenge that can be addressed by a single, scalable, end-to-end solution. In doing so, Glassbeam has defined a new market meta-category and underscored the importance of first-mover advantages in the networked "things" world.

THE PROMISE OF MACHINE DATA ANALYTICS

Many diverse businesses are discovering the concept of connected products and smart services, driving enormous new opportunities. Data management, modeling and analytic tools are the core enablers of these opportunities. Due to the many challenges of leveraging IoT technologies and machine data analytics, users are just scratching the surface of the real value that vast stores of collected data from connected products can unlock. A new generation of machine data intelligence is emerging that takes the value of connected products a significant step further. These tools dramatically increase manufacturers' visibility and understanding of product usage and behavior, enabling unimagined new values for users and customers.

The ability to detect patterns from aggregating large-scale sensor and complex machine log data is the holy grail of Smart Systems. Analytics enable a higher order of intelligence to emerge from large collections of machine and device data that can generate productivity improvements, uncover operational risks, signal anomalies, eliminate back-office cycles, and even drive enhanced security protocols. The interactions among machines, devices, people, and businesses will create opportunities to deliver new "smart services". These services, based on hard field intelligence, are fundamentally preemptive rather than reactive or proactive and can provide real-time awareness that a machine is about to fail, that a customer's supply of consumables is about to be depleted, or that a shipment of materials has been delayed.

GLASSBEAM'S ANNOUNCEMENTS

IoT and machine data analytics tools provider Glassbeam is focusing on quickly turning valuable, multi-structured data from machine logs into useful insights. Its recently released Glassbeam Studio (GB Studio) and Glassbeam Edge (GB Edge) offerings help to do just that. GB Studio is a data transformation and preparation tool that ingests raw machine log data and prepares it for further analysis and integration with machine learning platforms. What's remarkable about GB Studio is its nearly immediate impact on the customer: the tool can automate the preparation of complex data in a matter of hours, a significant improvement on the average six months it takes to complete a standard in-house machine learning project.

GB Edge, meanwhile, is intended to help bring IoT analytics to dispersed assets. Its lightweight architecture pre-processes data streams to ensure that only relevant information is sent on to central or cloud storage. By bringing these capabilities directly to the edge and the devices themselves, customer cost and latency are substantially reduced.

Flexible, fast, and edge-oriented solutions are necessary to support smart services. The basic functions underlying machine data management and analytics will drive seismic leaps in productivity and efficiency in a world of vastly expanded real-time data and awareness. The Internet's most profound potential lies in the integration of people, information systems AND smart machines. In a connected world of Smart Systems, not only people but all electronic and electro-mechanical products

existing analytics technology is too cumbersome to easily apply

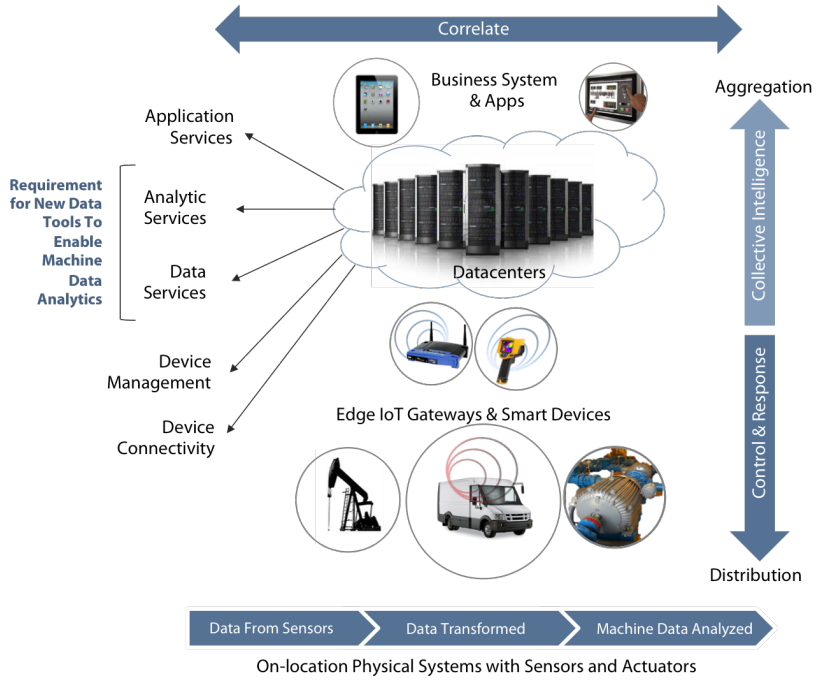
and machines will produce mountains of valuable information, all the time, from all over.

Before delving into the new thinking that makes this story possible, let's talk about why it's necessary at all. To date, remote services, M2M and now IoT systems have largely been focused on simple remote monitoring, as well as tracking and location services, in large part because of technical complexities and business model challenges. Existing technology has proven cumbersome and costly to apply with many conflicting protocols and incomplete, component-based solutions. The challenges of developing analytics applications and integrating diverse device data sources have been big adoption hurdles.

JUST COLLECTING MACHINE DATA, BY ITSELF, IS NOT VERY VALUABLE

Particularly challenging is the prospect of integrating and analyzing complex log data into Smart Systems. There are two primary types of data collected from connected machines and devices in the IoT: sensor or instrument data and log data. Sensor data collects useful environmental and status information in pre-configured, simple streams that are much easier to process and analyze. Log data, however, is more complex.

Figure 1: IoT Systems Require New Data and Analytics Tools



data transformation tools fall short of user needs today

Complex machines like servers, network hardware, medical equipment, and other heavy machinery produce multi-structured data logs that contain a wealth of information about the state of industrial processes, machine health, customer usage behavior and security and compliance breaches. The value of this data is immense; companies can leverage log data to drive ever-greater understanding of machine operations and can improve and optimize smart service delivery in a myriad ways.

THE NEED FOR DATA TRANSFORMATION

Collecting this data is just the first step. The next cycle of technology development for Smart Systems will set the stage for a multi-year wave of growth, based on combining IoT software platforms with data management and analytics tools, moving beyond simple connectivity and basic monitoring functions. But how can businesses hope to successfully make this move faced with a tsunami of structured and unstructured data?

The only way to achieve this is to have the product's own "machine intelligence" continually delivered back to its creator for processing. This requires three things:

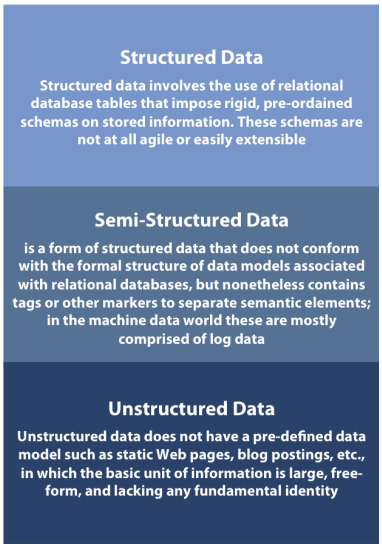
» The ability to collect and aggregate data from devices and machines

» The ability to transform data for use with diverse analytics tools

» The ability to conduct analysis of the data to inform decisions and actions

Data aggregation, transformation and management tools are the core enablers of these new analytic values, but numerous hurdles have constrained the use of

Figure 2: Types of Machine Data



glassbeam is putting powerful data tools into the hands of users

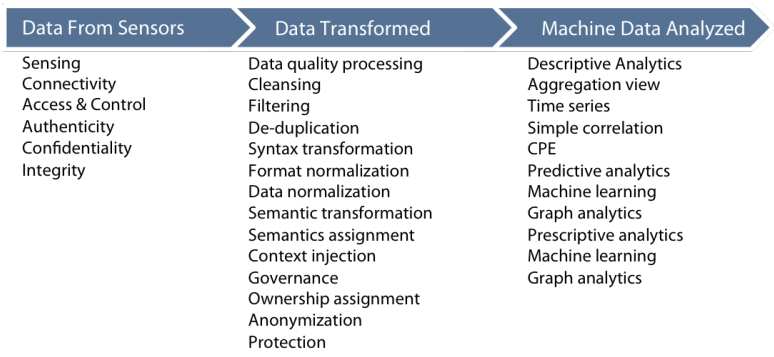
machine data to date. Analytics is still quite emergent within the Internet of Things arena largely because of the diverse and often unstructured nature of the data coming from sensors, actuators and machines. These diverse data types need to be pre-processed or "transformed" before analysis can be performed.

Today, data transformation tools lag behind both data aggregation and data analysis tools. The fact that a rapidly expanding range of devices and machines have the capability to automatically transmit information about status, performance and usage in real time is only the first step towards fully utilizing the potential of analytics. Without better data transformation tools, no amount of data collected can be effectively analyzed; it's the "weak link" in the unfolding story of the IoT and machine data.

The bit, the byte, and later the packet made possible the entire enterprise of digital computing and global networking. Until the world agreed upon these basic concepts, it was not possible to move forward. The next great step in Smart Systems development—completely fluid information and fully interoperable devices—requires an equally simple, flexible, and universal abstraction schema that will make information itself truly portable in both physical and information spaces and among any conceivable data analysis tools.

GB Studio puts powerful data modeling tools into the hands of business and technical users, enabling improved data transformation and preparation of unstructured and semi-structured machine log data. Users can easily model and transform any kind of log format through a drag-and-drop interface that will support the new analytics application values that were previously locked up in equipment and machine data. With this new functionality, users and customers will be able to dramatically reduce the time it takes to design, implement and maintain an end-to-end IoT solution.

Figure 3: Machine Data Transformation Is A Critical Enabler of Analytics



equipment manufacturers increasingly view data management and analytics as a minimum requirement

REAL-TIME AWARENESS DRIVES NEW VALUES

Equipment vendors increasingly view data management and analytics as a minimum requirement for managing equipment, systems and infrastructure. While there are a wide range of potential benefits created from connected product services, it is in the area of service efficiency and support effectiveness where the most immediate and tangible efficiencies have been seen.

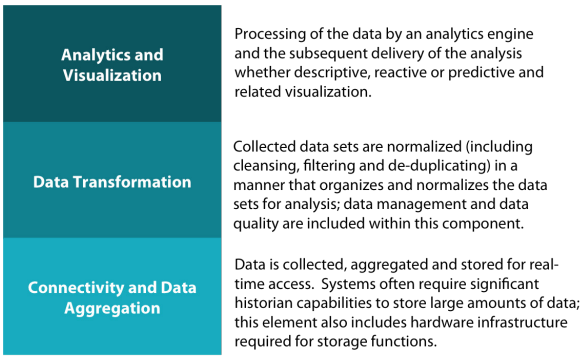
A networked machine generates information value over its entire lifespan. With this information, product manufacturers can know where the device is located, when it was installed, critical specifications, diagnostics, availability of spare parts, usage patterns, support status and more.

Ultimately, the "real-time awareness" that high-performing networks enable is driving vigorous interest in and deployment of so-called "edge" processing and analytic tools. Real-time machine data management and analytics will soon become a minimum requirement to manage the complexity of these connected systems, but only if machine data and analytics solutions are well-organized and easy to use at the edge.

The many portrayals of IoT systems collecting machine data and sending all of this data to the cloud are often deceptively simple and misleading. In a Smart Systems application world, designed to capture, log and analyze large volumes of data from sensors, edge processing will carry out the process of taking raw data and distilling it into information "locally", including filtering and transforming that data. Local processing is required to reduce the otherwise untenable scale of Internet traffic that will arise from connecting billions of devices.

The notion that all these "things" and devices will produce streaming data that has to be processed in some cloud simply will not work. It makes more sense structurally and economically to execute these interactions in a more distributed architecture near the machines, devices, and sensors where the application-context prevails. Today's systems cannot scale and interact effectively in systems with billions of nodes, all spewing data infinitely and continuously. Most IT teams have trouble grasping the power and importance these capabilities enable.

Figure 4: Distributed Real Time Data Management and Analytics



users need new approaches to their machine data challenges

Today's corporate IT function is a direct descendant of the company mainframe and works on the same "batched computing" model—an archival model, yielding a historian's perspective. Information about events is collected, stored, queried, analyzed, and reported upon. But all after the fact.

That's a very different thing from feeding the real-time inputs of billions of tiny "state machines" into systems that continually compare machine state to sets of rules and then do something on that basis. In short, for connected devices and the Internet of Things to mean anything in business, the prevailing enterprise IT model has to change.

Glassbeam's second announcement addresses edge computing and processing capabilities. GB Edge, a lightweight version of Glassbeam's platform, can ingest, parse and analyze unstructured data in close proximity to the actual device. These capabilities address the challenges of prohibitive costs and latency involved in sending data back to centralized data centers, which is particularly useful in applications like predictive maintenance.

GLASSBEAM INNOVATION DRIVES NEW VALUES

The tools we are working with today to monitor and analyze "smart" machines on networks were not designed to handle the scope of data generated, the diversity of device data types, and the massive volume of complex data generated from machine interactions.

These challenges are diluting the ability of organizations to effectively manage machines and systems. The fragmented nature of the analytics software offerings available today make it extremely difficult, if not impossible, to fully appreciate and capitalize on the value of machine log data.

Glassbeam understands that users will need a common means of deploying machine data analytics applications that can leverage tools across families of interrelated devices and diverse domains.

By addressing the most critical needs facing organizations and their data scientists, Glassbeam's new data transformation and edge management tools enable true end-to-end solutions for streamlining machine data analytics and intelligence. These tools help data scientists and business analysts focus less on preparing data for use in the first place and more time realizing the contextual value inherent in the data. Glassbeam's forward-looking architecture has created a single, unified platform for search, discovery, analysis and prediction, driving significant efficiencies, time savings, and usability to both individuals and organizations at large.

About Harbor Research

An internationally recognized research, technology, and business development consulting firm, Harbor Research has predicted, tracked, and driven the development of the Internet of Things since our inception in 1984. While our history is long, our strategy is simple: capture and create value by combining accurate data discovery and analysis with creative systems-thinking. It is this mindset that has given us the privilege of working with some of the greatest companies in the world.

Today, we continue to work with C-level executives and top management of some of the world's most consistently successful companies and innovative startups. In the same way that the market has flexed and grown over the years, our services and experience have grown to make us the premier service organization you see today. We work with clients in a variety of ways including consulting, advisory, research and content development, thought leadership, workshop facilitation, and beyond.

About the Author

Glen Allmendinger is the president and founder of Harbor Research and has been responsible for managing all of Harbor's consulting and research activities since its inception. Glen has worked with a broad range of leading technology innovators, product OEMs, and service providers, assisting them with strategy and market development for new smart products, systems, and services opportunities. He has participated in pioneering research and consulting work in the Smart Buildings, Healthcare, Retail, Transportation, Energy and Industrial arenas, helping clients to determine the scale and structure of emerging opportunities, competitive positioning, and design of new business models.

Glen co-authored the pioneering article "Four Strategies for The Age Of Smart Services," published in the Harvard Business Review. Glen has also authored thought-leading articles for a wide range of publications including The Economist and The Wall Street Journal, as well as being a frequent speaker in industry forums.