

Microsoft Amalga


the Unified Intelligence System



➤ Turn information into health intelligence and critical knowledge



Microsoft®
Amalga™



Our vision: To improve health around the world

For more than a decade, Microsoft has invested significant time and resources into understanding the needs of healthcare organizations. We are developing solutions that encompass both the provider and the consumer to help you achieve your goals from better patient care to improving the financial health of your organization. We believe the issues that Microsoft is best positioned to address focus on healthcare information management—getting the right data in front of the right people in the right way at the right time. That's why we're working to speed and improve the capture, manipulation, aggregation, and presentation of healthcare data by offering a family of integrated IT systems for the healthcare enterprise.

The Microsoft® Amalga™ Family of Enterprise Health Systems is built on Microsoft technology, offering a comprehensive range of solutions to meet the needs of your health enterprise.

Microsoft Amalga

Microsoft Amalga, the new version of the product formerly known as Azyxxi, is the Unified Intelligence System that allows hospital enterprises to unlock the power of all their data sitting in clinical, financial, and administrative silos. Without replacing current systems, Amalga offers leading-edge institutions an innovative way to capture, consolidate, store, access, and quickly present data in meaningful ways.

Microsoft Amalga Hospital Information System

Microsoft Amalga Hospital Information System (HIS), the new version of Hospital 2000, is a state-of-the-art, integrated hospital information system designed to meet the needs of developing and emerging markets. Amalga HIS is built around an integrated Electronic Medical Record (EMR) with complete patient and bed management, laboratory, pharmacy, Radiology Information System/Picture Archiving and Communication System (RIS/PACS), pathology, financial accounting, materials management, and human resource systems.

Microsoft Amalga RIS/PACS

Microsoft Amalga RIS/PACS is available as a stand-alone system as well as a component of Amalga HIS. Its integrated architecture means that radiologists can use a single application to manipulate study images and access the patient medical record. The workstation interface is optimized for radiologist workflow, including support for pre-defined templates, an intuitive report editor, and voice-recognition and dictation capabilities.

Modern healthcare is an information-intensive industry

Each advance in medical diagnostics or therapy generates new kinds of data and increasing degrees of complexity in existing data. The continued industry focus on safety and quality, combined with transparency through reporting and reimbursement based on performance, drives the need for more effective use of data captured across the healthcare enterprise.

While most healthcare information technologies focus on capturing data, they don't do a very good job of bringing

it all together in a way that allow clinicians, administrators, and staff to make intelligent clinical, administrative, research, and financial decisions based on information that crosses the care continuum and business functions. With information housed in siloed systems a standard information technology environment, most organizations find themselves challenged to bring their data together into a single view, drill down or analyze it without extensive manual rework, manual chart reviews or expensive and time-consuming intervention from IT professionals.

It's time to put data to work



Microsoft Amalga, the Unified Intelligence System, makes it possible for health systems to unlock their data and turn information into critical knowledge.

Amalga provides a single point for **unified** access to the wealth of information present in healthcare organizations. This system helps users correlate information from multiple systems, gathering powerful intelligence that they can use to help improve patient care, organizational quality goals, and operational efficiency.

With its innovative and **flexible** data capture, storage, and presentation capabilities, Amalga quickly delivers rich, role-based, customizable views and allows users to adapt the system to their own workflow and preferences. It helps users to be immediately productive with minimal disruption.

Designed from the inside out for simplified deployment and support, Amalga is **manageable**, allowing for changes and organic evolution without added burden to the organization. The system is built on widely used and supported Microsoft products for high availability, scalability, and data storage with security features.

Solve today's problems.

Be well prepared for tomorrow's.

Faced with advances in medicine, new medical technologies, and an ever-changing regulatory and quality landscape, predicting what intelligence you might need from your data—or even where that data may be found—is increasingly difficult. The only thing we can predict is that even more data is coming.

Amalga provides the flexibility and agility for your organization to manage both current and future information needs, in alignment with your organizational vision of best patient care, quality and operational efficiency.

A unified approach to healthcare intelligence.

Though various solutions such as Web-based portals, data warehouses, and analytics tools can provide benefits, Microsoft believes that a fragmented approach may not provide the best solution. Whether the data is clinical, financial, or administrative, Amalga was created with one key philosophy in mind: maximize the insight that you can gather from all your data while minimizing the cost of change. With a Unified Intelligence System, healthcare organizations can take a more holistic and long-term approach towards an effective information strategy that supports their organizational mission and goals.



Clinical Use of Microsoft Amalga

Clinicians are trained to respond to rapidly changing conditions to care for their patients. But is the information they need to support their decisions always available?

Physicians, nurses, and ancillary staff are all charged with an increasing patient load and higher quality expectations. Capturing the data stored in multiple applications throughout your enterprise and bringing it together in the way each individual needs to see it can not only help you improve patient care, but clinician satisfaction as well.

Microsoft Amalga, the Unified Intelligence System, helps pull relevant data together into one view, facilitating customized views to highlight the most critical information for that user, at that given moment. The user community—including clinicians, IT staff, managers, and other hospital employees—can independently create and modify views to meet individual needs.

Financial Use of Microsoft Amalga

Strategic decisions within healthcare organizations can be difficult and complex.

Many financial decisions can have a direct impact on quality, and the way that patient care is delivered can have huge financial implications. For example, extra care and resources such as involving more specialists not only imply additional cost for the organization, but may not necessarily bring improved outcomes. The right care at the right time for the right patient is a fine balance that healthcare executives need to establish. With the increasing trend toward high-quality but cost-effective care, clinical, operational, and finance functions increasingly will become intricately tied together, creating an urgent need for effective use of data housed in all systems.

Amalga allows administrators to bring together data from various systems and run what-if scenarios to uncover issues that may be creating a negative impact on your organization's bottom line. And since Amalga may extend the life of your legacy systems by making your data accessible and usable, you have the potential to achieve a better return on your healthcare technology investment.



"Amalga is an indispensable tool that will take our existing systems to the next level and keep St. Joseph Health System on the forefront of information technology, delivering the best possible care to the communities we serve. With Amalga, all our physicians—those in the hospitals, community-based and in group practices—will have virtually instant access to a patient's health information, thereby increasing connectivity between providers and improving care for patients."

DR. CLYDE WESP, CHIEF MEDICAL INFORMATION OFFICER,
ST. JOSEPH HEALTH SYSTEM,
ORANGE, CALIFORNIA

"It is transformational to have a system like Amalga, which offered the daily dependability we needed to ensure our basic work was completed, and the flexibility to help us answer new questions without the assistance of our Information Systems department. I can't describe how empowering it is to identify an issue, run your own report, and then solve the issue in 15 minutes."

BRADLEY KAPPALMAN, ASSISTANT VICE PRESIDENT, MEDICINE,
WASHINGTON HOSPITAL CENTER,
WASHINGTON, DC



"After searching for two years, we selected Amalga because we believe it provides the healthcare and research context that other products in the marketplace just don't offer. As a product developed by physicians, Amalga works the way clinicians and researchers work. It provides rapid results with minimum clicks, and allows for specific queries to help analyze and visualize data."

ED MARTINEZ, CHIEF INFORMATION OFFICER,
H. LEE MOFFITT CANCER CENTER & RESEARCH INSTITUTE,
TAMPA, FLORIDA

"Amalga plays a significant role in monitoring and improving our department's performance. I can create customized reports based on physician-specific results and performance measures. It is this kind of individualized feedback that has resulted in improved quality of care to our patients."

WILLIAM J. FROHNA, M.D., FACEP, VICE CHAIR,
MEDSTAR EMERGENCY PHYSICIANS, CHIEF DEPT.
OF EMERGENCY MEDICINE, UNION MEMORIAL HOSPITAL,
WASHINGTON DC

Research Use of Microsoft Amalga

Researchers need access to data that is often sequestered in homegrown or legacy information systems.

Microsoft Amalga, the Unified Intelligence System, can "free" captive data, providing researchers a first step to extracting insights through clinical analysis. Additionally, Amalga makes it easy to identify and track patients who may be seeing multiple clinicians, and to monitor for specific trends across larger patient populations. To support the iterative and investigative aspects of clinical research, clinicians can build and modify their own queries on-the-fly, without having to make special requests through the IT department or outside vendor, as is common with other systems.

Data can be queried in real-time by any member of a research team with a few clicks of a mouse. Once created, queries can be reused and enhanced. For example, queries can be used to identify specific patient groups or to generate forms required for a study. As needs arise, Amalga queries can also be modified on-the-fly to improve the flexibility of data gathering. Processes of testing a hypothesis on existing data that used to take months can now be done in a few minutes.

Administrative Use of Microsoft Amalga

Hospitals today deal with a variety of broad-reaching operational inefficiencies—a consequence of having many systems that can't communicate with each other.

The need to extract data from multiple systems can create significant issues in submitting quality data to regulatory and quality organizations. In addition, patient throughput is slowed if clinicians have to wait for records to be retrieved from different systems. Even standard reports are often complex and time-consuming to generate. Ultimately, the time and resources spent repeatedly checking multiple systems for records and reconciling data between different systems doesn't contribute to quality of care.

Amalga allows users to seamlessly combine data currently scattered across the enterprise into a simple, single user interface for viewing and analysis. Quality measures can be tracked in real time, and critical hand-offs between clinicians and other caregivers can occur more easily.

How Amalga Works

The data structure and information flow within Microsoft Amalga, the Unified Intelligence System, were specifically designed to get the most value from constantly changing data.

Amalga works with an institution's existing systems by making a copy of the data from those systems and saving it to its own store. Once configured, Amalga provides to clinicians and hospital administrators customized, flexible, unified views and reports, enabling more informed and rapid analysis. The system provides quick access to all available data—text, charts, images, video, transactional data—to anyone with an appropriate need to view.

Data Acquisition

Amalga can bring together all the data stored within the organization, whether it is structured or unstructured, very rapidly and with little or no impact on the existing systems. Data streams enter Amalga through the **Interface Subsystem**. Data can be captured in any format, standard—such as HL7 Version 2.x or DICOM—or otherwise. Data can be received (i.e. from interface engines) or retrieved via external adapters.

Every message received by Amalga is stored in the **Message Queue**. Importantly, Amalga can reparse the messages from the historical archive at any time. By reparsing just certain years, Amalga allows the clock to be rolled back recreating all or portions of the data core as needed.

The **parsers** break messages into individual data elements which are stored in the Data Core. Parsers can call any internal or external application or algorithm to transform incoming data. Data transformation is used for accomplishing such tasks as: creating and storing a master patient identifier; utilizing street addresses to derive a latitude and longitude to be stored in the database for geospatial mapping; creating usable de-identified data fields such as a random name or moving an address just enough to de-identify it but not so much to lose its value for bio-surveillance.

The high level of parallelism in the architecture of the Amalga Data Acquisition Subsystem allows the system to scale by adding additional queues and parsers without compromising the performance of the entire application. Similarly, the different components maintain a high degree of isolation to minimize interdependencies, thus lowering the cost of change.

Storage

Parsers store information in the **Data Core** into a structure that is easy for healthcare IT administrators to interpret, audit, and use.

The **Performance Core** organizes the information in a way that is optimized for speed and to fit any needed use such as clinical research, business intelligence or clinical data repository. This is where Amalga gets its observable speed and flexibility. Because the historical archive stores messages forever, messages can be reparsed at any time to accomplish such things as: extracting additional information from previously received data; restructuring the way information is stored in the Data Core for a different need or application; or to tweak and optimize the speed at which the data can be retrieved from storage. Importantly, any piece of information stored in the Data Core can be assembled to create a table that is exactly formatted to suit the needs of an external application.

Client

Finally, Amalga allows users, depending on their role and access privileges, to view in real-time the data stored in the system through the powerful and intuitive **Client**—from the most high-level view to the details of the machine that acquired a specific CT scan. The powerful Amalga client allows users to interactively explore the information and aggregate it on the fly without requiring assistance from the IT staff. Users can see all of the data in logical cohorts, customized to suit their particular workflow.



Enabling Better Access to Information

The unprecedented access to the Data Core and Performance Core that Amalga offers enables external applications to access tables and views that have been optimized to match required data model and performance characteristics. Optimization of the data structure for external applications is one important way in which Amalga can make available enterprise data for systems owned today and those purchased tomorrow.

Learn more about how Microsoft Amalga can benefit your organization
at: www.microsoft.com/amalga9.