# White Paper
## Integration Engines Improve Interoperability

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Hospitals, physician practices, and other healthcare facilities have rapidly expanded their use of technology to move from a paper-based environment to one that supports the use of electronic health record (EHR) or electronic medical record (EMR) solutions. However, sharing information among healthcare IT systems has traditionally been a challenge. Most facilities use a mix of disconnected technology, including EHR/EMR solutions, lab systems, IP phone systems, nurse calls, patient monitoring, bed tracking, and other solutions.

This creates an environment in which data is inconsistent across systems because of the reliance on manual communication and documentation, along with duplicate (or even triplicate) data entry, to keep these solutions synchronized.

There has been a steady movement towards a more integrated and interoperable core clinical communications system, along with ancillary systems, to facilitate the exchange of data

between, for example, two different EMR systems at different hospitals. Providers require semantic interoperability among solutions to exchange and use this electronic data to truly improve electronic communication.

Disparate systems can be linked using an integration engine so that a change in an EMR or laboratory system automatically generates updates to other systems and sends alerts via phone, paging, nurse call solutions, or even medical devices.

This level of real-time, synchronized communication is critical. According to an ongoing, event-related data report by The Joint Commission, poor communication is a major cause of sentinel (severe adverse) events in hospitals.

These events can range from medication errors to wrong-site surgery, falls, and post-operative complications. According to the report, poor communication is consistently ranked among the top three causes of such events, resulting in hundreds of otherwise avoidable medical errors.

An emerging class of messaging integration engines could eliminate these communication delays and errors while reducing reliance on manual data entry and paper-based processes.

## Integration Engines Bridge Clinical Communication and Collaboration Gaps

In most provider facilities, alerts and notifications are generated in a very disjointed manner. Patients trying to reach a nurse can use the nurse call system, but contacting a particular nurse may require overhead paging, texting, or an IP phone solution. Lab results may be automatically routed to a patient's electronic chart, but any alerts or notifications associated with completing those tests are handled through other disconnected systems.

Making these cross-system interactions happen has traditionally required the development of custom interfaces (a time-consuming and expensive undertaking) or manual entry of the same data into multiple systems. Today, integration engines give healthcare providers a way to access the range of technology solutions they use for clinical communication and collaboration (CC&C) so that they can exploit their full potential. This can improve patient outcomes, reduce costs, and boost efficiency.

A communications integration engine solution incorporates personnel directories and on-call schedules with clinical software, nurse call and alert solutions, third-party devices (such as IP phones and pagers), and other applications to automate the handling and dispatching of messages and alerts. These solutions appear as one integrated system to the average end user, but behind the scenes, they handle the messy work of merging multiple systems into a single touchpoint.

These systems, leveraging standardized communication protocols like HL7, eliminate the chaos of moving information between systems. This ensures that the right message gets to the right staff member and that all notifications, alerts, and other data transfers are auditable and documented in the electronic medical record.

Integration engines act as the "glue" that holds these many IT systems together. They translate various inputs (voice calls, pages, record updates, alerts, etc.) so that other solutions can interpret the data and react accordingly.

For example, bed tracking solutions are typically not directly integrated with the messaging systems that alert staff when a room is available. Using an integration engine, once a bed is cleaned, the bed management system (based on customized alerting protocols) can automatically message the correct personnel to inform them that a room is available. An e-mail or text message can be automatically sent to designated staff based on rules established by the facility on any platform.

In the case of a nurse call system, when a patient calls for a nurse, the notification not only goes to the nurse's station but is also forwarded to a specific nurse who may be in another patient's room or elsewhere in the building. That way, those patient requests don't depend on the nurse being physically present at the station to receive them. The nurse call solution still handles the escalations, but a messaging integration engine ensures that the correct staff members receive those notifications promptly via the fastest delivery mechanism.

## Efficient, Secure Clinical Communications

With the right integration engine as a bridge between software solutions and communication devices, hospitals can automate alerts and notifications, improving caregiver response times. An integration engine that interfaces with the on-call schedule to reach the correct staff members can ensure that the right person receives the right message promptly.

Integrating IP phones, pagers, and mobile devices can reduce overhead paging, providing a quieter environment for patients while more accurately directing patient requests and physician notifications.

More accurate and timely notifications can, in turn, reduce nurse travel time by eliminating

unnecessary trips back to the nursing station. By providing a platform for real-time notifications and improving efficiency, staff will have more time to spend with each patient.

Lab and test result notifications can be sent directly to physicians. This can eliminate the "phone tag" that staff often use when trying to reach a busy doctor while providing automatic updates to electronic patient charts and records. With a secure connection among solutions, this type of integration engine product can meet the secure messaging requirements of the Health Insurance Portability and Accountability Act (HIPAA) while providing the fully auditable documentation required for accreditation programs such as those offered by the Joint Commission. Each message can be date and time-stamped, and the system can confirm that the message has been delivered, viewed, and accepted.

## Hospitals Integrate Communications

One such integration engine solution that has already been successfully deployed by several hospitals is MergeComm from Amtelco. MergeComm is an event notification software system that can merge and expedite enterprise-wide communications in healthcare environments.

MergeComm helps streamline communication within a hospital to improve patient satisfaction. For example, MergeComm interfaces with the GetWellNetwork interactive patient care software. A question about the patient's pain level appears on the patient's TV via the GetWellNetwork, and when they answer, a page or message is sent to a nurse's pager or smart device. If the patient doesn't respond, the nurse receives notice that there was no reply.

MergeComm assists other processes within a hospital setting, such as reminding staff to prepare patients' meals, notifying environmental services workers about patient discharges to enable faster response times for cleaning rooms, or notifying care teams when needed after hours. The solution can also create an audit trail of these notifications, generating messaging statistics that can help improve communication processes and document response times.

Advanced integration engines that provide this type of notification management can help hospitals

reduce the occurrence of adverse events, reduce costs, improve care, and improve efficiency. As more healthcare providers rely on electronic health records and mobile communication technologies, there is increased impetus to link these systems in meaningful ways to improve patient outcomes and operational performance. Providing real-time messages and alerts from the full suite of healthcare solutions not only improves visibility for doctors, nurses, and other staff but can also streamline activities from bed management to medication administration, improve accuracy, and speed response times.