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HOW SMART DEVICES AND MIDDLEWARE INTEGRATION ARE REVOLUTIONIZING HEALTHCARE

BYOD & Healthcare

Since the release of Apple's first iPhone in 2007, consumer smartphone adoption has been a driving force in overall acceptance of smart devices in vertical markets like healthcare. As individuals bring their personal smartphone to work, it's increasing clear these smart devices are being used for work-related tasks. A Cisco Partner survey conducted in March 2013 shows convincingly that when healthcare workers were asked ''Do you use your smartphone for work purposes?'', 88.6% of respondents said yes.[1]

Bring Your Own Device (BYOD) to work is not a new concept. It actually took root back in the early 90s when Palm became successful with the Personal Digital Assistant (PDA). Remember the Palm Pilot? PDAs were utilized to sync contacts, calendar and email — typically without the blessing of IT.

As healthcare IT departments struggle with BYOD and how to control and manage personal devices, one thing is clear — these devices are not going away. If anything, BYOD will most certainly grow in the future. According to a recent IDC forecast for global smartphone shipments, ''2013 will mark the first year that smartphone shipments surpass those of feature phones, with smartphones expected to account for 52.2% of all mobile phone shipments worldwide.''[2]

The reality is that smart devices fill a void for mobile healthcare staff. Whether it's accessing the internet, communicating with team members, or utilizing a healthcare app, hospital staff members find it easier to get their job done with a smart device. In many different phases of healthcare, smart device use is being integrated with patient care. Mobile device strategy is critical because smart devices will play an ever increasing role in patient care.

Middleware Connects the Dots

Healthcare staff needs cannot be completely addressed with smart devices alone. Interactive solutions with real workflow changes must be incorporated to achieve both improved patient care and greater efficiency. Many middleware providers, including Ascom, provide smart device apps with integrated solutions. These solutions typically offer integration to systems like nurse call, patient monitoring, laboratory, service logistics and critical alarm handling, while also addressing the mission-critical elements of patient care. These mission-critical elements include staff assignment, alert

Surveys show that healthcare clinicians use their personal devices for work related purposes like accessing drug reference apps.[1]

message handling, message filtering, image presentation and message escalation. Middleware elements, like staff assignment, are critical because they connect patients to staff members ensuring receipt of alert messages. Likewise automatic message escalation helps reduce response time and the risk of human error.

Healthcare Is A Team Sport

Whether it's a personal or a hospital-provided smart device, staff members need a cohesive and comprehensive communications solution. Healthcare is a team sport requiring multiple, skilled resources to effectively administer patient care. Many tasks healthcare staff perform are particularly time sensitive. This specialized team environment necessitates highly interactive solutions.

Ascom provides an interactive, smart device application called Unite Axess, which focuses exclusively on hospitals and supports iOS and Android smart devices. This app is designed to take advantage of Ascom's middleware product, Unite Messaging Suite, which supports integration to various healthcare systems like nurse call and patient monitoring. The Unite Axess app delivers mission-critical messaging to clinicians, freeing them from being tied down to a laptop or patient room to be notified of relevant alerts and alarms.

Critical Elements Of Mission-critical Communications

Nurses, doctors and support staff deliver patient care to the point of need… at the bedside. Along with this mobile work environment comes the challenge of providing information quickly to ensure quality of care and efficient interaction with team members. Hospitals must address mission-critical concerns in their communication strategy and solution selection. Mission-critical communication solutions should address the following elements:

- Staying connected to and coordinated with other team members.
- Accessing patient health information on-the-go.
- Responding to alarms and critical patient events in real time.
- Filtering alarm messages to reduce alarm fatigue.
- Establishing escalation chain to guarantee appropriate response to patient events.
- Efficiently managing patient care while balancing priorities.

Staying Connected With Team Members

Being connected and staying connected with team members is incredibly important. Physically searching for individuals is particularly inefficient. Whether you need a quick question answered or are attempting to locate a piece of equipment, this takes away time that could be spent with patients. The Unite Axess for Smart Devices app makes it simple to stay connected with other team members by providing a ''chat'' feature. ''Chat'' is a messaging feature similar to short message service (SMS). It allows you to simply select one or more team members and send them a short message. ''Chat'' is less disruptive too and lets you connect while you continue your current task. It's a great way to take advantage of carrying a smart device and increase efficiency.

A waveform snapshot of the patient event helps prioritize a response on the spot.

Smart Devices Combine Ease of Use with Information Access

Smart devices improve connectivity and coordination between team members helping clinicians respond faster to critical patient events. Sometimes additional information can be provided with an alert message to quickly assess the appropriate response required. As an example, Ascom Unite can provide a waveform image with a patient monitor alert message. The ability to quickly review a waveform enhances the clinician's decision on how and when to respond — whether to respond immediately or continue with their current task. For clinicians who are constantly on-the-go, specific information such as a waveform image can have a significant impact on patient care, patient safety and overall efficiency. Smart devices provide an important delivery mechanism for combining alert messaging with image presentation resulting in positive impact on workflow.

In a December 2012 HIMSS survey, clinicians were asked to rate the "impact of mobile technology on patient care". Fifty-two percent of survey respondents said mobile technology made a "substantial impact", while an additional sixteen percent said it had a "dramatic impact" on patient care.[3] Smart device adoption in Healthcare many times boils down to efficiency or ease of use.

Alarm Filtering Through Smart Integration

Unite Messaging Suite delivers two-way, interactive messaging to smart devices for patient alarms with automatic escalation based on specific patient events and a pre-defined escalation chain. Unite provides secondary alarm notification with primary notification being the patient monitor system. Unite can also provide critical patient information along with an alert message to help clinicians speed up decision-making and prioritization. Staying connected to a patient even when you are not in their room is easily accomplished with a smart device and Ascom middleware integration.

Sending an alert message, however, is only a small part of delivering mission-critical information. Middleware must not only receive alerts and alarm information, but it must also be able to filter these alarms to assure the right information gets to the right person at the right time and place. Alarm fatigue, associated with patient monitoring, has been widely publicized the past few years as a leading patient safety concern. In April 2013 the US Joint Commission issued a paper which stated that alarm fatigue was the "the most common contributing factor" in alarm-related sentinel events.[4] Filtering patient monitor alert messages via middleware helps reduce alarm fatigue so clinicians do not become desensitized to patient alarms.

Another value of middleware integration with patient monitoring is how middleware processes alarm information utilizing smart integration. One example of smart integration is the use of configurable filtering rules. If multiple alarms are being generated by a single event, filtering rules can combine these alarms into a single alert message, resulting in less messages
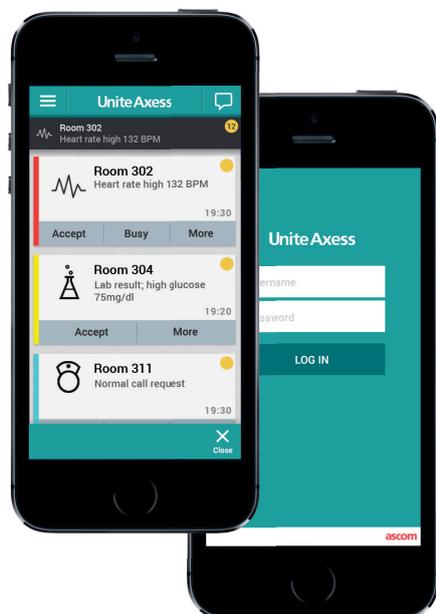
Middleware must be able to help filter and prioritize alert messages.

being sent to a clinician's device.

Another example of patient monitoring alarm filtering can be illustrated with a "leads off" alarm. Sometimes patient movement can temporarily displace a lead causing an alarm to be generated. Filtering these alarms with a time delay filter, can significantly reduce these low-level alerts. For example if the "leads off" problem corrects itself within sixty seconds no "leads off" alert message is sent. Alert message filtering and management are vital components in reducing alarm fatigue.

Automatic Alert Message Escalation Advances Patient Safety

Patient safety is a top priority for hospitals. Unite supports patient safety by automatically escalating an alert message if no message response is received (e.g. message timeout), or if a clinician responds "Busy" to a message. Automatic alert message escalation to pre-defined back-ups lessens confusion and speeds up response time to patients. Individual alert message types can be sent to one person or an entire group. Automatic escalation helps ensure critical patient alarms are not ignored. This invariably contributes to a safer patient environment. Unite can even notify the original alert message recipient when a back-up "Accepts" the alert message giving them peace of mind. Alert message escalation has another benefit…efficiency. When clinicians have the ability to keep working on their current task without interruption it allows them to be more efficient and productive for their patients.

Device Security and Privacy Issues

If there is a common thread to criticism for smart device use in Healthcare, it is without doubt concern over patient privacy and information security. Protecting sensitive patient information on a smart device is critical to adoption. How do we do that? Easy…you require login credentials with user IDs and passwords, authenticate all users, and encrypt all messages end-to-end. The Unite Axess app provides all of these protections.

You should also deploy mobile device management (MDM) software as an added protection for lost devices so that these devices can be remotely wiped of all secure data. MDM is security software utilized by an IT department to monitor, manage and secure employee's mobile devices, which may be deployed across multiple service providers and multiple mobile operating systems. MDM software is often combined with additional security measures to create a more secure environment to protect sensitive company data stored on mobile devices. MDM solutions typically support both iOS and Android smart devices and offer an efficient way to view and manage all devices from a central point of administration. MDM solutions allow you to define enterprise settings, policies and restrictions for devices without requiring user interaction. These policies often include passcode/PIN enforcement, user restrictions, WiFi, VPN, email, applications and more.

Smart Devices Deliver

A smart device equipped with the Ascom Unite Axess app can offer health-

Care providers can easily respond to alert messages by touching the convenient response keys at the bottom of each message.

care staff a secure and efficient tool to deliver improved patient care and enhance workflow. Combined with an advanced middleware solution, like the Ascom Unite Messaging Suite, this application can solve many of the mission-critical communication issues in healthcare today. From single staff assignment to alarm message delivery to automatic alarm escalation, Unite Axess can unify all your communication needs on a single device.

References

1. Cisco Partner Study (PDF), BYOD Insights 2013: A Cisco Partner Network Study, March 2013.

2. Press Release (web), International Data Corporation (IDC), June 4, 2013, Worldwide Quarterly Mobile Phone Tracker. Accessed July 23, 2013 at http://www.idc.com/getdoc.jsp?containerId=prUS24143513.

3. 2nd Annual HIMSS Mobile Technology Survey (PDF), December 3, 2013. Available for download at http://www.himssanalytics.org/research/AssetDetail.aspx?pubid=81559&tid=131.

4. US Joint Commission, Sentinel Event Alert, Issue 50, April 8, 2013. Available at http://www.jointcommission.org/sea_issue_50/, accessed August 29th, 2013.