Case Study
Intel® Atom™ Processor
Consumerization of IT
Client Productivity
Healthcare

Working smart: a mobile workforce with Intel® technology-based smartphones

Top-class teaching hospital Hadassah Ein Kerem uses Intel® Atom™ processor-powered mobile devices to achieve efficient workflows

Israeli teaching hospital Hadassah Ein Kerem is the largest hospital in Jerusalem. It has 1,000 beds, 31 operating theaters and nine intensive care units and employs over 5,000 healthcare professionals. Maintaining efficient and valuable communication is often a challenge for such a large organization, so Hadassah ran a small pilot to trial supporting hospital orderlies with mobile devices. The hospital deployed smartphones, powered by Intel® Atom™ processors, to enable quick, simple, on-the-go communication between orderlies and management staff.

Challenges

- **Employee support.** The hospital needs orderlies to transport equipment and patients between wards. It wanted to improve the information flow that staff members rely on to boost productivity.
- **Effective communication.** Hadassah relied on a paper-based system for recording the calls, so it needed better communications tools to improve workforce efficiency and reduce time spent relaying and clarifying messages.
- **Quality care.** Facing increasing patient numbers, Hadassah wanted to eradicate errors with patient handling, since it was not uncommon for wards to encounter four to five mistakes a day.

Solutions

- **Mobile devices.** Hadassah ran a small pilot to trial supporting hospital orderlies with smartphones in the workplace, deploying two Intel®-based smartphones in the team.
- **Mobile processors.** The smartphones run Android* and are equipped with second-generation Intel Atom processors.
- **IT consumerization.** To optimize the potential of these mobile devices, Intel and Hadassah jointly created a custom mobile application, the Transport App*, for quick and easy messaging between orderlies and management.

Impact

- **Workforce productivity.** The mobile app has revolutionized how Hadassah orderlies work, improving staff communication, dramatically reducing errors and enabling more independent and efficient workflows.
- **Battery life.** The extended battery life of the devices means multiple users can use them across shifts, minimizing time wasted charging.
- **Secure mobile.** The mobile devices are password protected, with each user having an individual login, so patient data is protected with built-in mobile data security.

"The impact we've felt from introducing Intel® technology-based smartphones in the workplace is huge. The long battery life is perfect as our tests have shown it lasts for multiple shifts. The custom app is really user friendly and improves team communication. We can manage our own workflows using Intel technology."

Eli Aminov,
Hospital Orderly,
Hadassah Ein Kerem

Life as an orderly

Being a hospital orderly is hectic. Processing job requirements and patient details quickly and correctly is crucial. "We transport patients, and occasionally materials and equipment, between wards. Knowing which patient we are taking, where to pick them up, where we are going, and any extra details, such as whether a patient needs a drip or is in a wheelchair, is important so we can be prepared, deal sensitively with patients, and do our job properly," said Eli Aminov, an orderly at Hadassah.

In the past, the dispatch center called orderlies with landline phones or hospital-owned mobile phones, and passed on all ticket details verbally. Then it was up to the orderlies to either remember the message or write down the information in their own notepads. Unsurprisingly, these methods were open to human error. When orderlies forgot a ticket detail or wrote the message down incorrectly, they needed to call the dispatch center again to clarify the ticket, which wasted time.

The hospital had tried other solutions to improve upon this system, but they were too complex and therefore unsuccessful. "We tried to use a beeper system, but there were too many technical issues. So we quickly dropped the idea. We would get the calls in a text message to our beeper, but still had to call a phone voice center to close the ticket. There were many problems with this form of communication, since we often lost the signal, which created delays with the messages and prevented efficient work. This system also didn't give us any extra vital information, like whether a patient had an infection. It was clear that it wasn't going to work," said Aminov.

Hospitals can improve workflows using mobile technology with Intel technology-based smartphones

Drive for efficiency

As the number of patients continued to rise and more buildings were being added to the campus, it became clear that the Hadassah Medical Center needed a better communications system to support its hospital orderlies and improve its workforce efficiency, quality of care and overall standard of safety. Transporting patients and equipment between wards in the new and the old buildings meant that orderlies had to make longer journeys, increasing both turnaround time and the need for a more efficient journey-planning system. "From the moment an orderly takes a call to the moment they've done the job, the process needs to be as efficient as possible," said Mira Mizrahi, orderly center manager at Hadassah.

The main aim at Hadassah is to always improve patient care and focus on ways to improve working behaviors to benefit patients. So Hadassah called on its strong relationship with Intel to solve this organizational problem, since this was a perfect opportunity to use Intel's robust mobile technology to achieve more effective workflows.

Smartphone deployment

Hadassah set up a proof of concept, piloting two smartphones, powered by Intel Atom processors, for fast-running devices with long battery life. The phones run Android OS and receive information through a mobile network to avoid connectivity problems between buildings or in elevators. Each user has an individual password to protect sensitive patient data. The devices are charged and stored in the hospital for extra security.

Intel and Hadassah IT also worked to jointly develop a specifically designed custom Transport App, which lists ticket details so that each orderly can log in and see his own scheduled jobs. This is much more efficient than the previous system, where a job request would go to a dispatcher, who would then decide which orderly should go and connect with them by phone. The dispatcher can now upload requests into each orderly's personal app so the orderly receives an alert on their Intel-based smartphone and can accept the job ticket in the app.

Users found the app interface easy to use and liked the smartphone's quick-resume function, which meant they could dip in and out of the app very quickly between jobs to close tickets or check details. "A significant benefit of the Intel® technology is the extended battery life," said Mizrahi. "Our orderlies work eight-hour shifts. These smartphones can last for a couple of shifts between charges, which is fantastic."

This new process also saves time and enables more accurate communication, which positively impacts the patient experience. "Employees can now manage themselves. They are not dependent on the regular office phones and have the freedom to provide feedback about individual jobs," added Mizrahi. "The app is very user-friendly and has improved our daily work. We can now add comments to jobs if needed, so if the patient isn't ready for transport or is still in the middle of treatment, we can note that and let management know why there will be delays. It is also a great management tool, since the dispatcher can block out our availability when we have training, meetings or breaks, which reduces job error due to a ticket being allocated to a staff member who is not available," said Aminov.

Better patient care

"Since piloting the Intel-powered devices, our productivity has improved, since fewer calls are made and the turnaround time between calls has diminished greatly," said Mizrahi. "I can now manage the increase in calls and distances without adding headcount. It is an amazing system and saves a lot of time."

A large part of the improvement due to the amount of job information the app carries. On opening the custom app, the user immediately has all the details of their next job, including the ID number of the patient, so it is easier to avoid mistakes. "With this new system, we can see all patient information, which is invaluable. We used to have to wait up to 10 minutes to get information about where the patient was from the nurse, but now it is immediate. The smartphone app provides important details like if the patient has a ventilator, oxygen balloon, or special needs. All tickets are color coded based on patient information. For example, a ventilated patient is shown in red and a patient with an infection in blue," said Aminov.

Feedback from the nurses in the wards has also been very positive, since they are impressed with the knowledge and timeliness of the orderlies. It has cut not only the risk of human error, but also handling time, since turnaround between jobs is so fast. The management tool means the jobs can be allocated as efficiently as possible.

Lessons Learned

Given the success of the trial of two mobile devices powered by Intel® technology, Hadassah is rolling out 25 smartphones, powered by Intel® Atom™ processors, across the orderly team. The technology greatly improves the quality of customer care and saves time, both in the team and for colleagues and patients, since it minimizes errors. This efficiency boost is the tip of the iceberg when it comes to integrating technology into hospital workflows.

Integrating technology into work-flows

Moving forward, the hospital is rolling out 25 Intel-based smartphones to capitalize on the success of the pilot. "We are interested in seeing how this method could benefit other teams. For example, it could work for the doctor who needs to manage requests for consulting or treatment in various wards, clinics, and buildings all over the campus, or in A&E to quickly communicate emergency situations in code blue or red. This is a great example of how hospitals can integrate technology into everyday work life, and how new technologies – especially mobile – can move workflows and employee behavior forward," said Mizrahi.

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