

An insider's look with  
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## Creating the smart building.

Silicon Valley's new El Camino Hospital aggregates technologies through ubiquitous wireless to transform patient care capabilities.

### **?** We hear the term more frequently these days, but what constitutes the "smart hospital" in your mind?

We wanted the hospital building to be "technology-aware." We really don't have any technology here that you can't find somewhere else in the world, but we certainly have a great number of technologies and we've done some unique things by aggregating the systems. We have configured technologies in new ways. We have aggregated technology so that everything is tied to our network. Our entire building exists on automation.

### **?** You describe it as a facility that "knows" patients very well. What do you mean by that?

At El Camino, when a patient registers, he/she puts a hand on a device, which then takes ultrasound images of his/her vein pattern. Patients realize that we're utilizing biometrics to know them well and appreciate the fact that we can utilize technology to be more efficient and help reduce incidents like identity theft.

Another example is that our 167 wireless robotic medication-administration units throughout the hospital "know" which patients get which drugs or supplies - as well as which caregiver issued the drugs since administration also requires a biometric sign-on. Generally, the hospital is smart because technology enables us to know the location of all drugs/supplies, whether they're stored in the transportation robots, the dispensing units or in the patient's room.

Whether you are a patient or a caregiver, the smart hospital "knows" you very well.

### Test your smart building IQ:

- Network supports wireless communications to several thousand mobile devices including medical devices.
- Ubiquitous wireless enables full medical-grade support for Wi-Fi, WMTS, cellular, and 2-way radio signals.
- Delivering a full spectrum of wireless signals and applications.
- Medical-grade telemetry enables staff to monitor patients everywhere within the hospital, including bathrooms, the cafeteria, patient rooms, hallways and the OR.

### **?** What were the essential elements to making the smart hospital a reality?

Our network was one of the most advanced that state inspectors had seen to date. It connects everything using a combination of wired and wireless technologies, including full Voice over Internet Protocol. Clusters of servers run the building: environmental systems for air conditioning and heat; elevators; security; fire detection; and systems that manage video and lighting. Even the plumbing system is networked.

In addition, we installed a distributed antenna system from Black Box Network Services (BBNS) to give us wireless coverage in every location

within the building, including delivering full medical-grade support for Cisco Wi-Fi, Philips WMTS, At&t cellular, and 2-way radios. We established high signal penetration with thorough RF engineered coverage patterns with the ability to locate RFID tags within a square meter or less.

### **?** How has the smart hospital impacted caregivers?

Part of our new care model yielded computers in each room. The concept is to have nurses spend more time at the patient's bedside, instead of running back and forth between the nurses' station. It's changing the way nurses are practicing, and they're excited about the new model.

Today, our entire staff uses a personal communication system from Vocera. It is installed and integrated with the beds, our electronic bed-board, nurse-staffing and nurse-call systems. If someone from outside, such as a physician, wants to speak to a nurse caring for a specific patient, he or she can say the patient's name, and the nurse will receive the call, wherever the nurse is in the building. This communication system also works well for the patient who can speak to his/her nurse or hospitalist regardless of their physical location.

El Camino Hospital has served the South San Francisco Bay Area for more than 50 years. By incorporating the latest, proven medical technology, it has been named one of "Most Wired" hospitals in the country for five years in a row. In 2009, it opened the state-of-the-art Mountain View hospital.

Black Box (NASDAQ: BBOX) is leading communications systems integrator dedicated to designing, sourcing, implementing and maintaining today's complex communications solutions. Black Box services more than 175,000 clients in approximately 150 countries with approximately 200 offices throughout the world.