

Improving healthcare with the Internet of Things (IoT)

Saensuk in Thailand makes head way toward a 50% improvement in care services for elderly residents with a wearable IoT-enabled monitoring system



Healthcare

Thailand

Business needs

With a growing population of elderly residents, the municipality of Saensuk needed to find a way to meet the healthcare needs of this demographic while keeping control on spending.

Solutions at a glance

- [Internet of Things](#)
- [OEM Solutions](#)
- [Modular Infrastructure](#)
- [Storage](#)
- [Cloud Client-Computing](#)

Business results

- 50% improvement in care service response times for elderly residents
- 100% reliability from robust IoT platform
- 90% of elderly users are highly satisfied with IoT solution
- Lowers ratio of nurses to residents, helping reduce homecare costs
- 14% of Saensuk residents are over 80 and could benefit from technology
- Almost zero training required, with elderly proficient in minutes

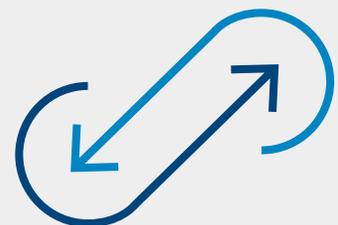
100%

reliability from IoT platform



50%

improvement in response times



Among the world populations, countries in the Asia Pacific region are aging the fastest. According to the Asia Pacific Risk Center, 200 million of the region's citizens will officially be elderly by the year 2030, leading to greater pressure on healthcare services. For regional governments, the resulting challenges are immense, and many are turning to technology for an answer.

A mounting challenge

In Thailand, the municipality of Saensuk has developed an Internet of Things (IoT) solution to meet the difficulties of an aging population. The yearly cost of providing care for the elderly demographic has already hit 5 billion THB (US\$143 million) and is set to grow. Part of the increase is from the number of nursing homes needed to shelter the growing number of elderly people. Saensuk wanted to make it possible for this demographic to stay at home longer, reducing the pressure on sheltered accommodations. What's more, it also wanted to increase the efficiency of its nursing homes to make the service more sustainable.

Home-based care is the goal

The authority launched the Saensuk Smart City project to develop a monitoring solution for use in homes and sheltered accommodation. The goal was to provide elderly people still living at home and in nursing homes with wearable devices that could raise an alarm if the wearer fell. The authority turned to the Burapha University, one of Thailand's major public universities, to support the initiative and deliver a proof of concept (POC). Here, Associate Professor Wiroon Sriborriurux of the university's engineering faculty began developing an IoT-enabled solution. With funds from the NIA and TRF, he collaborated with a local start-up company called BAESLab, which had developed a small wearable device to detect if the wearer falls.

Practical IoT solution wins out

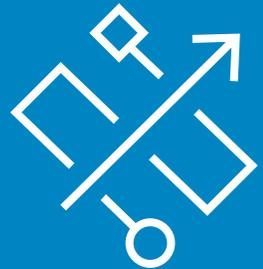
Prof. Wiroon looked for a highly reliable and cost-effective IoT infrastructure to support the wearable devices. "We tested a number of vendor solutions but only Dell and Intel® provided the performance required," he says. Moreover,

Prof. Wiroon liked the Dell strategy of being part of an IoT ecosystem, linking up with companies such as Intel and software developers worldwide. He says, "We valued the emphasis that Dell places on practical IoT solutions and overall solution stability."

"My estimate is that we can improve the responsiveness of our care services for the elderly by at least 50 percent using Smart City technology from Dell."

Wiroon Sriborriurux, Associate Professor,
Engineering Faculty, Burapha University

90%
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“We’ve had great feedback from residents, with 90 percent saying how very satisfied they are with the IoT solution supported by Dell and Intel.”

Wiroon Sriborriux, Associate Professor,
Engineering Faculty, Burapha University

A flexible, easy-to-scale solution

Prof. Wiroon, working with BAESLab, built the IoT infrastructure based on the following Dell solutions:

- Dell Wyse 3030 iSeries with Intel processors, for use inside people’s homes, operating as an IoT gateway device and broadband internet router.
- Dell Edge Gateway 5000 with Intel processors, for use in nursing homes for wider coverage, operating as an IoT gateway device and broadband internet router.
- Dell PowerEdge VRTX Modular Infrastructure Platform, featuring servers and storage modules, for processing data from the gateways and forwarding alerts through a local telecom provider to relatives and emergency services.

The solution includes a Dell Gateway in the home or nursing residence collecting the alerts and data in the event of an incident. If a person with the wearable device falls, the device communicates the fall to the Dell IoT gateway via Bluetooth. The gateway then sends the message to the back-end management system running on the Dell PowerEdge VRTX platform, which in turn sends out a notification message to relatives’ mobile phones and the emergency services via the local telecom provider. The Dell VRTX platform further collects the data to grasp a clear understanding of the number of incidents, responses, time to respond, and many other aspects related to improving the elderly community’s well-being.

Care services for elderly residents improved by 50 percent

As part of the POC, a number of elderly residents had the devices installed in their homes. In addition, the solution was deployed at a Saensuk nursing home. The POC was a complete success and the Dell technology proved to be 100 percent reliable. Says Prof. Wiroon, “We are very pleased with the outcome of the POC. My estimate is that we can improve the responsiveness of our care services for the



elderly by at least 50 percent using Smart City technology from Dell. I expect Dell and its entire IoT ecosystem to play an important role in delivering the improvements.”

Elderly users report high rates of satisfaction with IoT technology

Feedback from users and their families has been excellent. It is clear the solution will allow many elderly people to go on living at home. What is more, for participants in the nursing home, the solution enables them to go about their lives safe in the knowledge a member of staff will know immediately if they are in difficulty. Prof. Wiroon comments, “We’ve had great feedback from residents, with 90 percent saying how very satisfied they are with the IoT solution supported by Dell and Intel.”

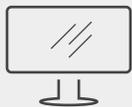
Almost zero training required, with elderly proficient in minutes

Satisfaction rates were enhanced by the simplicity of the solution. Prof. Wiroon says, “Bearing in mind that many

end users have little experience with technology, it takes no more than 15 to 20 minutes for them to be trained up in using the IoT solution. Working with Dell, we’ve designed a solution that is perfectly in tune with its audience.”

Offers significant healthcare cost savings moving forward

Looking to the future, Prof. Wiroon is aiming for the health monitoring solution to be rolled out to more residents and nursing homes across Saensuk and throughout Thailand. In the case of nursing homes, fewer nurses will be needed to oversee residents because the wearable devices will automatically raise an alarm if a resident falls. In addition, other health-related data will be captured in the future as the solution expands to provide greater health data collection, further improving the care the elderly receive. With this solution, the authority will be able to reduce the ratio of one nurse per 20 residents to one nurse per 50 or even 100 residents, further reducing the costs associated with elderly care. Prof. Wiroon adds: “Population aging is one of the world’s biggest healthcare challenges, and we’re helping to overcome that challenge using Dell IoT technology.”



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