

“With the Sensing Clinic program, we can monitor our patients 24/7, intervene sooner and use our bed capacity and personnel better. That is good news for the patients and for the hospital.”

Chrit van Ewijk  
CEO  
Slingeland Hospital



Fujitsu provides a Smart Sensing solution through which patients' statuses can be monitored 24/7, ensuring healthcare professionals make informed decisions.

#### At a glance

Country: Netherlands  
Industry: Healthcare  
Founded: 1975  
Employees: 1,600  
Website: [slingeland.nl](https://www.slingeland.nl)

#### Challenge

Slingeland Hospital wanted to understand how best to adopt sensing technology to support its medical staff with real-time information on a patient's vital signs. The technology should provide medical staff with information about a patient's performance, ensuring informed medical decisions and a higher quality of care.

#### Solution

In the Sensing Clinic program, Fujitsu and Slingeland Hospital co-created an innovative sensor technology to capture patients' statuses 24/7, allowing nurses to remotely monitor conditions, reducing the need for bedside visits, allowing patients' treatment to be tailored to their needs, and thus improving the patient experience.

#### Benefits

- Continuous monitoring of patients' vital signs and real-time availability of patients' statuses on mobile devices
- Improved staff satisfaction by reducing manual measurement, allowing more time to spend on patient care
- Enables healthcare professionals to make informed decisions on treatment
- Early detection of deterioration ensures better quality of care

## Customer

Slingeland Hospital is located in Doetinchem, the Netherlands, and was founded in 1975 as a result of the merger between Wilhelmina Hospital and St. Joseph Hospital. It is a medium sized general hospital with 350 beds and 1,600 staff. A further merger with SKB Winterswijk Hospital is taking place from 2017. Slingeland Hospital is planning to build a new hospital in Doetinchem over the next three years.

## Products and services

- Fujitsu Business Application Services – IoT and Smart Sensing
- Fujitsu Cloud Services
- Fujitsu Network Services
- Fujitsu Security Services
- Fujitsu Consultancy Services
- Fujitsu Services Delivery Management

## Challenge

In 2016 a new 'Sensing Clinic' study started at Slingeland Hospital, based in Doetinchem, the Netherlands. "When it comes to innovation, we discovered that we often notice too late that the patient's condition is worsening so we are looking for providers who can offer something extra in that domain," explains Chrit van Ewijk, CEO, Slingeland Hospital. The hospital wanted to understand how best to adopt sensing technology to support its medical staff with real-time information on patients' vital signs. The technology should provide medical staff with information about patients' performance, supporting informed medical decisions and targeting a higher quality of care.

The Sensing Clinic study is the first trial of research outcomes from Fujitsu's healthcare research project KIDUKU, a three-year collaboration between Fujitsu Laboratories and Fujitsu Ireland to understand how best to integrate sensing solutions into clinical and community based settings.

"As a hospital, we don't have specific knowledge on sensors, but Fujitsu has. We set up the requirements and Fujitsu provided us with the resources to measure what we need," says Van Ewijk.

## Solution

Starting in September 2016, phase 1 of the Sensing Clinic deployed innovative sensor technology, co-created between Slingeland Hospital and Fujitsu. The sensors capture patient performance, allowing nurses to remotely monitor conditions and reducing the need for bedside visits, thus improving the patient experience. This phase ran until April 2017 with plans to make the sensors and patches available to further departments within Slingeland Hospital thereafter. Phase 2 is expected to commence in July 2017 and will focus on monitoring vital signs of further patient groups within other departments, as well as the use of motion sensors to monitor and inform care plans for stroke patients.

"What we are doing, is new. We used to take observations from the patient a number of times a day and, in between, we had to use our clinical judgement. We would make rounds to see how the patient was," says Van Ewijk.

A rich set of sensors now provides medical staff with real-time information on patients' vital signs using a combination of ambient and wearable sensors. Chrit van Ewijk explains how the sensors are easy to put in place: "We stick a plaster, a so-called Health Patch, on the chest. We attach a wireless blood pressure monitor to the patient's arm and we place a sensor under the bed as well.



The patient has more freedom of movement than before. We receive continuous data from patients which is stored anonymously online and can be retrieved immediately. Now we can monitor the patient wherever he is. Thanks to the Smart Sensing technology of Fujitsu, we can now continuously monitor certain parameters to keep an eye on the patient. If they worsen, we can intervene a lot sooner and prevent their condition from getting worse."

To present information back to clinicians Fujitsu collaborates with VitalinQ, a Dutch company which specializes in health and wellbeing solutions. All data collected is fed back to the medical staff through VitalinQ's Lifestyle Guidance application. In the same way, the data collected can be exchanged with Slingeland Hospital's ECD and HIS systems in the near future.

"We don't try to change protocols, but we want to help nursing staff to perform their tasks in the knowledge that they are sometimes understaffed," adds Van Ewijk.

## Benefit

The Sensing Clinic program will be a huge improvement for Slingeland Hospital. Not only will medical staff members be able to continuously monitor patients' vital signs such as ECG, blood pressure, heart and respiratory rates and sleep patterns, but also the program saves time that would otherwise be needed to perform manual measurements. This leaves more time to spend on patient care.

The real-time availability of patients' statuses on mobile devices like smartphones and tablets will make it possible for healthcare professionals to make informed decisions on treatment. Finally, perhaps the most important benefit of the program is the early detection of deterioration, preventing further damage, which translates to a better quality of care.

"We receive a lot more data about the patient much earlier so medical interventions can shift more towards preventing deterioration and towards accelerating and shortening the treatment. Looking at what this program does for our hospital, we will be able to raise nursing staff satisfaction. After all, what they really want is to focus more on their care for patients. Sensor technology enables them to take a step back and focus on the data to make the best decisions for the patients."

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Phone: +31 346 598 111  
marketing@ts.fujitsu.com

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