

Improving Quality, Traceability and Accessibility for Blood Storage

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Blood and blood components are critical for saving lives of patients following surgery, or when treating traumatic injuries and hematological deceases. The supply of blood components is a vital part of modern healthcare.

Blood is a wonderful voluntary gift that can only be obtained from personal donations and every measure should be taken to honor this gift. Blood components must be stored at 2-6°C, at 20-22°C or in a frozen state. Deviation from those requirements will result in reduced shelf life or even discarding of the specific blood unit. By careful monitoring of the storage conditions, the shelf life can be maximized. This allows blood banks to optimize their supplies but first and foremost, this monitoring makes sure that blood for transfusion will meet official standards, and quality.

“Blood components used for transfusion are composed of living blood cells and complex biologically active molecules. Those components require controlled temperature during storage in order to maintain blood quality and to secure patient safety,” says Hans Gullikson, Associate Professor of Transfusion Medicine working at the Karolinska University Hospital in Stockholm, Sweden. “Today the temperature monitoring is inadequate during transport and in particular, during the actual blood transfusion situation in the hospitals. In some cases the temperature deviations are not detected and in other cases the blood components may have been unnecessarily discarded due to lack of information about storage conditions. There is therefore a great need for reliable and continuous temperature surveillance.”

Exposure of blood components to temperature variations may strongly affect the quality and the useful lifetime of blood. Therefore, in October 2011, wireless solution leader connectBlue and medical analysis expert Tridentify AB joined forces to develop a system that could “wake up” when polled and that would carry, track and analyze all the vital blood bag information in real-time. The system is today available for the European market.



Hans Gullikson, Associate Professor of Transfusion Medicine at Karolinska Institutet is an expert on blood components within the field of transfusion medicine.

The Latest Bluetooth Specification Offers new Possibilities for Tracking

The joint solution utilizes the new possibilities with the latest Bluetooth Specification v4.0 which features Bluetooth low energy technology.

Since Bluetooth low energy technology features very efficient discovery and connection set-up as well as low power consumption for small devices requiring long battery life, it is particularly suited for applications like the blood storage scenario.

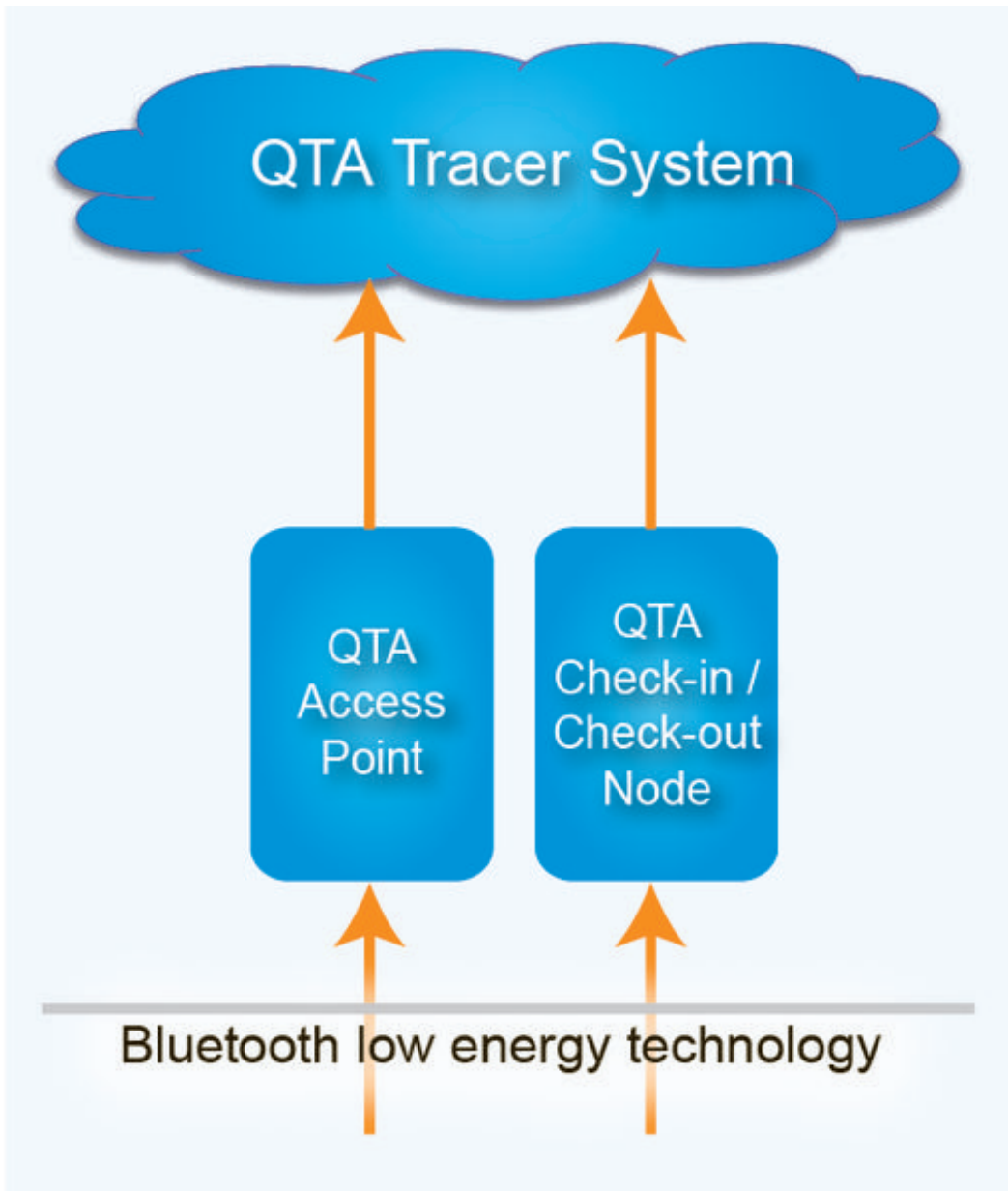
The Fundamentals of the Innovative Solution

With the new concept, one uses a “tracer”; the tracer is a tag-like module delivered by Tridentify and contains a customized version of connectBlue’s Bluetooth low energy platform module OLP425. When the blood storage bag is filled, the tracer is activated and all the temperature changes are recorded in its memory allowing specific algorithms to calculate an exact lifetime expectancy. The PC includes a Bluetooth low energy gateway and collects the data wirelessly from the tracer. Smartphones and other platforms are quickly adopting Bluetooth low energy technology, so additional devices can provide a rich set of connection possibilities.

The connectBlue Bluetooth low energy module includes the temperature sensor and an accelerometer used for activating the data transmission. The Tridentify application specific software in the module handles temperature logging, calculations and information. The gateway then uploads the data for further analysis. Thereby, the actual expiry date is provided.

Once a blood bag is set in motion (either by being taken out of the blood bank or a by simply tapping the blood bag), the Bluetooth connection is activated and the tracer can be connected to the gateway for information upload or read-out.

Once a blood bag is set in motion, the Bluetooth connection is activated and the tracer can be connected to the QTA Access Point or QTA Check-in/Check-out Node for information upload or read-out.



Tridentify supplies the complete solution QTA Tracer System® to the blood bank scenario with a Bluetooth low energy communication unit supplied by connectBlue. Tridentify provides a communication link with other blood bank facilities to share information about the blood stored in the various banks. Abbott Scandinavia distributes the Tridentify solution as well as the cooling and cleaning systems in Sweden.

Quality, Traceability and Accessibility at All Times

The solution is now being tested in six blood banks in Sweden. With the new system the blood banks provide quality, traceability and accessibility of the blood at all times providing a perfect tool for forecasting.

The new system basically means the end of prematurely discarding of blood due to uncertain lifespan predictions caused by temperature variations. The system makes it easier to get inventory overview of blood bags and their lifespan. This, in turn, opens up opportunities to make more solid predictions, forecasts, and allows for

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reallocation of blood when the supply is high or ask for more when the supply is low.

Attached to the blood bag is a "tracer" which is a tag-like module delivered by Tridentify and contains a customized version of connectBlue's Bluetooth low energy platform module OLP425.



www.tridentify.se [1]

www.connectblue.com [2]

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