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Facilitating rapid rollout of COVID-19 testing centers

How tech collaborators supported coronavirus emergency response in North Rhine-Westphalia.

"Doctors, pharmacies, nurses and other people active in the healthcare sector are currently at the forefront of the fight against the pandemic. Intelligent software is the most effective way to support them."

—Dr. Ralph Körfgen,
Compugroup Medical's Board of Physicians, Dentist and Pharmacy Information Systems.

COVID-19 is the biggest health crisis in generations, necessitating extremely fast setup for virus testing centers. By collaborating with a network of tech companies, health authorities in Germany's North Rhine-Westphalia region were able to deliver the IT infrastructure necessary to process and test patients at 110 centers around the region in just eight days.

Challenge
To set up COVID-19 testing centers, health authorities in North Rhine-Westphalia needed support from experts across a range of disciplines - fast. One of their primary challenges was defining and distributing the necessary IT infrastructure required to process patient data at testing centers.

Solution
To handle patient processing at these rapidly-deployed test sites, the state health authorities (the Association of Statutory Health Insurance Physicians) engaged system integrator (SI) Tarox, CompuGroup Medical (CGM), Microsoft, Intel, Iiyama, and Jasper+Driwa GmbH to develop a solution. Tarox rapidly configured and pre-loaded Intel® NUC mini-PCs with all necessary medical software; these were distributed along with other essential IT equipment like monitors and printers to fast-test coronavirus centers in the region, at a discounted cost thanks to donations from all companies involved.

Results
In just eight days from project kick-off, a complete IT infrastructure solution was delivered to over one hundred testing centers in the region. Once up and running, patients were able to arrive at the testing center, scan their medical insurance card, take a physical test and have results delivered by the local health authority within two days.

An unprecedented healthcare emergency

Amidst the global COVID-19 pandemic, health authorities in North Rhine-Westphalia (Germany's most densely populated state) needed a testing strategy: they wanted to keep potentially COVID-19-positive patients away from those with other ailments, and decrease the load on general practitioners (GPs).

The decision was taken to rapidly set up 110 test centers in the region. They called upon a network of tech players to provide the necessary IT infrastructure to deal with patients outside normal hospital environments.

Collaboration in a crisis

Given the specialized nature of the request from the health authorities, it was necessary for a number of different solution providers to work together seamlessly to supply the infrastructure required.

Figure 1. One of the testing centers set up in North Rhine-Westphalia

- **Intel** provided the hardware backbone of the solution: the Intel® NUC mini-PC. The standards-based architecture it's built on means easier data integration and collaboration – essential for a project of this type.

- **Tarox**, as system integrator, handled pre-imaging of the operating system and inventory management software.

- **Microsoft** provided the Windows* 10 operating system.

- **Iiayama** provided monitors for use by staff in the test centers.

- **Compugroup Medical** provided the medical software necessary to handle essential tasks like accessing patients' insurance and medical records – as well as supporting a video consultation service, meaning that patients with symptoms were able to call in and determine whether they were displaying symptoms that would necessitate a test.

- **Jasper+ Driwa GmbH** handled installation of Compugroup Medical's software as well as the delivery and setup of systems on site.

Thanks to existing relationships between all key players and a collaborative spirit in the face of an emergency, the solution was devised and delivered smoothly. The equipment provided to testing centers was:

Compact and ruggedized: Portable enough to be set up and relocated easily when required, and capable of withstanding use in environments like hastily erected medical tents and shipping containers. The solution also has low power requirements.

Preconfigured for use: Requiring busy medical professionals to perform setup on-location would be unacceptable. The solution was designed to be delivered ready to use: plug and play.

Secure: Administration of sensitive patient data requires compute hardware capable of protecting it – the Intel® NUC platform features hardware-based features that ensure data security.

Versatile: While most devices were configured for use by doctors for testing, some were configured as servers for on-site inventory management, with the other devices then able to access inventory data. It would have been inefficient and inconvenient to set up full size servers in the pop-up testing centers, so the versatility and performance of the Intel® NUC platform came into its own here.

All of the above meant that the solution was perfectly built for the task at hand: it enabled data integration from edge to cloud, and was built on a common hardware platform to ensure easy implementation.

Figure 2. The Intel® NUC Kit NUC7i3DNKE forms a key part of North Rhine Westphalia's fast-test center solution

The benefits of an expedited rollout

The exponential growth characteristic of the early stages of pandemics mean that responding rapidly is of utmost importance. Thanks to strong relationships between all the companies involved with the project, a process that might normally take months was massively reduced. The process of gaining approval from the health authority in the region was accelerated and granted after a period of just five days – with delivery and setup on locations then taking a mere three days.

The speed with which testing centers were able to get up and running meant:

- Patients were able to get tested faster, with less risk of exposing themselves – and others – to the virus.

- Health authorities were able to get vital data about the spread of COVID-19 earlier, while reducing the load on existing medical facilities.

- Staff manning the testing centers were able to focus on their jobs – rather than on solving IT challenges.

Spotlight on: Intel® NUC

Intel® NUC – short for Next Unit of Computing – is a small form factor PC, with a tiny footprint. It comes in a variety of configurations. For this use case, Tarox opted for the Intel® NUC Kit NUC7i3DNKE. Capabilities of the kit include:

- **7th Gen Intel® Core™ processors:** featuring Intel® Hyper-Threading Technology to get work done faster and Intel® Speed Shift Technology for more responsiveness on multitasking workloads.

- **Robust, compact form factor:** Validated for 24x7 operation, with WiFi/Bluetooth built-in.

- **Hardware-based security:** Intel® Platform Trust Technology verifies the boot portion of the boot sequence, Intel® Software Guard Extensions (Intel® SGX) helps apps protect system and user data, Windows Hello and True Key™ technology enable hassle-free passwords.

- **Intel® Transparent Supply Chain:** a comprehensive service that enables hardware component and system traceability from authorized sources.

Next steps

Intel and its collaborators on this project are monitoring the situation with COVID-19 closely, looking to apply the lessons learned to tackle new challenges as they arise. The flexibility and speed with which all key players were able to work together was vital to the successful rollout of testing centers, and provides a workable blue print for other regions – within Germany and beyond – wishing to implement a similar model.

To learn more about how Intel is working to meet the challenge presented by COVID-19, visit the Coronavirus Response and Support Hub.

To find out more about Intel® NUC, visit **www.intel.com/NUC**.