Manufacturing on the Edge

Manufacturing is moving through a period of massive transformation. Using digital tools and services is critical for all companies across manufacturing to remain powerful voices in their markets. GEC understands this drive to innovate and has created a technology environment to empower manufacturers to enhance their process management.

GEC (German Edge Cloud)—part of the Friedhelm Loh Group—understands how enterprises need to use the power that on-premises edge cloud services can deliver to their operations.

The toolset GEC has created includes ONCITE—a compact on-prem data center that manufacturers can easily install. Coupled with Boston's powerful NVIDIA A100 GPU servers, it delivers a new digital ecosystem that can offer high levels of plant optimization and predictive analytics. The practical advantages for any manufacturer includes insights into potential future events that could compromise a process of an entire plant.

Data collection, management, and insight extraction should be the trinity of technologies driving modern manufacturing facilities. The current state of digitization across the manufacturing section must accelerate to meet the challenges that all businesses will face in the next decade.

The adoption of next-generation sensor technologies across manufacturing processes means masses of data are generated. Using this vast source of information to optimize process efficiency is critical.

Your New Digital Ecosystem

For manufacturers, the environments they need to construct across their businesses need a foundation of comprehensive, secure, and agile digital tools. As Industry 4.0 has expanded, creating a digital ecosystem that all processes can connect to has become a commercial imperative.

Indeed, IIoT, edge, and multi-cloud computing coupled with data sovereignty offer all manufacturers the opportunity to use powerful mini-data centers that can deliver the processing power a business needs today and provide massive opportunities for expansion.

GEC has a suite of PaaS and SaaS applications that integrate hardware and software together to create a platform to transform any manufacturing facility into a data-driven environment where innovation can flourish.

Management

Information is power. GEC also believes that information can be transformative across the entire manufacturing industry.

• Have a complete overview of your facility

With ONCITE, it is now possible to have a complete managed edge network-based cloud service that creates a digital twin of your manufacturing environment. With this virtual space, near real-time analytics can deliver unprecedented levels of process insights.

• Fact-based decision making

Moving to a digital ecosystem removes the guesswork from process optimization. Now all decisions are based on collected data that is analyzed to deliver what have previously often been insights across the process floor. Using IIoT coupled with NVIDIA A100 Tensor Core GPU performance moves manufacturing process management to the next level.

• Process outcome predictability

From a complete process overview to focused interrogation of specific systems, ONCITE can give either view to ensure each process is optimized. One significant advantage is financial predictability. ONCITE can be loaded with cost analysis that can be tracked over time to reveal historical data, which future decisions can be based upon.

Removing data silos. Having the ability to perform real-time analytics with a digital platform that touches every aspect and process across a manufacturing space is vital to ensure companies remain at the cutting-edge of their markets. Customers demand agility, cost-effective solutions, and want to partner with innovative developers. ONCITE is the foundation all manufacturers—no matter their size—can build these services onto.

11x More HPC Performance in 4 Years

Throughput for Top HPC Apps
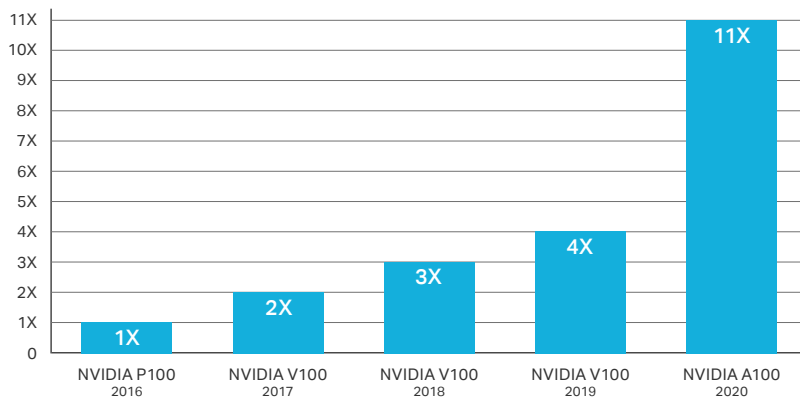
Geometric mean of application speedups vs P100: benchmark application: Amber [PME-Cellulose_NVE], Chroma [szscl21_24_128], GROMACS [ADH Dodec], MILC [Apex Medium], NAMD [stmv_nve_cuda], PyTorch [BERT Large Fine Tuner], Quantum Espresso [AUSURF112-jR]; Random Forest FP32 [make_blobs (160,000 x 64 : 10)], TensorFlow [ResNet-50], VASP 6 [Si Huge] | GPU node with dual-socket CPUs with 4x NVIDIA P100, V100, or A100 GPUs.

Operations

Creating a new digital ecosystem across your manufacturing plant can more than optimize these systems. The intelligent application of data gathering and analysis can reveal:

• Production optimization
Optimizing a plant with its myriad separate processes is vital to achieving cost-effective production. Production line steering can move to the next level when more data—and consequently more insights—are available near real-time.

• Operational improvements
Tracking and then analyzing every component of your plant and processes reveals where efficiency can be improved. Your plant becomes an intelligent ecosystem that can be improved over time as more data is collected and analyzed.

• Reduce costs
When your plant and processes can be seen in detail, cost centers can be identified. The efficiency gains via the ONCITE environment reveal where savings can potentially be made.

Manufacturing continues to move through a period of change. Consumers, the environment, commercial partners, and a shifting commercial landscape as a consequence of the pandemic have meant rethinking how the manufacturing process is managed and optimized. Moving to a new digital ecosystem allows any manufacturer to address these changes with cost-effective ease.

Neo IT

ONCITE forms the hub around which your business's digital ecosystem orbits.

Boston's servers and NVIDIA A100 power the ONCITE Industrial Appliance to fulfill your business's most complex IIoT and analytics use cases. It is now efficient to create digital twins of your company's manufacturing processes. The twin then delivers real-time analytics of the current production—and more importantly—can optimize production output by up to 45-50%.

• Fast and easy installation
Mix and match the precise components your business needs to create the managed digital ecosystem that will deliver process optimization. Easily scalable hardware stacks that can grow with your plant as it expands or contracts.

• Plays well with legacy systems
In most cases, there is no need to alter your existing plant radically. ONCITE is designed to integrate into process management systems. The ONCITE family is flexible, offering maximum interoperability.

• Low latency
The power of the edge cloud is that masses of bandwidth are available. The practical application of this power is near real-time analytics of your plant and processes. The digital twin that is created offers retrospective and predictive analytics. Cycle analysis reveals bottlenecks. And with an industrial architecture (fully supporting GAIA-X) that is robust and secure, your plant and processes are fit for 21st century production.

The digitization of factories is moving through arguably its most revolutionary period.

"Edge computing is already considered an indispensable core technology for IoT and Industry 4.0 applications, as well as autonomous driving for the automotive industry—and this is just the beginning."

Dr. Sebastian Ritz, Managing Director of German Edge Cloud GmbH & Co. KG

Data analytics require massive edge processing. ONCITE delivers this processing power in a compact, easily installed form factor. Manufacturers from automotive to aerospace now have an opportunity to transform their IT infrastructures, but also, transform the core of their enterprises by harnessing AI, AR and IIoT.

Learn more about how GEC ONCITE can transform your manufacturing processes by visiting GEC's dedicated ONSITE information source

To start embracing how a digital ecosystem could open new opportunities for your manufacturing services, contact GEC today