



KUNDENREFERENZ

NUROL MAKINA

Lower Process Costs, Faster Data Transfer

Process integration and data-based bridge-building
between 3DEXPERIENCE and SAP S/4HANA



It is exciting to discover what varieties of methodological and process excellence can be applied to product lifecycle management. In Turkey, for example, there are companies to which we can only tip our hats – like Nurool Makina, established in 1976 and active as a defense industry supplier since 1992. The company builds a range of tactical 4x4 vehicles at its modern production facilities in Ankara.



Nurool Makina's outstanding production capabilities are grounded in a state-of-the-art technology infrastructure that includes 5-axis laser cutting for armor plate processing, 7-axis robotic welding machines, hydraulic eccentric presses, as well as thermal treatment and paint application facilities. The company is owned by Nurool Holding (established 1966) and produces a range of armored all-terrain vehicles for the Turkish and international armed and police forces.

Since Nurool Makina only produces several hundred per year, it cannot be compared to a typical car manufacturer. Installed components like armaments and associated electronics also require a special value chain. The most important challenge, however, lies in managing the aftersales/service activities, because a logistics chain for (quick-response) parts supply must be established for each vehicle type and in every client country. This means that speed is the essence, and that speed can only be achieved via seamless end-to-end processes.

BRIDGE-BUILDING

Michael Drews, Senior Account Executive at CENIT AG, recalls the situation he found in 2018, when he arrived at Nurool Makina to begin work on a project for integrating the 3DEXPERIENCE platform with an SAP S/4HANA system. The client had certainly been busy already:

Nurool Makina had replaced the SmarTeam PDM system with the 3DEXPERIENCE platform to serve the engineering division, and at about the same time introduced SAP S/4HANA as the company-wide ERP platform. This meant that at a comparatively early point in time, the defense contractor decided to rely heavily on cloud applications – truly an innovative move. And yet, the company's employees continued to think and act in a traditional, compartmentalized manner:

Data exchanges between engineering, production planning and service/support remained rudimentary. Each unit might have been satisfied with the results it had achieved, but company-wide, end-to-end process chains were still a long way off. Accordingly, process costs remained high – too high, in fact.



As Michael Drews sums it up, “One of our priority goals was to design the transition from engineering to production in such a way that the relevant data, e.g. materials and parts lists, could be automated and made available loss-free to production planning.”

This consistency and completeness of data and information was crucial, and it was indeed an aspect that NuroL Makina aimed to achieve throughout all company processes.

Stuttgart-based IT and software provider CENIT was brought in to implement these plans, with initial contacts being established by CENIT’s local vendor.

The individual divisions had to give up their process leadership aspirations in favor of a “federal”, more egalitarian approach, and we had to develop a new terminology to reflect that view”, explains Michael Drews.

Additionally, this aspect had wide implications since NuroL Makina had already adopted a multivendor strategy for its PLM/ERP environment.

The implementation that followed encompassed a number of salient points: CENIT implemented a seamless integration of the two platforms, 3DEXPERIENCE and SAP S/4HANA, enabling the Turkish industry leader to run end-to-end processes across its entire range of applications and ensuring secure data transfer between the two systems.



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**Michael Drews, Senior Account Executive SAP Solutions
CENIT**

As a recognized international specialist for PLM and digital factory scenarios, CENIT was also mandated with ensuring that process chains would run smoothly across the 3DEXPERIENCE and S/4HANA platforms.

“At the start of the project we had to do a good deal of explaining to make sure that the client understood the significance and the consequences of end-to-end process chains.

Thanks to CENIT’s integration, objects from the 3DEXPERIENCE platform are now available – in real time – to classic SAP ERP applications like purchasing, materials management and manufacturing. This builds the foundation for wide-ranging project control capabilities that could not have been realized previously.

Documents, materials, visuals and other objects can now securely cross the “data bridge” between the two systems. Within the context of the overall process, Nurol Makina’s production planners and other relevant divisions can seamlessly use and process the data.

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SOLID ARCHITECTURE

In addition to the bridge supports (platforms), i.e. the 3DEXPERIENCE and S/4HANA platforms, Nurol Makina’s data bridge contains two connecting elements: cenitCONNECT SAP Integration for 3DX and cenitCONNECT Advanced Process Management (APM) for cross-platform process management of the information highway.

For production planning, Nurol Makina relies on the SAP Engineering Control Center (ECTR) – not, as is customary, as an MCAD integration tool, but rather to view SAP structures of engineering objects. For this, the company uses the SAP 3D Visual Enterprise Generator to generate neutral CAD formats that the SAP information logistics can work with. Structural synchronization via SAP GSS (Guided Structure Synchronization) enables transfer of source structures from engineering (PLM objects) to production planning.

CENIT’s major contribution to this project is a matter of workflow design. But what does this mean? As Michael Drews says, a common understanding of a clearly defined PLM target had to be developed first, true to the mantra: Where do we stand today, what do we want to achieve, and what use cases (solution components) will take us there?

In Turkey, says Drews, the buzzword “Industry 4.0” may be a good door opener, but for the conceptual work on concrete process optimization, clearly defined topics are necessary. Therefore, the project work focused on defining what CENIT calls the “Big PLM Picture”: Together with the client, CENIT developed an



understanding of what Nurol Makina ideally wanted in terms of processes, as well as use cases that would pave the way. These use cases were allocated to individual project phases in which specific targets were to be achieved. The use cases were then contrasted with IT system components (existing and/or required) that would enable the implementation.

SUMMARY: AN IMPRESSIVE ACHIEVEMENT

Product development creates a product structure which provides the basis for an engineering bill of material (EBOM). The EBOM is transmitted to SAP to verify the listed material masters; any that do not yet exist are generated automatically.

Simultaneously, 3D component visuals are generated to serve as an orientation aid in production planning – and then the production planners are ready to go to work with their GSS tool. The whole process is escorted by a guided change process: Engineering changes, but also modifications during production planning, are looped back to the 3DEXPERIENCE platform.

Another fine example of end-to-end process flow is quality assurance: This too relies on the provision of all necessary data and precise protocols of what the users do with the data. “We made sure that the processes became transparent”, is Michael Drews’ short explanation. Six stakeholders (compliance, quality assurance, production planning, sales, aftersales and service) continually and seamlessly exchange data with a seventh stakeholder – the engineering and its 120 CAD workstations. Two international players, Nurool Makina and CENIT, have built a solid bridge across borders.

„We made sure that the processes became transparent.“

*Michael Drews, Senior Account Executive SAP Solutions
CENIT*



ABOUT CENIT

CENIT empowers sustainable digitalization. With a broad solutions and services portfolio, CENIT enables clients to optimize their horizontal and vertical business processes. Our solutions are based on innovative technologies in: product lifecycle management, the digital factory and enterprise information management. With interdisciplinary knowledge of the processes involved and their considerable expertise in the field, CENIT consultants provide customers with end-to-end advice to ensure that solutions are implemented with an understanding of the entire value chain.

With a holistic approach and based on trusted partnerships, CENIT takes responsibility for solutions on behalf of our clients. From the initial consultation to the introduction of innovative IT solutions, right through to ensuring a cost-effective operation. The CENIT team adapts to each client, taking a practical approach, which enables measurable operational optimizations. CENIT has been helping prestigious customers in key industries to gain competitive advantages for over 30 years.

CENIT has nearly 900 employees worldwide who work with customers from: automotive, aerospace, industrial equipment, tool and mold manufacturing, financial services, and trade and consumer products industries.

ABOUT NUROL MAKINA

Founded in 1976, Nurool Makina has been involved in the defense sector since 1992, and is currently engaged in the production of 4x4 tactical wheeled armored vehicles at its modern facilities in Ankara/Turkey. Nurool Makina has a high production capacity, based on state-of-the-art technological infrastructure that includes 5-axis laser cutters used for the processing of steel armor, 7-axis robotic welding machines, hydraulic eccentric presses, and heat treatment and painting units.

Nurool Makina has always distinguished itself from other companies through its unique designs in the land platforms segment, and has a test area that enables to carry out performance tests such as; trench crossing and obstacle climbing, side and steep slope climbing, crossing rough terrain and deep fording. Nurool Makina produces Ejder YALÇIN 4x4, NMS 4x4, NMS Light, PARS 4x4, Ilgaz 4x4, Ejder TOMA 4x4 and Ejder Kunter 4x4 mainly for the Turkish Armed Forces and the Turkish National Police, as well as for organizations abroad.

Nurool Makina is aware of the fact that its strength lies in its huge family of employees, and its ability to blend their innovative efforts in the defense sector while adhering to its corporate values and more than 40 years of engineering experience. Nurool Makina continues to secure its position as a sectoral leader in Turkey, combining design and technology, and adhering to the principles of national development, social benefit and environmental protection.

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