Joint status report from
NAMUR, ProcessNet, VDMA and ZVEI

MTP and NOA

Two concepts promoting the future viability of the process industry

November 2021

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MTP and NOA – for several years now, these acronyms have been the defining topic of discussion whenever process automation specialists and automation technology providers come together. The Module Type Package (MTP) is considered indispensable for meeting the demand for flexible process engineering production facilities. NAMUR Open Architecture (NOA), in turn, finally allows operators to tap into “stranded data” and thus receive important information on the state of their plants. In addition, it is to become an important tool on the path to Industrie 4.0. What both concepts have in common is that they make process industry fit for the future. What’s more, both are ready for use.

NOA and MTP are equally suitable for both greenfield and brownfield plants in the various process industry sectors. (Source: NAMUR, ZVEI)

Abstract

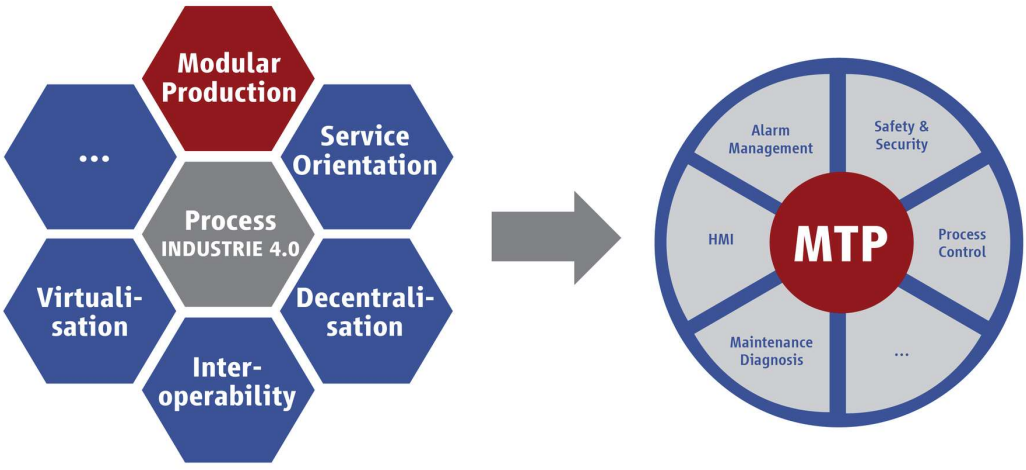
The process industry markets are becoming increasingly volatile. New products are coming onto the market in rapid succession, resulting in shifting requirements for production facilities. While plants used to operate almost unchanged for decades at a time, they are now subject to a continuous adaptation process. This is supported by a modular design that enables process changes and expansions. New systems can be assembled from existing and additional modules according to the modular principle. This flexibility also entails new requirements for process automation. In order to accommodate this, the user organisation NAMUR and the manufacturer organisation ZVEI have been working together since 2014 – with the participation of ProcessNet and VDMA starting in 2017 – on a concept for the cross-manufacturer description of the automation of process modules as well as a superordinate automation level for their integration and orchestration. A central element here is the Module Type Package (MTP). Standardisation of this manufacturer-independent interface is now in an advanced stage. The necessary tools are available. The first mechanical and plant engineers are offering modules with MTPs that can be seamlessly integrated into process automation.

Further demands arise from digitisation and its potential to reduce production costs and increase plant efficiency. This is partially driven by increased data transparency allowing not only core process data to be accessed, but also vital data and other additional information, much of which is generated by modern field devices in the plants. However, using this extra data has required enormous effort up to now. The NAMUR Open Architecture (NOA) makes it easy to achieve this while also ensuring that the core process is not disrupted. The additional information is accessed via a second, secure data channel without touching the core process. The idea, initially promoted by NAMUR, has since been developed further with the support of numerous automation component and system providers and translated into five NAMUR recommendations.

Both concepts are now largely ready for the market. MTP and NOA should be understood as two independent concepts that can also be used together. Thanks to NOA, it is possible to record more than just the vital data of individual field devices. Modules equipped with an NOA channel also supply their vital data to higher-level systems. The open architecture also enables suppliers to accompany their modules throughout the entire life cycle, creating opportunities for new business models and a new division of tasks. While process operators concentrate on the actual production process, module manufacturers and other service providers can access the asset information via the cloud and take over remote maintenance or offer services such as predictive maintenance. This results in higher-quality modular plant operation and new opportunities for operators and service providers.

1 Module Type Package: tested and ready to use

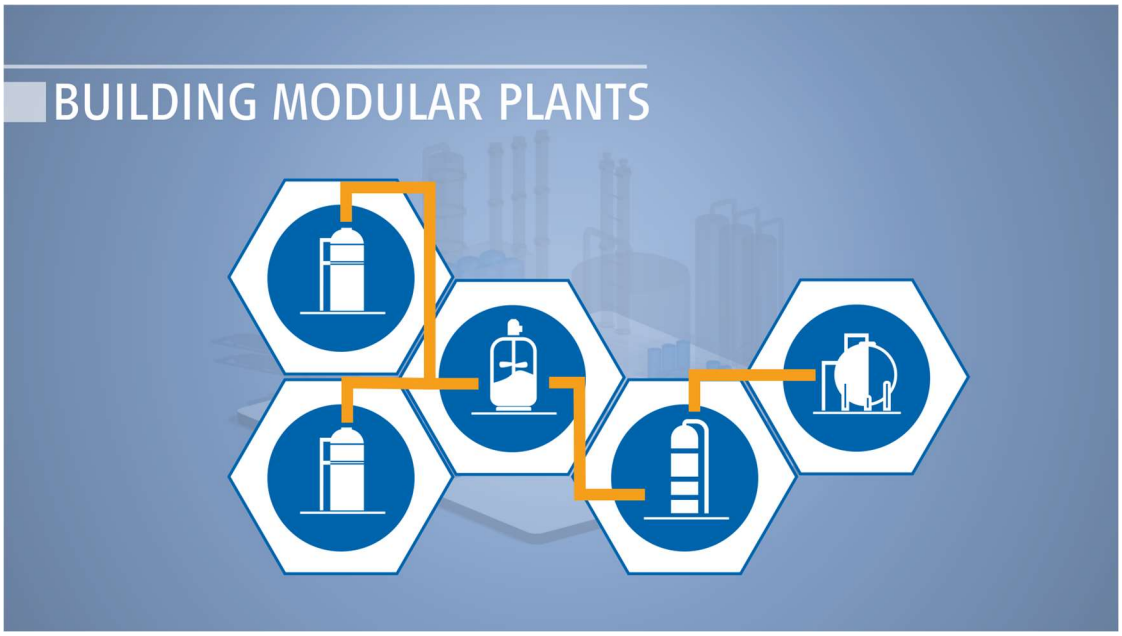
The process industry entered the era of modularisation with Industrie 4.0. Modular systems are already widely used in some sectors of the process industry such as the pharmaceutical and biotech industries or in the food industry. There is a growing conviction that modularisation also brings many advantages in classical chemical production, such as by integrating package units with MTP. The transition from development to industrial production can be significantly accelerated if modular process units are combined from the outset and multiplied for up-scaling. This also simplifies process qualification. Modules can be used to quickly expand existing systems or to add package units. In addition, modules that are already in use can be re-used for future processes. This is especially worthwhile in areas where batch sizes are shrinking, product diversity is growing, and product life cycles are getting shorter and shorter. This is no longer just the case in the pharmaceutical, biotech and food industries, but also in other industrial sectors. The modular design helps to ensure that tested, pre-qualified modules can be combined in the plant in the shortest possible time to form a complete system that can quickly be put into operation. This shortens the time to market or time to go on stream and ensures competitiveness.



Modular production is an important strategy for companies in the process industry to preserve their competitive edge in Industrie 4.0. (Source: NAMUR)

1.1 Standardisation to offset high implementation costs

It is therefore no surprise that actors from the pharmaceutical and fine chemicals industries, in particular, were the first to point out that standardisation of the module interfaces was long overdue. Quite a few module manufacturers also recognised this necessity. After all, the automation departments on both sides were confronted with the enormous amount of additional effort caused by different interfaces during implementation.



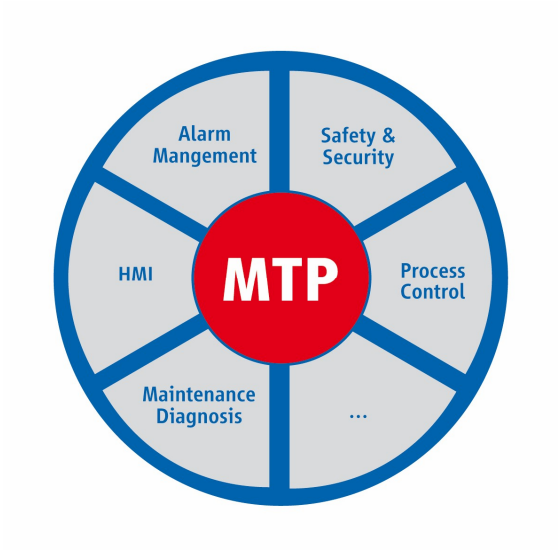
Standardised interfaces make it easier to combine modules from different manufacturers. (Source: NAMUR, ProcessNet, VDMA, ZVEI)

At user facilities, engineers had to merge the pre-automated modules from different manufacturers and integrate them into a higher-level system. Conversely, the module manufacturers supplied many customers around the world who demanded different interfaces. Both sides agreed, then, that establishing standardised, service-oriented communication interfaces would hold great potential. The goal was to enable the immediate use of modules automated by the manufacturer via “Plug & Produce” with as little engineering and implementation effort as possible. This was to be made possible not only for new greenfield plants, but also for existing brownfield plants.

1.2 Achieving Plug & Produce with MTP

The Module Type Package (MTP) resulting from the cooperation between NAMUR and ZVEI will meet the above requirements. It describes the process module functions independently of the manufacturer. Since an MTP can be derived from a module’s automation engineering, module manufacturers are able to generate one without much

effort. In turn, the operators can easily use the module functions by importing the MTPs into a higher automation level.



Module Type Packages contribute to the modularisation of automation systems. They contain a manufacturer-neutral, functional description of the automation of process modules. (Source: NAMUR)

What began as a vision in 2014 has now become reality. The first parts of the specification have already been transferred to the VDI/VDE/NAMUR 2658 series of guidelines in cooperation with the VDI/VDE Society for Measurement and Automatic Control (GMA).[1] Numerous pilot projects on the user side and several modules equipped with MTP prove that the technology can be used to implement flexible systems as envisioned by the Plug & Produce concept.

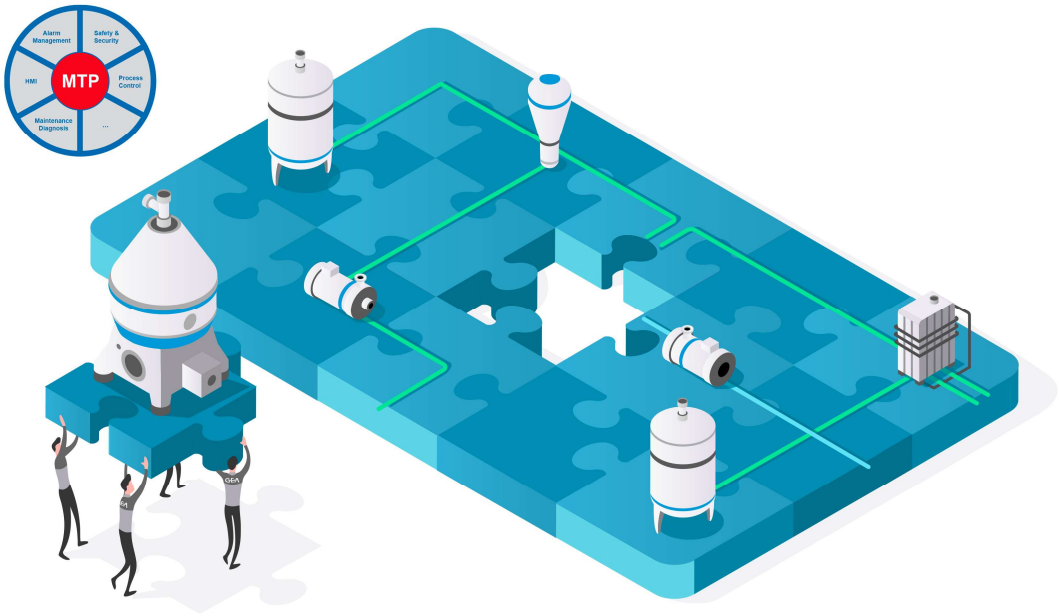
1.3 F3 Factory: production from a kit

The modular system concept now comprises significantly more than originally expected. The foundations were laid back in 2009 in the EU research project F3 Factory (Flexible, Fast and Future Factory), whose participants included numerous chemical companies such as BASF, Bayer and Evonik as well as universities and research institutions. The project's ambitious goal was to safeguard the competitiveness of the chemical industry. Even at this early stage, the modular principle was already the guiding idea. Standard containers were created from which entire factories could be assembled – a viable option for some processes. Today, container solutions are a

[1] Plug & Produce auf dem Sprung in den Markt; *atp Magazin* 01-02/2019, https://atpinfo.de/download/plug-produce-auf-dem-sprung-in-den-markt/

reality. For example, Lanxess has a container solution for producing secondary tanning materials from cutting remnants in the leather industry.

An important finding of the F3 project was that, in addition to the physical interconnection, clarifying the integration of data and automation structures is a chief concern. Even if the expertise for the unit operation lies with the respective module provider and the future operators do not want to bother with the details of their automation, they will still have to integrate the plant modules into an overall orchestration level. This is exactly what has been achieved with MTP. The customers of module manufacturers define the desired functions and services, then the module manufacturers take care of the implementation and also generate the MTP necessary for easy integration. The feasibility of this approach has already been proven by several plant and module manufacturers, who have laid the foundations for equipping plant modules with MTPs together with the suppliers of automation components and systems.



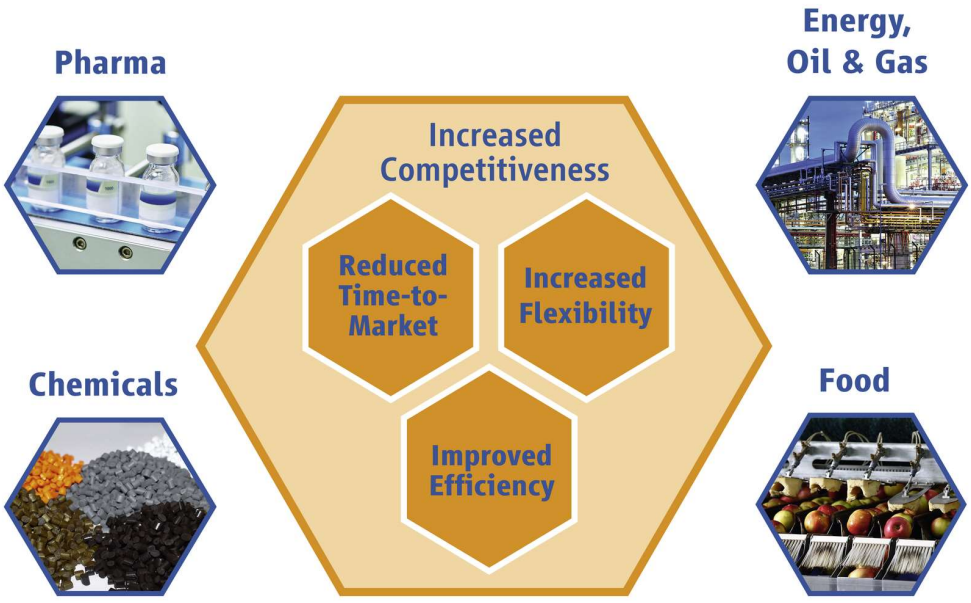
Module suppliers also benefit from MTP since it reduces the cost of integrating their module at the customer plant. Modules can even be pre-produced “in stock”. (Source: GEA)

1.4 Standardisation at an advanced stage

The prerequisite for the first real applications was to advance the standardisation process far enough to provide module manufacturers with a sound basis for designing “their” MTPs, i.e. the knowledge of how to design the integration with the functions encapsulated in services and which interfaces an MTP should be equipped with. This is evident from the first publications of the VDI/VDE/NAMUR 2658 guideline, which describe the MTP concept and define the modelling of operator screens, module services and the interfaces for the data to be exchanged. The MTPs created on this basis can already be used to support 50 to 70 percent of the engineering activities on the user side. Newly simplified features come with every additional published sheet of the guideline, for example regarding requirements for alarm management or diagnostics and maintenance. Industry leaders such as Merck, BASF, Evonik, Clariant, Covestro and Bayer support the concept and are committed to it, not least because it can enable them to use their current process modules again in future plant landscapes. Modularisation in the process industry is completed by the VDI 2776 guideline, which provides specifications and information on process engineering design and operating modular plants. An additional goal is to establish the MTP concept as the international standard IEC 63280.

1.5 MTP for brownfield: when will process control systems be “MTP-ready”?

With the MTP concept, intelligence is moving into the field more than ever. Instead of exchanging information about the assignment of terminal strips and wire colours or bits and bytes for signal transmission, engineers are now discussing process functions and services, which can then be encapsulated and called up in the module. However, there is still a challenge in existing (brownfield) facilities. Such plants can often be usefully supplemented or modernised by process modules. However, one barrier has yet to be removed for automation integration. Up to now, existing plants have been operated via powerful process control systems for which no MTP interface is available today. There is a need for action here.

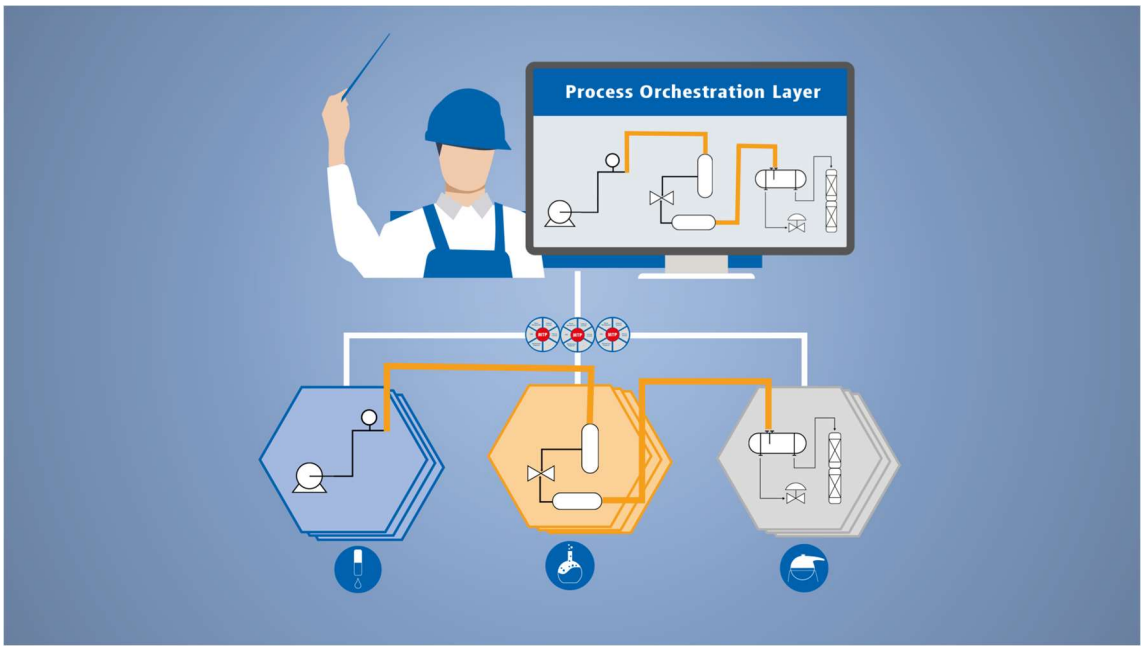


Existing plants and large-scale plants such as in the petrochemical industry can benefit from MTP without much effort if the established process control systems are made “MTP-ready”. (Source: NAMUR, ProcessNet, ZVEI)

Migrating to new, MTP-capable control systems is extremely expensive. For this reason, operators of brownfield plants expect new versions of the existing systems to be made MTP-ready. This is the only way to successfully transition existing systems and gradually integrate modules without requiring a switch to new process control systems with MTP integration capability. The MTP-compatible expansion of the process control systems would also be profitable for large plants such as those used in basic chemistry or petrochemicals. According to experts from these industrial sectors, the MTP concept could be useful in many areas, even in large continuous plants. It would simplify the integration of package units, for example, although the core process will undoubtedly not be modularised in the foreseeable future. This would certainly also promote the faster adoption of MTP technology.

1.6 Process Orchestration Layer (POL) for orchestrating process modules

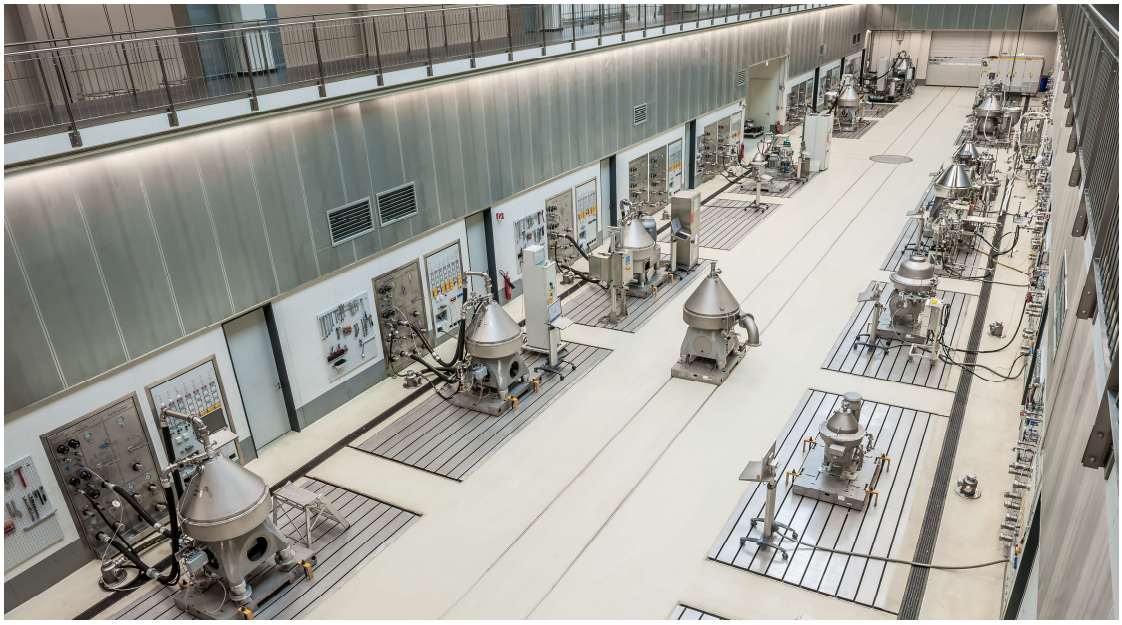
For fully and partially modularised plants, new process orchestration layers (POLs) based on batch, SCADA, MES or IIoT systems will supplement or modify the process control systems. The detailed central engineering of all automation functions is no longer necessary. MTPs provide the POL with the module services for orchestration. Unlike conventional process control systems, a POL no longer influences individual actuators in the modules; rather, it sends commands to the services of the modules where certain programs are triggered. Statuses and process values are displayed on the POL control screen. These services are described in more detail in VDI/VDE/NAMUR 2658. POLs offer opportunities and creative space for automation providers who want to support digitisation with a view to the future flexibility of plants in the process industry based on modular automation using MTP.



The POL control screen shows the states and process values of the individual modules.
(Source: NAMUR, ProcessNet, VDMA, ZVEI)

1.7 Value-added cooperation between module suppliers and plant operators

As modular production with the MTP concept becomes established, the working methods of plant engineers and module suppliers will also adapt and expand. Up to now, they have been delivering their machines with long data exchange lists and dealing with a system integrator who works on implementing the machine into the customer's system. In addition to the tedious specification work, this entails a somewhat long commissioning time for plants where several such modules are to be integrated.



Modules that already “speak” MTP – such as these centrifuges – are easy to implement in production plants. (Source: GEA)

In the future, however, module manufacturers will be able to set themselves apart with the clearly specified services of their skids, package units and modules. The vexing bits-and-bytes discussion turns into a value-added cooperation between module suppliers and plant operators, who must then determine which functions the module needs, which performance and availability are required, etc. Anything that speeds up commissioning for the end user results in greater protection of the module supplier’s know-how. By standardising the modules, the module manufacturer could also achieve cost benefits through economies of scale, which the plant operator can only benefit from, of course.

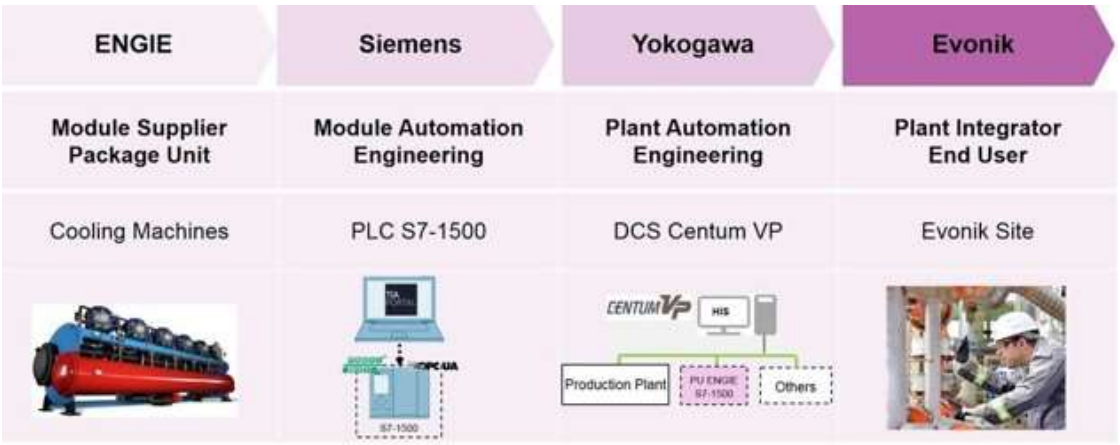
1.8 Tools for the engineering module and plant engineering module

In addition, the module manufacturer’s automation department sees a significant workload reduction thanks to the concentration on a standard. Already today, there are various solutions from numerous automation manufacturers that are intended to simplify module engineering, including MTP. For package unit suppliers, they promise only a small amount of required extra work. For example, the first basic structures of an MTP description file can already be derived from piping and instrumentation diagrams and planning tools. They are then completed in the module automation engineering. There are also already initial solutions from several automation providers for the plant engineering module, which will be carried out in parallel with module engineering in the future. They also ensure that the MTP concept is successfully linked

to the topic of Industrie 4.0, such as by incorporating MTP into the asset administration shell.

1.9 Benefits of pilot projects apparent before standardisation is even complete

The technological basis is therefore available. The remaining sheets of the relevant guideline should be published within the next two years. Many module suppliers have already gained initial experience of MTP with support from automation providers, many of whom are working on the MTP concept under the leadership of ZVEI. The missing element is still broad demand among users. Early adopters like BASF, Bayer, Evonik and Merck KGaA have already gained experience in various pilot projects and thus proven that the MTP concept benefits users and that the required interoperability and independence from a specific manufacturer exists.



The MTP standard has already been used in commercial industrial plants, such as for package units at a world-scale Evonik plant in Singapore. (Source: Evonik)

Evonik was able to demonstrate the concept by implementing a cooling unit as a package unit in one of its brownfield plants in Singapore. This was achieved within just a few days, largely via Plug and Produce. 80 percent of the process was carried out in a one-to-one import of the MTP-HMI description with manual adjustments amounting to 20 percent.[2]

Merck has also already supported concrete projects with MTP technology not only in Germany, but also internationally in the US and Asia. The company installed the first POLs before connecting them to modules with MTP. The Merck specialists were not yet able to obtain all modules fully equipped with MTP from plant engineering manufacturers. However, they were so convinced of the concept that they made the effort to program the necessary MTPs themselves. Merck began working with MTP a

[2] https://www.process.vogel.de/die-mtp-technologie-im-realitaetscheck-a-1038714/

few years ago via the ENPRO 2.0 initiative ORCA (Efficient orchestration of modular plants).[3] Among other things, the company has already implemented a thin-film distillation system, dosing systems and a membrane filtration unit with MTP in its pharmaceutical division. [2]
Several other manufacturers in the pharmaceutical sector and fine chemicals industry have tested the use of MTPs in laboratory, demonstration and pilot plants.

1.10 Three conditions for the success of MTP

According to users and providers, three factors will now be decisive for the success of the MTP concept:

- The necessary demand from users, who should include delivery of an MTP in the specification sheet for their module and package unit suppliers. Even if complete modularisation is not yet possible, these modules will remain flexible in the long term and will also help speed up future plant projects.
- The addition of MTP functionality to existing process control systems to ensure that existing plants also benefit from the new option of integrating package units.
- The internationalisation of the standard, which may have been driven by the German organisations NAMUR, ZVEI and VDMA, but will ultimately be used worldwide by the globally active process industry companies involved.

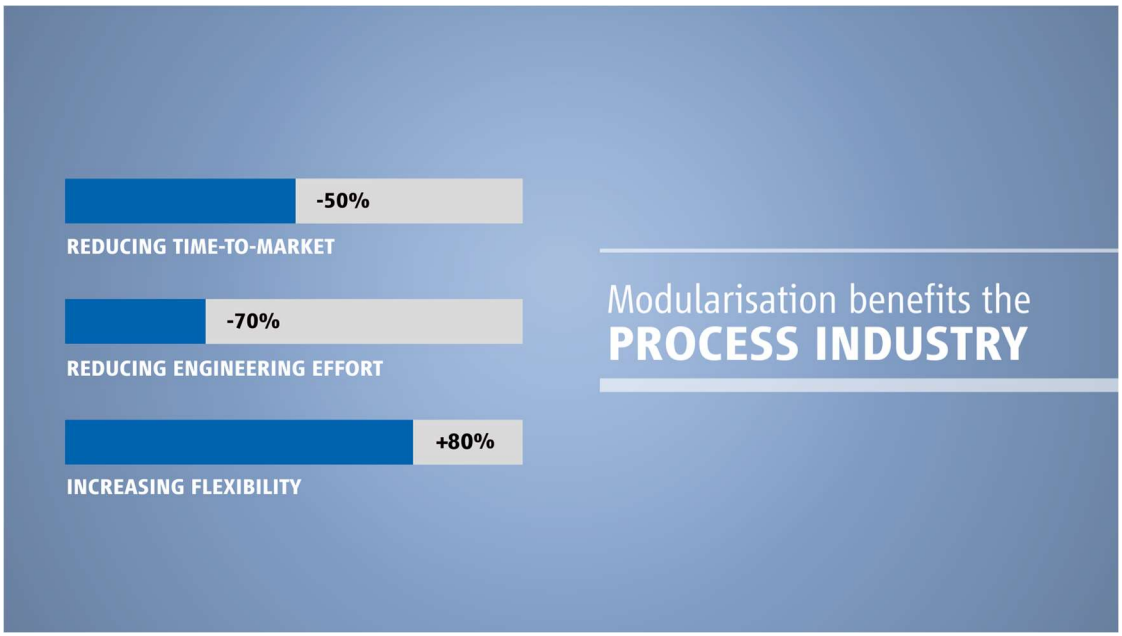
1.11 Working towards an international standard

The organisations and companies involved are actively pursuing the latter point in particular, and have been promoting the MTP concept to visitors at international trade fairs such as ACHEMA and Hannover Messe for several years now. In addition, there is a close exchange with international associations and organisations such as ISPE (International Society of Pharmaceutical Engineering), BioPhorum and OPAF (Open Process Automation™ Forum). In October 2019, a New Work Item Proposal (NWIP) was submitted to the IEC (International Electrotechnical Commission) aiming to establish the MTP concept as the international standard IEC 63280 “Automation engineering for modular systems in the process industry”[4]. A change in responsibility announced at the 2021 NAMUR general meeting will also be conducive to internationalisation. The new “MTP host” is the PROFIBUS User Organisation (PNO/PI), which will take care of further standardisation in the future, also at international level. PNO/PI is also responsible for managing the rights to MTP, certifying

[3] http://enpro-initiative.de/ENPRO+2_0/ORCA.html

[4] https://www.iec.ch/ords/f?p=103:38:2906049848221::::FSP_ORG_ID,FSP_APEX_PAGE,FSP_PROJECT_ID:1452,23,103501

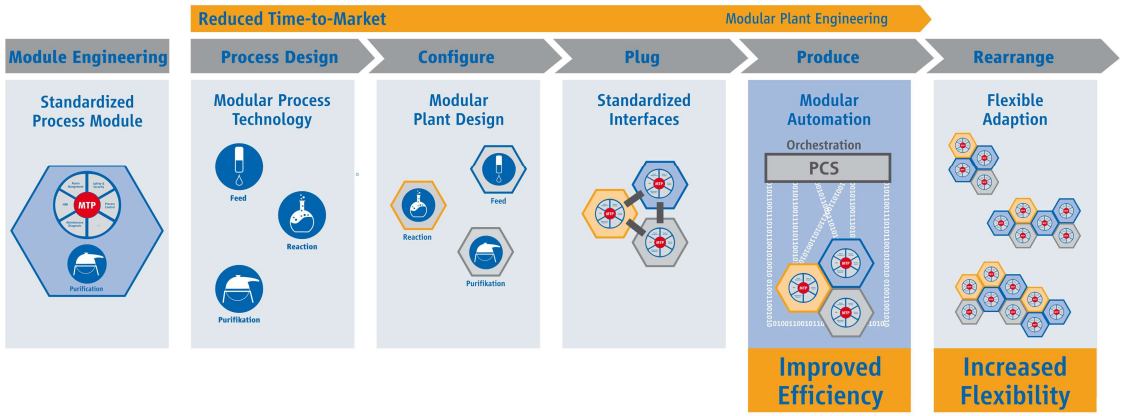
MTP products and marketing the concept. NAMUR, ZVEI and PNO/PI will supplement the MTP concept and implement it around the world in partnership.



Modular production has great benefits for process plant operators worldwide. The MTP concept should therefore be standardised internationally. (Source: NAMUR, ProcessNet, VDMA, ZVEI)

1.12 Conclusion: the MTP concept is market-ready

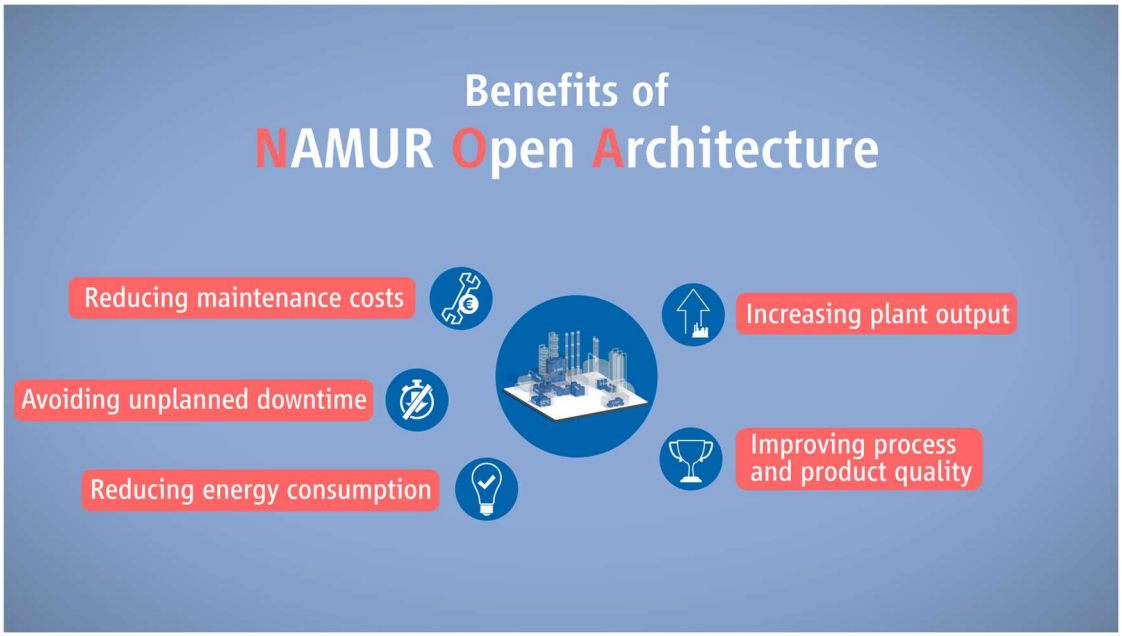
Modular production will play an important role in the process industry 4.0. It can shorten time-to-market, increase production flexibility and reduce investment risks. Standardised automation interfaces in the process modules allow them to be quickly integrated into plants. The Module Type Package plays a key role in this. It provides a vendor-independent description of the process module with various facets such as HMI, process control, maintenance, diagnostics, safety and security as well as alarm management. This offers advantages for module manufacturers and users. For total plant automation, the MTPs are imported into the POL (process orchestration layer), which integrates the modules. The standardisation of the MTP concept has already progressed far enough to be deployed, as several pilot projects prove. Whether it really becomes a market success will depend on broad demand among users. The international standardisation and dissemination, which will be advanced by the PROFIBUS User Organisation in the future, will be a major success factor.



Both module manufacturers and plant operators stand to benefit from the MTP standard. (Source: NAMUR, ProcessNet, ZVEI)

2 NAMUR Open Architecture: support for the digital transformation

Another three letters with great potential for the process industry 4.0: It's no big leap from MTP to NOA. The NAMUR Open Architecture[5] was indeed originally initiated by NAMUR. These days, the concept is essentially driven by the same stakeholders as MTP. Numerous ZVEI member companies have been involved in its development.
The plant and module engineers also benefit from this. Thanks to NOA, they can easily implement the accessibility described above for their vital module data and develop new services on this basis, such as predictive maintenance. But NOA also contributes to greater production efficiency and plant availability in every non-modular plant.



The process industry stands to gain a wide range of benefits from NOA and the resulting accessibility of plant data that will lead to higher overall plant effectiveness. (Source: NAMUR, ZVEI) …

2.1 Easy, secure access to stranded data

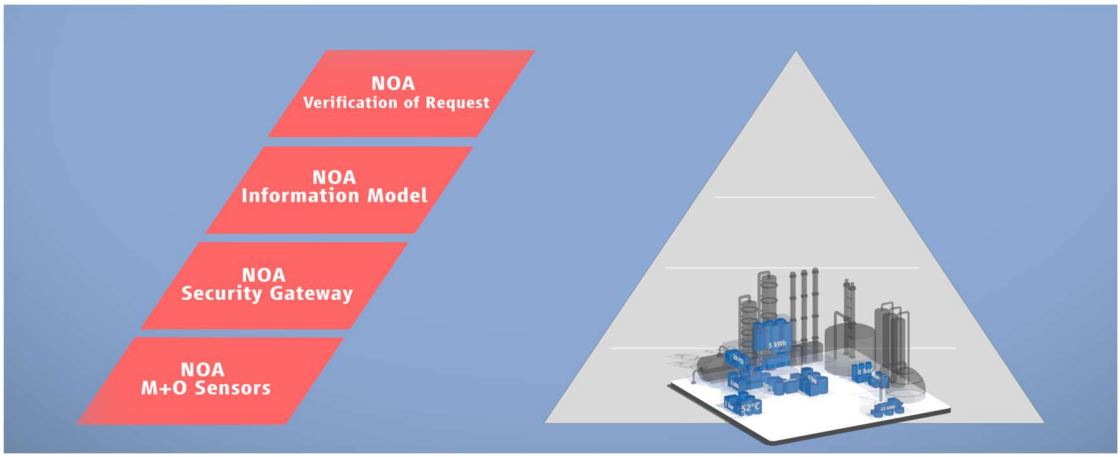
To trace the development of NOA, one doesn't have to go back quite as far as for MTP. The idea and main features were presented at the NAMUR general meeting in November 2016. There was a consensus within the process industry that data and connectivity were becoming increasingly important in Industrie 4.0. However, it was evident that plant operators were quite good at using process data, but not the large amount of data provided by numerous smart sensors and field devices. Everyone agreed that this was a treasure trove of data waiting to be harnessed. The "stranded data" could only be exploited with a very high expenditure. With NOA, this is no longer

[5] https://www.namur.net/de/fokusthemen/namur-open-architecture.html

the case. Additional information such as vital data is accessible in a simple and, above all, secure way and can be used for plant and equipment monitoring and optimisation (M+O).

2.2 NOA expands the classic automation pyramid

The idea behind NOA is that the core process, represented by the automation pyramid, remains untouched. NOA adds a second data channel to the pyramid that does not affect the installed base and therefore cannot affect its availability or security under any circumstances. IT components can be easily integrated from the field level all the way up to corporate management. This side channel allows further information from plant assets such as sensors, actuators or entire plant modules to be made accessible and available for processing via existing standardised interfaces. And it does so without burdening the process control system with this flood of data. The NOA concept gives plant operators a complete, structured picture of the state of their plants.



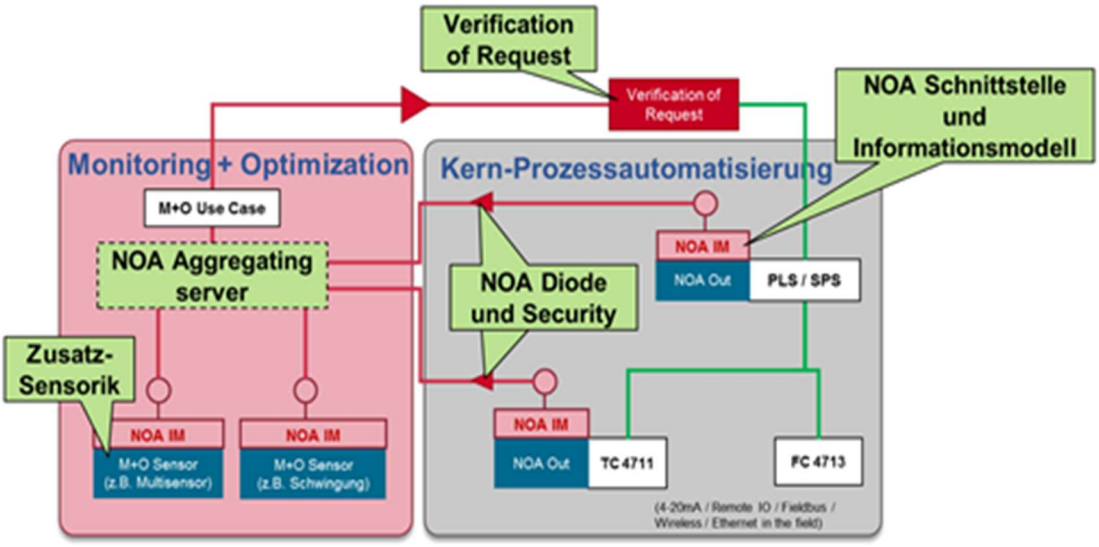
NOA adds a side channel to the existing automation pyramid, enabling easy, secure access to additional data. (Source: NAMUR, ZVEI)

2.3 The open system world of NOA

NOA is suitable for both existing and new plants. All relevant data from a plant is accessible in a structured and standardised form. In addition to the vital data already available, additional data can also be implemented to allow conclusions regarding the “health status” of the plant or of individual assets

This is achieved with NOA M+O sensors that can also be wirelessly integrated into the NAMUR Open Architecture. Beyond the usual measured variables, this may include vibration data from a mounted vibration sensor or a previously unmeasured temperature value. Many of these sensor types can be compared to human senses. For example, they “feel” heat, “hear” sound changes or “smell” certain ingredients. If they are inexpensive and easy to integrate (often wirelessly), they can also be used to monitor standard equipment such as pumps, pipes or containers.

A fundamental component of the NOA concept is a standardised information model (NOA-IM, PA-DIM) with an interface based on OPC UA, which defines the syntax and semantics of the data exchange. Secure cross-outputs into the side channel, the NOA diodes, are supplemented by equally secure paths back – via NOA verification of request. This approach is capable of closing optimisation cycles.



The NOA concept, described in detail in the NAMUR recommendation NE 175, defines components that can be used to obtain production data for plant and device monitoring without reaction. (Source: NAMUR)

Finally, the NOA Aggregating Server aggregates the various NOA data sources so that the data is made available centrally to M+O applications, as the accessibility of the data alone would have been insufficient. The NOA concept therefore also includes the aggregation of this data in order to process it in cloud or on-premise applications, such as with artificial intelligence. It provides a basis for reducing maintenance costs and avoiding unplanned downtime, but also for improving plant performance and process

quality while reducing energy consumption. Much of this can already be realised today with a rapid return-on-investment.
The initiators have placed great importance on the security aspects. Being secure by design, NOA ensures that targeted or unintentional threats have no repercussions for the core process. Moreover, it is vital to ensure the integrity and confidentiality of the information that can be obtained through NOA.

2.4 NAMUR recommendations for NOA-compliant products

Anyone who wants to work with the NOA concept today can already use various products with NOA interfaces and read out data in an NOA-compliant manner. Even the high security requirements can already be met, but the development of NOA is still in flux. More products will follow to ensure that NOA is as easy to use as possible.
They must comply with the NAMUR recommendations; the manufacturers can and must prove this. There is an explicit warning against deceptive packaging which – as happened at the 2018 ACHEMA trade show – only claim this with an “NOA-inside” sticker.
The following NAMUR recommendations have already been published:

- NE 175 – NAMUR Open Architecture – NOA concept
- NE 176 – NOA Information Model
- NE 177 – NOA Security Zones and Security Gateway

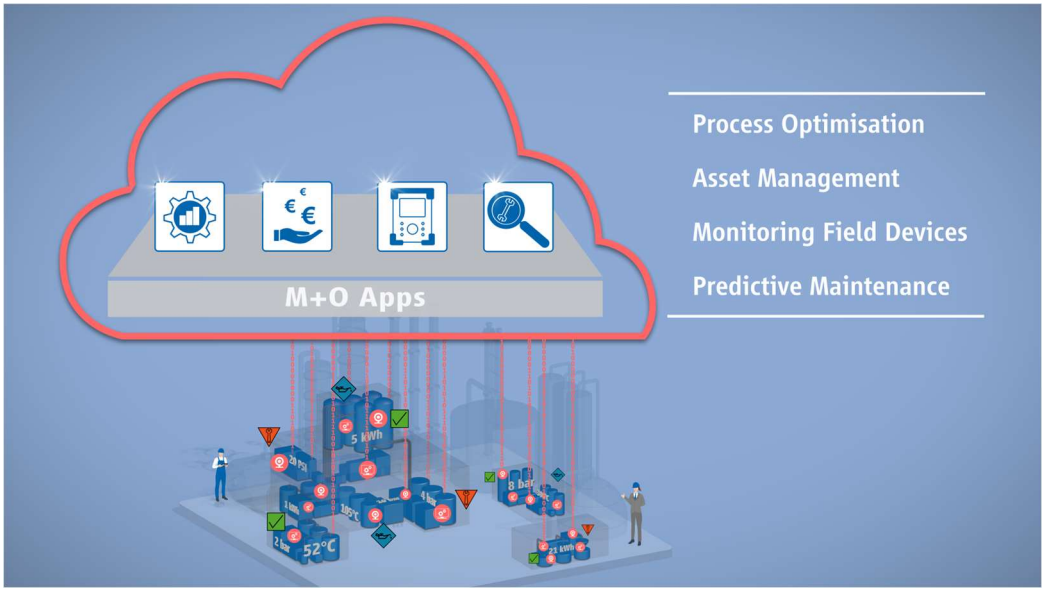
Two more NAMUR recommendations will soon follow:

- NE 178 – NOA Verification of Request
- NE 179 – NOA Aggregating Server

2.5 Ecosystem replaces standalone solutions

The bottom line is that NOA puts an end to proprietary standalone solutions used to access M+O data from individual sensor providers. As a consistent, standardised solution, it enables applications in which many actors within an ecosystem can contribute their expertise. NOA end users in this ecosystem will presumably be able to choose from a bundle of solutions.

Many well-known companies have already started pilot projects in this direction. After gaining initial experience, the automation experts are now incorporating plant operators to identify further business cases in which NOA applications make sense.



In the future, operators of plants with NOA-based architectures will be able to select best-practice applications from different providers within an ecosystem for monitoring and optimisation. (Source: NAMUR, ZVEI)

2.6 Added value from sensor replacement to complex PAT measuring points

Simple NOA applications that can already be implemented bring immediate benefits. For example, when replacing a defective sensor in the field, which still entails a lot of documentation work today. This is an error-prone step. An existing NOA solution can automatically document the change.

The application of the NOA data model in the field of Process Analytical Technology (PAT) is particularly promising. Complex PAT spectrometers provide a large amount of data that can be used for holistic diagnosis to contribute to the operational excellence of production processes – to the delight of PAT specialists. However, information on the reliability of measurement results or the condition of a pH sensor, including its maintenance or calibration requirements, already brings added value for plant operators.

At the NOA test facility at INVITE, experts have proven that online condition monitoring for PAT measuring devices is a worthwhile application for NOA.
(Source: Phoenix Contact)

More complex PAT devices, which generate a large amount of vital data, are also a main focus. Up to now, they have often provided no more than a status value of “measuring device defective”. It then takes time for the responsible technician to find and fix the error. With the right information in the right place, however, technicians can act in a targeted manner and generally provide immediate, quick relief. They gain insight from trend information on the device condition via NOA, and they can generally determine what they need to repair before they get leave for the site.
NOA applications for PAT devices are currently being explored at Bayer. After tests demonstrated the possibilities and the benefits, the health data from more than 4,000 PAT measuring points is now being harnessed using NOA. This brings the potential for six-figure savings (in euros).

2.7 Connectivity: from HART to APL to 5G

Currently, NOA is mostly implemented using the HART or WirelessHART signals present in numerous devices. Gateways can also be used to address older devices in brownfield systems, provided that the manufacturers of these devices support this by disclosing the data structures. Ethernet APL, the digital process communication of tomorrow, will play a major role in the future. It is also considered an enabler for NOA applications. With the NOA information model, M+O data can already be diverted from APL devices to the NOA channel. Low-power wide-area networks (LPWAN), narrowband-IoT (NB-IoT) networks and the future 5G technology also offer suitable solutions for data transmission in campus networks for the additional NOA M+O sensors (IoT sensors).

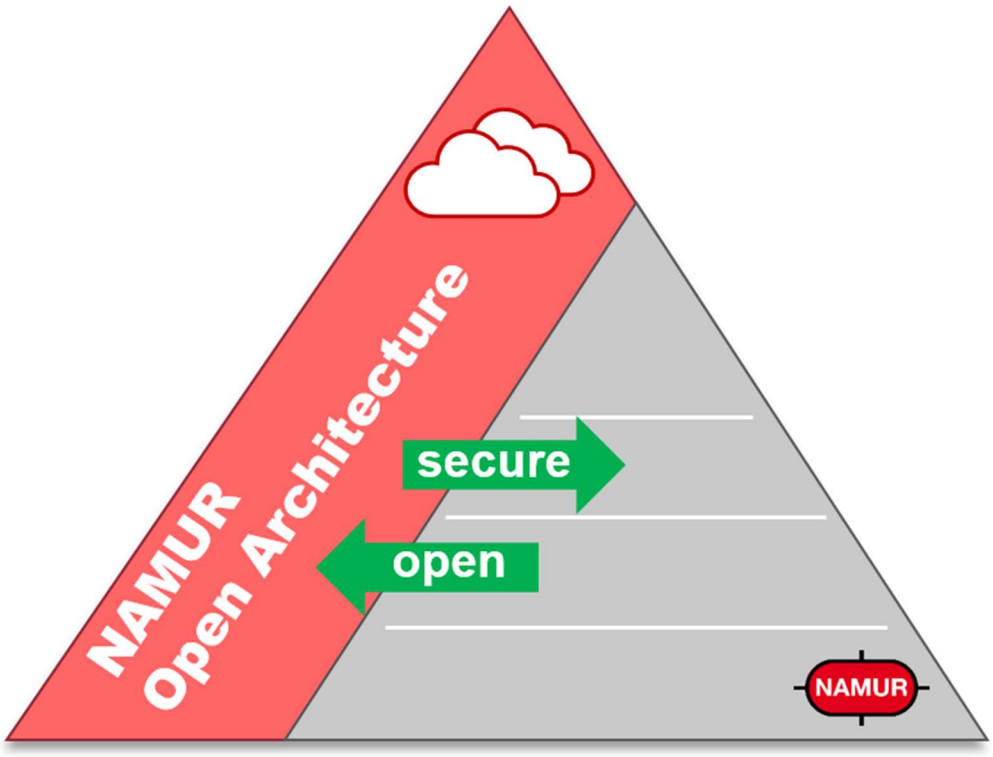
Whether via one transmission technology or another – in addition to the usual automation network, plants and companies are creating a parallel infrastructure supported by edge devices for the provision of local computing power and/or simply as data collectors (aggregating servers, gateways). This, too, must be managed within an ecosystem. It also creates another challenge for process control engineers. They must be capable of using the NOA concept and the technologies and products required to do so and of recognising the associated potential together with the plant operators, service technicians, maintenance personnel, operations managers and other actors.

2.8 Harnessing additional benefits with NOA in the MTP concept

As stated above, NOA also benefits the operators and suppliers of process modules. In this respect, NOA brilliantly complements the MTP concept. While a module's diagnostic information immediately required by the plant operator must be mapped within the MTP concept itself, a NOA side channel can also be used for other vital data and information for modules. This information is primarily of interest to maintenance personnel or even to module suppliers themselves. For example, the latter can be commissioned via service contract to replace necessary spare parts in good time, and applications that enable predictive maintenance provide support here.

2.9 Conclusion: initial solutions, great potential, international significance

Many companies in the process industry are excited by the chance to access stranded data in a simple and secure way in the future and to use new monitoring and optimisation functions. As is customary in process automation, these functions are subject to lower requirements, for example in terms of availability, since NOA offers an open system world in addition to core automation. Like the MTP concept for modular systems, NOA is not a “German” topic, although it was initiated by NAMUR and ZVEI. Most of the initiators operate internationally and will of course use the NOA concept in plants all over the world. From the very beginning, the initiators have also involved international organisations such as BioPhorum and ISPE (International Society for Pharmaceutical Engineering) and presented the NOA concept at international events like the Open Process Automation Forum. After all, global acceptance is absolutely crucial for the success of NOA. Anyone who wants to contribute to its further development in the future is more than welcome.



With NOA, plant operators will be able to access stranded data more easily in the future and use it for monitoring and optimising their plants and processes. (Source: NAMUR)

MTP and NOA – Two concepts promoting the future viability of the process industry

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