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AIMagazine

INDUSTRY 4.0 IN PRACTICE

The Digital Factory: Does digitalisation bring barriers, or benefits?

Editorial

The old saying that no plan survives contact with the battlefield also applies for industry's war of competition for new hires and greater efficiency. One force behind all of this is the digital revolution, which we're all living within whether we like it or not. That's why we've decided to devote the latest issue of AIMagazine to the ***digital factory****. That doesn't have to mean that it's all virtual and that robots take care of everything, as you'll sometimes hear at various conferences. In this issue you'll be reading about how digitalisation (like everything else) starts with small steps, and that even minor changes can mean big things. And also, everything's still really all about people, about flesh and blood.*

If you have a deeper interest in our home country, then the "18" at the end of "2018" probably says something for you. That's right – we'd like to pay tribute to 100 years of Czech independence. As global as we are, we're still firmly rooted in Pilsen, where we open up the door to digitalisation as handily as this city's Na Spilce restaurant can serve up a perfect Prazdroj beer. And we're proud of that! So let's take a brief look into history. The century since the founding of what was then the Czechoslovak Republic has been full of revolutions and transformations, starting with 1918 itself, followed by the industrial revolution under the First Republic and industry's transformations during and after World War II, and then after 1989 and on up to today. And it's all far from over. Time goes on, the situation on the battlefield keeps changing, industry is entering its fourth revolution, and a 100-year anniversary is just one of many milestones...

And at Aimtec, we too have embarked upon a number of changes. You're looking at one of them right now – a new face for AIMagazine. We're sure you'll like it at least half as much as we do. Meanwhile there's so much more that we have coming up for you. Like the 19th annual TAL conference – Trends in Automotive Logistics. Come join us in Pilsen this October: to consider the future, discuss the past and follow it all up with good food and good drinks. And until then, enjoy the summer and look positively at the future. It will surely be a good one.

Zdeňka Linková

The cornerstone of every digital factory

It's not just corporate IT managers who lose sleep over Industry 4.0. Members of companies' top management often have to address this topic as well. No matter whether it's because their digitalisation projects have been delayed, and they're no longer keeping pace with the market, or because their projects' budgets ran out long ago and long before bringing the expected benefits. Then their backlogs fill up with further digitalisation plans, for which they don't have free capacity. Meanwhile, digitalisation success depends upon a well-configured IT strategy, in terms of not just the choice of products used, but also securing the appropriate resources (teams of professionals).

Thanks to our 20+ years of experience in digitalising manufacturing and logistics, we see corporate digitalisation projects from the perspectives of both central managers and local branches. And local manufacturing plants are truly where corporations' added value is created. Their efficiency, flexibility and ability to deliver on time and at high quality have a fundamental influence on the whole corporation's profits. During our many discussions with customers, we've noted several commonalities that underlie the often difficult and awkward births of global projects. We'd like to share our experience and opinions with you in this mini-series that we've prepared for you that's dedicated to strategic topics from the domain of corporate IT managers. The first of our topics is **The cornerstone of every digital factory**. For us, that's none other than ERP.

In our times of automation, robots and the IoT, why such a boring topic as ERP? You can't build a digital factory without stable cornerstones – both physical stones and software building blocks. And **ERP** is one of these cornerstones. Like it or not, it is – in our opinion – still the backbone of the whole integrated solution, the one upon which the remaining production and logistics systems rely. You see, many companies yearn for a beautiful, standardised IT solution that's the same worldwide and that unifies all of their processes. In short, a lovely manufacturing company paradise. Their thought here is that the costs and risks connected with the administration of a number of heterogeneous systems are too high; they demand separate administration and mutual integration, and that brings nothing but trouble. And these companies surely have the right idea. So how can they make it a reality?

Logically, most companies begin their deployment of a unified ERP solution (this is usually SAP) with a pilot branch, one that deals with the majority of the same processes that the company does overall, and this subsidiary is usually then presented as a model for others. At this branch, a team of professionals delivers a pilot project, with the goal of creating a corporate template. However, the approaches to implementation vary from case to case.

A variety of approaches to implementing ERP

The first possible approach to a corporate ERP solution is to create a system with very specialised functions and lean processes on the level of manufacturing or warehouse management. That means for example one with transaction screens for mobile devices or with touch screens for production or quality announcements, with VNA integration, etc. The key stumbling block here is that no entirely standard ERP system supports these transactions in a truly lean form. So this is the moment where a consultant comes in, either internal external – and it's often a very senior one (in plain English: one that can write program code) – and creates transactions tailored for the pilot, i.e. model plant. Then comes the moment when the corporation begins speaking confidently of a completely standard, unmodified SAP template.

This is followed by expansion to the other plants, where the team suddenly discovers that every plant really does need something slightly different after all. The real-world reasons for this are many, for example cultural (Germany vs. the USA), topological (legacy issues in old halls), differing manufacturing and warehousing technologies, product differences large and small, differing quality levels from local suppliers, differing traceability requirements and so on. So once again a consultant comes in – if the company is lucky, it's the same one – and modifies the processes. Quite often they don't just configure; they code. I probably don't need to explain how tattered the template looks after deployment at the seventh location. We know of corporations where they're already on the third launch of their corporate template over the last ten years.

Some companies, meanwhile, choose a **fixed corporate template** from whose processes not an inch of deviance to the left or to the right is allowed. Once again, I probably don't need to explain how well these are received by the plants, especially the ones with large production volumes. During their existence, they've each nursed a local SAP instance in which they have process variants that provide the specific functions for their processes, and now suddenly here comes headquarters with its new "decree"...

The third option is the **minimalist** one. The head office prepares a template providing for internal logistics in SAP without the WM (Warehouse Management) module and without handling units. However, this variant can't address what that plants really need – efficiently managed logistics and production – and meanwhile it just kicks the same dilemma down one level, into their WMS and MES systems. Here they then have to address the very same requirements for standardisation, robustness and flexibility.

The fourth approach is to use further **integrated modules** from the software supplier, for example the EWM module from SAP – but that, along with SAP S/4HANA, is a subject for a separate article.

So what, then, is the right solution? In my opinion, standardisation really is the right idea, and a standard corporate template is the only right direction. But the question is, how do you "steer" it?

The first step towards success – and it's a fundamental one – is to realise that any kind of modification to ERP is actually software development. And that demands a professional approach. What's more, when you want to standardise, logically that should probably mean standard software. There's a difference between spending fifty dev-days on developing a few warehouse scanner transactions, and spending hundreds to thousands of such days on developing a standardised add-on for lean stock management in automotive. You see, on the warehouse or workroom level, no one single ingenious standard transaction template exists. Even inside of a single corporation, reality is often about considerable process diversity. A global seat manufacturer can serve as an example here – processes at the materials warehouse often differ significantly from the processes at the plants that manufacture seat structures and trims and perform JIS seat assembly. Even within a single seat manufacturing plant, they'll work differently with "cow" than they do with rolls of textiles.

The ideal route here is a configurable, or better yet **composable solution**, where the corporate process template can be flexibly recomposed in a way that's tailored to the local specifics, while still meeting the head office's requirements for the given transaction. One of our customers has aptly called this kind of template composed of functional modules die Bausteine – the building block. The local versions of transactions are then produced error-free and with no programming needed, i.e. without needing detailed specifications, coding and lengthy testing. It also has one more important impact: it fundamentally reduces the time from the GAP analysis to the first prototype. Meanwhile the corporate team has everything under control and always knows what it can expect from a localised transaction.

Another important guideline is **specialisation**, for which there's no better example than automotive with its supply-chain structure. We've had to introduce specialisation into our teams as well; for example in the Warehouse Management System area, we have specialists for such processes as those for optimising warehouse routes, for returnable packaging and for production halls and aftermarket distribution centres. Yet despite all of this, in mid-sized automotive enterprises, teams of 4–6 internal consultants quite typically deploy the entire ERP system. With every new customer, we keep learning new things.

Our final question might be: To what extent can professional software development (even modification is development) and specialisation and the preparation of a configurable solution be handled using internal resources only? But with my thoughts on that topic, I'd be jumping the gun, or rather, I'd be divulging the contents of the next part of this mini-series. So next time I'll be presenting you with my thoughts on the subject of **Do It Yourself**, that is: handling critical business systems using internal resources only.

Author's note: nothing of the above should be taken as dogma; it's all about compromise and seeking a balance. I'll be glad if this article ends up sparking a discussion. Write me at roman.zak@aimtecglobal.com.

Roman Žák

Integrate your SAP ERP with EDI

It's hard to say, really, which system in a company is the most important. For some companies, it might be the production management system, for others planning, for others accounting. But the ERP system and EDI shouldn't be missing from that list. ERP is the river into which the data from every other program runs, and meanwhile call-offs and orders over EDI are the spark behind production; it's where ASNs are exchanged and invoices go out. But… couldn't it all be a little simpler? What if we had someone to whom we'd explain everything we need, he'd set everything up and then it would all run automatically on its own? And what about SAP?

SAP ERP is notorious for being very complex. You need to know its environment and features in great detail to configure it well. So it's natural that companies have their experts and trained specialists who take care of administrating SAP and configuring its processes. And yet if a company needs to integrate a second very complicated mechanism like EDI into SAP, in most cases they can't both be handled in-house. So it's appropriate to hire outside staff for this job. But then you have to explain your processes to two different suppliers… or do you?

1 + 1 = 1

No matter whether you're in the phase where you're deploying SAP ERP and want to integrate EDI communication while you're doing that, or instead you already have SAP and you now need to extend it with EDI: turn to a supplier who can offer both solutions. It will save you a lot of effort and, frankly, money. Implementation will go more smoothly and take less time, because you won't have to coordinate two suppliers and explain your processes to them. The compatibility of these two systems will also be ensured, and any good supplier of this kind will do all the mapping and customising for you. So one SAP + one EDI really can equal one supplier.

Faster reactions and a more transparent supply chain

Integration between SAP and EDI brings you one enormous benefit – the data from your customers and suppliers is logged automatically and in real time. So you don't have to hand-copy anything or hunt for it in tables. You'll have access to all of your information on deliveries and on changes to orders and customer requirements in one single place. And your teammates in every division from purchasing to manufacturing to dispatching will be able to react more quickly and flexibly. What's more, as a universal language, EDI will bring you access to orders you couldn't compete for before.

SAP + EDI the Aimtec way

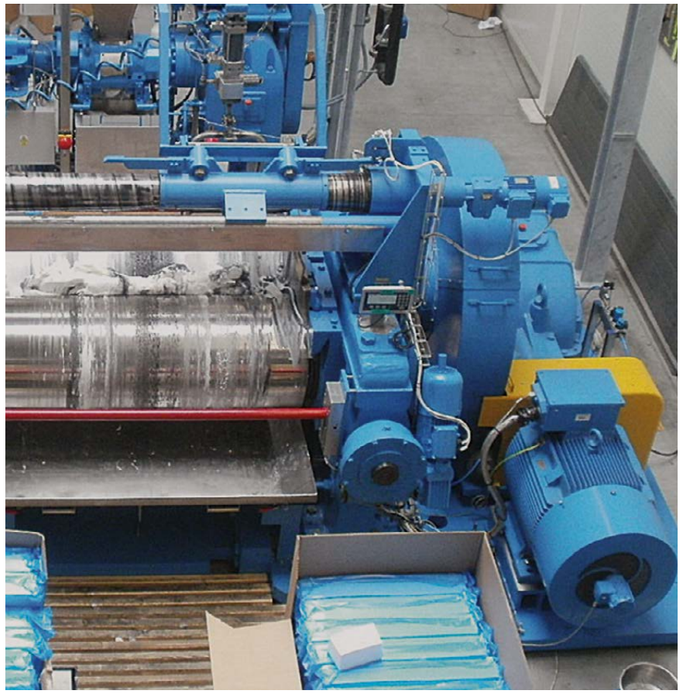
At Aimtec, we have a combination of integration (EDI) and SAP specialists under one roof. We enable EDI communication via either on-premise facilities or EDI as a service, and then ensure its full integration into SAP (HCI, PI, HTTPS and HTTP via VPN). We configure the SD module to process call-offs, generate ASNs and print shipping documents and other necessities. Automotive is our speciality, where we have over 20 years of experience – and we're also experienced with every OEM supplier concept. Our Mapping Factory (see page 18) will ensure that data interchange with your suppliers and customers go smoothly. Our SAP specialists, meanwhile, will configure your processes throughout SAP ERP so that you can always see the right data and information where you need it. No more hand-copying.

For the story of how a SAP+EDI implementation worked at DAIHO, see page 8.

Marek Šabatka

We are the new EDI provider at Wacker Chemie

The Munich-based chemical company WACKER has decided to make two beneficial transitions at once – it's switching EDI providers as it upgrades its network solution for supplier connections from ISDN over to modern communication channels. Its new EDI provider is Aimtec with its ClouEDI.



From on-premise solution into the cloud

Since the ISDN network in Germany will be shut down by the end of 2018, Wacker Chemie AG was seeking new solutions to replace both their on-premise server and part of the connections running over their then-current EDI provider. Wacker decided to partner with Aimtec and implement their ClouEDI solution – EDI as a service.

ClouEDI enables customers to exchange messages with their business partners over multiple communication channels without the need for on-site hardware. Users can check the status of their transmissions and conversions easily on the my.clouedi portal. The service uses a clear pricing plan that allows customers to easily calculate project costs in advance. Aimtec is unique among Czech companies in that it runs ClouEDI on Amazon's AWS in Germany.

Fast and reliable

The pilot phase of WACKER's project was planned to last three months, including the processes for creating mappings and onboarding 16 suppliers. The expertise and the broad selection of communication channels at Aimtec in connection with the professional project management at WACKER made this project a complete success.

"We chose Aimtec for their proven expertise in EDI solutions and their innovative approach. With ClouEDI, we take our processes to the next level. During the pilot phase, both teams showed their dedication and professionalism", said Herbert Hangöbl (E-business manager at Wacker) of the project. Enthused by their experience with the pilot, both parties have decided to expand their cooperation in 2018.

Wacker Chemie AG

WACKER is a globally-active chemical company with some 13,800 employees and annual sales of around €4.92 billion (2017). WACKER has a global network of 23 production sites, 21 technical competence centers and 50 sales offices.

Jan Stočes

The first step on the road to Industry 4.0 at DAIHO

The individual steps in digitalising your enterprise may seem demanding. And they do demand long preparation and thorough employee training. But all that effort pays off in the form of clearly defined processes and a record of production data and planning. Having a single system that is capable of integrating logistics, production and finances as well as financial controlling can thus greatly benefit your company. At DAIHO CZECH and DAIHO Schenk, they could tell you a lot about that. Both of these plants were anticipating the deployment of a new ERP system. And both of them decided for the combination of SappyCar + ClouEDI.

In the Czech Republic, DAIHO manufactures plastic pressed parts for use in industry. You can find products from the Liberec-based DAIHO Schenk factory – ashtrays and cup-holders – in cars made by Audi, BMW, VW and Mercedes. Meanwhile the DAIHO Czech plant in Pilsen mainly produces components for electronics and air conditioning. At both of these plants, they began to need a better way to monitor manufacturing information, plan purchases and control material flows. The Liberec plant was the first to see changes.

A real-time digital image of the Liberec plant

DAIHO Schenk was already using an ERP system before they deployed SappyCar. But alongside it, they also had to use several other systems for monitoring stock levels, material flows and production. This was all demanding to operate, and it was especially demanding to ensure that the data was correct. Once they implemented SappyCar, our pre-configured SAP ERP solution for the automotive industry, the DAIHO team had a complete tool for the automated management of material flows. That's given them a real-time overview of their stock statuses, so that they can plan their production and purchases better. They've likewise acquired a complete overview of their manufacturing's individual phases. Not to mention a record of data for traceability, which is absolutely fundamental for automotive. This project also included the activation of our EDI as a Service: ClouEDI. It guarantees error-free, automated communication with customers.

The Liberec template travels to Pilsen

The use of the new system proved its worth at DAIHO Schenk, and the implementation process served as a template for DAIHO CZECH. The project's main motivations were to support enterprise processes, manage warehouse stocks, plan production and monitor production data such as total cost ratio.

Zebra mobile terminals were integrated into the system, so as to make warehouse workers' jobs easier and to eliminate errors. During the "go-live", Aimtec provided 24-hour support directly on-site.

Introducing a new ERP and logistics process management inside of a factory is only the first phase in the overall digitalisation of production, but by taking this step, DAIHO has joined the ranks of the companies that are modernising their processes in the Industry 4.0 spirit.

Premium support and system adaptations

The Pilsen DAIHO CZECH plant mainly delivers to Daikin, an air-conditioning manufacturer. This client's special requirements had to be reflected in the system as well. We therefore extended SappyCar and SappyWMS – our warehouse management system – to ensure that product dispatching would run smoothly. One example of a process that we customised is picking into customer forklifts in a predefined sequence. DAIHO's clients also include Panasonic and Fehrer. ClouEDI handles their electronic data interchange for these as well.

In light of the complete change in how processes at the Pilsen plant work, DAIHO requested that we provide premium support during preparation and during the "go-live" itself. Even though the employees were trained in advance regarding how to work with the system and the new mobile terminals, the Aimtec team was available right at the factory 24 hours a day for the whole first week as well. Their presence during the system launch ensured that the transition occurred smoothly, with no negative impacts on production.

Prepared for future development

SappyCar now handles the collection of production data and the planning of production at the DAIHO Czech pressing line, paint shop and assembly sites from start to finish. Thus their directors have a non-stop overview of the current state of production and stocks – in short, a digital image of their factory. And the system is prepared for future development as well. Today it's collecting the data needed for quality control, so that tomorrow's controls can be more thorough. Likewise, adjustments are also anticipated for other processes that will push DAIHO into the next phase of automation.

Jan Kratochvil

What do Mercedes, ski poles and the human brain have in common?

You might be saying: “Vacations! The driver loads the skis and the poles into their Mercedes and heads for the slopes.” And that’s one right answer. But there’s another one: some of Daimler’s automobiles… and some ski poles… are made thanks to DCIx. And the human brain? More on that in a bit.

Just about everyone suspects that all of the objects around them must be made somewhere. The clients for whom we organised the DCIx System User Meeting got a chance to see “under the hood” of the manufacturing of door fillings for Daimler and ski poles from Leki. And both products are born with help from DCIx, so we couldn’t miss the chance to make a reference visit right to the IAC Přeštice 2 and Novasport operations. A bit unusually, practice was followed here by theory – and not only for DCIx, but also for some other new products in our portfolio.

How to find a package in a pile of pallets

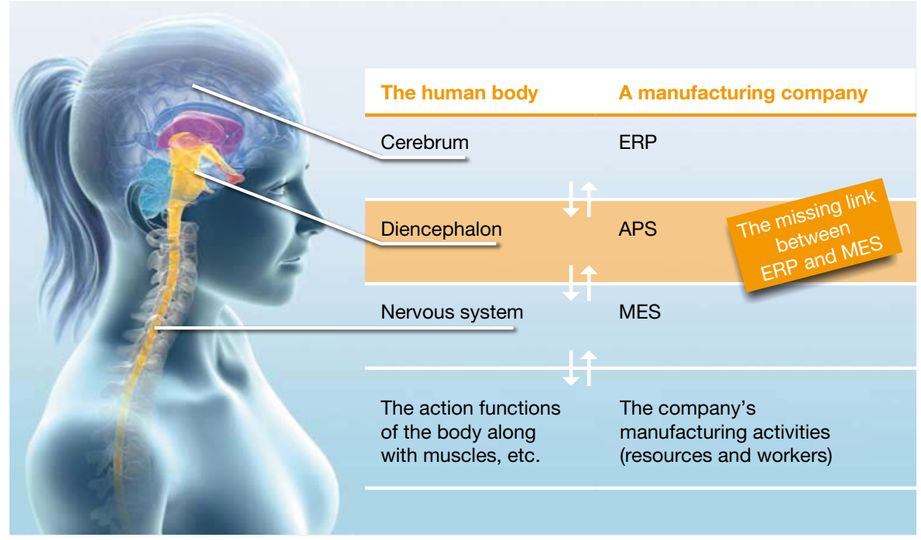
Location Based Services were the first new Aimtec feature shown. These can guide warehouse navigation to some extent. They can not only monitor where a handling unit or piece of equipment is located, but also analyse its routes. Collecting and visualising data in DCIx lets users monitor whether, and for how long, their equipment is riding empty, identify bottlenecks and plan optimal routes. The benefits here are a reduction in vehicle hours and an increase in warehouse staff’s productivity.

Location Based Services (LBS) are just one out of many things you can do for warehouse automation. LBS are new on the market, but many technologies for partial or complete automation are older and are widely used for their undeniable time and money savings. An automated warehouse can for example watch the dimensions and weight of your handling units for you, while conveyors can move materials and goods to where they’re needed, and vertical lift modules let you utilise your warehouse’s whole height. And managing and controlling all of the above technologies with a single system – DCIx – is a natural here.

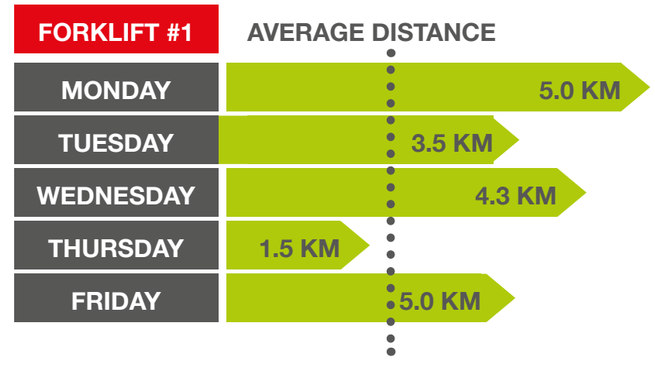
The missing link between MES and ERP

If we compare a factory to the human body, then we can say that the ERP system is its brain – everything

The human body as an analogy for an enterprise system



Fleet workload diagram



starts there, and all information goes back to it. MES performs the functions of the nervous system. During their evolution, humans also developed the diencephalon, which serves as a connector between the brain and the nervous system, filters the information that is to penetrate into our consciousness, governs endocrine functions and more. In a manufacturing enterprise, it is very often the link that, if present, would manage production and transmit the ERP information on production, materials consumption and so on. Meanwhile the problem isn’t that such a system doesn’t exist. Advanced planning and scheduling (APS) is precisely this link between MES and ERP.

Advanced planning and scheduling enables things like short-term and long-term planning and simulations of the influence of production data on the production plan. The benefits? For example reduced materials stocks, a precise WIP overview, and increased OEM supplier reliability.

Interested in the details? Want to come visit our next seminar? Write us at vit.glasl@aimtecglobal.com.

We’d like to thank all the participants of the DCIx System User Meeting – and IAC and Novasport for enabling us to visit their operations as well.

Vít Glasl

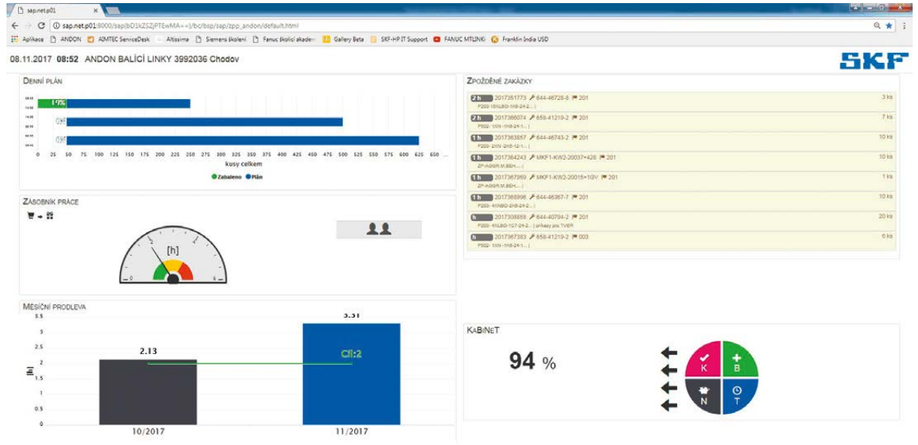
Lean Manufacturing principles on a packaging line

Not many companies in our country have withstood its fundamental societal changes over the last 100 years without major fluctuations. The Swedish company SKF is one of the exceptions. It set up a business branch, and later a manufacturing branch, here just after World War I, and it's still successfully making history today. Its plant in Chodov, near Karlovy Vary, is the largest plant for the production of lubrication systems in Europe. But as history changes, factories and their processes and systems must change too. The Digital Factory means fine-tuning for not just production processes, but also those that come before or after it, such as packaging.

When SKF was analysing its bottlenecks, they found that the packaging line was among them. They sought a way to eliminate errors and increase line throughput, but meanwhile they didn't want to add other software alongside their SAP ERP. We thus offered to create an andon in line with Toyota Production System (TPS) principles to support lean manufacturing customised for the needs of SKF. The visualisation of indicators helps to eliminate downtimes, notifies of the current state of packaging progress and provides source materials for correcting data.

A signal for better optimisation

"Andon" is Japanese for "signal", and it serves differently in different types of production. But in all of them, it provides workers, supervisors and management with visual notification of each error or non-standard situation. For SKF, we chose an andon that visualises processes on the packaging line. The workers can see directly during their shift how they are doing relative to the plan, and then they can respond to the current situation. The indicators are based on data that is imported from SAP, and they are shown on the line in real time (they are updated once every five minutes). On the screen above the line, employees can monitor five main indicators that offer them quick and simple information. And because Czechs are a competitive lot, the visualisation also provides them with a further motivation – thanks to the transparent plan, they can compare their shift with their colleagues'.



The daily plan

The simple visualisation offers a display of the number of items that should be packaged and those that have already been packaged. If the workers determine that they've only met 30% of the plan halfway through the shift, they know that they should talk over the situation with their superiors. Naturally a much happier situation arrives when they're ahead of expectations. The screen shows two linked shifts; optionally they can transition to three-shift or one-shift operation.

The Work Feeder

How can staff get information on how many units are still waiting to be packaged, and how can they compare it with current capacities? That's what the Work Feeder is for. It shows whether the current work queue is manageable with the current number of workers on the shift. If the hand is in the green part, that's ideal; if it's in the orange part, that means a delay in shipment packaging, but still an acceptable time. Red, meanwhile, indicates a major delay.

Delayed orders

We don't live in an ideal world, and orders are sometimes delayed at the warehouse before packaging. Thanks to the Delayed Orders screen, packagers, assembly foremen and production directors have a way to see how long which order has been waiting for packaging. There are delays that are acceptable and that thus remain within the yellow-orange field. But then there are red orders, which have been waiting for packaging and dispatching for a long time and thus need to be handled preferentially – or the data needs to be verified to preclude the possibility that the shipment has been packaged, but a data-entry error has occurred. The context here is that SKF's quality department was sometimes taking an order from production off to be checked without registering this action in the system. This produced an artificial delay on the packaging line, where the order was not physically present. Another important case was the situation where the label was not scanned when a shipment was packaged, and thus the system still registered it as unpackaged.

Monthly delay

The monthly delay visualises information on the average time between the production of an order and its packaging. This motivates workers towards better order processing, but it also can serve as an indicator for the plant directors regarding capacities. By implementing the andon, SKF has reduced this delay by an average of 2–3 hours.

KaBiNeT

KaBiNeT is a special indicator summarizing all the items above, which expresses in one number the degree of success at combining quality, safety, costs and order time at a given packaging line.

SKF CZ is originally a Swedish company, but already in 1919 they had a business branch in Czechoslovakia. Their extremely high-quality metal ball bearings gained popularity quickly and made their way into all areas of machine engineering, thus demanding the opening up of manufacturing centres here as well. After the war, SKF was covering an unbelievable 95% of rolling-element-bearing consumption in Czechoslovakia. Today, SKF offers its customers bearings of all kinds in a number of variants for a variety of application types, as well as sealing, lubrication, tools and other products and services. In 2010 SKF enriched its manufacturing portfolio by acquiring Lincoln, a renowned manufacturer of central lubrication systems, and in 2013 it laid the cornerstone of the largest lubrication-system manufacturing plant in Europe – Lubricon.

Lucie Koloušková

Not just smart manufacturing – smart planning too

A digital factory doesn't just mean collecting data on production and logistics processes. It also means controlling them. And you can't do that without a plan. How should you handle processes that can't be handled in an existing MES system, such as production release? How can you ensure that your production lines react quickly to change requests and new projects? By using advanced planning and scheduling.

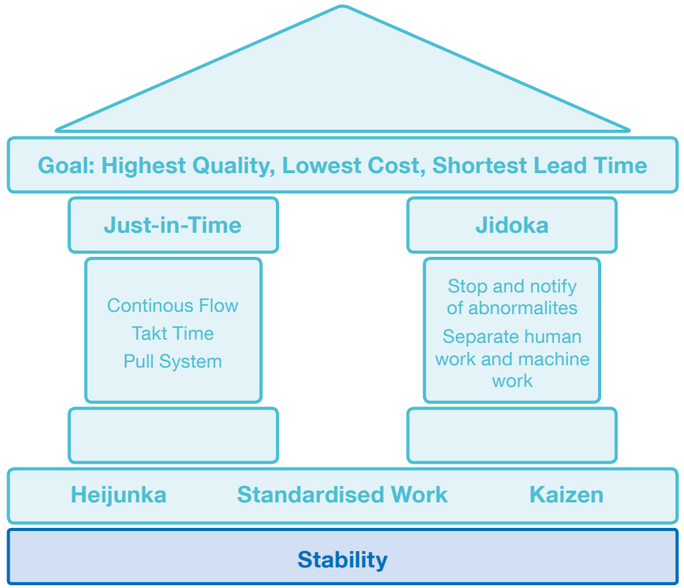
There are several Advanced Planning Systems (APS) out there on the market. At Aimtec we've put our faith in the Asprova system from Japan, and our experience with its benefits for our customers has confirmed for us that we've bet on the right horse. The leading lights of Japanese industry have been using Asprova since 1994. It's based on the philosophy of lean principles for advanced planning and scheduling and the other planning systems used in Japanese companies, such as TPS (Toyota Production System). Asprova is supported in 19 countries of the world, and it is used at over 2,000 companies worldwide. This system addresses the basic questions for composing production plans, which are:

- Are we able to plan for the future?
- Can we add a test order to our plan?
- Might we be manufacturing too much?
- Do we have enough materials for our planned production ?
- When should we order materials, and how much?
- How long does it currently take for orders to make it through production?
- Do we have enough workers to fill our orders?

Quick configuration and immediate benefits

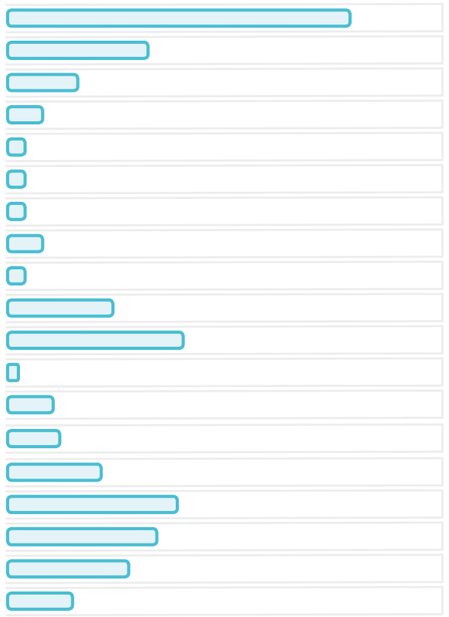
One enormous advantage of the Asprova APS is that it has preconfigured functionalities, which can be interconnected – and the whole system configured – so as to fit the operations of a specific plant. That means no programming is necessary; this speeds up the process both for implementing the system and for any adjustments to it in the future. Thanks to its standardised interface for SAP and other global ERP systems, the error-free transfer of data needed for other operations is also assured. And also: before the actual deployment of the planning software, the input data (bills of materials, production procedures, etc.) is sanitised. That's because not even the best plan is useful if it's working with bad data. So after deploying our APS, you gain:

- a tool for flexible real-time planning,
- a planning algorithm that can be changed simply and easily,
- a graphical visualisation of your production plan – Visual Management (you see what you're planning, and you don't have to spend a long time searching for data),



Toyota Production System "House".

The types of companies that use Asprova – percentages by field



19.5%	Manufacturer of electronic parts and devices
8%	Manufacturer of transport equipment
4%	Manufacturer of precision machinery and appliances
2%	Manufacturer of other products
1%	Manufacturer of food products
1%	Manufacturer of beverages, tobacco and feeds
1%	Manufacturer of textile products
2%	Manufacturer of furniture
1%	Manufacturer of pulp, paper and paper products
6%	Manufacturer of plastic products
10%	Manufacturer of chemical products
0.40%	Manufacturer of petroleum and coal products
2.60%	Manufacturer of ceramic, stone and clay products
3.80%	Manufacturer of rubber products
5.30%	Manufacturer of non-ferrous products
9.70%	Manufacturer of fabricated metal products
8.50%	Manufacturer of general-purpose machinery
6.90%	Manufacturer of electrical machinery
3.70%	Manufacturer of electronic and communication equipment

- information on delayed orders and other bottlenecks – Optimisation (Asprova is able to flexibly react to bottlenecks and differing configurations for N planning strategies),
- a reduction to order throughput time and a reduction to warehouse stocks – Lean Management (producing only what's needed, with a precisely defined level of capacity demand),
- integrated reports, sophisticated outputs and a graphical interface for both line operators and management,
- automated synchronisation with your ERP system,
- simulation of alternative production plans based on a variety of criteria (costs, the time needed for the order to pass through production, feasibility etc.),
- an overview of orders' statuses and of when products can be delivered,
- optimisation of machine/worker loads, leading to an increase in production efficiency,
- planning based on lean manufacturing principles – TPS.

The benefits of implementing Asprova APS

Higher production throughput and operation linkage.

Shorter throughput times.

Fewer material stocks needed, as well as fewer excess works in progress and finished products.

A warehouse stock reduction of 30 to 50 percent.

Quick creation of a production plan that takes all of your plant's limitations into account.

A planning efficiency increase of 25 to 60 percent.

Standardisation and the possibility of substituting one planner with another.

Centralisation of planning.

Better relationships with your customers thanks to error-free deliveries.

Pavel Boháč

Planning at a demanding manufacturer of plastic parts

The ANTOLIN LIBAN plant manufactures plastic parts for car interiors. ANTOLIN LIBAN was a part of Magna International Inc., a global automotive supplier, until August 2015; today it belongs to Grupo Antolin. ANTOLIN LIBAN manufactures door panels, dashboards and other components for customers such as ŠKODA AUTO, Audi, BMW and Citroen. It is highly respected by its customers.

"The advanced Asprova system for planning complex production processes in the automotive industry helps us to track and analyse our production data even better. Asprova offers numerous reports enabling a variety of visualisations."
Ivan Marinec, Plant Manager, ANTOLIN LIBAN, s. r. o.

Project phases

Phase 1
Analysing and optimising internal processes.
Phase 2
Creating a model and testing with real-world data.
Phase 3
Designing and integrating the enterprise information systems – SAP ERP, MES and APS Asprova.

The initial situation

The project was implemented in the period when the Libáň plant still belonged under the Magna concern. The management of Magna Interiors Libáň decided it wished to further improve its production planning. All planning had previously been done within its enterprise-wide SAP system. Magna Interiors initially considered the implementation of the Asprova APS system for plan visualisation purposes only, but ultimately it implemented an advanced tool for the whole of its production planning and assessment for all three of its plants in the Czech Republic – in Libáň, Liberec and Nymburk. The APS solution chosen also met their condition of having multiple language versions, so that it could optionally also be rolled out to other divisions.

The customer's requirements and objectives

- Collection of data from the SAP enterprise system.
- Planning of integration of all resources based on incoming purchase orders.
- Planning based on minimum and maximum stocks.
- Exporting of data into the SAP ERP and MES systems.
- Reporting on the latest manufacturing status.
- Evaluation of manufacturing according to the plan.
- Visualisation in the form of Gantt charts on LCD displays directly within production spaces.
- Planning of number of adjusters and manufacturing operators.

The solution

Asprova, a Japanese production planning and management system, met all of the customer's requirements. Aimtec is Asprova's supplier for the Czech and Slovak markets, and Aimtec cooperated with the customer's specialists to deploy Asprova APS based on the needs and requirements of their manufacturing process.
The project consisted of several tightly connected steps. The initial phase of the Asprova deployment included an analysis and optimisation of internal processes. The creation of a planning model and testing with real data then followed. The next step brought the connection of the APS Asprova interface to the SAP enterprise information system; here Magna had had to prepare sufficiently accurate data. This was achieved using purpose-built reports that enabled quick and effective modifications to the needed data. Asprova was also hooked up to their existing MES system. Aimtec completely integrated all three of their enterprise systems – SAP, Asprova and MES. With Aimtec's Asprova deployment, the planner has an adequate tool for advanced production planning.
Every morning the data is copied in from SAP into Asprova. The planner creates a detailed production plan for the next 2–3 days. First the presses supplying JIS assembly are planned, then the critical presses and finally the presses with overcapacity. A capacity forecast for the next two or three weeks is prepared, including schedules for operators and adjusters. The plan thus created is exported to SAP and sent out to the MES system's terminals at individual machines. Operators, meanwhile, can see the job queues. The MES system downloads information on the specific manufacturing batch and proceeds with the manufacturing steps automatically. The results are displayed in the form of a Gantt chart on LCD panels and are used for the subsequent planning steps. Loading in data (stock levels, call-offs and production data) from the SAP enterprise system into Asprova takes about 5 minutes. The actual planning run within Asprova takes 10 minutes. The copying of data from SAP takes place in the early morning hours and lasts 25 minutes.

This solution's specifics

- There is a change to the typical internal processes in relation to each specific production batch. The ID number of each production batch is printed onto labels within SAP ERP and Asprova.
- Publishing the plan independently from the planner – the planner simply composes a plan within Asprova, confirms it and sends it off to SAP. There's no need to worry about anything else: all of the related processes run automatically. The planner creates a plan every day and keeps updating it according to the latest data.
- Easy error correction – if a planner makes an error in Asprova, they can correct it easily (unlike in SAP), and it will not be propagated further into the system or into related processes.

Benefits

- Schedulers are 25–50% more efficient.
- The tools in Asprova and MES provide better plan control.
- Stock levels for works in progress and finished products are up to 30% lower.
- Master data clean-up is supported.
- Planning for publishing is highly efficient.
- Overhead is reduced by up to 15–20%.
- Production status can be checked online based on the plan.
- The plan can be evaluated for a specific period and for its differences compared to the original plan.

Pavel Boháč

We have our own digital factory too

The Digital Factory doesn't have to only mean introducing Industry 4.0 at manufacturing and logistics firms. We also have our own digital factory at Aimtec. We call it the Mapping Factory, and it's a part of our Independent EDI Services.

A guarantee of the latest features and of sending correct data

Electronic Data Interchange (EDI) is a key process for manufacturing companies. Even though it is not directly responsible for manufacturing, integration with suppliers and purchasers is itself of fundamental importance for practically all manufacturers, and especially for automotive suppliers. If for example ASN (Advance Shipping Notice) messages fail for any reason to be delivered correctly, or if they contain errors, the supplier can receive a fine (a defect charge). These have an effect on the supplier's overall rating, and through that, on its future contracts. Invoicing also takes place over EDI, and so it is important that everything works as it should. Meanwhile EDI configuration is a very specific and complicated process that demands an IT team and EDI specialists. But for many companies, maintaining employees with these skills is very costly, and moreover they're hard to find on the market. The solution, then, is outsourcing or the use of cloud services.

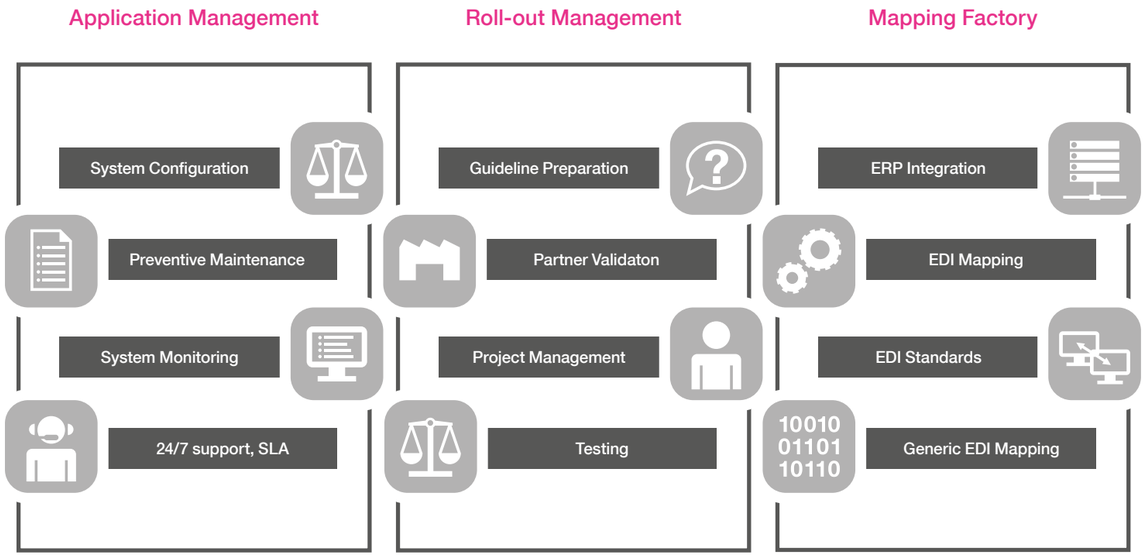
Aimtec has 50 consultants devoted to Independent EDI Services. Their advantage lies in their knowledge of multiple solution types, standards and fields that can be found at our customers. We can thus cover data interchange within automotive, logistics, and manufacturing as well. Moreover, we're constantly watching the requirements for updates and developing new tools for message monitoring and verification. We can guarantee not only that your EDI will keep up with your customers, but also that the messages you send will be verified properly. We offer these services even to companies that are not customers of our other solutions.

Tell us where you deliver. We'll deliver the rest.

ConfiguringEDIcommunicationisaverycomplicated process, and configuring it "from the ground up" can take a very long time. Thanks to our over 20 years of experience, we know the requirements of OEM companies, and so we have pre-prepared message templates. This significantly shortens the time needed for configuring EDI connections. Within an EDI project, we communicate with your partners directly and take care of all communication testing and the implementation of specific communication requirements. If you need to integrate a new partner or process into the system, naturally we'll take care of all needed adjustments.

A factory for developing mappings

The demand for developing EDI conversions ("mappings") has led us to assemble a team that's specialised in this. Thanks to our agile approach, we deliver our projects very quickly; however, we place a strong emphasis on quality, and our configured processes are one reflection of that.
When creating our mappings, we perform standard code reviews so as to preclude errors and meet the quality criteria we've set for ourselves. After all of the testing rounds, both automated testing at Aimtec and testing at the customer, we set up the new process on the production server. To ensure that everything will go smoothly, we offer assistance during "go-live", either remotely or on-site.



You don't call support, support calls you

Our EDI services also include monitoring of the ASN messages you send. This ensures that our operators know if an error has occurred in any of your data transmissions. After identifying the problem, they call either you or your customer and arrange a solution. Naturally they're ready to talk to you in English or German.

We take care of the system even after project launch

We're constantly watching to make sure the system is functional and "healthy". During short daily and longer weekly iterations, our team shares know-how and works on the priorities of individual projects. This ensures that the users of our services can enjoy swift reactions to new requirements.

Pavel Rybár

EDI as the solution to a cold-war crisis

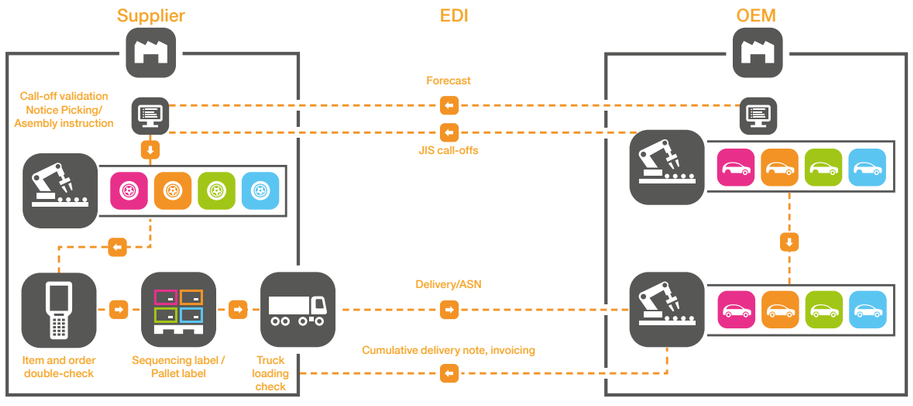
Just as with many other technologies, EDI was pioneered by the military. Ed Guilbert, considered the father of EDI, developed standardised messages about shipped goods during the Berlin blockade in 1948. The first actual EDI messages were sent in 1965, and ten years later, EDI's standards were drawn up by the Transportation Data Coordinating Committee (TDCC). Other standards were gradually developed after that, such as ANSI X12 (1981) and EDIFACT EDI (1985). They were first picked up by food-industry companies, who were then followed by banking and automotive.
Source: http://blog.logicbroker.com/blog/2013/08/19/edi-history

Why ClouEDI?

Electronic Data Interchange is a thirty-year-old system, and yet unlike other solutions that are dying out over time, it is still used today. This system and its providers have to adapt to the growing number of new requirements – and of clients that exchange data over EDI. That's why we've brought our customers the option of harnessing our ClouEDI system – EDI as a service. On February 6th, we organised a workshop about its benefits.

A team of 50 Aimtec specialists work on ClouEDI. Three of them – Marek Šabatka, Jan Stočes and Daniel Choc – came to Horoměřice to present our solution for integrating customer/supplier communication. Several of ClouEDI's main benefits were presented:

- There are no hidden costs in an investment into ClouEDI. You know the project's price in advance, and it's completely transparent.
- Since it provides EDI as a service, there's no need to invest into hardware or an internal team to manage hardware and software.
- Implementation can be finished in just a few weeks.
- Customers always have access to the latest features.
- If you are an automotive supplier, then we'll speed up implementation for you by applying our ready-made message mapping. If needed, we will communicate to the OEM any supplementary adjustments based on your customer specifics and help you with onboarding.
- The system is stable – thanks to an Amazon data centre, we can guarantee a 99.5% SLA.



And what kind of workshop would it have been if it didn't include a hands-on demo? This demo let the audience try out in real time what ClouEDI can do – searching for messages, fulltext searches and e.g. the my.ClouEDI Message Monitor, which gives the user a rapid overview of whether or not messages reached the customer correctly.

ClouEDI for automotive

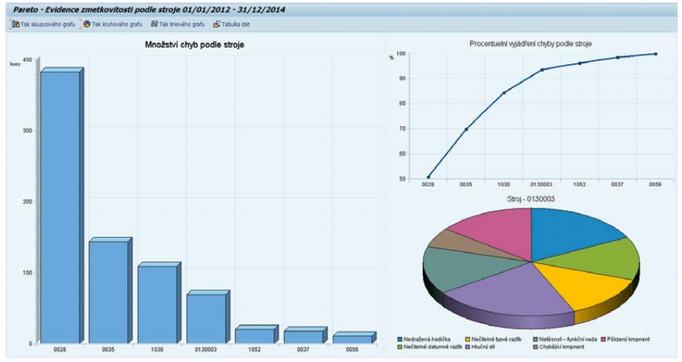
The automotive industry is quite specific in all of its aspects. Including data exchange. ClouEDI is automotive-ready and can also be used for managing automotive deliveries. It can provide up to three levels of ASN message validation, and thanks to this it minimises defect complaints and thus also money lost to OEM fines. One important part is its TSB generator, which takes care of printing customer labels and delivery notes for VW shipments that are precisely in line with the requirements of VW (including Škoda Auto). ClouEDI is also ready for cases where an ERP system is not able to work with call-offs. The ClouEDI JIT module transforms them into standard orders that can be imported into the ERP system that a company has already implemented.

Would you be interested in a workshop like this one? Would you like a consultation on which solution is the right choice for your company? Write to us at marek.sabatka@aimtecglobal.com, and we'll give you a call.

Marek Šabatka

How to handle quality control in SAP

Are you a SAP user? Are you also in charge of handling claims, making action plans and assessing defects at your company, and in search of how to manage suppliers? Or perhaps you're seeking answers because you lose track of which corrective measures have been implemented, and how fast? Are you thirsting for an effective, single-system tool? SappyQMS helps with all of these problems and more. And at our workshop on 22 February, we showed you how to get the most out of it. Here's a rundown of the most important points brought up there.



Action plans in action

As an automotive supplier, you know that whatever the audit, it's demanding to register and verify corrective measures for its individual findings. SappyQMS eases your work with monitoring individual steps, such as watching deadlines, responsibilities and corrective measures' statuses.

Caution, discrepancy!

Discrepancies can arise at any step of the manufacturing process. SappyQMS lets you control how they are handled once found and interlink individual cases of their occurrence and handling. This hands your quality manager a tool for easily comprehending and registering the process context.

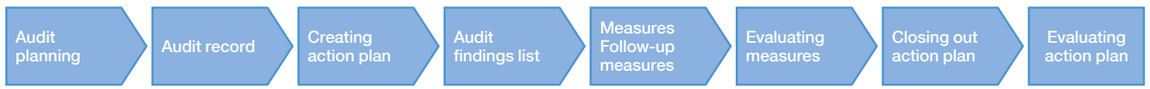
And since everything is clearer in graphs, SappyQMS offers visualisations as well.

Where do the rejects start? What are they costing us?

Very important questions for manufacturing companies! And tough to answer. Our system enables users to monitor reject-rate data, including where rejects start, and why (e.g. defective material, an error by a machine, etc.). SappyQMS can also monitor trends in the costs of your reject-handling process. All this can be followed in graphs that will help you assess, analyse... and add measures if needed.

One other area where quality-reporting features can be put to good use is APQP – Advanced Product Quality Planning. Sampling during input inspections is a good specific example here. SappyQMS lets you manage the approval process and record individual samples' statuses. And naturally, it lets you monitor your firm's other APQP processes as well.

Filip Melichar



The Digital Factory as MuleSoft® sees it

See the video here

How do you automate an entire factory? You need just three technologies: an API, the IoT and artificial intelligence, all communicating together. That's how MuleSoft sees it, and last autumn they presented their vision of the digital factory at their summit in London.

MuleSoft is a company that develops software for interconnecting applications and technologies. They've developed the MuleSoft Anypoint Platform as a foundation for integrating enterprise systems. As their partner, we rode out to MuleSoft Summit 2017, where Uri Sarid, the company's CTO, presented their vision of the digital factory. A factory can be fully automated with the help of nothing more than an API set that interconnects the other technologies. In this case the APIs are organised into three layers. We presented this concept – API-led connectivity – to you in AIMagazine #28.

The Industrial Internet of Things shown live

Through a model of a factory utilising the **Industrial Internet of Things – IIoT**, you can easily imagine how an automated workplace might function. In this case it's made up of a robot, a robotic arm, cooling equipment (a fan) and sensors (for the fan status and the temperature and for blockage of the arm). These are integrated into the application network using standard **system APIs** (they provide access to back-end systems, or, in this case, devices). The IoT devices were interconnected with the Factory Floor Dashboard application using the **user API** (providing communication with user front-end applications). The Factory Floor Dashboard enables the visualisation of your workplace and real time insights.

Playing with API building blocks

So we have an application where you can see what the temperature of the robotic arm is, whether or not the fan is turned on, and whether the arm is capable of action, or is blocked instead. Standardised REST APIs from **Open Connectivity Foundation (OCF)** were used for this purpose. These enable the application of RAML (RESTful API Modelling Language) solutions for home and industrial use.

The next piece of the puzzle is the API that controls the cooling of the robotic arm. If the temperature sensor notes an increased temperature, the cooling device is started up automatically. This is an automatic process controlled by software logic (if A happens, do B). We thus make a distinction here for what are called **process APIs**. The integration model then looks as in the diagram shown here. The individual APIs form a "plug-and-play" application network.

Automatic event reports and remote repairs

Another part of the digital-factory functionality presented is the ability to automatically generate a report when an unexpected event occurs and arrange a response by a technician. This is handled by another process API. A special application notifies of the malfunction (blocking by boxes) and arranges for a service technician to be sent out. But he may not even have to be sent out at all. During their demonstration, MuleSoft used a robot with an installed camera. Interconnection with a virtual reality headset enables anyone anywhere in the world to see exactly what's there in front of the robot in the factory. Also, thanks to augmented reality and integration – via APIs, naturally – with the application network, they can also see the sensors' statuses. Thus instead of just the temperature sensor itself, they see a temperature reading etc. That gives them an edge over even a technician responding on-site. A remote technician who's reflected in a robot can perform service responses faster and more safely.

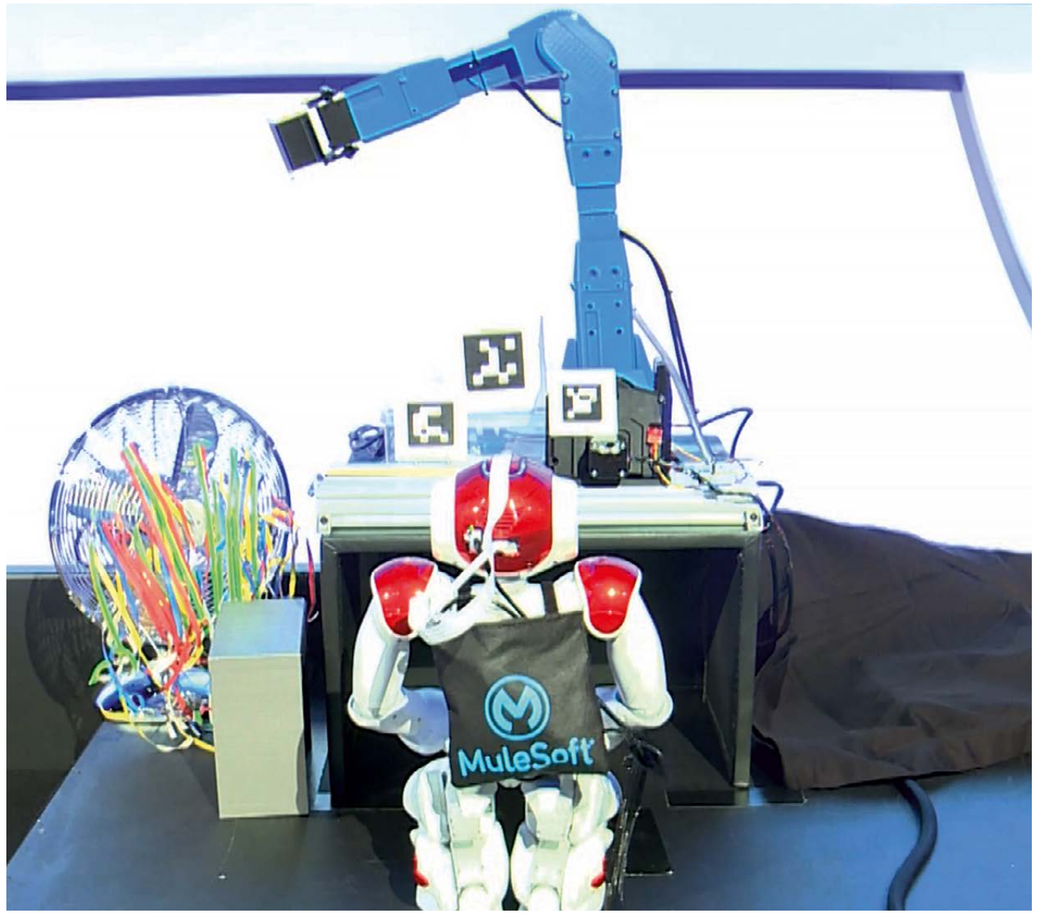
In the video you can also see integration with the Amazon Recognition service. This is useful for example for controlling a plant's personnel flow – it only provides access for the people who actually work there. It can similarly be used in co-operation with machines – the system has access to an image of the operator who has been trained for the given machine, and will not let anyone else manipulate the machine etc.

The benefits of the Industrial Internet of Things

We've demonstrated three fundamental benefits in our example of a fully automated factory. The first lies in **automated** logical **actions** that can be triggered at a plant without human intervention. We showed this through the example of the cooling and the status check for the robotic arm's operations. No manpower is needed for checking the current state of the line. Another major benefit is **the option for remote service responses**. These are very useful when there's a limited budget for technicians, or operations are in a faraway place, or for example the technician happens to be at a different plant of the company and won't be able to relocate to the plant with the malfunction sufficiently quickly. Thus you can resolve simple defects remotely. And as technology advances, the options here will keep expanding.

And the benefit for developers? There's no need to reinvent a way to interconnect technologies with each other and with applications and their functionalities. **Standardised APIs** make it possible to assemble them into a complex whole in the way that suits a given operation. API recycling saves significant time that your developers would otherwise have to spend writing entirely new code.

David Šolc



API (Application Programming Interface)

This is a set of definitions, protocols and tools that describe how to communicate with a given application. You don't have to go far to find a real-world example. APIs are used all the time for connecting two applications – for example when paying for web purchases, where your bank connects to the e-shop and instantly sends information on whether or not you have enough money on your account, and then sends the money to the e-shop, which meanwhile has instant feedback on whether or not your order was paid successfully.

MuleSoft, Inc., was founded in 2006 in San Francisco. They have developed MuleSoft Anypoint Platform, a system for integrating applications, data and devices. Since 2016, Aimtec has been a MuleSoft partner for the area of production and logistics. www.mulesoft.com

The Open Connectivity Foundation (OFC) focuses on providing safe integration and interoperability of technologies for consumers, enterprises and industry by providing standard communication platforms, interface specifications, implementation with open-source code and a certification program enabling communication with a device no matter what its form, operating system, service provider, technology or environment. Interconnectivity is a fundamental element of the IoT. www.openconnectivity.org/

How does a car get painted?

You come into the showroom, the salesman hands over the keys and you step up to your new car for the first time. The paint literally shines, and you look forward to the rev of the engine. But do you know how it got painted? And that it's definitely not just one quick job after assembly? Paint shops are very complicated operations, and we'd like to describe them to you.

It has long been the rule that new cars are not made entirely at the automakers. Hundreds of other firms specialise in producing the individual components, and if these are components that affect the car's visuals, then painting awaits them as well. It's a process that's definitely complicated to plan, because every error means huge losses of both time and money. Because not all blues are the same, and because you can't just spray black paint and then immediately switch to white. But despite this, all of the parts have to arrive at the automaker in the precise order that they've dictated. So, if a request arrives for delivery in the sequence red, white, blue, black, you have to use precisely that sequence when delivering your products (e.g. bumpers or doors, which are typically manufactured externally). How do you plan all that?

Skid, jig, primer – do you know them?

First let's explain a few terms. Just like every area, the paint shop has its specialised expressions:
The **Skid** (or also the **SkidType, ST**) is a metal construction with hooks (called **jigs**) upon which painted parts are suspended. Different quantities of parts can be suspended from a single skid, depending on their size (e.g. 1 bumper vs. 1,000 caps).
Painting Train (PTT) – a table with a breakdown of the individual SkidTypes.
Colour System (CS) – the paint loading for the painting robots.
Double Paint (DP) – two-round painting, first with the **Primer** and then with the surface paint layer.

Prohibited colour combinations, rinsing etc.

The main difficulty faced by all paint shops is the large number of restrictions. To put together an efficient and realistic painting plan, they thus need to take into account all capacities, equipment limitations and manufacturing processes. Without planning tools, this is practically impossible. There are many minor details that fundamentally influence the final product. For example, the colour. Not all blues are the same. Every automaker has its own precisely defined colours, and even though they can seem very similar at first sight, you definitely can't substitute the colour that Audi uses for the one used by BMW. And then there's prohibited colour combinations. You simply can't just paint in red and then immediately paint in white. Although painting devices do get rinsed, the result would not be ideal. Meanwhile the method for suspending the products on the skids (one-sided vs. two-sided) also plays a role, and so on. Thus, when composing the plan, a strong emphasis is placed on configuring it precisely to match a specific paint shop's operations. Advanced Planning & Scheduling (APS) systems are what is used for planning manufacturing processes that are this complicated. These enable the production line to respond even to cases that would be nearly unmanageable without them. By this we mean non-standard situations such as quick re-planning due to downtime, as well as urgent orders by the customer. APS also makes it very quick and simple to respond to material availability and the need to re-hang skids.

So how do you plan it all?

If a company's management decides to implement APS, they first need a thorough mapping and analysis of their processes. During these, bottlenecks are determined, as well as the skid sequencing logic and the differences between individual plants (if the software is being deployed at a company with multiple branches). One secondary process here is the sanitising of all input data (methods, bills of materials, item and supplier masters etc.). This is followed by the creation of a planning model, which is tested on real-world data. The result is a unique tool that ensures that production will go smoothly.

We are helping one of our clients to plan cap production in what is by now a third plant. The program in charge of both paint-shop planning and the actual production and subsequent assembly of components is the **Asprova** APS. This system is unique in that it has predefined solutions that do not need to be reprogrammed, enabling us to prepare a planning tool relatively quickly. Yet despite this, when configuring Asprova for paint shops we've run into areas that are specific for precisely this field, such as **Prohibited Colour Combinations**. The application needs to incorporate these restrictions as well.

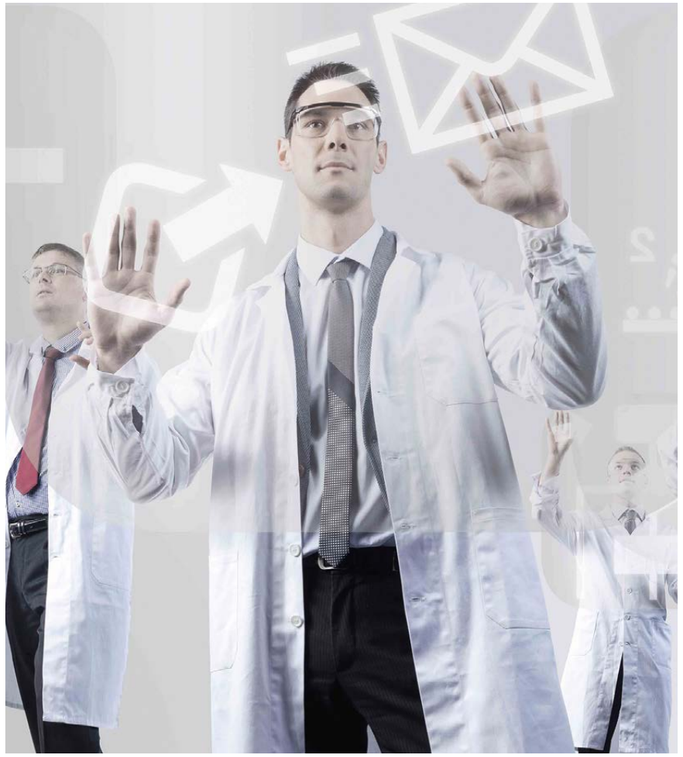
Another Asprova function is grouping into painting units. The goal here is to prevent the situation where, during a sequence, the plant starts painting with a colour that isn't ready, and at the same time to create a report for the paint exchangers. Exchanging the paint in all systems takes varying amounts of time, and can even reach up to several hours. That can mean very long idle times if things are not planned correctly and/or the operators of the paint exchanger do not receive the correct information. And then there's the very special **Double Paint**. In this process, the same part is sent to the paint shop twice. In the first round, it's painted with the primer, and then it's placed into the work queue a second time, this time for its final paint job. Not all parts are sent through Double Paint, and the production plan needs to take this into account as well. The system precisely defines at what position (what jig) a part needs to be suspended for re-queuing after its first paint job. It's thus important that every site have access to reports that display the work queue clearly and simply. The production supervisors and the planners themselves each have their own outputs from the system. Asprova thus ensures that all sites work with the same data and have precise information for their activities.

As you can see, manufacturing an automobile, and then painting it on top of that, is no simple matter. Will you look at your car the same way after today?

Otakar Horák

Digitalisation is all about people

In manufacturing and logistics companies, digitalisation keeps on making work easier and letting people focus more deeply on their specialisations. Behind all of the systems, automation, configurations, programming and process creation that we talk about in AIMagazine, you'll always find people. As we noted in our first article, the foundation for the digitalisation process is having both the right tools and the right teams. And meanwhile the success of our clients and their projects depends on people who will lead them through the entire process.



Many of our projects mean a chance for us and our client to move forward, but also a great deal of work. You see, at the start of it all, the project task can sound thoroughly trivial. But our true task isn't just to solve the surface problem that brought the client to our door. That's why we begin every project with an analysis of the client's processes and the real cause of any discrepancies found. That's the only way to provide a truly functional solution. Often, for example, companies come to us with a request for advanced planning and scheduling, but then they discover that their real problem lies in input data. So we need to get their warehouse or their production data in order before we can start configuring their planning software. What seemed at first like a clear solution suddenly turns into a far-reaching project. That places major demands on our team and theirs.

In our projects, we focus on how to clarify the project's meaning for the customer (i.e. for you) and create the right task description, form of communication, and method for sharing information. We seek a way to involve all interested parties in the discussion, so that they all will see the new project as an opportunity, not a danger. If we fail to perceive the effort put into all this as a necessary condition for growth, we'll lack the courage to move forward. And that applies for both sides. Our consultants (and the rest of our employees as well) receive a variety of training and development courses. We also invite experts who, while not from our field, can help us to see ourselves in the mirror. Two years ago, we invited the coach Marián Jelínek to our teambuilding event, and this year we invited Petr Ludwig, author of The End of Procrastination. Ludwig spoke not about procrastination, but about growth – how to turn barriers into challenges.

Naturally we train more than just the soft skills. Our best consultants all have **IPMA** (International Project Management Association) **certification**, which they received after being trained in effective project management by instructors from SHINE Consulting. Our senior project managers pass on their experience and time-tested methods to their newer teammates, to ensure that their projects will run smoothly and that our juniors will also grow into seniors. We also support this through an **internal certification** process for our consultants – within which they perform a mock system-configuration process – and an internal project-management certification process. Within it, candidates practice the entire project process, from kick-off through project documentation on to the project plan and handover to the support department. We keep improving so that we can provide you with the support you need. That's because digitalisation is a challenge. And for us, it's definitely a positive one.

Radka Pučelíková

Digitalisation at Weltbild

Modern Zebra TC51 Android-based mobile terminals, rugged DS3678 scanners for long-distance scanning and e.g. the CS4070 pocket sensor for pickers – Aimtec has supplied all this to the new distribution centre of the German multi-channel bookseller Weltbild. The delivery was preceded by consultations with Aimtec's Technical & Support Director Petr Stejskal, whose detailed knowledge of logistical processes helped him to propose the ideal hardware solution. Weltbild turned to Aimtec in August of 2017 to ensure that the warehouse would function smoothly during the peak Christmas season. The short deadline was not a barrier for Aimtec.

Digitalisation and redesign of warehouse processes

Weltbild's large central distribution warehouse supplies goods to over 140 brick-and-mortar shops and also serves thousands of customers ordering online. Meanwhile the use of a WMS system is essential for its warehouse in Bor in the far west of the Czech Republic. Weltbild recently decided to make its processes even more efficient and to switch to completely paperless logistics. With its over 20 years of experience, Aimtec helped them to acquire the most appropriate hardware for critical warehouse processes. In a very short time it tested and then delivered hand-picked equipment models to support the flawless functioning of deliveries during the Christmas rush.

Registration of goods movements using mobile terminals

The distribution centre has switched to the digital registration of all warehouse movements via the scanning of barcodes on goods. Weltbild consulted with Aimtec so as to choose suitable equipment for the processes of receiving and storing goods and preparing customer orders. Upon agreement with the customer, modern multi-functional Zebra TC51 terminals with large, high-quality displays, long battery life and endurance in an industrial environment were supplied. Operators wear these mobile terminals – nearly 150 of them – using special cases with wrist straps. This increases their freedom during goods handling while maintaining their nonstop access to information. For forklift-based goods receipt and storage, the TC51 terminals are supplemented with 28 Zebra DS3678 long-range sensors, which enable barcode scanning at a distance of several metres. The last scanner type included in the investment was the small Zebra CS4070 – 120 of them for the pickers. These are connected with the TC51 terminal over Bluetooth, just as the DS3678 scanners are.

Hardware/software integration

One key element in the delivery was the connection of the equipment to the customer's WMS system using a Citrix client. Aimtec recommended advanced configuration using Zebra's StageNow tool. It likewise ensured user "lock-in" to the WMS application by deploying the Enterprise Home Screen tool. The basic hardware delivery was performed in record time: just two weeks. Aimtec achieved this feat thanks to proactive cooperation with the HW producer Zebra and the client.

Christian Sailer, Weltbild's CEO, states: "Aimtec was a reliable and competent partner for us in introducing paperless processes at the Bor warehouse, and in the quick integration of the new software and hardware"."We won Weltbild over with our knowledge of mobile terminals and of logistical processes. We could understand the needs of the central warehouse and recommend suitable hardware. We were also able to directly connect them to the customer's information systems", says Aimtec's Technical & Support Director Petr Stejskal.

Weltbild Gruppe

Weltbild is the largest multi-channel bookseller in Germany, and with its 83% brand-recognition index, it is that nation's most-recognised brand (BrandIndex). Weltbild, founded in 1948 as a Catholic publisher, is among the leading European companies dealing in books, media and the internet. It newly lies under the majority shareholder Droege Group AG. Via e-shops, direct marketing, brick-and-mortar shops and social networks it brings in millions of customers per year. Weltbild is number 2 in online book sales, and as the co-founder of the successful Tolino Alliance, it is number 3 in the growing field of e-books.

Petr Stejskal

It resists the rain and dust. Your business may well find it irresistible.

The barcode. That simple yet ingenious idea from Joe Woodland, first tried out in practice back in 1974, simplifies our lives every day. From barcoded chewing gum – the first thing to be labelled with it – we've reached a point where practically all the goods we buy have these unique codes made of lines and numbers. Moving from here to the places where these goods are actually made, sorted and distributed – manufacturing and logistics halls – we find ourselves in a world where barcodes are simply indispensable. There are lots of barcode-reading terminals out there. And some of them can do other things too. But recently a new little helper has entered the market that easily beats out larger and usually more expensive competing readers. And not just in its price… It has its advantages over smartphones, which are an occasional choice here. By the way, has your phone ever fallen onto a concrete floor?

At first sight, you might mistake the new TC20 mobile computer from Zebra Technologies for a smartphone. But instead, it's a smart tool that will help you e.g. store and track the goods at your warehouses and collect field data. The TC20 is an extremely sturdy device that will go where smartphones fear to tread – places full of dust, rain or frost. With its built-in camera, you can quickly take pictures of things like damaged packages during receipt. And naturally its 2D imager can scan barcodes as well. What's also a natural for the TC20 is a long battery life. And versatility – for example, you can use it as a walkie-talkie. It's networkable over WiFi and Bluetooth. Also, the TC20 is Android-compatible. In short, this tool can save you a lot of time and money. Interested in learning how it can be put to work for you? Contact Antonín Steinberger: antonin.steinberger@aimtecglobal.com.

Antonín Steinberger

The Digital Factory: Pain or Gain?

This question has been a challenge for many companies since long before Industry 4.0 came into this world. We'll be addressing it – and possible answers to it – at the Trends in Automotive Logistics (TAL) conference, which we'll be holding in Pilsen on 10 October. To learn why you should attend this conference and what will distinguish its 19th year, we spoke with Roman Žák, Aimtec's chairman of the board.

Why did you pick "The Digital Factory: Pain or Gain" as this year's subject?

You can approach digitalisation very simply and gain from it. But you can also make it very complicated for yourself, and that – that is pain. We can really feel how, for many of our customers and other companies too, digitalisation is enticing, but also an entanglement. For some it's a source of frustration, because they don't know the right angle. We believe that the whole process can be handled pragmatically and very rationally – you just choose pilot projects and a team with the right people to steer through the change. Digitalisation is mainly about people, after all.

And what will people learn at TAL? Why should they make the journey out to Pilsen?

They'll learn there, but we haven't set it up as a training class, and they won't be fed instructions. They won't hear a simple: "To digitalise, do this and this." TAL is a set of presentations – real-life examples and case studies about how you can "do digitalisation" and what other companies have experienced while introducing it. We want to whet people's appetite so they're not afraid of changes, and so they'll discuss the benefits and pitfalls with our speakers and each other.
We always invest a lot of effort into finding interesting speakers who can catch everyone's interest and bring in new ideas. Practically immediately after one year finishes, we begin working on the next. We also want to make the whole event's atmosphere a good one day and night. And this year we're providing more space for meeting each other and talking to each other. We're also looking forward to the evening program, including the singer Tonya Graves.

Who's the audience for TAL?

Most of the roughly 180 people attending TAL each year come from logistics, and they're mainly heads of manufacturing, company directors and, of course, IT. We are an IT company, after all. But we welcome everyone whose job is to manage processes and who wants to learn how digitalisation can help their company.

What road has TAL travelled in its nineteen years?

The road to becoming truly international. We've managed to make TAL a Czech/German event, and every year we work on improving its program and organisation. I firmly believe that this year, too, we'll succeed at providing an enriching and enjoyable experience for everyone involved.

Zdeňka Linková

Trends in Automotive Logistics 2018

The #AimtecHackathon 2018 winners are here

Pilsen has just seen the third year of #AimtecHackathon – the programming marathon organised by Aimtec. Although dominated by programmers and technologies, it included children's events as well. Also in store were public lectures on the technologies presented. This year the #AimtecHackathon winners produced projects for practical use in everyday life, and in sports as well.

Putting teams and technologies to work

On Friday 9 March, over forty developers met up at Pilsen's Moving Station. Their assignment was simple: put available technologies to fresh uses. Thanks to #AimtecHackathon's partners, we could offer them e.g. a speech recognition system, a virtual reality kit, a programmable drone, an Alexa personal assistant and tools for tracking positions inside buildings. The teams themselves chose which technologies to incorporate in their projects, and how.

The developers could get to know the technologies on the opening night, and mentors for each tech were available all weekend long. It was up to participants to choose their teams – and to outline the project they would present live at the Hackathon's end. They were motivated by more than just a chance to try out new devices: valuable prizes awaited the winners.

Educating children – and the general public

On Saturday, while the programmers were busy developing, the Hackathon was busy educating the public. Children aged five and up could try out virtual reality, controlling a robot and more. Advanced audiences could attend #TechTalks – detailed lectures on individual technologies, building their own robots and the secrets of the Internet, from safe web behaviour to the dangers of drone flights all the way to e.g. blockchains and Amazon Web Services.

Smart cars, homes and sports equipment

It was interesting to see how the teams handled their projects and how well their members coped with working together. Most participants met for the first time at the #AimtecHackathon, and so they had to handle teamwork with strangers who had different approaches and skills. Making presentations to each other and the jury was also hardly simple. Yet the winners overcame all this to bring us interesting innovations and approaches. This year's grand prize went to the Trajectory Hunters team, which came up with the idea of a digital trainer. Special sensors in e.g. a javelin can monitor the javelin's position, speed and trajectory. Specialised software then lets athletes visualise and evaluate their work with the javelin (or other equipment) and then analyse their technique. Second place went to a smart doorbell that lets its owner interact with visitors via smartphone, and third place went to PES, a team with an autonomous, voice-controlled car. It can even head in to charge its batteries on command.

The partners for this year's #AimtecHackathon were Amazon Web Services, Angee Technologies, the Robotics Centre, the Faculty of Applied Sciences at the University of West Bohemia in Pilsen, FOXON, Holodeck, JuicymoCZ, nvias, RVTECH, Sewio, SIMPLECELL, SpeechTech, U+ and our educational partners VOŠ a SPŠE Pilsen.

Jiří Dobrý

The winning team at #AimtecHackathon 2018: Trajectory Hunters.

Cars, drones, pets...

The new A class Mercedes' doors come from Přeštice

The grand opening ceremony of IAC's new facility – IAC Přeštice II – was held in March. That factory is where the doors for this beauty are being produced. When you notice a new A class on the road, remember: it's made with help from Aimtec.

Drones at the warehouse: the future, or a blind alley?

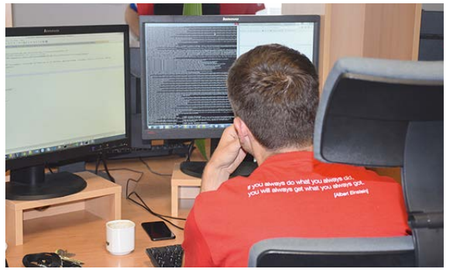
We sought the answer at DRONFEST. You'll find details soon on our website – and in the next AIMagazine.

New ITLOG workshop about the cloud

For the first time ever, the EASTLOG conference included ITLOG, and we just couldn't miss it! The cloud's possibilities for automotive and logistics were presented by Jan Stočes and Marek Šabatka.

When a gibbon meets a mule…

…they're probably at the MuleSoft London Summit. Our colleagues from Integrations, aka the Gibbons, were in London to sneak out news on the latest from MuleSoft and how can we use it for you.



You can't stop the progress, but you can help it along!

That was the motto of this year's internal DCIx hackathon, where we tried out new technologies as well as UX and functions. News is coming to your screens in DCIx soon.

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