Electro-mobility:
Who will survive?

#AimtecHackathon
20–22 March 2020, Pilsen

Shift digital boundaries with us!

An event full of new technologies and inspirational presentations and above all – full of code.

70 **50** **60**
hackers   young hackers   participants

Want to become a partner of #AimtecHackathon?
Let us know!

aimtechackathon.cz

Contents   Editorial

Like it or not, electromobility will affect us all. And it's obvious what that means... or is it? We've summarised the key facts and figures surrounding this rising trend, and several of those figures say that it will be no easy ride. And especially not for automotive, which will have to adapt and accept greater automation. Charge your information battery on pages 4–9.

But it's not just automotive that will have to adapt. We're seeing more and more companies from entirely different fields turning to logistics automation as well. For this issue, we've prepared a case study of Sellier & Bellot (page 12), and we're already preparing further content surrounding automated warehouses – but that's for future issues. Until then, we'd recommend reading up on the Hollywoodesque story of EDI (page 17), or enjoying our online version – it's always the first place where our articles appear.

Here's wishing you pleasant reading.

Zdeňka Linková

3

How to survive E-mobility

4

After over a century of using combustion engines as the main system of propulsion in passenger cars, this type of engine is slowly being curbed in favour of electric motors. The world is expecting that electric cars will skyrocket… What sort of impact may e-mobility have on Europe's automotive industry? What should the automotive suppliers focus on to survive?

Based on the 2015 Paris climate agreement, European Union member countries agreed in October 2018 that CO_2 **emissions** from new passenger cars must be **37.5 percent lower by 2030** compared to 2021. For car makers it is practically impossible to achieve this goal by solely selling vehicles with low-emission combustion engines. The logic behind calculating fleet consumption only considers CO_2 generated by operating the vehicle ("tank-to-wheel") and does not include CO_2 generated during the production of the vehicle or fuel. As a result, these limits can be observed **only by selling electric cars.**

Investments into e-mobility in the coming decades

According to forecasts, US$300 billion will be invested into electrification over the coming decades, with approximately 45% of that going to China. Volkswagen will be making nearly one third of the total volume of investments (US$91 billion), which is approximately 60% of the company's R&D expenditures for the period. In comparison: Volkswagen's research and development expenditures in 2018 totalled US$15.3 billion.

Production of combustion vs. electrical motor

Established car makers keep the secret to the key ingredient in cars – the combustion engine – under lock and key "in house" (unlike other parts). The combustion engine, combined with smooth logistics and the car assembly process itself, is the **key expertise held by original equipment manufacturers.** But with the advent of electrical power systems, this expertise is gradually disappearing. Not only the profitability of OEMs, but also employment throughout the automotive industry is at risk.
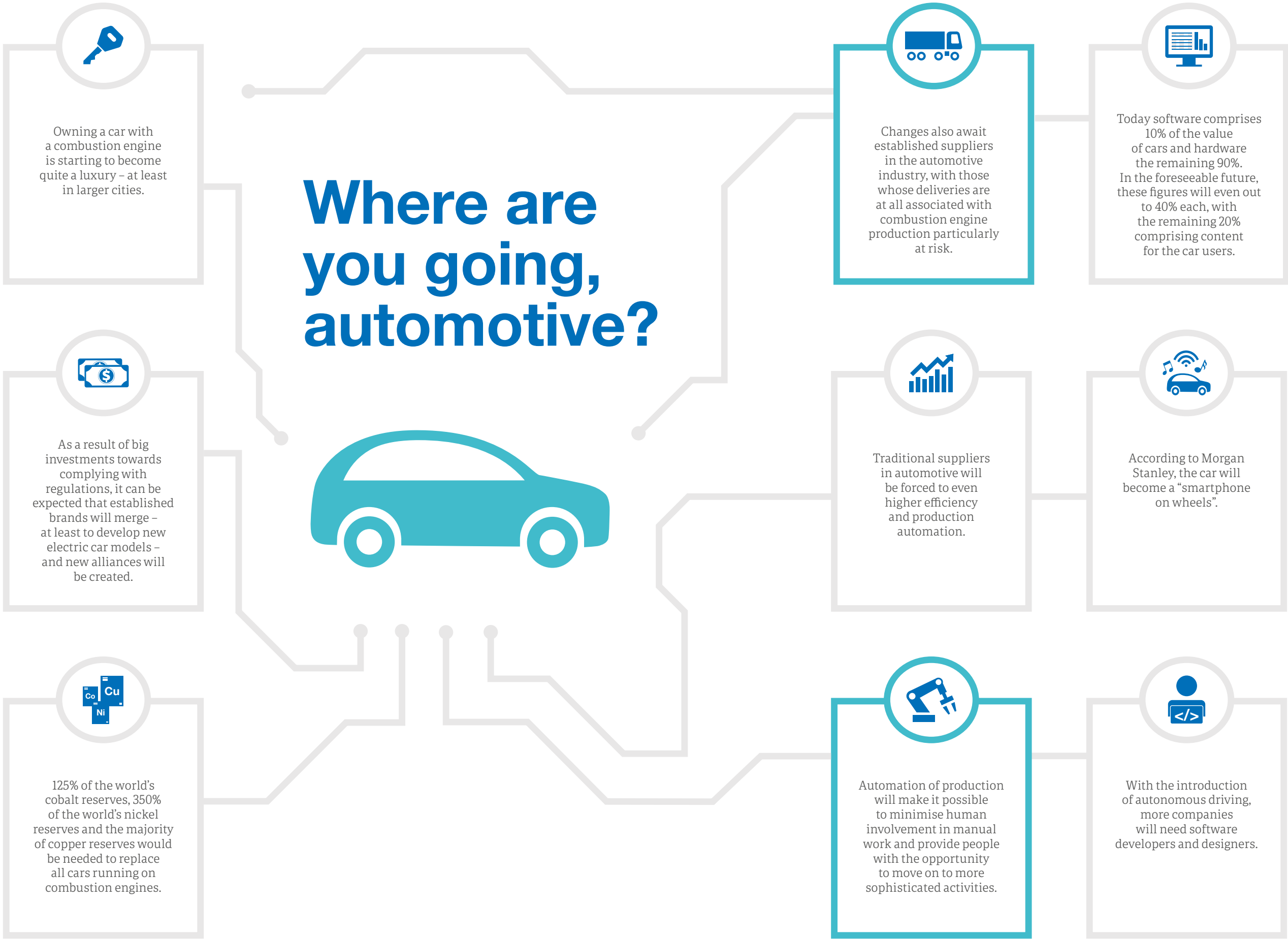
It is estimated that a combustion engine power system contains 1,400 parts, while an electric power system has just 200. It takes Volkswagen 26–32 hours to manufacture a combustion engine car, but 16 hours to produce an electric car; the company aims to get this below 10 hours.

Opportunity for production automation

The reduced complexity of e-mobility provides further opportunity for **production automation**, leading to a reduction in jobs. The automotive powerhouse of Germany alone employs more than 800,000 in this sector and 1.5 million workers are connected to the industry in some way. Catastrophic scenarios indicate that **up to 600,000 jobs are at risk** unless the government and the largest corporations are able to respond in time to the potentially rapid transition to e-mobility, autonomous cars and the new perspective of mobility as a service.

The flow of investments into electric vehicles, by automaker's country of origin

Origin	Destination
Germany $139.5 billion	**China** $135.7 billion
China $57.0 billion	**Germany** $71.7 billion
United States $39.0 billion	**United States** $34.0 billion
Japan $24.3 billion	**Japan** $18.9 billion

Where are you going, automotive?

Owning a car with a combustion engine is starting to become quite a luxury – at least in larger cities.

As a result of big investments towards complying with regulations, it can be expected that established brands will merge – at least to develop new electric car models – and new alliances will be created.

125% of the world's cobalt reserves, 350% of the world's nickel reserves and the majority of copper reserves would be needed to replace all cars running on combustion engines.

Changes also await established suppliers in the automotive industry, with those whose deliveries are at all associated with combustion engine production particularly at risk.

Today software comprises 10% of the value of cars and hardware the remaining 90%. In the foreseeable future, these figures will even out to 40% each, with the remaining 20% comprising content for the car users.

Traditional suppliers in automotive will be forced to even higher efficiency and production automation.

According to Morgan Stanley, the car will become a "smartphone on wheels".

Automation of production will make it possible to minimise human involvement in manual work and provide people with the opportunity to move on to more sophisticated activities.

With the introduction of autonomous driving, more companies will need software developers and designers.

The new era in the automotive industry does not portend only negatives. As has been the case many times throughout history, **jobs will shift from one industry to another**. Passengers will expect car rides to be fun, and they will have increasing demands for comfort. **With the introduction of autonomous driving, more companies will need software developers and designers**. Accompanying this shift will be production automation, which will make it possible to minimise human involvement in manual tasks and provide people with the opportunity to move on to more sophisticated activities. On the one hand jobs will of course disappear, but on the other hand new jobs will be created in new sectors.

Automation as a competitive advantage

Automation is best explained through the concept of a digital factory (or smart factory). Initially automation involves optimising and digitalising logistical and production processes, replacing repetitive and strenuous human work that has low added value with technologies like automated guided vehicles (AGVs), cobots (collaborative robots) and other technologies that **facilitate and minimise work by**

humans. This includes reducing the need to scan bar codes or eliminating paper document exchanges among divisions, customers and suppliers. It is absolutely crucial that all systems, technologies and people be interconnected into a single functioning unit so that all steps in production may flow in a smooth cycle, without unnecessary downtime or errors. **As a result, the line between production and logistics becomes blurred.**

Digitalisation also makes the decision-making process easier. With constant access to real-time logistics and production data, managerial staff have indispensable tools for better and more effective management. **Data visualisation** and **advanced planning and scheduling systems** also play an important role. Lastly but importantly, the concept of a digital factory (or Industry 4.0) enables faster and easier responses to a changing environment – whether that means a "standard" change to a car model or an enormous change like the shift to alternative fuels. The final phase of the digital factory is a seamless comprehensive ecosystem that can not only respond to, but also predict changes.

Traditional suppliers at risk

Changes also await established suppliers in the automotive industry, with those whose deliveries are at all associated with combustion engine production particularly at risk. Major changes and **modifications will come to other parts as well**, including transmissions, suspensions, shock absorbers and air conditioning systems. New car body designs will be sought – the lighter the vehicle, the greater the range per single charge. The changes will also affect electronics and special sensors and detectors. Electrification will also represent an opportunity for **entirely new parts** to be used – electric motors, batteries and battery management systems, battery casings, fuel cells and hydrogen tanks.

In addition to technology changes associated with electrification, car sharing and more, OEMs will also face an increasing need to invest into new

technologies. At the same time, they will experience pressure on their margins due to new competitors – from China and/or from technology companies. Analysts at Atradius, an insurance company, believe that further developments will largely depend on China.

To be successful in the future, conventional suppliers must re-evaluate their sales models. Which steps should they take?

> Newly formulate their strategy and reconfigure their product portfolio to maintain stable growth for their company.

> Push down operating costs and secure financing for the upcoming transformation of the sector.

> Build new competencies; change internal processes and thinking in general with regards to technology changes.

> Form new partnerships with technology companies to ensure the continuous ability to innovate – this is a must.

Based on the behaviour of the biggest players on the market, these are the right steps. Conventional suppliers and car makers are already starting to work together with technology companies to develop new technologies for future mobility. These companies include **Delphi**, which is working with **Intel** and **BMW**, and **Volkswagen**, which has announced a partnership with **Microsoft**. Companies like Delphi (Aptiv), Autoliv, Adient and Continental have divided or are planning to soon divide their enterprise into business units for "old" technologies and units from which we can expect a high degree of development and innovation.

Tomáš Svoboda

Want to know more? Download our white paper, "E-Mobility and Its Impacts on the Automotive Industry," at aimtecglobal.com/aimagazine.

Automated warehouses are becoming a reality

"Already now, companies are seeking ways to streamline their processes, increase productivity and replace labour which is often lacking. After production is automated, warehousing will be the next in line. We're seeing the introduction of automated warehouses more frequently in the automotive sector, although companies from other manufacturing industries are also increasingly moving towards automation. Fully automated warehouses save space, time and human resources in warehousing operations.

Several approaches can be taken towards automation, and most companies choose the gradual route, such as by using smart handling equipment. Despite this, an increasing number of fully automated warehouses are cropping up; these operate completely without human intervention. Besides saving time and human resources, they also save space, because a larger number of pallets can fit in the same area. In comprehensive projects such as these, however, several factors must be considered – such as distribution network capacity and floor flatness.

Whether the site of the automated warehouse is an existing or a new hall also plays a certain role. However, it is always necessary to first standardise and describe all the processes and links to other technology, including rare situations that used to be handled by people. The job of providers of control systems for these warehouses is to then interconnect everything into a single functioning unit."

Rostislav Schwob, Supply Chain Solutions Director, Aimtec
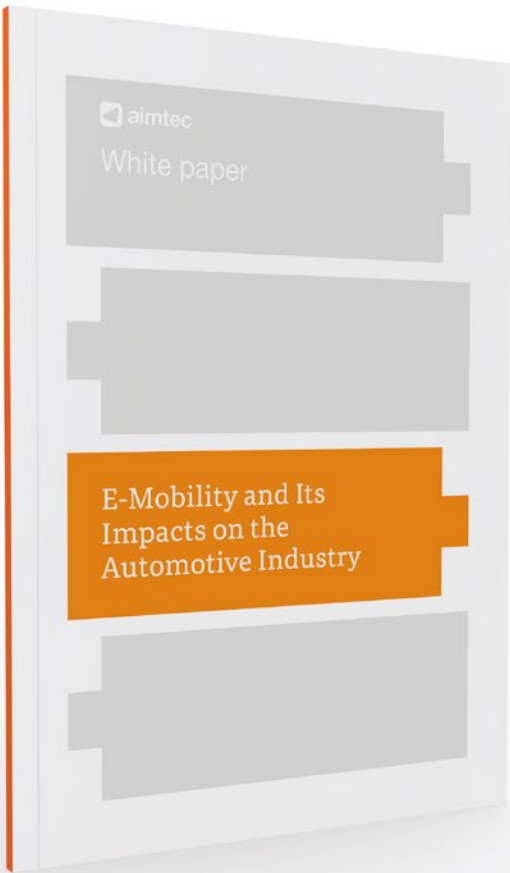
White paper

What impact is e-mobility having on the automotive industry?

E-Mobility and Its Impacts on the Automotive Industry

Recharge your information

The TAL 2020 conference:

The best in European automotive

"Each year's TAL has one thing in common. Our wish for its participants to bring home the best of experiences, as well as ideas that will help them towards an even better formulation of their vision and strategy for manufacturing and logistics management," says Roman Žák, chairman of the board at Aimtec, on the history of Trends in Automotive Logistics (TAL). Originally a side event for Autosalon, a trade fair in Brno, it has become an independent conference with international speakers and attendees. It will be celebrating 20 years in 2020 and promises an attractive programme once again.

Roman, what are your memories of TAL's first few years?

My memories of organising this conference, and of the topics we discussed, bring a smile to my face. We sent out invitations by fax, and we talked about things like EDI and barcode-based unique IDs for handling units as the latest news. In other words, things that are a matter of course today.

And what about 2020 – what can we look forward to?

I'm most pleased that Marco Prüglmeier will be coming in from the BMW Group, where he's in charge of innovation and implementing Industry 4.0 in practise. He and his team have just won the prestigious German Logistics Prize, which only confirms that his presentation is the best of the best today. Marco is also an immensely easy-going and communicative person despite his standing and successes.

What other topics will we be hearing in Pilsen in February?

We'll be taking a look at automation and cloud systems in a way that lets them "properly snap into" an overall digitalisation concept, instead of treating them as isolated islands. We'll also spend time on the role of visualisation for project success. This will be presented through examples from practise, in contrast with BMW via, for example, smaller projects wherein these phenomena even still have a significant impact on entire companies' processes and operations.

Why is TAL in Pilsen? Do you ever think about switching locations?

TAL has moved several times over the years. We started out in Brno and in Slovakia, and by way of Prague, we've made it to Pilsen. Here we have our headquarters, and we can also use the location to bring in German visitors. In Prague, we always tried to offer untraditional venues, such as DOX or an old wastewater treatment plant in Bubeneč. So far we haven't found any sites with that much flair in Pilsen, but I'm confident that this year's "beefy" content and evening side programme will best the previous years once again. We'll also be providing considerable room for attendee networking. And with that, I'd like to heartily invite you all – and I look forward to seeing you.

Zdeňka Linková

Trends in Automotive Logistics 2020

The Digital Road: Who is the driver?

20. 2. 2020 Parkhotel Pilsen (CZ)

Join us! »» **talconference.com**

Pure precision from manufacturing down to shipping

If there's one word that characterises Sellier & Bellot, it's precision. They need it in their manufacturing, storage, transport and shipping. They've been a technology pioneer for nearly two hundred years and have earned global renown.

Besides being one of the most important industrial firms in the Czech Republic, they are simultaneously one of the world's oldest munitions and defence manufacturers. The Sellier & Bellot (S&B) portfolio includes a wide range of ammunition for hunting and sport, as well as for military and police forces. S&B's manufacturing activities must comply with strict norms, and advanced technologies are the key to guaranteeing the highest of quality for their products and enabling their constant development. In 2016 the company decided to invest in its logistics, which hadn't seen any significant changes since World War II. They decided that they should have a warehouse capable of keeping up with the times, and so within the year, a fully automated warehouse for their finished products was constructed.

S&B's requirements

> Faster shipping.
> Increased warehouse capacity.
> Error-free retrieval.
> Increased production throughput.
> Integration with their existing ERP (MAX).

A fully automated warehouse

The assignment from S&B was simple at first sight – speed up shipping and shipment mixing, minimise the error rate, and increase the warehouse capacity and shipping throughput. All of this was to serve one single goal: better customer service. One aspect played somewhat in the project's favour: S&B was adding a new hall to their existing warehouse. This is precisely where the fully automated warehouse was constructed. In this space with a 1,489 m2 footprint and the capacity for over 3,500 pallet locations, every warehousing operation is performed without human intervention, including both put-away from production (after the pallet has been read into DCIx and placed onto a conveyor belt by operators with the aid of a forklift truck) and retrieval out of storage into the mixing centre or the shipping centre. Despite this, the project still partially needed to be installed into the existing physical and digital environment. Picking still takes place today in the original hall, and the ERP system likewise has not changed. Aimtec's task was thus to take the hall layout and the technologies used and, based on these, devise a workable software solution for warehouse operations and for integrating all their systems, technologies and processes.

A complete warehouse logistics solution

The DCIx control system used at S&B is in charge of not "only" put-away and retrieval from storage via fully automated stackers, but also all the logic before and after the automated warehouse, including weight and packaging checks, and simultaneously all the integration of the physical technologies used – the conveyors, cranes, feeders, scales and wrap-around packers. DCIx controls and monitors the movements of all the pallets from the entry point on out to shipping, and does so in real time.

Put-away

Every pallet journeys from manufacturing to the put-away line with aid from a human operator, but the put-away process itself is performed fully automatically, including scanning, film-wrapping, size and weight checks to ensure safety at the warehouse, and placement into a specific pallet location. Due to the risk that one of the stackers might malfunction or suffer an outage, it was originally proposed that all stocks of all items be evenly divided into both aisles of the automated warehouse, such that every order could always be delivered at least in part. However, this feature was deactivated, and the maximum use of the warehouse's capacity took priority.

Removal from storage

One third of Sellier & Bellot's goods travels from Vlašim across the ocean in shipping containers. These have very strict rules for how they must be filled, and so in addition to the weight limit, the composition of the pallets in the the individual layers is another problem that must be solved.

The remaining two thirds of the firm's shipments are distributed by trucks. Here as well, a number of rules exist that complicate preparation for dispatching. The height of the pallets, their weight, the composition of the layers in each pallet, homogeneous pallets, assembled mixed pallets – these all represent tasks whose fulfilment is managed by the system. The pallets are taken from the automated warehouse to the mixing centre or directly to the shipping centre, depending on how they will subsequently be handled. After the mixed pallets are assembled, a weight check awaits them, and they are also transported away to an output point, where they are then prepared for loading.

The mixing centre – where machine meets man

When a final pallet is to be assembled from multiple product types, pallets with goods are transported one by one to a special mixing centre, where it is humans' turn to intervene. The automated system transports selected source pallets with stocks of desired goods over to an empty pallet for mixing. Based on instructions displayed above the work centre, an operator assembles the mixed pallet's layers one by one. Unneeded source pallets with stocks travel automatically back to the warehouse. They pass through weight and outline controls, they are wrapped in film, and they are put away into a new position. In cases of conflicts with the system's register, the conflicting pallet is transported to the output point for review. The completed mixed shipping pallet travels past the same check and is transported to the output point, where it then waits to be loaded.

How to prepare for an automated warehouse

The management of a fully automated warehouse has many specifics that must be kept in mind when implementing one. Naturally, such an automated system can handle all standard operations more quickly, precisely and easily than before. Yet unlike at an ordinary warehouse, where humans perform the warehousing operations, it is essential during automation projects that both ordinary processes and non-standard situations be analysed and described in detail. The machine – the automated system – must have an unambiguous solution clearly defined for every situation – even error situations. This requirement demands in turn a maximum of flexibility from the control system.

By "a maximum of flexibility", we mean the ability to completely adapt it to any real-world situation that has been illustrated at the start of the project using diagrams. If the system is not able to adapt and does not have an infinite number of configuration variants, then

during the launch period, it will crash headlong into limits and barriers that will not allow its automated warehouse technology to be used in full. If the system is configurable, meanwhile, the outcome of the automated warehouse project will be a solution that is prepared for future changes and expansions – and thus one that opens up new possibilities and savings.

Besides the obvious savings of labour, the introduction of an automated warehouse also saves time in warehousing operations. Moreover, it means the implementation and description of standards for these operations. After all, automation cannot work without standardisation. And it is indeed this standardisation that opens the way to yet more automation.

"We have assessed this project as a successful one overall. It was implemented within a live environment, which brought in certain limits, restrictions and planning-precision requirements for its individual milestones, such as the transition into

the live environment, migration of data between systems, operator training etc.

Over the course of the project, we had to contend with a number of changes, from the construction-readiness of the new hall in connection with future technologies, to various technical and process-related matters. LogTech and Aimtec dealt with these changes flexibly, which we would assess as an advantage of these two integrators. Overall, their communication was very open; our requests were met with forthcoming responses. There was a pleasant and friendly atmosphere at the construction site throughout the project's execution. The expectations that we had established at the start of this project were fulfilled.

We see the smoothness with which the project was executed as the greatest victory here. We know that installations of similar warehouses and WMS deployments from other suppliers at other companies did not go as smoothly, and shipping problems arose as well. At our company, meanwhile, we didn't 'lose' even a single truck, and we never had even a single case of an order failing to ship out.

The ergonomics and safety of our work have improved significantly. Verification mechanisms that reduce the risk of bad picking, and thereby of complaints, have been integrated into our picking operations.

Thanks to the integration of the DCIx Warehouse Management System into our MAX ERP system, our technologies are completely automatically controlled, and the processing logic for our work is taken care of. Every time a pallet enters/exits our system, the pallet's weight and quality are verified.

Overall this is the greatest change in logistics processes in the history of Sellier & Bellot. This investment will enable our further expansion in the future." Ladislav Pešata ml., independent planner, Sellier & Bellot.

Zdeňka Linková

Yard Management Systems are for more than just truck yards

Yard Management Systems (YMS) mainly serve for managing loading and unloading, but they don't have to stop there. The biggest trend in added features for a YMS encompasses automatically letting vehicles into a yard based on their license plates and reporting on which vehicles are currently within it. The system then both saves time and prevents the kind of unpleasant situation where vehicles that have no reason to be in your yard are moving around there, or they're parked there for too long.

YMS license plate recognition is based on a system where, in most cases, the same transporters and individual vehicles are always supplying the yard; however, new data can also be added at any time. An authorised employee supplements the YMS records with the transport company name, the license plate number and the driver name for the driver who has permission to ride into the yard, along with the time slot needed for loading or unloading goods. So if at the warehouse they know that a specific truck will come at 2 p.m. and needs one hour for handling, you can set that vehicle to have access to the yard from 1 to 4 p.m. As the vehicle passes through

the boom gate, a camera photographs its license plate, the system converts the photograph to text and pairs it with the data in the YMS, and if it finds a match, it opens the gate. A similar system is also used for exits from the gate.

Data can be entered right at the gatehouse

If a truck arrives outside of its reserved time, or a vehicle isn't registered in the system for some reason, the gatehouse worker can simply enter the needed data into the YMS directly. The most convenient approach here is for the worker to have access to a touch terminal;

they can process everything more easily there than on a computer. The data is automatically passed on to the system, where it's viewable for management – and also for warehouse operators, who see it on screens right by the gates.

Automatic license plate recognition for personal vehicles as well

Another possible use of license plate recognition is for the **personal vehicles of a company's employees**. They can be let into and out of the premises automatically, with the management also having access to a report telling who is inside and who is not. This report is available for trucks as well. It improves the service level – and also increases security by ensuring that cars that don't have to be there (yet) aren't there.

The benefits of using a YMS for automatic vehicle admission

> Vehicles are handled faster at the gatehouse.

> Gate and personnel load levels can be planned optimally.

> Reality vs. the plan can be checked right at the ramp.

> Carrier reliability can be assessed easily.

Aimtec is a Yard Management System provider. It has enhanced its YMS with features for automatic license plate recognition, and it already has a YMS pilot project for a customer under its belt.

Marek Šabatka

Without EDI, industry would not be where it is today

No matter whether you supply components to an automaker regularly or have only sent it a one-off shipment of office supplies, you've definitely heard of EDI. Electronic data interchange is a commonplace part of enterprise systems in a variety of areas today – and in automotive especially. And yet the story of EDI is utterly Hollywood-worthy – the Cold War, running across the city with diskettes, a boom alongside the Internet, and even the disappearance of people and a transition to the world of the future and unknown technologies.

Electronic data interchange is sometimes thought of today as a mere necessity – a mere market requirement. But it's important to keep in mind that it is one of the key factors for success in industry, that it enables faster and more precise manufacturing and logistics and that many of the products we use every day could not have been born without it.

EDI's beginnings – from the first standards to wireless transmission

It may seem like EDI is intertwined with the internet. But the truth is that it was here much earlier, and even before the first computers. Its history reaches back to the Cold War, when Army Master Sergeant Ed Guilbert and the American Army's entire logistics team faced a demanding task: supplying West Berlin during the Berlin Blockade. It was at this time that the first EDI standards and the notion of exchanging data in logistics were born. In 1948, Guilbert created standardised shipping documents – but it took another twenty years before these were transferred into an electronic form. In the 1960s, EDI's era truly arrived – the first EDI messages were sent across the Atlantic using a telegraph, and electronic data interchange also began to expand into new fields. In 1975, its first official standards were published, and with the rise of computers, a new chapter in data interchange began to be written.

17
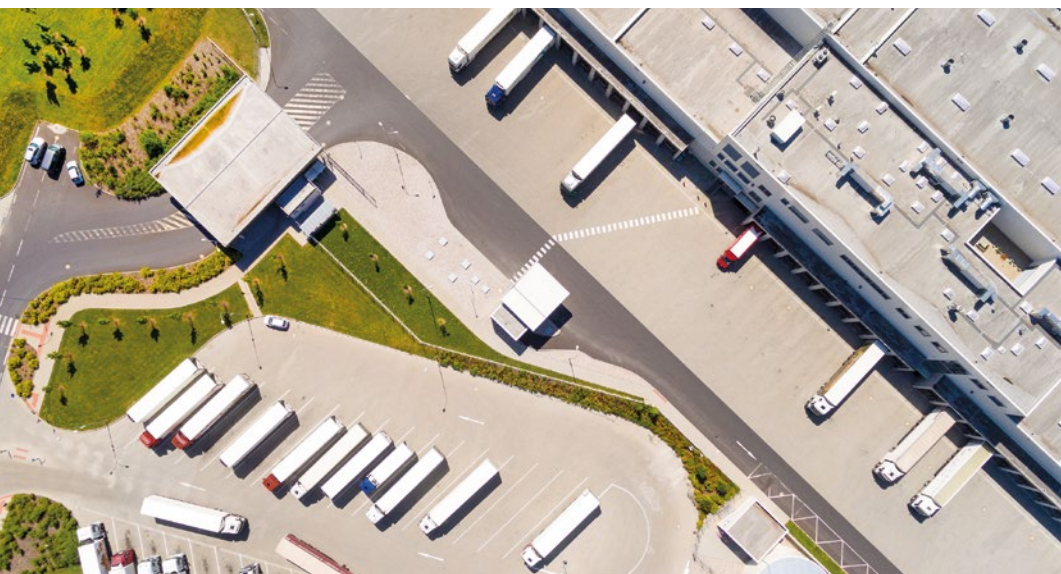
In the Czech Republic, the beginnings of EDI's mass expansion arrived along with other Western trends: after 1989. If you speak with the old hands who were there for the introduction of data interchange, you'll learn that stock trading was among the first Czech EDI projects. Data, along with commands, was carried from banks on physical media to the securities centre, which processed that data. Another example is Čepro. This Czech company developed its own satellite-based communication network for the flow of business documents among suppliers, its warehouses, business centres and the invoicing department. Here EDI played a key role in stocktaking as well. Although stock was taken physically, the inventory counts were imprecise due to deviations. With EDI, thanks to the transmission of data on the amounts of goods supplied and sold, a very precise overview of the state of their stocks could be kept, saving them no small amount of taxes related to missing and excess stock.

On-premise and EDI specialists

To be human is to want to possess. And companies, too, want to possess their own affairs, and they thus long used on-premise EDI tools under the administration of an internal EDI specialist. This person was, and in many companies still is, irreplaceable – infused with enormous know-how. After all: over time, every branch of industry has evolved, or rather adapted, EDI standards for its own needs. Because of this, individual messages often differ despite the fact that e.g. automotive and retail use the same standard. Messages based on the same standard can even differ within a single branch of industry at different companies. In the on-premise era, all of these differences had to be addressed by an internal employee. They had to configure systems, adjust them,

implement new requirements and – when an outage, error or problem arose – be there to fix them. Immediately. Whenever and wherever. And as you might suspect, that's unsustainable.

Smart companies thus began to make use of external specialists. Although they each still had their own system and internal team, it "only" took care of day-to-day operations, with the outside supplier handling any complicated adjustments and configuration. They also ensured that messages arrived on-time and in line with customer requirements. It was no exception for an external specialist to travel over 5,000 kilometres per month. But this as well is changing.

Outsourcing and the Cloud Age

Standards continue to multiply, and with every new change, your EDI supplier must be certain that you will comply with both today's and yesterday's regulations, because not everyone adopts standards at the same time. For internal teams, this is a practically unsolvable problem, especially since no "school of EDI" exists, and so specialists have to make do with what they learn during their careers. Outsourcing has become the logical solution.

Once companies successfully outsourced their EDI processing, they gradually began to learn that there's actually no need to keep their system in-house. The shift to data centres arrived – and these were also easier for external consultants to connect to. This approach is preserved in many companies to this day. From here it's just a small step to cloud systems, where we can see a parallel with other life trends – for example car ownership, which for certain parts of the populace is unnecessary. Just like having a full set of tools at home when we can just borrow what we need instead. Cloud services work similarly – you just turn on the individual services that you need and turn them off when they've become extraneous.

Conversion settings must be watched constantly

When a customer (for example an OEM) has adjusted a standard to meet their needs, the standard becomes non-standard. This is when a team of conversion configuration specialists, called "mappers", jumps in. These EDI specialists develop mappings (conversions). But mapping is more than just defining that field A in one system is field B in another. Often it means gathering data from several systems

and doing difficult programming based on special conditions directly within the conversion. Each mapper must know the logistics concepts of customers (OEMs) and the processes at the company. The team on the side of the EDI supplier must cooperate very closely with the customer's heads of logistics and IT to configure everything needed. But how do you choose the right EDI supplier?

Your EDI supplier should act as your partner

You can find a number of EDI service providers out there on the market. You should always be watching for one who will be not just a supplier, but also a true partner – the kind that will help with your EDI communication from start to finish. Look for signs such as:

> Independence from any specific EDI products/technologies – are you using multiple systems for your EDI communication? With system-specific specialists, you'll need one for each system. That's not good...

> Protocols and format support – is your supplier able to connect with partners over a wide range of standard communication protocols? Are they up to speed with the very latest standards?

> Notifications about new updates – is the supplier watching developments on the market and at your EDI partners and alerting you when the need for changes arrives? Do they work with you

in advance to address the release of each new standard or certification?

> System operations monitoring – do you have access to reporting on whether or not your messages are delivered?

> Conversion from anything to anything – does the supplier develop their own mapping? Are they able to adapt to e.g. demands for new document and message formats and special customer demands?

> Comprehensiveness – does the supplier handle EDI for you in its entirety, or is it merely a communications tool, with most of the responsibility lying on your side?

Can mapping development be left to machines?

Market players large and small are experimenting with automatic mapping development with help from machine learning. But as is becoming clear, the world of EDI is, despite its standardisation, so full of exceptions that people will not be replaced by machines here any time soon. At least how that's how it seems based on the current situation, where teaching a computer all of the exceptions still takes more time and money than setting it all up manually. However, making at least partial use of machine learning has shown itself to be one road forward. In this case, the algorithm takes care of 80 to 90 percent of the mapping development, and an EDI specialist then checks the

result and fills in the remainder – but this remainder is key for flawless EDI communication. As the number of demands for adjustments grows and as EDI expands into other fields, efficiency is becoming the most important thing for mappers, and machine learning can improve it.

What awaits EDI in the future?

EDI has an unbelievable road behind it, and despite past prognoses saying it would wither and die, it has on the contrary shown itself to be irreplaceable for industrial production. We can take as proof of this its expansion into other fields and the pressure to introduce it within more and more links of the supply chain. Meanwhile, besides traditional EDI in the form of VDA/EDIFACT files and communication channels such as OFTP2, newer technologies are rushing to the forefront as well. The world of B2B integrations is making ever more frequent use of transfers over https, queries over an API, and the XML and JSON formats. EDI is thus no longer just electronic data interchange. Today it is a tool for supply chain integration. Mere exchange of documents in an electronic form has grown into a tool for increasing efficiency and productivity thanks to more precise information for the warehouse, the purchasing room and the production hall. As the supply chain becomes more and more tightly integrated and the pressure grows for it to become more and more transparent and visible, EDI is becoming a key element for keeping things flowing smoothly during the manufacturing of a growing number of goods. And with the growing volume of data, which will need to be processed with an advancing internet of things, it is more than likely that EDI will take on an important, or even leading, role in this area as well. What began as a necessity in the age of handwritten information has taken on the role of a mediator in communication among machines.

Jan Stočes

The benefits of cloud-based EDI:

> Comprehensiveness (the EDI supplier has to guarantee that messages comply with both today's standards and their historical versions, that messages can be delivered and that the software is up-to-date).

> Financial flexibility (it's often much simpler to obtain approval for operating costs in the form of software fees than for an investment into a new system).

> Overall flexibility (when you're using EDI as a service, you can simply turn on the services you need and turn off the ones you won't use).

> Easy licensing (you don't need to buy just a certain number of licenses; you can make supplementary purchases and cancellations license-by-license, which is more economical and flexible).

AIMagazine

The new digital content portal for Industry 4.0, automotive and IT

Digital Factory | Cloud | SAP S/4HANA | Trends | Technologies | Automotive

The end of support for Windows CE and Windows Mobile is approaching. Switch to Android.

Microsoft makes no secret of the fact that on 13 April 2021, it will be ending its support for the Windows CE operating systems, and support for Windows Mobile will end even sooner – on 14 January 2020. This is perhaps a logical step. Not counting the first mobile phones, these operating systems have been appearing in industrial operating systems for many years now. Time for a change! The makers of terminals and other industrial devices have been preparing for the end of support for a long time, and they are moving on to Android. Zebra Technologies was the first to take this step.

### The end of support for Windows CE – What will really happen in 2021?

You definitely should not expect the apocalypse on April 21st, 2021. The end of support means that Microsoft will stop developing security updates and other updates for Windows CE and Windows Mobile, and nothing more (but nothing less). So if your mobile terminals run on Windows, you need not worry that they will stop working. And I am confident, in fact, that many companies will be using devices with Windows CE even long after the end of support, without even the slightest problems.

But sooner or later, it will be necessary to switch to a new operating system. Because devices with Windows will no longer be available on the market,

application developers as well will be working exclusively in Android. But Android is definitely nothing to fear – not at all. The little green machine-man brings new possibilities to the manufacturing hall. It's a modern operating system with broad support, thanks to which you'll be able to utilise your industrial mobile devices more efficiently and get more out of them. From the standpoints of digitalisation and Industry 4.0, Android opens up new doors, making it the right choice for everyone who wants to take advantage of these new possibilities.

Your current Windows devices will remain usable

If you are a conservative sort, you have no intention of replacing your devices or your existing Windows solution simply
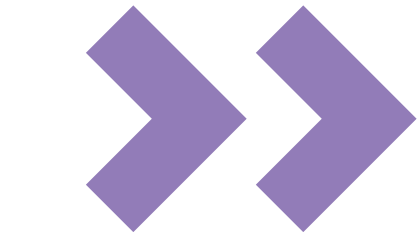
suits you, there's no need to worry. In many cases, you'll be able to use Android devices alongside your Windows devices. Options exist such as the Telnet Emulator and other applications that make it possible to use new terminals in the same way as the old ones. But it's good to keep in mind that, even though the devices we're talking about here are very rugged, they are not immortal. And in any case, if you're planning to grow and to buy new equipment, there's essentially no other choice today besides Android. So you should find out in time what the transition to Android will mean in your environment.

Is Android safe in industry?

The largest fear when switching to Android is a fear for a company's security. How can you prevent a user

from downloading external content and dangerous third-party applications onto their device, or surfing the internet during working hours? But the solution is fairly simple. Industrial devices in general and overall – both Android and Windows – should be running on a network without internet access. For devices from Zebra Technologies, we also have access to a tool named Enterprise Home Screen. This is an adjusted version of the Launcher. It ensures that nobody will do anything with their device that they shouldn't be doing. In short, they won't be able to. You can configure Enterprise Home Screen so that the only application available is the one that an operator needs for their work. All other applications, web browsers, settings, wifi changes, etc. are unavailable without the administrator password that unlocks all the functions in Android.

Enterprise Android: Extended support for ten years

It's well-known that the support period for ordinary devices with Android is a mere three years – at least, that's the period guaranteed by Google. But if you are buying a device with an older version of Android, you can even expect significantly briefer support than that. With Enterprise Android, you don't

have to worry about such short support periods. As a matter of principle, industrial devices are expected to have lifetimes several times longer than those for ordinary consumer electronics, and because of this, Enterprise Android support extends out to ten years from a device's entry onto the market. Additionally, updates and patches are published on the manufacturer's portal, and the customer has direct control over their installation.

Mobile Device Management – remote administration

Remote administration for your devices? Just one more thing that's a natural for Enterprise Android. Every new Zebra device supports features such as SOTI and VMware, making it easy for you to remotely install updates, check your devices' status, etc. However, this tool only truly pays off with a high terminal count. With a lower count, you'll definitely welcome StageNow. This is a tool from Zebra Technologies that is installed on every one of their terminals. You can easily create a profile in a wizard on their desktop client. At the end of that process, a 1D or 2D code will be generated and provided to you. Just scan a device, and the configuration, wifi settings, terminal sleep settings, scanner
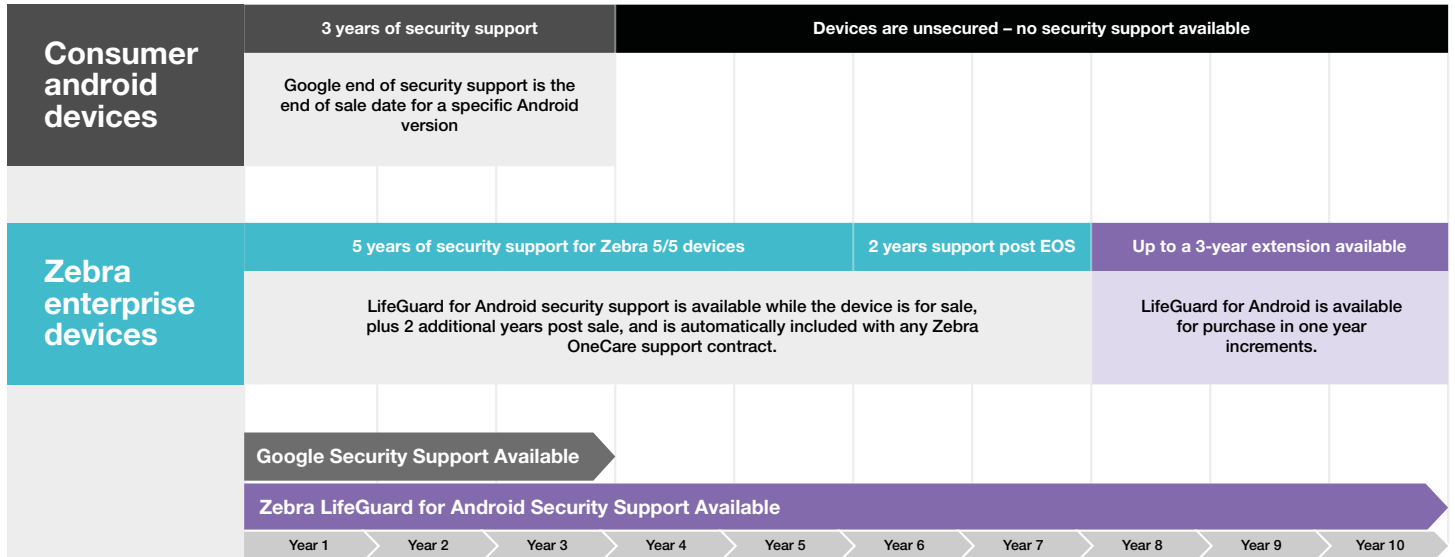
settings and other features will be stored automatically. With even just ten devices, StageNow will save you a lot of time, and installations on up to dozens of devices will only take a few minutes. Configurations can be performed anywhere and can use your internal wireless network, with the needed data being accessible on one of your servers. Or you can also do things more simply, using just a hotspot and a laptop.
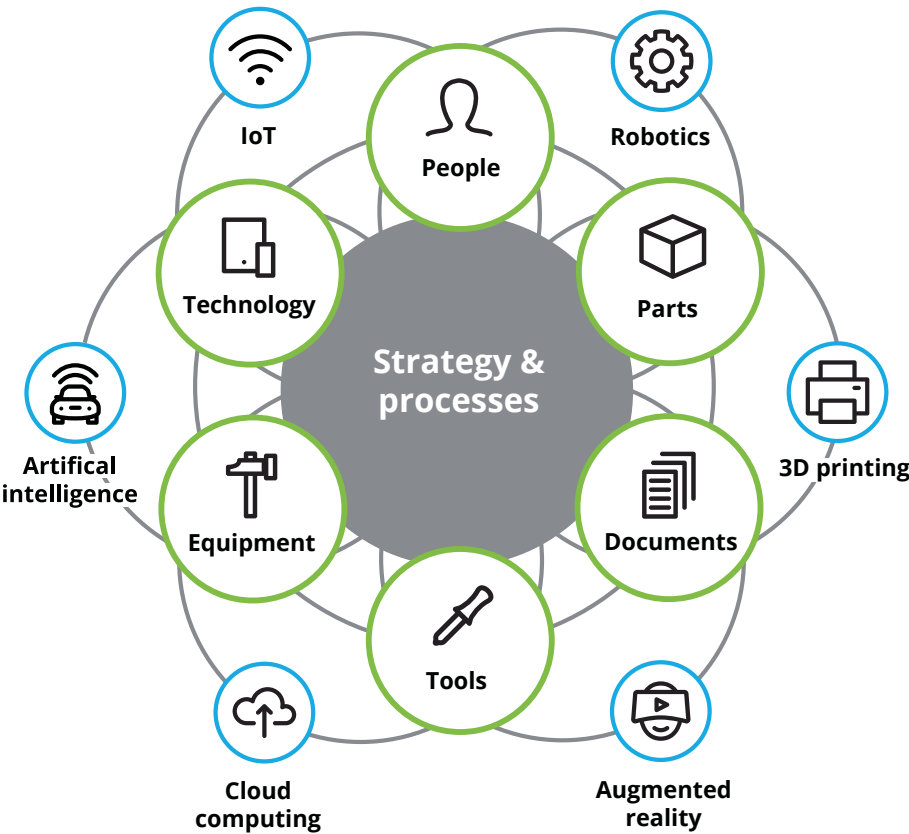
A switch to Android: A step ahead

We currently see a switch to Android as an unambiguous step ahead. Its status as a universally supported platform means that much more powerful hardware appears on the market for it. This offers you new possibilities. And from the developer standpoint, the availability of APIs means that they will be more able to make full use of existing hardware and thus bring their customers more interesting features. After all, Android development has been a very vibrant area for quite some time now. Android also brings some measure of certainty and stability into fields of industry where they have by now disappeared in the case of Windows. So don't be afraid to switch to Android.

Antonín Steinberger

A comparison between the support for standard Android devices and Enterprise Android from Zebra Technologies.

Consumer android devices	3 years of security support	Devices are unsecured – no security support available	
	Google end of security support is the end of sale date for a specific Android version		
Zebra enterprise devices	5 years of security support for Zebra 5/5 devices	2 years support post EOS	Up to a 3-year extension available
	LifeGuard for Android security support is available while the device is for sale, plus 2 additional years post sale, and is automatically included with any Zebra OneCare support contract.		LifeGuard for Android is available for purchase in one year increments.

Google Security Support Available

Zebra LifeGuard for Android Security Support Available

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |

Deloitte.

Deloitte and the Digital Factory

Manufacturers are facing a new age of physical production. Advanced processes, new materials and increasing automation are reshaping the industry. Business leaders are beginning to ask themselves how to keep up with market changes…

Deloitte invites you to visit us at next year's TAL 2020 conference, where we will be showcasing use cases of integrated AI used cases into manufacturing operations.

Here's a part of what you can look forward to:

- A quality gate / visual inspection using Machine Learning in Image Recognition to determine the quality of finished goods.
- DIY AutoML tools that make your journey to embracing AI in your day-to-day simple and easy to deploy.
- Visual analytical tools to help move your reporting from traditional BI to Insights Driven.
- An Augmented Reality station demonstrating various IoT use cases – bring your smart phone.

Contact:

Donovan Spronk
Senior Manager, Consulting
dspronk@deloittece.com
+420 734 359 406

© 2019. For information, contact Deloitte Czech Republic.

In brief

New head for SAP division

Jan Kratochvil took over as head of Aimtec's SAP division on 1 July 2019, replacing Halka Kračmerová. Ms. Kračmerová is continuing her Aimtec career in the new role of Senior Business Consultant. Mr. Kratochvíl mainly stands before the tasks of preparing our solutions for the transition to S4/HANA and developing our cloud solutions.

Eissmann Group Automotive visits Schlanker Materialfluss

Martin Kozaczuk and Karel Langmajer from Eissmann Group Automotive joined Aimtec's Halka Kračmerová and Karel Langmajer to present material flow digitalisation in practise at the Schlanker Materialfluss (Leaner Material Flow) conference organised by Bayern Innovativ.
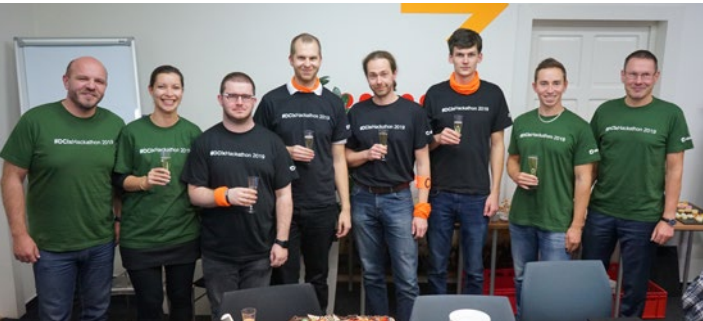
An internal innovation boot camp for DCIx

Aimtec has recently held the third year of its internal hackathon aimed at a singular goal – pushing DCIx ahead as much as possible during three days of intensive programming. Over 20 developers and consultants focused here on such objectives as user interface adaptations, a self-teaching neural network and product quality control.

Mechatronics experts care about digitalisation too

Jan Stočes spoke to mechatronics experts at Internationales Forum Mechatronik about how best to approach the digital transformation. Meanwhile, we're preparing content on the digital transformation and its phases for you as well. Watch us online – and offline.

AIMagazine [34]

The magazine about Industry 4.0, the automotive industry and information technologies

#AimtecHackathon 2020

Next March, Pilsen will be brimming with enthusiastic programmers and tech experts! A programming competition and presentations on a variety of topics are awaiting us as a part of #AimtecHackathon. We'll be looking at the security of biometric data, IoT's uses in agriculture and more. Learn more at aimtechackathon.cz.

Starting 1 January 2020, we are anchored at Hamburk Business Center.

Aimtec
U Prazdroje 2807/8
301 00 Pilsen
Czech Republic (CZ)