2018

RAIL NEWS

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COTS Applications around the World

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Editorial

Dear reader,

In the past few years we have been working hard to change the landscape of rail safety once and for all. Now, we can rightfully say that commercial off-the-shelf (COTS) based safety is established in the rail industry.

There are currently dozens of installations worldwide – ranging from signaling systems to electronic level crossings and many more. Solutions built by OEMs and system integrators using HIMA hardware have changed the way the market perceives COTS. You will find out more about how this was possible in this this edition of Rail News.

But the journey is not at its end.

Rail safety specialists must now combine their efforts, learn from one another, and work more closely together. Be it in developing a market strategy or supporting end customers worldwide with high-quality service – collaboration is the key to success.

With digital transformation in full swing and many railway networks outdated, more and more customers now realize it is high time for new safety solutions. They need solutions with built-in cybersecurity. Solutions that are optimally scaled to the requirements of each application and flexible to use. The demand for your expertise and services combined with HIMA's SIL 4 hardware is on the rise.

For the entire rail industry, this is a once-in-a-lifetime opportunity.

Let's make it count!

Best regards,

Sedat Sezgün
Group Vice President
Business Segment Rail

Off the Shelf, on the Rise.

HIMA Smart Rail Summit 2018

"This summit was a great opportunity to connect with colleagues, partners, and customers to plan for the future of rail safety," explains Stéphane Berthet, Division Leader of Signaling at Mobility, France. He was one of the participants at the HIMA Smart Rail Summit 2018 in Germany – the first event of its kind. For two days, Mannheim became a hotspot for rail safety solution users and providers. There were around 100 participants from over 20 countries present.

The aim of the event was to bring HIMA and its partners together to identify opportunities and address challenges in the rail sector. And at the heart of the summit, there was one leading topic: commercial off-the-shelf (COTS) controllers. However, this wasn't the only item on the agenda. There were plenty of highlights and valuable contributions from participants.

What Was on the Agenda?

The HIMA Smart Rail Summit provided a platform for operators, system integrators, and OEMs to discuss the potential for new business, as well as best practices for tackling market challenges. The rail sector is radically changing due to many factors, including urbanization and environmental regulations. For this reason, the conference highlighted the necessity for open controllers that can be quickly implemented without the need for ongoing customization.

"You can be sure of the quality of the COTS products without having to perform the planning and quality assurance in areas such as electronics yourself."

Jari Pylvänäinen
Director of Safety Related Systems, Mipro Finland

COTS in the Spotlight

At the forefront of discussion was how COTS is now established as standard in the sector. Proprietary controllers are in decline and COTS has taken over due to the high level of flexibility it offers users. Attendees learned about how systems constructed from standardized components and featuring out-of-the-box functionality allow companies to fulfill safety requirements while reducing operational costs. Experts also explained how the modular design of HIMA COTS controllers achieves this by only utilizing necessary functions for applications. If requirements grow, users can simply retrofit necessary modules.

2016 **47%** → 2017 **55%**

Companies using or planning to use COTS systems.

Source: ASTRAN survey 2017

Participants heard from Sedat Sezgün, Group Vice President Business Segment Rail at HIMA, about the rail strategy for the future. His address included the need to create a smart partnership between different rail organizations to promote knowledge exchange, experience sharing, and learning from best practices.

Other Key Themes for the Modern Rail Sector

The Smart Rail Summit 2018 addressed many other key developments in the industry. Experts gave talks on megatrends, and professionals had the opportunity to establish new partnerships and network with others within the rail industry.

Digitization Waits for No One

Many rail networks are outdated and require modernization to be ready for the future. This topic was high on the agenda at the Smart Rail Summit. Visitors learned how replacing outdated technology with automated processes provides a solution. Additionally, there was a focus on future innovations, including autonomous trains. The future of the rail industry is digital, and the summit provided key insights to participants on how to protect against cybercrime and user errors with the latest safety technology.

Knowledge Exchange Keeps the Rail Sector on Track

The Smart Rail Summit 2018 gave system integrators, operators, and OEMs the chance to make their voices heard. Participants were able to discuss with one another where they have found success and what challenges they are facing, such as implementing new controllers and maintaining certification. Attendees were also able to take part in workshops and give feedback. Tackling challenges in the rail industry requires collaboration – and that is why it is important to get input from others in the sector from all around the world. The summit provided HIMA with additional information to work with its partners and overcome common obstacles.

New Contacts and New Partnerships for a Brighter Future

Another core focus of the Smart Rail Summit 2018 was connecting industry professionals and creating partnerships to tackle challenges in the sector as a collective. HIMA recognized the vital role its partners have played in making COTS such a success at the event. Sedat Sezgün explains: “Simply manufacturing safety controllers is not enough. HIMA wants to support and work with other enterprises to develop new business models based on COTS and design cost-effective safety technology suitable for the digital era.” The event enabled companies to network with one another and create partnerships for future success.

Stay up to date with HIMA news, upcoming events, and innovations by following us on our dedicated channels:

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> **“In principle, the customer needs only one product or product family that they can use for all of their rail vehicles. This makes things incredibly simple for me as a manufacturer, and I know I can rely on COTS.”**
>
> **Peter Heidrich**
> Division Leader at Bombadier Transportation GmbH, Germany

A Successful Debut Event That Is Set to Continue

The HIMA Smart Rail Summit 2018 was a hugely successful event. Collaboration between HIMA, its customers, and partners shed light on some of the pain points in the industry. The first HIMA Smart Rail Summit set the standard for the future, ensuring that rail organizations from around the world will continue to work together to overcome challenges and produce first-class safety technology.

Around the World with COTS

COTS solutions are not a one-off phenomenon: This was one of the key takeaways at the Smart Rail Summit 2018. Conference participants demonstrated the diversity of COTS applications, as well as the full variety of benefits. And the versatile technology is already revealing its enormous potential around the world – from France to Australia.

Open Systems Sending Positive Signals

Our journey begins in France with the Clermont-Ferrand project. French systems integrator Colas Rail was the first company in the country to use COTS controllers in a signaling solution. The reason? Proprietary safety technology is too expensive and can very quickly become obsolete. The company added three new stations to the Clermont-Ferrand tram network and used a HIMax controller in the SIL 4 certified signaling system for the extended area. But the biggest benefit is that Colas Rail can now offer an open solution for interlockings, allowing its customers to make their own modifications as needed.

Mobility follows a similar concept. The French transport infrastructure specialists developed their Light Rail Solution (LRS) using COTS components. Not only can this solution be easily adapted to customers' needs, but it is also easy to install and saves space. Where the old relay technology required a 50m³ control building, the new solution only takes up 2.4m³, meaning it can be installed on train platforms. Mobility is using COTS technology for the ongoing extension to Nice's tramways, as well as for Luxembourg's new city trams.

Fast-Track to Market

Of course, signaling systems are not the only application for COTS products. SafeinTrain, a German company that specializes in rail safety software and embedded systems, used HIMA COTS technology to develop a train control and management system. Time to market was the crucial factor in this project, and pre-certified HIMA systems enabled the company to deliver on time despite tight deadlines. The customer, Polish tram manufacturer Solaris Bus & Coach, has already deployed the safety solution in a number of its trams. It keeps trams and passengers safe by monitoring drive systems and preventing unintentional roll-back.

Scaling Up for Success

Scalability is one of the biggest drivers behind COTS components: at least for Austrian company RDCS Informationstechnologie. The rail-specialized systems integrator uses HIMA COTS hardware and software components in its rail traffic management system as well as its ILOCK-RC interlocking system. Thanks to a modular architecture, the solution can be scaled up easily – but it is also a key driver in digitization. By laying fiber-optic cables along the tracks, railway companies can use the ILOCK-RC system to replace physical interlockings with virtual ones. Controllers are decentralized, and functions are defined using software instead of hardware. This concept has already been successfully implemented by Kazakhstan's national railway company.

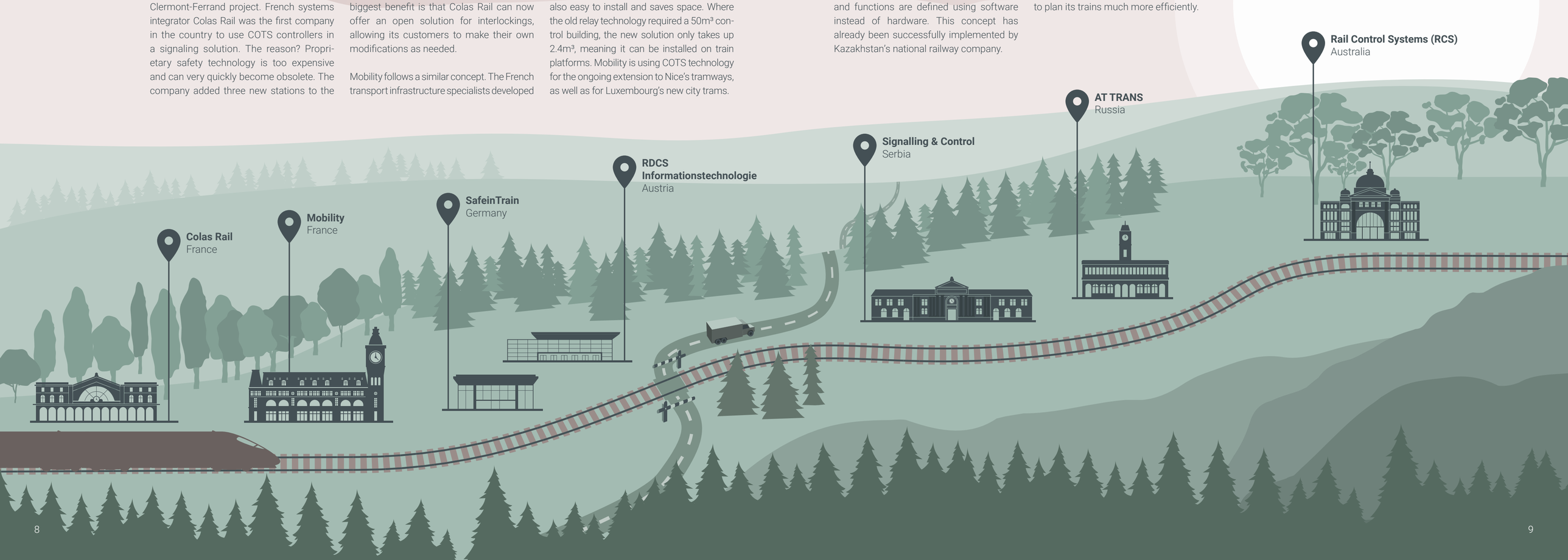
The national railway in Serbia is also reaping the benefits of COTS components. The company Signalling & Control has used COTS components from HIMA to create its own electronic interlocking solution. And this has proven effective in multiple projects for Železnice Srbije (Serbian Railways). Here, scalability and pre-certification were decisive. Gaining approval for systems poses a huge challenge and involves a great deal of work. Certified COTS products provide a cost-effective and time-saving solution, which is especially important for smaller companies.

Logistics, Right on Schedule

Our next stop: Russia. The potential of logistics as an application for COTS is often underestimated – but not in the world's largest country. According to experts, industrial railways make up around 50 percent of the total rail market in Russia. Russian rail company AT TRANS created an interlocking solution based on HIMatrix controllers, which not only maximizes safety, but also optimizes train scheduling. The HIMA technology is directly linked to axle counters so they can track the location of trains in real time. In addition to performing all relevant safety functions, the controllers convey valuable information to the company's logistics management software. This enables AT TRANS to plan its trains much more efficiently.

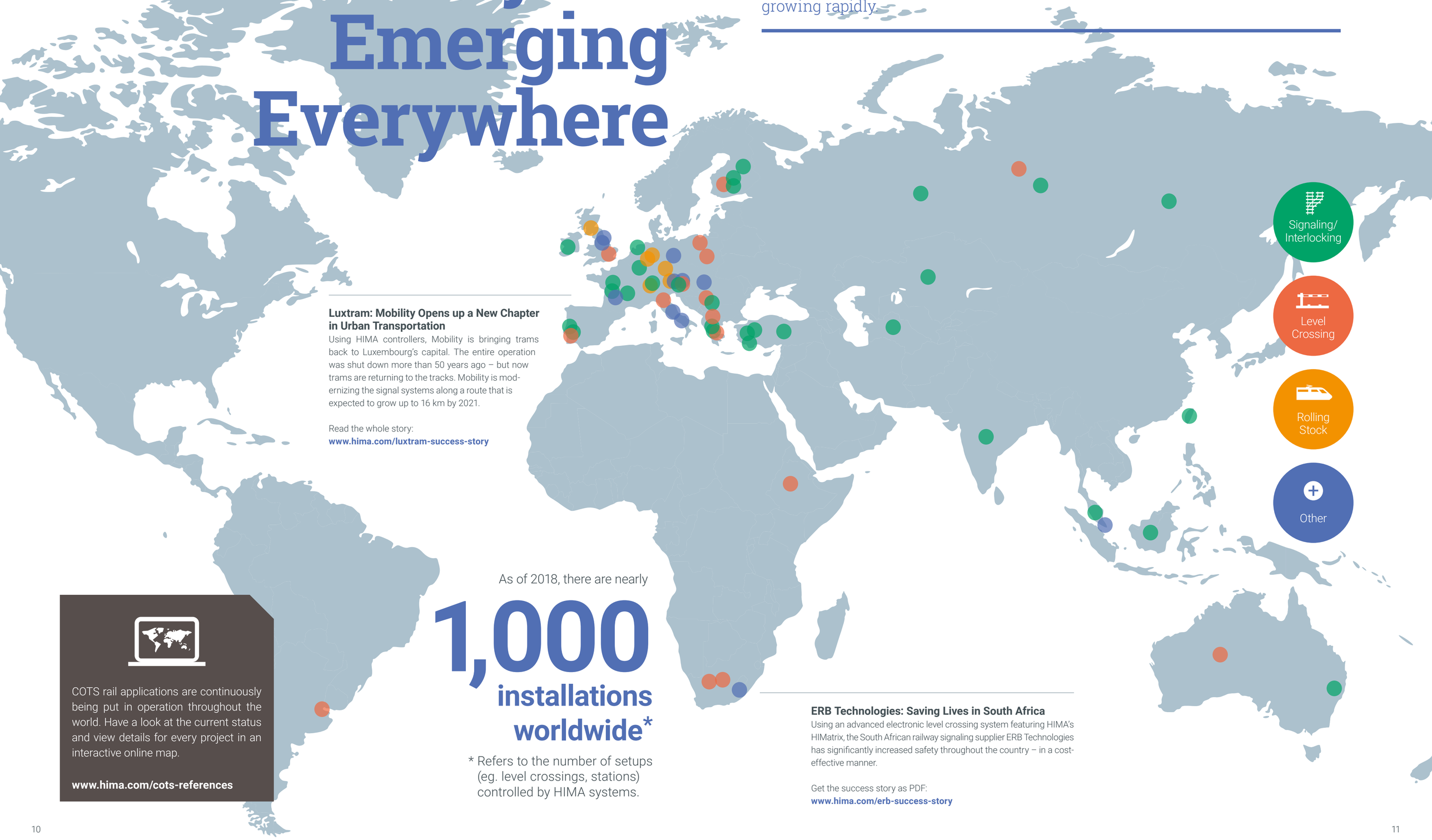
Flexibility to Meet Highly Specific Requirements

COTS solutions have even established themselves on the other side of the world, as demonstrated by multiple projects in Australia. Rail Control Systems (RCS), an Australian systems integrator, has implemented several solutions based on COTS controllers for level crossings and signaling systems across the country. The key differentiator: flexibility. As function blocks only need to be designed, checked, and approved once, additional customer-specific functions can be added quickly and with no additional cost. This is a huge advantage in a country with complex approval procedures such as Australia.



New Projects Emerging Everywhere

Just a few years ago, early adopters began to develop the first solutions based on HIMA COTS controllers. From then on, this trend has quickly picked up pace. What started with four partners has now become a global movement that is growing rapidly.



Luxtram: Mobility Opens up a New Chapter in Urban Transportation

Using HIMA controllers, Mobility is bringing trams back to Luxembourg's capital. The entire operation was shut down more than 50 years ago – but now trams are returning to the tracks. Mobility is modernizing the signal systems along a route that is expected to grow up to 16 km by 2021.

Read the whole story:
www.hima.com/luxtram-success-story

COTS rail applications are continuously being put in operation throughout the world. Have a look at the current status and view details for every project in an interactive online map.

www.hima.com/cots-references

As of 2018, there are nearly

1,000 installations worldwide*

* Refers to the number of setups (eg. level crossings, stations) controlled by HIMA systems.

ERB Technologies: Saving Lives in South Africa

Using an advanced electronic level crossing system featuring HIMA's HIMatrix, the South African railway signaling supplier ERB Technologies has significantly increased safety throughout the country – in a cost-effective manner.

Get the success story as PDF:
www.hima.com/erb-success-story

Survey: What Will Rail Safety Be Like in the Digital Era?

Railway operators, infrastructure planners, legislators, and of course passengers will impact how the industry changes over the coming years. To gain a clearer picture of the many factors safety providers now must consider for their business, HIMA conducted a survey amongst the Smart Rail Summit participants. Here are the results.

What is the most fundamental change on the horizon in the rail industry? For 56% of the respondents it is digital transformation. This comes as no surprise, as technological disruption has already drastically altered well-established industries. The second most important trend is the shift from proprietary safety technology to COTS systems, something that 23% of the respondents mentioned. For 14%, increasing international competition in the rail industry is their main concern. These results are consistent with recent findings by ASTRAN (see infobox below).

Digital Transformation Puts Cybersecurity on the Agenda

While digitization presents lucrative new business opportunities, one third of the respondents also believe it brings a level of risk to the rail sector. As self-driving trains and networked processes become the norm, the importance of cybersecurity is growing rapidly. But what is the status quo in the daily business of system integrators and OEMs? 42% say that cybersecurity does not yet play an important role in bids, proposals, and offers. For the remaining 58%, it does play a role – for 38% it is even mandatory already. The survey participants agreed that the relevance of cybersecurity is going to increase in the near future. Just 4% think it will only have minor influence on the rail industry in the upcoming years.

Clear Benefits of COTS

Safety providers have a keen interest in digitization. However, they can only influence it to a limited extent. COTS completely changes this and grants them greater control to shape digital transformation. That's why system integrators and OEMs are increasingly switching to SIL 4 certified standard hardware to meet more demanding customer requirements and access new markets. There are many reasons to use COTS systems instead of proprietary controllers. By far the most important factor for survey respondents was independence from a single hardware provider. More than half see this as the main benefit. Avoiding vendor lock-in helps both sides: Safety solution providers can develop solutions based on a wide range of open systems. On the other hand, users no longer have prices and features dictated to them by large vendors, which often results in oversized solutions for applications.

Megatrends Reshaping the Rail Market

In their latest study, business consultants from ASTRAN evaluated what rail specialists around the world consider the most important trends affecting their industry. Read more about the top five on the Smart Safety Hub.

www.hima.com/top-5-rail-trends

79% believe the number of COTS-based solutions in operation will significantly increase.

The shift to COTS of course also presents challenges. Three quarters of the rail summit participants consider the approval process to be the main challenge for gaining a significant market share. Interestingly enough, only 7% think the alleged obsolescence of commercial off-the-shelf hardware is an actual problem. This is probably because the safety specialists themselves know from experience that this concern is unsubstantiated. The issue of high safety requirements in the rail industry garnered similar results, as just 2% mentioned this as a challenge related to COTS. Nonetheless, HIMA hardware is SIL 4 approved in accordance with CENELEC.

An Optimistic Outlook for the Future

After looking at the challenges and opportunities of COTS technology in detail, the survey asked participants whether the prevalence and number of COTS-based solutions in operation will significantly increase. 81% of the safety providers that were asked were convinced that this will be the case – an important statistic, as their confidence plays a key role in achieving this goal.

The main benefit of using COTS systems for me is…

- Use of state-of-the-art tech: **7%**
- Flexibility: **18%**
- Price: **24%**
- Vendor independence: **88%**

What influence will cybersecurity have in the rail industry in 3–5 years?

- Little influence: **4%**
- Some influence: **19%**
- Large influence: **77%**

The percentage of COTS based solutions in the rail industry will increase tremendously.

- I agree: **79%**
- I don't think so: **15%**
- No idea: **6%**

Changing Tracks:
An Interview on the Future of Rail Safety

As the transformation of rail transportation picks up pace, will tomorrow's rail industry be unrecognizable from that of today? HIMA Group CEO Sankar Ramakrishnan and Sedat Sezgün, Group Vice President Business Segment Rail, discuss key changes in the sector, look forward to upcoming developments, and evaluate what impact these will have on rail safety.

The rail industry is currently going through radical change. What are the key drivers in this transformation?

Sezgün: I think, first of all, you have to look at the broader changes in society and the business world to understand how we got to where we are today. Take urbanization, for example. Because the rail industry serves to transport people and products from one place to another, movements in population have a huge influence on the way rail companies operate. As populations grow in metropolitan areas, the industry needs to look for solutions that meet the heightened demand. Companies in the rail industry are asking themselves: How can we make transportation faster, safer, and more accessible for everyone?

Ramakrishnan: Exactly. In today's world, people are better connected. But so are all the systems involved in rail transport. As digitization becomes ever more prevalent in the rail sector, we will see major changes in technology. For instance, signal boxes, trains, and railway stations are no longer isolated – they are now connected to external systems via networks.

What innovations can we look forward to as a result of digitization?

Ramakrishnan: Like in almost every other industry, data will be at the heart of the transformation of rail. The insights gained from that data will create new opportunities to make rail travel more efficient. Take fault prediction for example: If we know in advance when a train or a system within the rail network is likely to fail, then we can plan maintenance in a way that prevents disruption. This will make rail travel more attractive by increasing the reliability and punctuality of train services.

Sezgün: In my opinion, one of the most exciting developments right now is the concept of digital interlockings. They will make it possible to optimize the flow of rail traffic by tracking the location of trains and adjusting their speed accordingly. And as digital interlockings replace their mechanical counterparts, maintenance costs will sink.

There has been much talk about COTS systems in recent years. What led to their rise in popularity?

Sezgün: A few years ago, our partner companies and thought leaders in the industry were asking themselves the question: "Is there an alternative to the inflexible, proprietary systems that big companies offer?" Back then, the industry was dominated by a small number of major players who defined the rules. Their safety systems are rigid: highly customized and extremely expensive. So the problem for customers was that once they had chosen a provider, they were tied to them. We aimed to change this and give OEMs and system integrators the chance to enter new markets.

Ramakrishnan: From my experience working for a large corporation in the rail industry in Asia, I saw that many big players were delivering safety as a part of their total proprietary systems. Our customers were used to this situation, and they were naturally skeptical when COTS came about.

> **"Data will be at the heart of the transformation of rail. The insights gained from that data will create new opportunities to make rail travel more efficient."**
>
> **Sankar Ramakrishnan**
> CEO of the HIMA Group

“We have reached a common understanding that most experts agree with: COTS is here to stay.”

Sedat Sezgün
Group Vice President Business Segment Rail

Is this one of the reasons why it has taken so long for COTS technology to establish itself?

Ramakrishnan: Yes, the doubts about COTS were definitely an obstacle. But due to rising cost pressure, companies in the rail industry simply had to find alternatives to proprietary solutions. OEMs and integrators needed more freedom, simpler implementation, and a way to reduce their costs. But while cost was one of the initial triggers, other considerations came into play as awareness of COTS technology grew. For example, the first companies to start seriously weighing up the benefits of COTS components also saw a good opportunity to expand their business models.

Sezgün: You have to appreciate that the industry was rife with misconceptions about COTS. While it has long been known that COTS products offer a way out of vendor lock-in, some perceived them as “not safe enough”. And there was a fear that the components would become obsolete faster. However, these concerns are misplaced. In fact, we’ve proven that standardized COTS controllers can achieve the highest level of safety more cost-effectively and flexibly.

Ramakrishnan: It’s also worth noting that it is easier to adapt COTS systems to changing needs, which enables you to develop future-proof solutions. And thanks to pre-certification, they can save considerable time in the approval process, helping companies bring their solutions to the market in less time.

What role did HIMA play in dispelling the misconceptions about COTS?

Sezgün: After listening to our partner companies, the early adopters of the COTS concept, we decided it was time to challenge the status quo. We worked together with OEMs and system integrators – we provided the open technology, and they built the solutions. Together, we started the COTS movement. We have since reached a common understanding that most experts agree with: COTS is here to stay.

Ramakrishnan: I would say that we have achieved critical mass. We went from zero to 55 partners in less than ten years. Now, you can find HIMA COTS technology in a variety of applications, all around the world. We will continue to listen to our partners and collaborate with them closely to develop new safety concepts based around COTS components.

How close are we to seeing driverless trains, and what significance do they have for the industry?

Sezgün: Self-driving trains are quickly becoming a reality, and there are already many examples of driverless metro systems around the world. The first autonomous long-distance trains have also been successfully tested. This means we will see train operations increasingly shifting to control centers in the coming years. The safety requirements are, of course, huge – but we will deliver safety solutions that fulfill the highest standards.

Ramakrishnan: Once successfully implemented, autonomous trains will be able to run at a higher frequency than conventional trains, helping address the increased demand for transport that we mentioned earlier. But they will also be more energy efficient thanks to optimized accelerating and braking.

You mentioned high safety standards – what are the most important requirements for OEMs and system integrators?

Sezgün: The standards and regulations vary significantly from country to country, but they are always very demanding. In Europe, for example, the safety standards are governed by CENELEC. Fortunately, these standards are accepted worldwide, so CENELEC-certified systems can be deployed in applications around the world. However, the approval process for safety-regulated electronic systems is very complex. Because it includes a wide variety of hardware and software assessments, verification of functional integration, and corresponding certification, it can take several years to gain approval.

Ramakrishnan: This is another area where COTS controllers can help. Pre-approved and pre-certified COTS components can considerably accelerate the approval process. They also help manufacturers solve the challenge of keeping all documents up to date for every component.

Looking toward the future, how can rail become more attractive as a mode of transport?

Ramakrishnan: As environmental awareness rises among the general public, rail has the upper hand. In terms of CO2 emissions and energy consumption, trains are much more sustainable than cars or airplanes. But having a reputation as a green, safe mode of transport will not be enough. It will ultimately come down to making trains run more reliably, more efficiently, and keeping ticket prices low.

Sezgün: While some of these aims can be achieved through better technology and innovations, the industry will also require government backing. Many rail networks are already strained or in need of modernization, and as the global population rises and concentrates in urban areas, state-owned companies in particular will require support from municipalities and national governments.

An In-Depth Look at COTS Rail Technology

If you would like to find out more about why COTS systems are the future in rail safety, follow the link below and download our free guide to COTS technology. The in-depth, 16-page study covers technical aspects and maintenance concepts, as well as legislation, standards, and certification. It also includes all the considerations that need to be made when selecting COTS systems.

www.hima.com/cots-guidelines

Sankar Ramakrishnan

CEO of the HIMA Group

HIMA Group CEO since 2013, Sankar Ramakrishnan brings a wealth of expertise and fresh ideas to the organization. Having previously worked in the rail industry in Asia, he has hands-on experience in the sector and is familiar with the challenges. As a company, HIMA has ambitious targets in the rail industry, and Ramakrishnan is responsible for putting these visions and ideas into motion.

Sedat Sezgün

Group Vice President Business Segment Rail

Following many successful years developing HIMA’s rail business, Sedat Sezgün was chosen to lead the company’s rail segment in 2015. Using his extensive knowledge of electrical engineering and the rail industry, he has been instrumental in executing HIMA’s strategy for the rail market. Sezgün continues to guide HIMA and its partners into the next generation of rail safety today.

The Two Faces of Digitization:

Business Opportunities and Technological Advancement

What Business Opportunities Does Digitization Create?

From level crossings to signal boxes, and even autonomous trains, the potential for digitization in the rail sector is huge and already becoming a reality. Reinhold Hundt from the consulting firm ASTRAN believes digital transformation to be the main trend in the sector over the coming years. This evolution calls for safety solutions that are fit for the digital age. Therefore, there are many potential challenges and opportunities of digitization in the rail industry.

What Is the Current Situation in Rail?

For rail transportation to remain competitive with other methods of travel, such as airplanes and cars, the sector must become more efficient and reduce costs. There are many means to achieve this, including automating processes and even trains themselves. However, while such measures may make rail operation simpler and more effective, they also have implications for rail safety. These changes require new types of safety solution and providers must adapt with the ever-developing technology landscape of the rail sector.

Evolving with Digitization to Gain Market Share

Despite the rail industry being a somewhat closed market with high barriers to entry, if existing players do not develop solutions suitable for the networked age, they are likely to get left behind. Software companies could potentially take over and gain market share. This transformation of the market represents challenges for companies as success depends on investing resources in research and development. However, if handled correctly, digitization offers safety solution providers and rail operators an abundance of opportunities. By working closely with rail companies, safety solution providers can help create new business models and access new markets.

Defining a Clear Strategy for Success

If safety providers react to this change, not only can they profit, they can actually contribute to influencing digitization. Companies must embrace drivers of digitization such as the Internet of Things (IoT) and machine learning, and develop a strategy using them. In this way, new solutions and systems will work in harmony with the demands of the digital age. Secondly, safety providers must look to build on their internal IT knowledge and expertise. This allows them to take control of solution development themselves and not be reliant on IT third parties, which may be costly and relinquish a business' influence on digitization of the rail sector. Finally, working together with others in the industry is vital. In this way, the rail sector can tackle challenges as a collective to minimize costs and reduce risks in solution development.

> "Due to the rise of digitization in the rail sector, solutions based on COTS systems and open safety technology will form the key foundation for digital platforms in the future."

Reinhold Hundt, Rail Industry Expert at ASTRAN

How Will Digitization Drive Technological Innovations?

As digitization changes the rail industry, the requirements for rail safety will also transform. This calls for significant technological advancements to keep pace with the new market. Cybercrime is at the forefront of challenges in digital safety, but there are also many other aspects to consider. These include communication between devices, innovation cycles, and migrating processes to the cloud.

COTS Rises to the Challenges of the Digital Age

To defend applications against cyberattacks, it is vital to minimize, or even eliminate, opportunities for people to access systems. This can be achieved by implementing closed safety systems. HIMA identified cybercrime as an issue early on and designed its COTS controllers with this in mind. HIMA controllers for rail safety utilize their own operating systems for applications, making it incredibly difficult for hackers to gain access. COTS technologies from HIMA only use the functions required for the relevant application, and distributed control systems are separate from one another. As a result, if the communication processor is attacked, safe operation continues.

Rail Safety in an Increasingly Networked World

The digital age is the era of interconnectivity. Machines can be connected to one another and even to people. Five key drivers of digitization are used to create these intelligent networks. These are IoT, machine learning, Industry 4.0, virtual reality, and autonomous systems. This development requires new types of safety systems and means safety solution providers must adapt to the transformation.

> "Standardization of communication and ensuring reliable safety are our two central challenges in the digital age. These were the fundamental obstacles we looked to overcome when designing systems at HIMA."

Dr. Alexander Horch, Vice President of Research, Development, and Product Management at HIMA

Innovation Cycles Undergoing Change

As a result of the rapid advancement in software over the last two decades, innovation cycles have become significantly shorter. If safety technology requires long-term availability, updates are necessary in short intervals. Modern controllers must ensure that updates are simple and quick to perform. Additionally, it should be possible to map hardware functions using software. HIMA controllers are designed to fulfill these requirements. They are backward compatible to ensure systems are future-proof and can be adjusted with the pace of innovation. Another benefit is their modular design, which allows users to exchange certain functional modules or add completely new ones – even during operation.

> "We are not interested in short-term profit. We want sustainable growth, and that is why we enter into long-term partnerships to tackle the challenges facing the global rail industry."

Sankar Ramakrishnan, CEO of the HIMA Group

Standardized Communication Is Key

Standardization of communication interfaces could spark huge developments in rail technology and automation. By creating consistent communication, organizations could connect rail networks across entire nations, or even internationally. But consolidating different communication protocols presents challenges. Therefore, HIMA designed flexible controllers that fulfill the requirements for standardizing communication and ensuring continuous safety.

HIMA Pushes Ahead with Digitization

HIMA has been innovating with safety technology for 110 years and has continuously adapted to whatever market changes arise. The company is committed to providing first-class safety technology and will continue to invest in research and development. Additionally, collaborating with other companies in the sector is key to HIMA's strategy. This includes providing training, joint market initiatives, and gathering feedback from customers and putting it into practice.

A Clear Strategy for the Digital Future

Whether it's standardization, migrating functions to the cloud, autonomous trains, smart supply chains, or maintenance, digitization will lead to major developments throughout the rail sector. HIMA is investing heavily to support these changes and to ensure that the rail sector remains on track for success in the digital future.

Fit for the Future of Rail?

With a host of new trends fueling transformation in the rail sector, it remains to be seen how the industry will develop in coming years. But one thing is for certain: There will always be demanding safety standards to fulfill. Everyone involved with functional safety in the rail sector needs to ensure they have the necessary knowledge and certification. And this needs to be refreshed and expanded on a regular basis.

HIMA offers training courses to help engineers and managers expand and refresh their knowledge. End users and system integrators can learn how to successfully implement functional safety in accordance with CENELEC standards. Course content ranges from an introduction to standards in railway applications, to risk analysis and lifecycle principles, to software design and safety-related communication.

For more information, visit **www.hima.com/en/products-services/seminars**.

One Contact for Rail Safety – Wherever You Are

By partnering with HIMA in the rail industry, you benefit from complete independence and control. You can configure HIMA safety controllers as you see fit, and you are not tied to a single vendor. In addition, HIMA application engineers can support you in every step of your rail safety project, no matter where you are in the world. The company's dedicated rail segment has already gained substantial experience from numerous projects, ranging from control systems for level crossings to COTS technology for signaling systems. Learn more about HIMA's solutions for rail safety at **www.hima.com/en/industries-solutions/rail**.

Situated at over 50 locations in all continents, HIMA has a global network to offer on-site assistance and services whenever you need them. To find a contact near you, visit **www.hima.com/en/about-hima/contacts-worldwide**.

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