

# Inside magazine

October 2021 — Issue 01

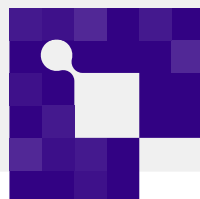


In this issue:

The how, what and why of Inside

“We’re producing brains – that’s my primary product”

“I want my grandkids and their kids to have the same future we had”

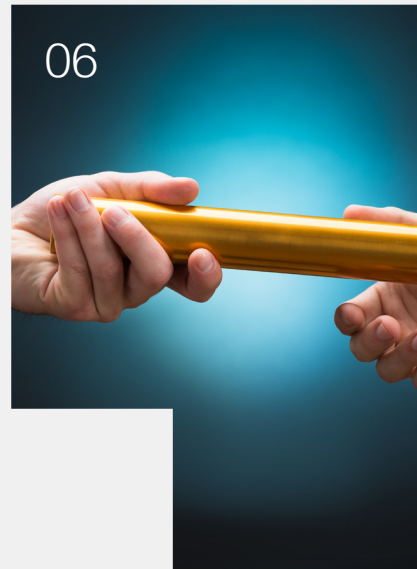


**Inside**  
Industry Association

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ECSEL  
BE2020

Creating Intelligent Digital Systems together:

# The how, what and why of Inside

Welcome to *the* industry association for R&D&I on Intelligent Digital Systems and their design tools! Before you is the first ever edition of the Inside Magazine, including all the info on our new name and renewed purpose, memories and stories from our trusted network, updates on the upcoming Brokerage Event and Key Digital Technologies (KDT) and much more. But what does all this mean for our members and scope? And for embedded systems in general? It's about what's **Inside...**



Jean-Luc Di Paola Galloni



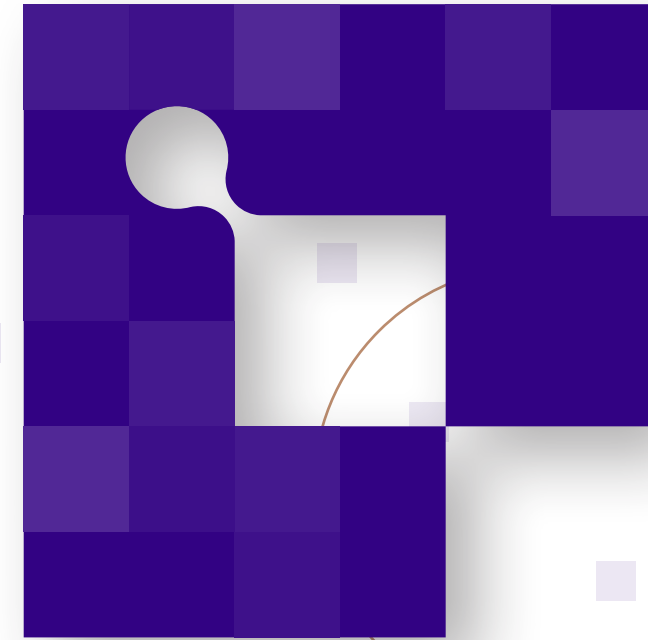
Jan Lohstroh

## A timely opportunity

The idea of a new name has been around for some time, but this year has proven to be a particularly good opportunity to formalise a change due to the concurrent switch from ECSEL to KDT. By the time of its conclusion, ECSEL is expected to have spearheaded around 90 innovative projects with about five billion euros worth of investment; KDT will build on this foundation to support the largescale transformation of all economic and societal sectors, including a major contribution to the Green Deal target of becoming the world's first climate-neutral continent by 2050.

Inside intends to play a key role in this. By co-defining the general Intelligent Digital Systems R&I strategy for Europe, we aim to shape our future technologically, economically and societally – something we can only do with the help of our valued network. Like ARTEMIS before it, Inside is open to all larger corporations, SMEs (including start-ups), RTOs and universities in Europe, which can collectively build new partnerships and consortia, create new initiatives and acquire funding to push the ECS domain forward. The benefits are straightforward: in addition to gaining international recognition and access to the continent's top experts, organisations can share risks and costs while solving the most important challenges of our time.

"The change was, I would say, a collective approach that was submitted very democratically to the existing organs of management of the association," notes Inside President Jean-Luc di Paola-Galloni. "I have to say, there was an overwhelming majority – if not almost an unanimity – to change the name and then accept the name as Inside. When you promote yourself as Inside Industry Association, this should trigger some companies or universities that are not yet members to understand who we are, ask for more information and potentially become future members."



## What's in a name?

Few may remember it today, but ARTEMIS was actually an acronym for Advanced Research and Technology for EMbedded Intelligent Systems. With the new name, however, we intend to make this focus on embedded systems clear in just a single word, as outgoing Secretary General Jan Lohstroh explains.

"This is strongly related to intelligence in software, which is not visible from the outside. If you work in hardware, you can put a chip under the microscope so people know what you're talking about. It's more abstract for our type of business. The new name should be intriguing and relate more to the invisible part of electronic systems which are *inside*. That's how we got to this name. We're still a strong community, just evolving into the next phase. Together, we are ushering in the digital age and that's why our slogan has changed to '*Creating Intelligent Digital Systems Together*'."

Jean-Luc nods his head. "What's interesting about the name Inside is that it shows what we're about in one word: the systems and applications that are not seen but are extremely important in the electronics value chain. With Inside and the link to the European Union, it's a step to better identify ourselves. For newcomers, this is a much clearer and more enticing association to join."

## The wheel keeps turning

Such clarity is all the more important given the increasing complexity of our domain and our world. In 2018, the global ECS value chain was worth 52.6 trillion euros and the economic value of the embedded systems and embedded intelligence section is growing faster than the hardware section. This is the area that Inside seeks to address, but we do so in the face of growing competition from other regions and the need to retain our autonomy on European values such as privacy and sustainability. We envision a world in which all people can benefit from the support of Intelligent Digital Systems, a world constantly on the move through innovation led by our members: the Insiders.

In terms of parameters or scope, this means that Inside follows the path set by the ARTEMIS Wheel – now the Inside Wheel – which outlines the six technologies needed to create embedded intelligence and the six primary sectors in which this is utilised. "So," Jean-Luc explains, "we will keep the big three European semiconductor companies that are interested in understanding what applications we're working on and the link between hardware and software. The aim is to attract more members in the domains of artificial intelligence, edge computing, Internet of Things and systems of systems. Such companies are already present, but there is an interest in opening up these areas even more."

## Alive and alert

For Jan, the name change marks almost 17 years spent developing the organisation into its current form, as he discusses further in his joint interview with incoming Secretary General Paolo Azzoni. From 1 January onward, he will serve as an advisor for as long as is necessary and will help make Inside a success in its newest iteration. "It was a very interesting journey over the last couple of decades with a very big influence on society, business models and all companies in the world," he concludes. "And it was a pleasure to have had so many contacts in many countries with different approaches, languages and cultures but to still be able to bring people together for the best of Europe."

This name change is just the beginning of a new chapter in European ECS research and development. Looking to the future, we plan to reinvigorate ourselves through actions rather than words. "If you don't revitalise yourself, particularly in an area which is going through *a lot* of evolution, you put yourself at risk," concludes Jean-Luc. "First of all, I do want to keep a continuity. It's very important to keep the people who were insiders of ARTEMIS! But, in a nutshell, rebranding the association at a time when the programme is also rebranding itself puts attention on the fact that we are alive and alert and that there is strong regional competition and cooperation around the world. As an organisation, we show that we are ready for the challenges ahead of us." Are you In?



# Handing over the baton: the once and future Secretary Generals of Inside

The name change from ARTEMIS to Inside isn't the only major transition this month: after 14 years as Secretary General, Jan Lohstroh will be stepping down and Paolo Azzoni will be taking his place. How did ARTEMIS evolve under his tenure and how will it continue to grow as Inside? Jan and Paolo look back on their careers and forward to their hopes for the association.

## ETP to association

Jan's involvement with ARTEMIS and ECSEL goes right back to the beginning – to quote former European Commissioner for Information Society and Media Viviane Reding in the first ever ARTEMIS Magazine in June 2008: "I would take this opportunity to thank Jan Lohstroh from ARTEMIS-IA for his considerable help and operational support during the start-up phase of the ARTEMIS Joint Undertaking." Such support came off the back of a long career at Philips, including responsibility for more than a

thousand people as a Senior Vice President at Philips Electronics and a place on the board of Philips Intellectual Properties and Standards, but Jan still had more to give.

"My career began in 1970, when I started in the Philips Research Laboratories at the age of 24. I'm now 75, so I've been working for 51 years," he begins. "Philips had a rule that higher management had to retire at the age of 60 but I still had a lot of energy and was approached for this role as Secretary General. All the contacts

I've had in ARTEMIS have been very interesting, talking to people at the forefront of industry and making sure that we're connected to each other in projects. Europe is facing tough competition from the rest of the world in the area we're in and I think that all the projects we've done have helped. Whether it's been enough, we'll only know 20 years from now."

Like his predecessor, Paolo has been with ARTEMIS/Inside since the start. His career has also largely mirrored the development of the



association, starting in the area of electronic design automation and gradually shifting to the software domain. This included working with the father of the MQTT protocol, Arlen Nipper, on the creation of a software-oriented division within Eurotech Group in the transition from a pure hardware manufacturer to a provider of solutions for the edge to cloud continuum.

“This was in 2006,” says Paolo, “and we already anticipated the Internet of Things. Across my career, I’ve been able to work in all steps of the ECS value chain, including processes and materials, electronic components and devices, embedded software, integrated systems, systems of systems and applications, so I have a global view. After an exciting period in academia, I joined Eurotech Group to set up a research centre focusing on the areas of embedded and cyber-physical systems, edge computing, IoT and embedded intelligence – all the topics that ARTEMIS also focused on. It was during that period that Eurotech Group became a member of ARTEMIS-IA. You could say that Jan and I represent the living memory of the association, covering both management and technology aspects.”

The intervening years have seen constant evolution for the organisation, starting with its foundation as a European Technology Platform (ETP) by European Commissioner Erkki Liikanen in 2004. “The idea was that the ETPs would deliver strategic research agendas to improve European competitiveness,” Jan explains. “There was a discussion about whether embedded systems should have their own group, so the commissioner asked key people in this area whether they’d be interested. The answer was positive.” The ETPs were loosely organised; in 2007, the Commission’s new

concept of Joint Undertakings required a legal construction for its members and ARTEMIS Industry Association was initiated. After seven years, the ARTEMIS Joint Undertaking was combined with the ENIAC Joint Undertaking to create ECSEL. Another seven years later, this will soon give way to Key Digital Technologies (KDT).

“There were many ETPs,” Paolo notes. “For example, Eurotech Group was initially in charge of the ETP for high-performance computing. The idea of ETPs generated the concept that the Commission has to dedicate some budget specifically to advancing projects with higher TRLs and a greater final impact. This can be done only by focusing on more industrially-oriented initiatives. Not all these ETPs had a further evolution into something close to an industry impact, but this did happen to ARTEMIS and later with ECSEL and the KDT.”

**A central position in the value chain**  
Considering the demonstratable achievements during their time with the association – including, for instance, the growth of the ARTEMIS/Inside network to over 240 organisations and the triggering of multi-billion-euro investments via ECSEL – both Jan and Paolo are keen to emphasise the bigger picture over individual memories. As Paolo points out, “it is not a moment in time that differentiates us but something we developed across 15 years or more. The huge difference between this and other European initiatives is that we directly and

indirectly influenced a lot of real projects that generated real impact which is documented.”

“What was striking to me,” adds Jan, “was the complicated concept of the Joint Undertaking as a tri-partite construction with funding by the Member States and the Commission together with the associations. This meant a lot of boundary conditions and meetings, but we got it working over time. That was an achievement and we could fund big projects with a lot of impact. Another interesting aspect was that policy-making by the Commission and Member States in the ECS field has taken place together in one room. What I hope is that such an approach will become much more integrated over time because there is a risk that there will be overlaps or gaps across Europe that are needed to make the whole thing work.” This risk is part of the reasoning behind the association’s change of name and logo, which should better convey the focus on Intelligent Digital Systems – crucial, given that embedded and cyber-physical systems are hidden inside cars, planes, industrial and medical equipment and may therefore go unnoticed by both Public Authorities and consumers. The name change is also an opportunity to highlight what makes Europe unique, such as the European Commission’s drive to maintain security and privacy safeguards in sharp contrast to developments in the US and China.

“Today, we have other challenges, not only technological but also economic and political,”

## It’s sincerely an honour to be the successor of Jan considering what he’s done for the association

continues Paolo. “For sure, we can start from a solid base in the ECSEL initiative. From there, we can build a completely new initiative which will be able to address and tackle new challenges. For example, we are now aware that it is not a matter of single steps of the value chain; we need to cover the whole chain if we want to win at a global level. This is something we must consider as Inside as we are positioned at the central part of the value chain and have large visibility over it. For me, there is no before and after: Inside is the natural evolution of ARTEMIS into something new.”

### The speed of technology

From this central position, Jan and Paolo have grown increasingly aware of the simple fact that modern products and services are too complex to be developed by one company autonomously; across the entire world, organisations must collaborate to provide trustworthy, adaptable, open and evolvable digital solutions. For Inside, this point is compounded by the ubiquitous presence of ECS within such products and services. These are factors which the association must continue to draw attention to if the momentum of the last 14 years is to be maintained.

“I think that it’s good for Europe that you have some platforms and ecosystems where you really meet because we are often so different

– so many countries, languages and systems,” says Jan. “It’s a challenge for the associations to bring the best parties together to make sure that we have better results. I have full confidence in Paolo. He knows the area very well and will be capable of bringing parties together for this purpose.”

“It’s sincerely an honour to be the successor of Jan considering what he’s done for the association, for the role he has had for 14 years and for what I have learnt from him. As a successor, you have to do better, and this will not be easy!” laughs Paolo. “I would end on the concept that Jan already explained excellently. There is a lot of work to do in increasing the awareness of the concept of a value chain, or better yet a value network, and in creating a culture of cooperation among European players: value, business opportunities and growth come from diversity and cooperation, while isolation and fragmentation destroy them.”

“In my opinion, we should try to be practical and focus on aspects that can create real positive effects and quickly achieve what I like to call the strategic autonomy of Europe. Indeed, speed, flexibility and adaptation are key factors for European evolution towards the digital age; the association can play an important role in positively influencing the pace at which the community evolves, such

as in conceiving, proposing and developing our projects more effectively. These are very frequently not aligned with the market’s speed. It is difficult to say if an association and a Secretary General can solve this, but we can certainly raise it and the first step certainly consists of creating sensitivity and awareness and letting our members believe in it.”

“Time goes so fast,” agrees Jan. “When I started at Philips, there were no personal computers. I had to hand-write my documents and bring them to the typing room. I remember one of my first visits to the United States was about a GPS system, which originated for the locating of ships. It was a huge 19-inch rack of equipment to put on a ship but now you have that functionality in your digital watch. It’s amazing what we can do today and I was lucky to experience this over a very long period. And it’s not over yet.”

Tough times, uncertainty and complex competition are ahead, conclude Jan and Paolo, but it is precisely these conditions that create a sense of urgency, increase responsibility, push us towards cooperation and represent great times for disruptive innovation. In turn, this generates exciting opportunities and brings us to a better and more sustainable future.



Jan Lohstroh



Paolo Azzoni

# “We’re producing brains – that’s my primary product”

As a European Technology Platform for R&D&I, Inside brings together over 200 OEMs, SMEs, universities and research institutes to create Intelligent Digital Systems together. Our new name reflects the importance of our community to everything we do, so we’ve invited members to share their stories on what it means to be Inside.

As a long-standing professor at Luleå University of Technology, Jerker Delsing has been around since the start. “I was part of writing the first Strategic Research Agenda some sixteen years ago,” he explains. “But why did I come there? Here, we have what we call the Process IT Initiative, where we talk about how to support our process industry. We have mines, paper pulps and the steel industry around our university and we identified Inside as the most interesting and most important European industrial association to join. This has rewarded us with a lot of industrial and academic contacts but also membership of a number of very interesting research projects.”

Among the projects they’ve coordinated is an ongoing success story: Arrowhead Tools, Europe’s largest project for solutions in industrial automation and digitisation with a budget of 91 million euros. For Jerker, however, the biggest achievement has been the establishment of Eclipse Arrowhead, one of the major open-source initiatives to address the implementation of information collection and distribution technology for a working Industry 4.0. “I’m not saying that this is flying yet but I think there’s a growing appreciation and usage. We see companies building commercial things with this technology and when you realise this – when companies say, ‘hey, have a look at this installation’ and you see the Arrowhead logo on their boxes – that’s kind of cool!”

#### New ground for competition

Inside is about more than technology and commercialisation though; for academic members, projects feed knowledge back into the programmes that provide the next generation of engineers. “We’re producing brains – that’s my primary product,” says



Jerker Delsing



Patrick Pype

Jerker. “To a very large extent, these students are now at industrial companies. Because of the knowledge they got at the university, we see them doing things that the companies didn’t think of before hiring them – knowledge partly created through the projects we’ve been involved with through Inside.”

As for the future, Europe is the leading lady in automation, digitisation and Industry 4.0, but this position is based on legacy technology. The rise of Internet of Things, edge computing and AI and the enormous transition to Intelligent Digital Systems brings major challenges but also serves as a key motivation for Jerker. “This is a new ground for competition. Not only knowledge-wise, which is my profession as a university professor, but also in terms of how we can exploit this to improve society. I think that we have both the possibility and the capability to continue Europe’s stronghold as one of the major regions or the major region of the globe. This is one of my driving forces for the transition to Inside. On the larger scale, it’s why I’m here and why I want to stay here.”

#### The heart of everything

Jerker isn’t the only one who’s been around for a while. “I’ve been involved in Inside since the very, very beginning. Don’t ask me when as it’s a long time ago!” laughs Patrick Pype, Director Strategic Partnerships at NXP. “I became a member of the Steering Board and a guest of the Presidium and we intensively discussed rebranding. To me, this is a positive action because ‘Inside’ sounds much more powerful than ‘ARTEMIS’. When you hear ‘Intelligent Digital Systems’, that tells you everything.”

Although Patrick’s work is focused on semiconductor design, he’s keenly aware of the

push and pull factors that other domains are now exerting. “Semiconductors are the heart of everything, but the hardware doesn’t work if you don’t have intelligent embedded software,” he explains. “On the other hand, I think it’s also important that we create a basis for people to trust their devices. We need to make sure that security, safety and privacy protection are guaranteed. Resilience and robustness are key factors for a future where devices can anticipate and automate our needs before we are even aware of them and can warn and take action if something goes wrong. I see this as an important research domain for the future: combining such artificial intelligence in systems with a high grade of safety and security requirements.”

#### Crossing the language barrier

As an example of this, Patrick points to the recently-concluded SECREDAS project. Led by NXP and counting numerous Inside members among its 69 participating organisations, this was one of the first ECSEL projects to look at security, safety and privacy from the dual perspective of mobility and health. The many impressive results include 46 hardware and software demonstrators and prototypes for mitigating threats to connected and automated vehicles, but Patrick has also found a great deal of value on an individual level.

“We’ve been able to bring together actors in different fields like the security, safety, automotive and medical domains. If you talk about security and safety in an automotive application, that’s different to a medical or rail context. In my opinion, an understanding of each other’s ‘languages’ is one of the key results of this project. On one hand, I’m focusing on the activities of my company. But on the other hand, I learn a lot from the discussions we have in this forum and get new insights I can use within the company and the partnerships we engage in.”

In a nutshell, this is what Inside is all about: bringing experts out of their silos and combining their knowledge for mutual benefit. “Inside is ideal for getting to know what’s happening in the world and in the value network, as I now call it,” says Patrick. “In the past, you had the classic supply chain where the semiconductor company delivered to the printed circuit board manufacturer which delivered to the software company which built the system. Now, you see more direct interactions between OEMs (like car manufacturers), semiconductor companies and software companies in order to come up with a final integrated system solution. And Inside forms an ideal platform to bring all these players together and get the whole value chain talking.”

# “The key is not to become champion but remain champion”



Wouter Leibbrandt



Paolo Azzoni

Digital sovereignty means different things to different people, organisations and nations, but few would deny that control of one's own digital assets is a prerequisite for true competitiveness in Europe. Through its collaborative ecosystem for Intelligent Digital Systems, Inside aims to enable and retain digital sovereignty across all areas of industry. Dr Wouter Leibbrandt and Dr Paolo Azzoni share their visions on what this may look like in practice.

## Tapping into other sources

“As a person, as a European citizen, digital sovereignty means that we keep control of our digital assets and data because these are becoming the most valuable things we have,” says Wouter. “If you lose control over them, you lose control over a big part of your life. In order to stay in control of your industrial development, it's also important that you have sovereignty such that you're not dependent on others who can shut on and off a functionality that you need to make your systems work. It's like your light switches at home being controlled by your neighbour.”

Take GPS, for instance, which is utilised by millions upon millions of devices worldwide yet is owned by the US government and operated by a branch of its armed forces. As the head of TNO's ESI research centre, Wouter is keenly aware of such threats to digital sovereignty

but believes that Inside can play a crucial counterbalance by bringing together the best minds for cross-fertilisation.

“At ESI, we're about 60 people. You can do a lot of things at that scale but in order to be really world-leading, you have to tap into other sources. Collaboration keeps us sharp; it makes sure that we're connected to the latest developments and gives the opportunity to learn across different domains. This is one of the unique opportunities for Europe because we have an attitude of not being siloed. The high-tech equipment industry learns from the automotive industry; the maritime industry in Scandinavia learns from the aircraft industry in France. This speeds up innovation.”

## The protection of value(s)

Today, Europe, Asia and the US each excel in different areas: Asia is traditionally well-

known for extremely efficient mass production, while the US has captured the market for internet services such as Google, Amazon and Facebook. For Europe, crucial success has been found in the engineering of complex systems, from lithography machines to advanced driver assistance. “This is because we do systems engineering very well,” explains Wouter. “It's not always well-recognised because sexy things like AI capture more attention than the people making systems in the most reliable way, but this digital engineering is, to a large extent, what Inside is all about. The key is not to become champion but remain champion, and that's often the most difficult thing – just ask the German football team.”

But digital sovereignty need not be restricted to assets alone. For many, the term also means the protection of values, such as Europe's particular focus on privacy, transparency and safety. “When it comes to intelligence,” Wouter notes, “it's about ethics and understandability. We're still very good at integrating some auxiliary technologies – cloud and AI, for example – but you have to also be good enough in the technologies you want to integrate. It's nice that I can leverage all these cloud facilities, but is my privacy secure? That's where we should concentrate because that's where it matters. It's what Inside is for: making sure that Europe stays in the lead.”

## Community, networking and cooperation

For Paolo Azzoni, on the other hand, his role as Head of European Technology Programmes

at Eurotech and chairman of the ECS Strategic Research and Innovation Agenda 2022 has led him to a somewhat contrasting perspective on competitiveness. “The message we tried to deliver with the ECS-SRIA synopsis, published in March this year, is that instead of speaking of digital sovereignty, we should talk of digital strategic autonomy. Why?” he asks. “For me, the word ‘sovereignty’ is demagogic. It is something we will never obtain. It is more reasonable and sustainable to talk about strategic autonomy in every area, not just digital.”

In other words, certain gaps in our value chain will probably never be filled due to a lack of knowledge, competences or capacity to catch up with other parts of the world. By focusing instead on areas in which Europe can be autonomous, we can continue to be at the forefront of their development while freely choosing the best technologies, solutions and materials from elsewhere when autonomy is more limited.

“It is clear that Inside will be fundamental to continuing research and innovation in these strategic areas,” continues Paolo. “Embedded intelligence is one of the domains where Europe excels, so this is something we should continue to work on to ensure that there is an evolution – otherwise someone will surpass us tomorrow. We must continue an effort with all the characteristics that these activities have in Inside: a community, a network and strong cooperation between European partners.”

## Finding the added value

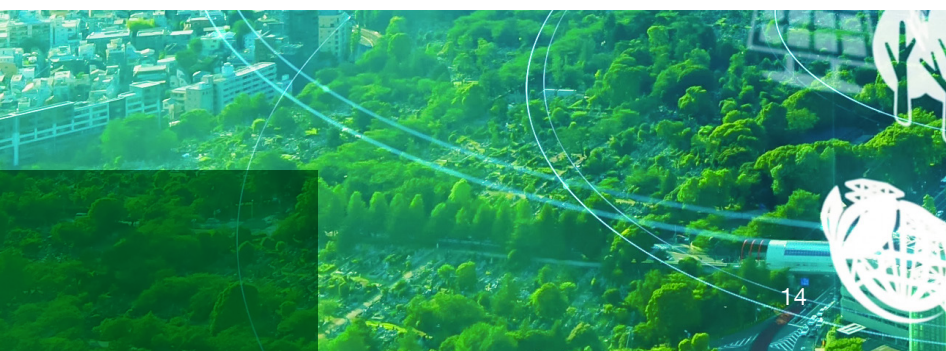
Within this Inside ecosystem, projects typically focus on the downstream area of the value chain and the eventual exploitation of added value by member organisations. “They let us make a first test of new technologies and create solutions from them,” Paolo says. “This has a big impact on our competitiveness because if a project is successful, we are able to develop new products at the state-of-the-art in our markets. For Eurotech, this market is hard due to being focused on high reliability, not mass production. We really need to exploit the newest technologies and choose the one which is more reliable for a long time.”

Despite the difficulty, Paolo is pleased to report a number of successes over the years, demonstrating the valuable role that collaboration between Inside members can play in the (pre)competitiveness of Europe. With their Everywhere Software Framework (ESF) and Everywhere Cloud (EC), Eurotech has spent ten years pushing forward the technology level of system integration platforms and has now developed counterparts for these within the Eclipse Foundation projects Kura and Kapua. “Every project – pShield, nShield, Arrowhead, Arrowhead Tools, CPS4EU, InSecTT – has ensured the evolution of both Kura ESF and Kapua EC,” concludes Paolo. “In these projects, we could imagine new futures and architectures but also test them in real use-cases. This is something we try to investigate in all research projects we develop in this community.”



# “I want my grandkids and their kids to have the same future we had”

Reducing the European Union’s greenhouse gas emissions to at least 50% of their 1990 levels will require a monumental effort by industrial organisations across the continent. Such collaboration requires a community, and Inside is here to provide the openness and innovation necessary to meet the European Green Deal’s goals.



## More than mobility

The Green Deal means different things to people across the continent, but for Michael Paulweber of AVL List, the connection is personal. “I have three kids and three grandkids. I want my grandkids and their kids to have the same future we had,” he says. “On the one hand, we’re using too much energy and releasing too much CO<sub>2</sub>, with effects we’re now seeing on the climate. On the other hand, the number of people in the world is increasing. The amount of energy and space they need is increasing, so everyone has less to use. We need to find ways to have the same level of comfort with less energy consumption.”

“Europe should go further in this direction to really support the Green Deal,” agrees his colleague Horst Pfluegl. “We need to do something about global warming and it’s good that we’re turning mobility green – but it’s not just mobility that’s a cause of global warming. There’s the food industry, for instance, or the energy sector. We need to think about the whole story and look at the entire ecosystem. Where do we generate our energy? How do we store it? What’s the best way to convert it?”

## Striking a balance

Although widespread support for the Green Deal exists throughout the world of Intelligent Digital Systems, there’s also a keen awareness of the need for sustainable competition with places like the US and China. “There’s a threat that Europe could go in this direction without looking at the rest of the world,” Horst continues. “If we ban the combustion engine in Europe, the rest of the world may just continue. And we shouldn’t just look at CO<sub>2</sub> production but also the consumption of CO<sub>2</sub> by plants and forests. How can we find a good balance when forests are being burnt down in Brazil, for example? Everybody thinks that if we have better electric vehicles, we have solved everything. We’ve actually achieved nothing if we don’t look at the bigger picture.”

Despite this complex state of affairs, Michael is confident that ecosystems like Inside can make an important contribution to the Green Deal’s goals. “Key Digital Technologies are not the solution but they do enable things like automation. One of the foremost challenges for the KDT is to find ways of reducing energy usage through better chips, power electronics and batteries. But you can also have predictive



Michael Paulweber



Patrick Pype



Horst Pfluegl

software with better control and distribution and less waste, which is where artificial intelligence and edge computing enter the game. Something we’re also trying to bring into the ECS Strategic Research and Innovation Agenda is the circular economy. You have to look at the whole lifecycle of a car, PC or refrigerator and reuse the materials. You could use image recognition to figure out the different materials and bring them back into the production cycle. So at Inside, we can do a lot to create a liveable future!”

## More than a buzzword

For Patrick Pype, the issue is somewhat less existential. “The European Green Deal means that we should continue to work on solutions that reduce CO<sub>2</sub> emissions, energy consumption and the need for higher and higher processing efficiency. As a community, we’ve been working on this for many years and we are very strong in this. I often say that we’ve lost the battle for the cloud in Europe but we are winning the battle for edge computing and low power compute efficiency. That’s an important aspect because it’s not just a matter of high data processing but rather efficient data processing. This means that we need to build intelligence in our chips and software to see what data to use and how to use it with the lowest power consumption. That’s where we should continue our strengths.”

As NXP’s Director Strategic Partnerships and a permanent guest of the Inside Presidium, Patrick has one foot in the technical side of sustainability and the other in the long-term governance needed to make a real success of this. A particular area of interest for him is the lifetime analysis of components and systems. “Whereas we now often wait until a system breaks down to take action, we should have Intelligent Digital Systems that predict when they will break down or that can still work at 90% of their capacity. Another area is the recycling of materials – a complete printed

circuit board is now often thrown away and recycled in one way or another. But how about replacing only part of it or more intelligently composing the system if some parts live longer than others?”

## Grabbing the headlines

These are the sorts of questions which NXP and other Inside members are now asking themselves, helping to reframe the European Green Deal as a competitive opportunity and not just an antidote to prior mistakes. “If you look to manufacturing, we all follow sustainability guidelines while aiming to improve our fab production further and further. We also have shared ambitions with other players in Europe,” Patrick points out. “If I look at automotive, for example, we are moving together to the electrification of cars and intelligently charging the batteries of electric cars. Automated cars will also mean less traffic jams – so less CO<sub>2</sub> emissions – and less accidents. This all helps to contribute to the Green Deal and sustainability.”

As for Inside, Patrick considers the name change and renewed sense of purpose as a golden opportunity to definitively put the Green Deal on the agenda of companies and domains which previously saw little involvement. “We should more actively promote what we are able to do,” he concludes. “We’ve already evolved a lot and made a lot of progress in this domain but we did not promote it well enough in my opinion. A role of Inside can therefore be to really show some concrete results of what we’ve realised in terms of contributions to sustainability and the Green Deal.”



Fresh programmes and face-to-face contact: organised chaos at the

# Brokerage Event 2022

After two years without face-to-face meetings, the ECS Brokerage Event 2022 will most likely be the first major opportunity for the three industrial associations – Inside, AENEAS and EPoSS – to bring their experts together in one space. From materials and chips to sensors and from software to systems, the Brokerage lays the foundations for projects across the ECS value chain and will take place in Brussels on 18 and 19 January 2022. Association directors Jan Lohstroh, Caroline Bedran and Elisabeth Steimetz offer a taste of things to come.



Caroline Bedran



Elisabeth Steimetz



Jan Lohstroh

Giving the people enough room to interact and come up with new project ideas. That's what it's all about.

## Three pillars for success

"Brokerage events are a sort of organised chaos," begins Jan Lohstroh, Secretary General of Inside. "You cannot steer or come with proposals because it's up to the participants to look for connections. We are not forcing them, but we do create an atmosphere, boundary conditions and the opportunity to speak to a full audience. Later, they have the opportunity to meet bilaterally. The Brokerage Event is one of the highest-rated events for our members because it gives them the chance to win a place in projects and get funded. Every opportunity to build bridges with partners in Europe is important to them – not only with partners they know but maybe with new ones in different countries and with different expertise."

In practical terms, the event involves the sharing of project ideas in short talks, as well as pitches from SMEs to showcase their skills and find potential partners. This is all enabled via the ECS Collaboration Tool, which allows users to initiate projects, invite partners and search for both. As the Brokerage is open to all interested parties, not just members of the associations, this serves as a crucial entry point for newcomers to the ECS community. A major advantage of the Brokerage is that it does not

address a single funding instrument but rather the full funding landscape, as AENEAS Director General Caroline Bedran explains.

"The scope of the Brokerage covers ECSEL/ KDT and EUREKA Clusters calls, but also the EC Calls of interest to our community so that people are aware of what is available and where they can get support from the Commission or national funding bodies. They then do not need to predetermine which funding instruments they will submit their proposal to. It's when their proposal develops that they can decide if it's more suited to EUREKA or ECSEL/KDT, for instance, and our associations can give advice as needed. I think this is why it's been so successful in past years."

"One underlying thing that will be presented there again is the Electronic Components & Systems Roadmap," adds Elisabeth Steimetz, Office Director of EPoSS. "It's the ideal event to present the Strategic Research & Innovation Agenda [SRIA] because this document lays the basis for the open calls for proposals; on the other hand, it's the ideal opportunity to discuss with the experts and to recruit them to work on the next SRIA. For me, these are three pillars of the Brokerage: presenting the funding

instruments, presenting the roadmap and giving the people enough room to interact and come up with new project ideas. That's what it's all about."

#### Chasing Europe's priorities

Organised by the three associations, the ECS Brokerage Event – like the SRIA – has its origin in the ECSEL Joint Undertaking, which gathers the ARTEMIS, AENEAS and EPoSS associations and thus their formerly separate Brokerage events. This three-association arrangement set a precedent for long-term collaboration, with the SRIA focused on shaping Europe's digital priorities over ten-year periods. "At the beginning of ECSEL, there were still separate SRIA-like documents by the three associations with a staple through them," says Jan. "We now have a common document called the ECS-SRIA. This is a funding-agnostic document, so it can be used for the Joint Undertaking, EUREKA initiatives and for the EC Horizon Europe programme. Whether the full playing field of the SRIA will be available for funding or whether some topics will be labelled as priorities depends on the yearly work programmes. We will soon know the priorities set by the Public Authorities for the first call of KDT. Of course, we will let our members know this and make sure that enough new ideas are generated on those topics."

These priority topics ultimately underpin the main goal of the three associations and their ECS-SRIA: ensuring that European competitiveness can be maintained in the face of rising challenges worldwide. Today, integrated circuits and software are the backbone of almost all new products and services. In fabrication terms, however, European semiconductor companies are no longer amongst the most advanced in the world and European system companies are now more dependent on overseas suppliers than ever before – a disadvantage highlighted by the European Commission's recent announcement of a 'Chips Act' to boost European semiconductor self-sufficiency.

"We have to be flexible, including in the coming Brokerage Event, because the funding available from Public Authorities may be dependent on this message that Europe has to work even harder," Jan continues. "This involves huge amounts of money so the best plans should be executed with the best partners. The projects we do are pre-competitive because the services and products are so complicated nowadays that no company can cover the expertise in the value chain alone. But, of course, the final

impact should be that products and services reach the market and are successful."

"The key advantage of the live brokerage for the three associations is bringing people from the different communities together to discuss the ideas that Jan just mentioned," agrees Elisabeth. "The meeting will allow a direct discussion at the coffee tables and give us the opportunity to align views with our members. The main benefit is the feedback and exchanges for new project evolution. For me, that's a key purpose of a Brokerage Event. EFECs, in November, is our policy-oriented event, but we have to bring the two sides together at the Brokerage: the bottom-up ideas created by project leaders and companies and the importance of the semiconductor industry and ECS along the whole value chain, which will be discussed at EFECs. That's why we have and need these two events, which perfectly match."

#### Something X-tra

As mentioned, Brokerage 2022 holds the special distinction of hopefully being the first opportunity since 2020 for many association members to meet in a non-virtual environment. "For us," says Caroline, "this Brokerage will also be very important because it's the opening of new programmes. Following ECSEL, we have Key Digital Technologies [KDT]. This is co-funded by the Commission and the member states. It's a huge programme over seven years and with a seven-billion-euro budget – much bigger than ECSEL in terms of size, budget and

ambitions. So, we will have to see how this will link with other initiatives. What's also important is that we are launching a new EUREKA Cluster programme in which the cluster for the ECS community will be supported by our three industry associations. The title is Xecs, with the 'X' referring to the community."

With the first call having taken place at the end of September 2021, this new funding instrument will be offered to the community in part via the Brokerage event, helping to ensure that sound proposals and consortia are formed. "This is all the more important as Xecs will be launched before KDT, so these two instruments will complement each other even more this year," Caroline notes. "I know that our community is very fond of this event and will be looking forward to meeting face to face in Brussels in January. I hope we'll see the results of this in the next generation of projects."

"We all hope that the first KDT call will open in December, so the Brokerage meeting in January will be the perfect opportunity for people to align their project ideas. What we also traditionally have is a look at the Horizon Europe calls for lower TRLs, introduced by the European Commission. We hope to have this again as an additional pillar laying the basis for the future," concludes Elisabeth. "As Caroline said, it's therefore a very important Brokerage as it will really open up new opportunities in different instruments, the EUREKA context, Horizon Europe and especially KDT JU. A real new start, I would say."

*The two-day conference is planned as an in-person event in Hotel Le Plaza Brussels. The venue has been set up to be COVID-19 compliant for the number of participants according to current Belgian legislation. If, however, we are forced to move the event online due to unforeseen changes in the pandemic or Belgian legislation, we will place a notification on the registration page of our website.*

# The KDT JU, successor of the ECSEL JU



Jan Lohstroh

**The ECSEL JU has been active for seven years as a tri-partite Joint Undertaking (EC, 30 Participating States and three industry associations). This has been co-financed by the EU through the Research and Innovation Programme H2020 (which stopped at the end of 2020) and by national and regional authorities.**

Within the new Multi-Annual Financial Framework (MFF, the seven-year budget of the European Union), a new EU Research and Innovation Programme has started with the name 'Horizon Europe' (HE). In this new programme, Joint Undertakings will again be part of the activities, one of which is named KDT (Key Digital Technologies) and serves as a successor of ECSEL (Electronic Components and Systems for European Leadership).

Due to many reasons (e.g. COVID, Brexit, etc.), a final agreement on the MFF and a political agreement on the budget for Horizon Europe were delayed until December 2020. The good news is that the EC has budgeted 1.8 billion euros for KDT versus 1.2 billion euros for ECSEL; the Participating States should mirror that amount together.

Whereas the legal basis for ECSEL was a dedicated Council Regulation for just ECSEL, on February 23, 2021, the EC proposed a combined Council Regulation for all nine Joint Undertakings in HE called the Single Basic Act (SBA). Political negotiations in the Council and Parliament on this SBA are experiencing quite some delays because each JU has its own specific community, business models

and boundary conditions, making the SBA a complication rather than a simplification. While still awaiting the opinion of the European Parliament, the SBA will probably be adopted by the Council of the EU in November. This implies that the KDT JU is likely to start in December, almost a year later than originally foreseen. It also implies that the first call of KDT cannot be launched until December of this year instead of in February.

The KDT Joint Undertaking will, like ECSEL, again be a tri-partite public-private partnership with AENEAS, Inside and EPoSS as Private Members. The three associations, supported by their common advisor Jan van den Biesen (of Europolaris), had many (online) meetings and email exchanges with the EC, Member State representatives and members of the European Parliament and their assistants in order to make sure that the KDT part of the SBA will adequately cover the interests of the members of the three associations and that the financial and in-kind obligations can be met.

In October and November of this year, the three associations will give their input and feedback on the Work Programme being proposed for the first call of KDT, which will ultimately be

decided by the Governing Board of the KDT JU in which the three associations together will have 1/3 of the votes. The intention is that the technological scope of the Work Programme will be the ECS-SRIA, as issued by the three associations.

It is the wish of the EC that a significant part of the EU funding in KDT will go to priority topics. To extract possible priority topics from the ECS-SRIA, the three associations organised a couple of workshops in Q2 of this year. The EC and Participating States will come to the first Governing Board meeting of the KDT with a proposal for a final decision to take these up in the first call of KDT. This first call will most probably be announced in December of this year.

In the Brokerage Event in January 2022, organised by the three associations (see the article on the Brokerage Event in this magazine), the JU will explain the Work Programme, and we hope that enthusiastic consortia with a big footprint in Europe will be formed to take up the challenges and prepare impactful KDT project proposals.

Jan Lohstroh



# “ This is a real melting pot that generates so much ”



## Helping to shape the future

“If I were to look at the main benefits of being an Inside community member,” ponders Sara, Verification Manager at STMicroelectronics, “I would say exposure, collaboration and future-proofing. Exposure is so important: exposure to knowledge, the state of the art, ideas, technology directions – being in the community, surrounded by people from all sorts of backgrounds, with all kinds of knowhow and perceptions – this is a real melting pot that generates so much. Of course, this is only made possible by collaboration, and the Inside philosophy allows the collaboration to be really positive and open. People are prepared to share their knowledge because they are convinced that only through doing so can you achieve great things. Also, by being involved in these developments, you are helping to shape the direction of future needs – future calls, in fact. You help shape the future, as it were, so for STMicroelectronics we have ‘inside’ information that can be put to good use for future business opportunities.”

## People make the difference

“I think if I had not become involved in the Inside community,” Sara continues, “I would certainly have missed out on quite a lot. And I’m not just talking about professional aspects. By definition, a community is made up of people. And it’s people that make things happen, after all. I have gotten to know so many people on a personal level, face-to-face and screen-to-screen. Hopefully, the coffee breaks will soon be physical again rather than virtual but nevertheless, the people I have met – some of

whom have become acquaintances and even friends – have enriched my personal life as much as my professional life.”

As women have not always found it easy to gain a foothold in the world of high-tech engineering, Sara also hopes for a future in which the gender balance within European ecosystems becomes less biased. “But that’s not something that can change overnight or without promoting to girls the opportunities on offer,” she concedes. “So how did I end up where I am, you may ask? Well, I guess it started when I played with my brother’s mechanical toys and developed a fascination for those. It’s generally starts at a young age. There seems to be a social ‘war’ on stereotyping at the moment, so perhaps that may level the playing field in the future so that engineering is not regarded as a gender-based subject at school, at university or as a career. We are seeing more women coming into the engineering world and by profiling the successes of women in the community, Inside could play a role in improving the lot of women in high-tech engineering. I’m happy to contribute to this here.”

## Understanding your competencies

As for Jerker Delsing of Luleå University of Technology, the foremost benefit of Inside is clear: “The network with other members, not only the organisations but very much the individuals. You find people that you’ll start to call friends, which I’d say leads to capabilities that were never thought about before. What I personally find very rewarding is getting problems from industry and being able to

transfer these into more general knowledge. We’re open to discussing it and finding a way forward. Another thing is seeing the students that I had the opportunity to train and foster find their way into these communities. That’s another rewarding part of being here: widening my network but also seeing that my network is helping others.”

As an example of one such community within Inside, the Arrowhead Tools project has brought together 33 large enterprises, 24 SMEs and 31 RTOs to help guarantee European leadership in digitalisation and automation. As the project coordinator, Jerker was recently in the position to communicate several remarkable results on engineering costs for automation solutions, including 20-95% savings along the engineering lifecycle. However, as Jerker also notes, Inside is as much about coming to understand one’s own competencies as it is about developing new ones. “In too many cases, people think they can ask a company to come and help them. This will not work in the long term as you don’t have the core competencies yourself. You have to understand the level of competency your organisation needs to be functional and competitive.”

## The language of technology

An important aspect of this is a recognition of the changing role of Intelligent Digital Systems: while most companies don’t sell software, software does create, transform and transfer information which forms a vital part of their value creation. “The automotive industry, for example, has realised that the value creation

Inside is about more than creating embedded intelligence: by connecting key players from across Europe, we also aim to shape the future perceptions of Intelligent Digital Systems and the next generation of engineers. Dr Sara Bocchio and Professor Jerker Delsing take a look at the benefits of being part of this growing community.

for automobiles today is largely software-dependent – but they’re still selling cars, not software,” Jerker explains. “How do you value your competences and knowledge about your information architectures so that you invest correctly? Through Inside, this can be further discussed and visualised at different levels: political and corporate but also further down these hierarchies.”

Just as technology platforms can provide interoperability between IT and OT, Inside can offer potential members the chance to connect their competences to domains they had never previously considered. Befitting of an association with members across the continent, Jerker reflects on the connection between language and technology. “Languages were driven by the need to survive and cooperate as individuals. We’re doing the same things with machines, but we’re building them to survive on the market. How do we translate between their ‘languages’ while understanding what we really mean? In Swedish, we have the word ‘lagom’. There is no translation to English; it becomes a sentence or two. This is exactly what happens in technology too. But it’s very rewarding to be a member who is actively engaged in projects because you see that there are fundamental aspects of how things have evolved on this globe and can wonder how we can make benefits out of this which will improve society.”

# Upcoming events

## Digital around the world

20 October 2021



All-day long, region by region, time zone by time zone, high-level international speakers will present and discuss the latest technological innovations and trends in digital transformation: from IoT to 5G, network virtualization and smart services. The conference is a unique 24-hour non-stop virtual event on the latest trends in digital transformation.

## CSW Autumn 2021

25 October 2021



Hosted by the University of Lyon, this Computing Systems Week will bring the HiPEAC community together with the systems-on-chip and embedded systems/connected objects research group at CNRS.

## EBSCON

3 November 2021

Electronic based systems involve components and devices driven by micro- and nanoelectronics including embedded software. They are the foundation for digital products and services. EBS functions enable the implementation of applications such as automated driving, the Internet of Things and smart cities and thus constitute the heart of our digitalized society.

## SSI International Conference

9 November 2021



The 4th SSI International conference will build on the success of its predecessors, with industry-leading insiders delivering more than 30 presentations spanning five sectors. Attendees at the two-day conference will gain an up-to-date overview of the status of the global sensors industry, and will have the opportunity to meet many other key players within the community. SSI International is part of AngelTech.

## SEMICON EUROPA

16 November 2021

The 17th HiPEAC conference will take place in Budapest, Hungary from Monday 17 January to Wednesday 19 January, 2022. Associated workshops, tutorials, special sessions, several large poster sessions and an industrial exhibition will run in parallel with the conference. The three-day event attracts over 500 delegates each year.

## EF ECS 2021

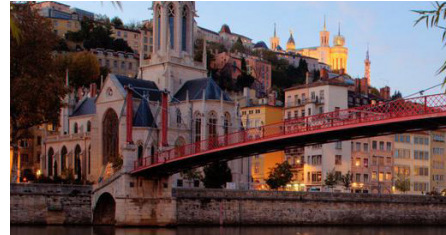
23 November 2021



The 5th edition of the European Forum for Electronic Components and Systems will take place online on 23-25 November.

## HiPEAC 2022

17 January 2022



The HiPEAC conference is the premier European forum for experts in computer architecture, programming models, compilers and operating systems for embedded and general-purpose systems.

## ECS Brokerage Event 2022

18 January 2022

The annual ECS Brokerage Event will take place at Le Plaza in Brussels in 2022.

Co-organised by ARTEMIS-IA, AENEAS and EPoSS, the event prepares for the KDT calls, EUREKA calls and other calls of 2022 related to Electronic Components and Systems.

## DATE 2022

14 March 2022



The 25th DATE conference and exhibition is the main European event bringing together designers and design automation users, researchers and vendors as well as specialists in hardware and software design, test and manufacturing of electronic circuits and systems. DATE puts strong emphasis on both technology and systems, covering ICs/SoCs, emerging technologies, embedded systems and embedded software.

Online version is available at [Inside-association.eu](http://Inside-association.eu)

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### Submissions

The Inside Industry Association office is interested in receiving news or events linked to the aim of Inside Industry Association, related projects or in general: R&D in the field of Embedded and Cyber-Physical Systems area.

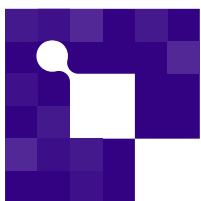
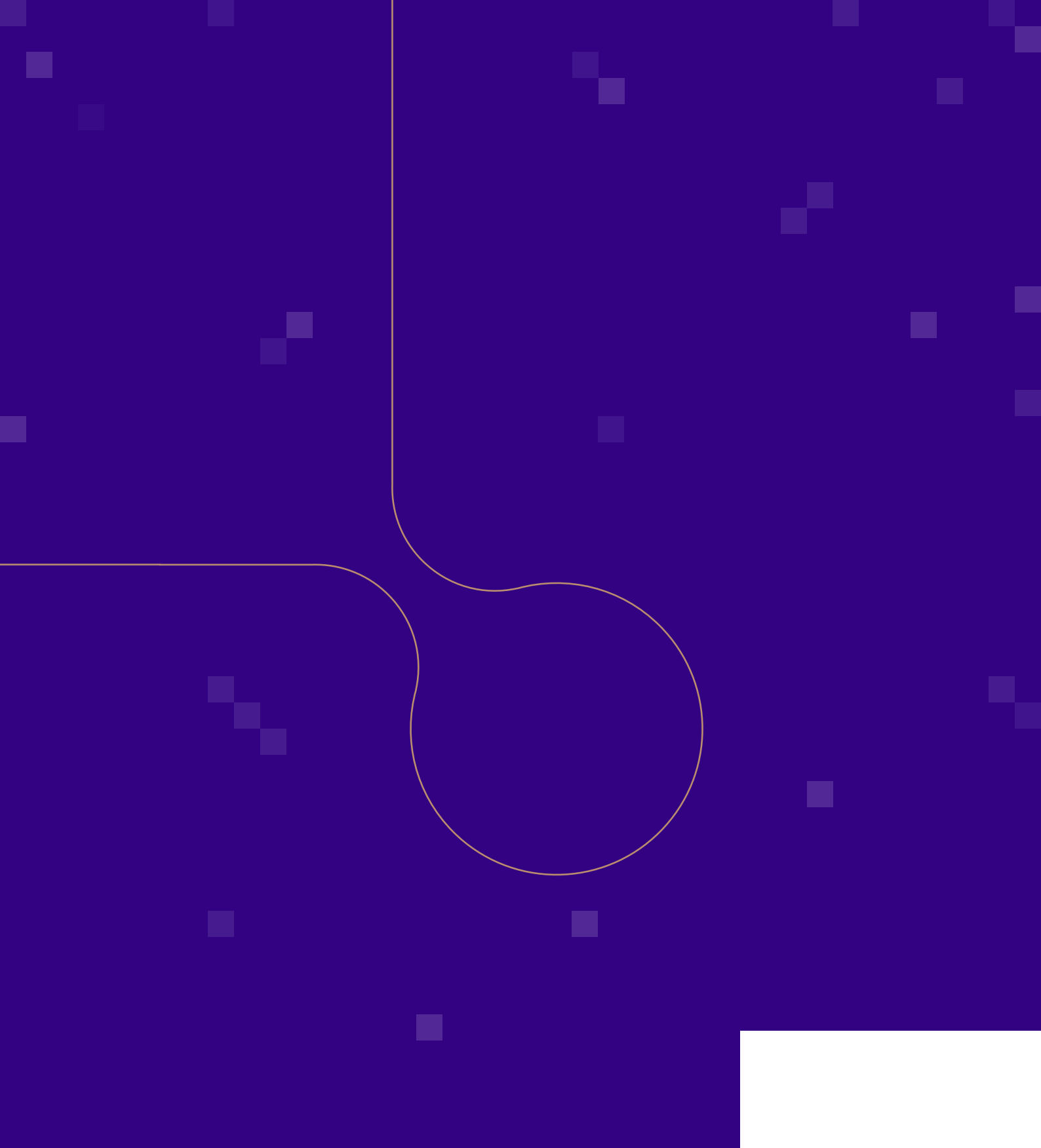
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