EFFRA

Today.Tomorrow. Since 2009

Advancing manufacturing innovation in Europe

EFFRA

Celebrating

fifteen years

of manufacturing innovation

A Journey of progress, resilience, and collaboration

Fifteen years mark a significant milestone, and it is with great pride that we present this special publication celebrating the journey of the European Factories of the Future Research Association (EFFRA). Over the past decade and a half, EFFRA has been instrumental in shaping the European manufacturing innovation landscape, ensuring that manufacturing remains firmly on the policy and innovation agenda.

From one Framework Programme to the next, our passion for advancing manufacturing innovation has only deepened. We have tirelessly advocated for the sector, emphasising its critical role in economic resilience and societal well-being.

Over the years, EFFRA has established itself as a trusted facilitator, bringing together perspectives from industry and research to foster collaboration, accelerate innovation and address the pressing challenges of our time.

This publication is not only a reflection on EFFRA's history but also a celebration of the vibrant, diverse and resilient European manufacturing community. It brings together voices from across the ecosystem, exploring topics as varied as remanufacturing, artificial intelligence, the role of youth and skills in manufacturing and the global context. Through interviews, analysis and reflection, this collection highlights how we are collectively adapting to an increasingly demanding and fast-changing world.

EFFRA's impact goes beyond policy and research advocacy. Over the years, we have organised countless events that have brought together thousands of people — fostering connections, sharing knowledge and inspiring innovation. Even in difficult times, such as during the COVID-19 pandemic, we adapted to the needs of our community by pivoting to online events and ensuring the continuity of dialogue and collaboration.

As you explore this publication, you will find a rich timeline of achievements, insights into our shared history, and, most importantly, forward-looking perspectives that highlight the opportunities ahead.

Above all, this is a celebration of the power of partnership and collaboration. It is through working together that we can ensure European manufacturing continues to thrive and evolve, meeting the challenges of today and shaping a sustainable future.

Thank you for being part of this journey. Together, we honour 15 years of progress and look forward to an even brighter future for manufacturing innovation.

EFFRA Executive Director
Željko Pazin

EFFRA

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Welcome

EFFRA

EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

Championing innovation and collaboration in European manufacturing

The European Factories of the Future Research Association (EFFRA) stands as a cornerstone of innovation in European manufacturing, uniting industry leaders, research organisations and academic experts, together with EU policy makers, to shape a sustainable, competitive, and high-value manufacturing future. Established in 2009, EFFRA is a dynamic membership-based association with over 200 members from more than 20 countries, representing a diverse spectrum of expertise and perspectives across Europe.

EFFRA's vision is to position Europe as a global leader in advanced manufacturing by fostering sustainability, innovation, and resilience across the sector. Its mission is to enable collaboration among all relevant stakeholders, driving cutting-edge research, and translating innovative ideas into real-world industrial applications. At its core, EFFRA recognises the need for a strong manufacturing sector in Europe and so seeks to ensure that it remains agile and competitive in a rapidly evolving global landscape and promotes Europe's reindustrialisation agenda.

Through regular matchmaking events, workshops, and knowledge-sharing platforms, EFFRA creates opportunities for its members to forge meaningful connections, exchange expertise, and develop joint projects.

As well as facilitating this influential industry and research community, EFFRA plays a pivotal infrastructural role as the private partner to the European Commission in the Made in Europe partnership. In this capacity, it helps shape EU manufacturing policy and research priorities by working closely with European institutions and national ministries.

Through strategic roadmaps and coordinated research agendas, EFFRA ensures that the EU's framework programmes align with the needs and priorities of the manufacturing community and, indeed, Europe's wider industrial needs.

By bridging the gap between policy and practice, EFFRA gathers input from its community of stakeholders to inform EU initiatives and funding calls. By fostering a continuous dialogue between the public and private sectors, EFFRA contributes to creating a manufacturing ecosystem that is innovative, sustainable, and globally competitive.

EFFRA champions sustainable practices and economic resilience, ensuring that Europe's manufacturing industry evolves to meet environmental, social, and economic challenges. Through its leadership in the Made in Europe partnership, EFFRA helps advance technologies that are people-centric and prioritise efficiency, circularity, and reduced environmental impact.

EFFRA is formed


EFFRA
...a MANUFUTURE Initiative

Mr Massimo Mattucci
Comau S.p.A.
Powertrain System
Via Rivalta, 30
10095 GRUGLIASCO (TO)
ITALY

30 April 2009

Re: Your nomination for the EFFRA Board of Directors

Dear Mr Mattucci,

We would like to cordially invite you to candidate for a seat in the Board of Directors of the European Factories of the Future Research Association (EFFRA).

This association is a special purpose vehicle for the €1.2 billion partnership with the European Union on future manufacturing technologies. On 11 March 2009, the MANUFUTURE High-Level Group had decided to establish this association and on 17 April 2009 we have registered it with the Brussels-based notary Stephan Borremans.

EFFRA Board Members have the opportunity to participate in the central decision-making process of the European Union's private partner and in particular to propose its strategic direction to the General Assembly. We have attached the competences of the Board of Directors together with a list of the other Board nominees for your perusal.

The election of the Board of Directors is subject to a formal approval of the first EFFRA General Assembly that will take place on 26 May 2009 in Brussels. We would like to ask to already reserve this date in you diary and will send the exact location and agenda for this event to you in due course.

Should you accept our invitation, please let us now by **11 May 2009** through sending a short e-Mail to Mr Frank Knecht (frank.knecht@cec.be) who is in charge of the EFFRA day-to-day administrative management.

Yours sincerely,

Adrian Harris — George Chryssolouris

MANUFUTURE-EU

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Herbert von Bose
Director – Industrial Technologies
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BE-1049 Brussels

Thierry Van der Pyl
Director – Components and Systems
European Commission – DG INFSO
BE-1040 Brussels

7 July 2009

Re: Creation of EFFRA as private partner of the Factories of the Future PPP

Dear Messrs von Bose and Van der Pyl,

I am very pleased to inform you that the MANUFUTURE community is making rapid progress towards a better cooperation with the Commission in the context of the Factories of the Future initiative.

In order to have a legal entity that can engage in the public-private partnership, the MANUFUTURE High-Level Group had decided on 11 March 2009 to establish the European Factories of the Future Research Association (EFFRA), which has been registered on 17 April 2009 with the Belgian notary Stephen Borremans and which has had its first General Assembly on 26 May 2009 in Brussels.

The EFFRA General Assembly has elected my dear colleague Massimo Mattucci as EFFRA Chairman. His role is to represent the private side in the Factories of the Future PPP vis-à-vis the political institutions and other stakeholders at high level. I myself had the honour to be elected EFFRA Vice-Chairman. I believe that the creation of EFFRA marks a big step forward for a lean and direct interaction between the public and the private partners. We have chosen Brussels as seat for the EFFRA Office, so that the European Commission has its direct contact point nearby its own premises.

I would also like to inform you that the EFFRA Board (see Appendix) has decided on its first meeting on 26 May 2009 to establish an informal Executive Committee, comprising the EFFRA Chairman, the two Vice-Chairmen, the Treasurer and the acting Executive Director. The Executive Committee is authorised to carry out the discussion with the European Community with regards to the overall implementation strategy of the Factories of the Future public-private partnership.

EFFRA's chief executive Željko Pazin was part of a what seemed to be a rather disparate group of individuals who helped form EFFRA in 2009 with the aim of putting industry at the heart of Europe's industrial strategy. Speaking about this lucky alignment of people and circumstance, he and other key individuals from 2009 reflect on these origins that led to such significant outcomes

Fifteen years ago, EFFRA emerged in response to an urgent need to bring manufacturing back to the forefront of European economic policy. Yet, this was no single visionary's project. "It wasn't a single person's idea," reflects Željko Pazin, EFFRA's chief executive and one of its founding figures. "It was more of a coincidence - a lucky alignment of four or five factors, each building on the other."

In the early 2000s, Europe's manufacturing sector found itself at a crossroads. Global competitors like China and the USA were outpacing Europe in manufacturing investment and productivity, and the sector had little traction within EU research frameworks. "We in industry felt shut out," Željko recalls. "The framework programmes were seen as something for professors, consultants and not for companies. But we knew they were essential to boost Europe's industrial competitiveness at the time."

Initiatives such as the ManuFuture Technology Platform had already taken the right steps towards connecting academia and industry, encouraging technological advancements. Meanwhile, however, industry associations

George Chryssolouris reflects on EFFRA's early days

Professor George Chryssolouris, a prominent figure in the European manufacturing ecosystem, played a foundational role in the establishment of EFFRA. A distinguished member of the High-Level Group of the European Technology Platform on Manufacturing (Manufuture), George also served as the founding Vice Chairman of EFFRA and later became the coordinator of EIT Manufacturing.

Reflecting on the creation of EFFRA 15 years ago, George emphasises the collective effort behind its formation. "The establishment of EFFRA was certainly a collective effort, based on the significant contributions of a number of people and organisations," he recalls. One memory stands out vividly: the day EFFRA was officially founded at a notary's office. For George, "it felt like a historic moment - one that would shape the future of European manufacturing.". George also highlights the crucial role played by the Manufuture platform, which provided the foundation for EFFRA's creation. He expresses gratitude to key contributors, including Maurizio Gattiglio, José Caldeira, Željko Pazin, and Chris Decubber, who were deeply involved in EFFRA's early development and continue to advance its mission. "Their dedication and collaboration were instrumental in transforming an ambitious idea into a thriving association that has driven manufacturing innovation across Europe," he says.

Looking back, George sees the formation of EFFRA as "a pivotal moment for European manufacturing, a testament to the power of collective action and shared vision.". His reflections capture the spirit of innovation and cooperation that continues to define EFFRA's important and ongoing impact today.

PPP event in 2013 | (from left) Massimo Mattucci, Herbert von Bose, Neelie Kroes, Maurizio Gattiglio, Khalil Rouhana and Željko Pazin

such as VDMA, Agoria, Teknikföretagen, and Orgalim had been complaining to the European Commission that the EU framework programme had too much of an academic focus and left a gap where direct industrial relevance was concerned.

Around the same time, the EU was experimenting with new public-private partnership (PPP) models, including Joint Technology Initiatives (JTIs), which were designed to bring the resources of industry and the strategic vision of the public sector together. But, as Željko recalls, many found how JTIs looked at that time to be too bureaucratic and cumbersome, their complex structures and funding processes often hindering the rapid innovation that industry required. "At that stage, the intention behind JTIs was good," Željko reflects, "but they were too cumbersome to set up, especially since some of them at that time had a reputation for being 'closed shops'."

> "This funding, and the partnership approach that followed, gave us the push needed and EFFRA was formed with the launch of Factories of the Future (FoF), EFFRA's inaugural programme, and a powerful demonstration of the role manufacturing could play in Europe's recovery and growth."

The pivotal moment for EFFRA's formation came with the 2008 financial crisis, which catalysed a shift in priorities and a willingness by many to take pragmatic steps to set things up quickly that were of real added value for the broader manufacturing industry and innovation ecosystem. In response to the crisis, the EU had developed a recovery plan that allocated billions to revitalise key economic sectors, recognising manufacturing as central to this effort.

As such, €700 million was earmarked within this plan specifically for manufacturing, with a mandate for innovation and efficiency to underpin Europe's competitive edge. This marked a major shift, as policymakers and industry leaders saw the potential for a recovery that would make Europe more resilient and self-sufficient. The funding and focus from the recovery plan provided EFFRA with the opportunity to launch, together with the European Commission and member states, the Factories of the Future partnership, which would set a new standard for how industry-driven research could transform European manufacturing.

"The recovery plan was the opportunity, and for the first time manufacturing had a real seat at the table when it came to discussions about EU research funds for industry," Željko remembers. "This funding, and the partnership approach that followed, gave us the push needed and EFFRA was formed with the launch of Factories of the Future (FoF), EFFRA's inaugural programme, and a powerful demonstration of the role manufacturing could play in Europe's recovery and growth."

Transforming vision into reality

EFFRA's founding was not simply a bureaucratic response to funding requirements. It was a grassroots, collaborative effort, built on many diverse contributions. "It was a case of a central European idea here, a South European input there and Scandinavian views elsewhere, with voices from across Europe all adding to the mission," Željko further explains. "EFFRA's goal was straightforward yet ambitious: unite industry, academia, and policymakers to create a European manufacturing roadmap centred on competitiveness and sustainability. But setting up this coalition required more than good intentions; it necessitated a shift in how EU programmes worked with industry."

A turning point came with EFFRA's success in committing two Directorate-Generals – DG Research and DG Connect – to join forces and collaborate in this sector and connect manufacturing with digital innovation creating a new space for collaboration. "We were the only partnership crossing boundaries, engaging both RTD and ICT, and bringing physical manufacturing and digital sectors together," Željko recalls. "This collaborative model was key to building a unified vision and giving industry a real voice in shaping the EU funding agenda."

EFFRA's initial roadmap brought industry, research institutes, and universities together to set priorities for production technology and sustainability. "Our main aim was to make European manufacturing competitive and sustainable," Željko explains. "We needed to keep pace with global advancements, and we wanted to see real impact – projects that industry could use.

> Europe cannot thrive on the service industry and digital apps alone. It needs a manufacturing backbone to ensure stability and growth and EFFRA's work in making manufacturing an exciting, essential part of Europe's future has helped rebuild this backbone.

"Through careful alignment of funding calls with industry goals, the FoF partnership and EFFRA created projects that weren't just academic exercises but practical, valuable developments for Europe's industrial sector."

Signed | Signatures for Factories of the Future Programme

One of the roadmap's key achievements was to foster an open channel of communication between "technology providers and technology users," as Željko puts it. This brought together those equipping factories, like robotics and automation companies, with those running them in sectors such as automotive, aerospace and shipbuilding. By encouraging these interactions, EFFRA's roadmap reflected not just what was technologically possible, but also what industry needed most.

EFFRA's influence also extended to the growing trend of circular manufacturing. By focusing on projects that encouraged companies to rethink waste, reuse materials, and create products designed for recycling, EFFRA positioned European manufacturers as early leaders in sustainability. "This was important because it demonstrated that competitiveness and sustainability are complementary, not conflicting goals," Željko says. "These early successes gave EFFRA the confidence that it was on the right track and that sustainable practices could sit at the core of Europe's industrial vision."

Raising the profile of manufacturing

EFFRA's mission from the start wasn't only to fund projects – it was about revitalising European manufacturing by raising its profile, and proving that it could be innovative, sustainable, and even, as Željko says, "sexy again". By showcasing the sector's role in job creation, economic resilience, and technological advancement, EFFRA set out to highlight how essential manufacturing is to Europe's prosperity.

"Europe cannot thrive on the service industry and digital apps alone," Željko insists. "It needs a manufacturing backbone to ensure stability and growth and EFFRA's work in making manufacturing an exciting, essential part of Europe's future has helped rebuild this backbone."

This reinvigoration of the sector has also shone a light on a skills gap that exists in industries that are changing with technological advances, and EFFRA has been instrumental in promoting partnerships with vocational institutions, on-the-job training, and educational programmes to cultivate expertise in the latest advancements, from zero-defect manufacturing to advanced AI applications. Such efforts are critical to ensuring that Europe's manufacturing workforce remains competitive and adaptable in a rapidly evolving global landscape.

Facing geopolitical dynamics and economic resilience, today's global landscape, is marked by the rise of manufacturing hubs in Asia, and this has introduced new complexities for Europe's industrial future. EFFRA has recognised the importance of economic resilience, seeing Europe's manufacturing competitiveness as reliant not only on innovation but also on secure supply chains and greater self-sufficiency. This shift has led to closer cooperation with EU policymakers and international bodies to address global challenges like climate change, resource scarcity, and technological equity. "Global challenges require both competition and cooperation," Željko says, "and Europe must find a balance to remain competitive and forward-looking."

As EFFRA looks ahead, its mission remains focused on a resilient and inclusive European manufacturing sector. "Digitalisation and data-driven manufacturing are central to this vision," says Željko Advancements in AI, digital twins, and zero-defect processes are aimed at creating smarter factories capable of responding to disruptions, optimising resources, and maintaining competitiveness on the world stage."

A vision for the future

Reflecting on EFFRA's journey over 15 years since its formation, Željko sees the challenges of the early years as instrumental in shaping the organisation's approach for the future. "Our aim is to ensure that Europe remains a powerhouse of manufacturing innovation," he says, "setting standards not only in productivity and efficiency but also in sustainability, responsibility, and inclusivity."

EFFRA's vision has always been about more than just economic growth - it's about creating an ecosystem that values the environment, fosters collaboration, and empowers all industry players, large and small, to thrive.

"From our lucky beginnings, as the various stars aligned, we have been able to help Europe realise that manufacturing is crucial for jobs, resilience, and prosperity," Željko concludes. "EFFRA's work has brought manufacturing back to the forefront, helping restore Europe's manufacturing backbone and setting it up for an exciting future."

Recollections from EFFRA's first chairman

Massimo Mattucci: Founding memories of EFFRA and the Factories of the Future PPP

Massimo Mattucci, based in Turin, Italy, was the first Chairman of EFFRA, elected in 2009. He brings a wealth of experience from leadership roles at Synesis Consortium and Comau. As one of the founding figures of EFFRA, Massimo's legacy is deeply intertwined with the establishment and early achievements of the Factories of the Future Public-Private Partnership (PPP).

In the late 2000s, European manufacturing faced unprecedented challenges. During the Presidency of José Manuel Barroso, the European Commission (EC) launched the European Economic Recovery Plan, identifying manufacturing competitiveness as a key priority. In 2008, discussions with the ManuFuture organisation led to the idea of creating a PPP to help European industry overcome these difficult times. "ManuFuture decided to react by dedicating a specific association - including industry, universities, and research centres - to start a dialogue with the EC Commission, represented by DG Research and Innovation and DG INFSO," Massimo remembers. "This new body became the European Factories of the Future Association (EFFRA), established on 11 March 2009."

Leading EFFRA: A historic chairmanship

Massimo was elected the first Chairman of EFFRA during its inaugural General Assembly on 26th May 2009. He recalls this milestone with great pride and gratitude, especially toward the main sponsors of his candidacy, including Heinrich Flegel (Daimler), Adrian Harris (ORGALIME), and Francesco Jovane (IT CNR). "To my great surprise, within the first

EFFRA's first chairman | Massimo Mattucci

General Assembly, I was elected EFFRA Chairman. That marked the beginning of an intensive period of work, with internal and external meetings, during which the EFFRA organisation grew significantly."

Under his leadership, EFFRA transitioned from a fledgling organisation to a key player in European research and innovation. Early support from VDMA and ORGALIME was crucial, providing offices and personnel such as Frank Knecht and later Željko Pazin, who became the EFFRA Director.

Key relationships and milestones

Massimo emphasises the importance of building strong relationships with key figures in the European Commission, including Directors Herbert von Bose (DG Research – Industrial Technologies) and Thierry Van der Pyl (DG INFSO – Components and Systems). Later, EFFRA engaged with senior EC leaders such as Janez Potočnik, Viviane Reding, Maire Geoghegan-Quinn, and Neelie Kroes.

"Our most relevant contact in the EC organisation was Reffrn Smits, DG Research & Innovation Director-General," he recalls. "I think I was able to establish a very warm and constructive feeling with him and his organisation, which was one of the main contributors to the success of the PPP initiatives."

Legacy and reflections

Massimo remains deeply proud of EFFRA's contributions to European manufacturing and its role in fostering collaboration between public and private sectors. He attributes much of the PPP's success to the collective effort of EFFRA's members and board, as well as the professionalism and support of EC representatives.

"The activity of the EFFRA Association from the start laid the foundation for a strong and enduring partnership between industry, academia, and policymakers," he says. "Together, we have built a model of collaboration that continues to shape Europe's manufacturing future."

Massimo's extensive career includes leadership roles at Synesis Consortium and Comau, where he focused on advancing manufacturing technologies and processes. As Past-Chairman of EFFRA, he remains an advocate for collaborative innovation, digital transformation, and sustainable growth in European manufacturing.

> Together, we have built a model of collaboration that continues to shape Europe's manufacturing future.

the cogs keep turning

More memories of EFFRA's formation and evolution

Maurizio Gattiglio

Maurizio Gattiglio is a leading figure in European manufacturing and innovation, known for his role as Chairman of the ManuFuture European Technology Platform (ETP) and as a long-serving board member at EFFRA. With decades of experience fostering collaboration between research, industry, and policymakers, Maurizio has played a pivotal role in shaping Europe's manufacturing research agenda and advancing its global competitiveness.

Reflecting on EFFRA's formation, Maurizio recalls its unique and trailblazing nature: "EFFRA was one of the first three organisations managing the private side of Public-Private Partnerships (PPPs). That so many co-programmed initiatives are now operating is a testament to how important EFFRA's contribution to collaborative research in Europe has been."

Maurizio is especially proud of EFFRA's efforts to bring industrial partners to the table, ensuring that priorities were aligned with market needs and that research outcomes were exploited effectively. This model of collaboration - uniting the public sector, research organisations, and industry - has since become a cornerstone of European innovation policy.

One of Maurizio's proudest memories is how EFFRA foresaw the transformative potential of artificial intelligence (AI) before it was widely recognised as a disruptive force. "I am still proud of how the EFFRA team understood before many others the growing and disruptive influence of AI."

EFFRA's early identification of AI's importance has allowed the association to support research projects that harness its power for manufacturing applications, from predictive maintenance and autonomous systems to digital twins and supply chain optimisation. This forward-thinking approach has helped position Europe as a leader in the adoption of AI for industrial purposes.

José Carlos Caldeira is a prominent figure in European innovation and manufacturing, currently serving on the boards of INESC TEC, PRODUTECH (the Production Technologies Cluster), and EFFRA.

José recalls that manufacturing was far from being a political priority when EFFRA was founded. At the time, the dominant narrative suggested that Europe could thrive as a service-based economy, retaining high-value portions of supply chains while outsourcing labour-intensive production to other regions. This perspective, José argues, was both "ignorant and arrogant." It underestimated the importance of maintaining production capabilities locally, failing to foresee that transferring manufacturing activities would also lead to a gradual transfer of technological capabilities and expertise.

The 2008 financial crisis provided a stark wake-up call, exposing the fragility of a Europe over-reliant on financial speculation and service-based industries. José and like-minded advocates seized this moment to emphasise the critical need for manufacturing to regain prominence. "Manufacturing," he emphasises, "creates a 'snowball effect' of economic activity, with every job in manufacturing supporting two additional jobs in related services. This interconnectedness underscored the dangers of deindustrialisation."

The origins of EFFRA: From advocacy to action

The funny and happy memories of EFFRA's early days are vivid for José. One humorous moment came even before the association's creation, during a last-minute meeting in Lisbon with then-European Commission President José Manuel Barroso. Organising the meeting during the summer holidays was a challenge, with key figures scrambling to attend. The meeting also marked the debut of Erwin Boß as the newly appointed Director of DG RTD. Reflecting on his first meeting with a European Commission president, Boß joked that it was a "nice way to start at the top, with nowhere to go but down."

On a more serious note, José highlights the political and strategic significance of this meeting and the subsequent creation of the Factories of the Future initiative. The initiative was born from intense lobbying efforts by advocates of European manufacturing, who had worked tirelessly to present a compelling case for its inclusion in EU policy. "The European Commission ultimately recognised manufacturing's vital role in job creation and economic resilience, allocating significant funding to support its revival," José says.

A diverse and unified vision

The establishment of EFFRA itself was not without challenges. Bringing together a diverse community of stakeholders, representing different sectors, countries, and interests, required diplomacy and shared vision. José credits the group's ability to collaborate effectively and quickly align on a common strategy. "EFFRA's creation provided an institutional body to drive forward the Factories of the Future initiative, enabling sustained focus on research and innovation in manufacturing," he states.

> "you cannot do this."

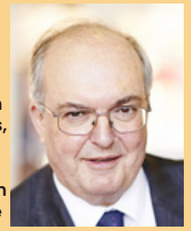
> "Every job in manufacturing supports two additional jobs in related services. This interconnectedness underscored the dangers of deindustrialisation."

Manufacturing's place in Europe's future

Looking back now, José reflects on how the misguided policies of the early 2000s - focused on short-term financial gains - allowed manufacturing to decline, only for Europe to realise its value during moments of crisis. While today's conversations around resilience and strategic autonomy are encouraging, José laments that these lessons should have been apparent earlier. "Events like the pandemic and geopolitical conflicts have reinforced the need for self-sufficiency in critical sectors, but these challenges were not unforeseeable," he reflects.

"We cannot predict when or where such events will happen, but we know for sure that they will happen. The question is whether we will be prepared." His reflections serve as both a celebration of EFFRA's legacy and a call to action for Europe to remain vigilant and proactive in securing its industrial future.

Adrian Harris



Fifteen years ago, the creation of EFFRA marked a pivotal moment for European manufacturing. Adrian Harris, then Director General of Orgalime and now president of the FAIB, and a key figure in EFFRA's formation, recalls the determination and strategic thinking that brought the association to life.

One of his most memorable moments came during EFFRA's inaugural meeting. There was resistance from some who opposed giving industry associations a prominent role within EFFRA, particularly as it aimed to represent all manufacturing SMEs. Critics were vocal, declaring, "You cannot do this." Yet, just weeks later, EFFRA was officially established, decisively proving the skeptics wrong.

"Doing something I was told we couldn't do has always been a favourite career memory of mine," Adrian reflects, underscoring the determination that set the tone for EFFRA's success. At the time, the manufacturing landscape in Europe was at a crossroads. Orgalime had long provided input into EU R&D programmes, but there was growing recognition that the industry could achieve much more. Adrian explains that while Orgalime has some success in influencing policy, its independence from EU funding meant it could not fully capitalise on the opportunities available. Establishing EFFRA "as a sister organisation" allowed the manufacturing community to work more strategically with the European Commission, not just influencing policy but also securing a fairer share of funding for Europe's largest industry sector.

The key to securing European Commission funding for EFFRA, Adrian remembers, was trust. "The Commission trusted us as a serious partner with whom they could create a win-win situation for Europe in an increasingly competitive world," he explains.

A critical aspect of EFFRA's success has been its ability to balance the voices of industry, research, and academia. Adrian highlights that EFFRA's industry-driven vision has been instrumental in fostering collaboration. Industry's reliance on innovation to compete globally has underscored the value of working closely with academic and research organisations. This pragmatic, balanced approach has won increasing appreciation from the European Commission.

Looking back, Adrian's reflections reveal the determination, strategy, and collaboration that defined EFFRA's early years and continue to guide it today. "From an ambitious idea to a trusted partner shaping the future of European manufacturing, EFFRA's story is one of bold vision and enduring impact."

Reclaiming Europe's industrial future: Strategic reindustrialisation and autonomy

As Europe navigates an evolving industrial landscape, the issue of reindustrialisation emerges as a critical point of discussion. For leaders like Olaf Pannenbäcker, Continental's former VP of Operations, who also serves as Chairman of EFFRA, this conversation is both pressing and complex. In this exclusive interview, he offers an insightful look into why Europe must rethink its approach to manufacturing and the importance of securing the continent's industrial future.

Reindustrialisation has become a critical strategy for Europe as it confronts a new industrial era shaped by digital technologies, global competition, and environmental imperatives. The aim of the strategy is an ambitious one - to strengthen the continent's industrial base by revitalising domestic manufacturing, bolstering supply chains, and leading the green transition. EFFRA stands at the forefront of this movement, advocating for advanced manufacturing technologies and research-driven innovation to drive this new industrial age in Europe.

"We're consistently discussing with EFFRA members the importance of retaining manufacturing value within Europe," says Olaf Pannenbäcker, VP of operations at Continental and EFFRA Chairman, as he considers this new industrial age. This question of value retention, it seems, isn't merely philosophical - it's a central factor in Europe's economic stability. But in Continental's case, like many large companies, maintaining value within Europe has proven difficult, with production drifting to non-EU European nations and beyond.

"Our own internal surveys show that around 15 per cent of production has moved out of Europe over the last seven years," he says, reflecting on the strategic shift toward producing closer to consumer markets as a key factor. "For instance, manufacturing in China for the Chinese market just makes sense, but that also means European production faces increased challenges."

This trend is echoed across the broader industrial sector, impacting not only large multinationals but the network of smaller suppliers they rely on. "It's like a silent drain on industrial jobs and capability," he continues, adding that it's largely driven by cost considerations. "The automotive industry, for example, is extremely price-sensitive, and decisions are often made based on immediate savings rather than long-term impacts."

However, the viability of continually shifting production eastward within Europe is diminishing. "We're seeing double-digit salary growth forecasts in regions like Hungary, whereas in Germany, France, and the UK, those increases are relatively modest," he explains. As the cost gap narrows, the logic behind eastward production migration weakens, which may prompt a revaluation of older strategies that led production out of core EU markets.

Even with shifting cost dynamics, bringing production back to Europe raises many financial challenges. "Strategic reindustrialisation is certainly costly," he admits. However, there are scenarios where the investment could be justified. "When we look at the carbon footprint analysis at Continental, for example, we find that emissions from our factories are only a small part of the picture. A significant chunk comes from transporting components. Sourcing locally, despite the higher price tag, could lower emissions and shrink our environmental footprint."

This green imperative dovetails with a broader European shift towards sustainability, but for reindustrialisation to become financially viable, Europe's economic models may need to adapt, offering incentives that encourage local production. "We need public-private partnerships, and that's where EFFRA plays an essential role," Olaf says. "EFFRA facilitates large, coordinated projects that allow companies to work on solutions in partnership with the European Commission, developing funding frameworks for longer-term impact.

Olaf Pannenbäcker | EFFRA Chairman

"This setup allows companies facing specific challenges to collaborate, draft white papers, and work with the European Commission to create long-term funding frameworks."

Strategic autonomy: A new industrial imperative

Geopolitical factors also weigh heavily in Europe's push for reindustrialisation, as it seeks to secure strategic autonomy in an increasingly uncertain world. Rising global tensions, especially with a reliance on key external suppliers like China for critical materials and the US for technological resources, have highlighted Europe's vulnerabilities. By strengthening domestic production capabilities, Europe can better shield itself from supply chain shocks, protect critical industries, and reduce dependencies that could undermine its ability to navigate geopolitical pressures. This drive towards industrial independence will also allow Europe to better influence global standards on technology, trade, and sustainability, reinforcing its role as a stabilising force amid shifting alliances and economic rivalries.

"We're seeing that industries are increasingly sensitive to geopolitical risks, leading to heightened awareness of the need for resilience," Olaf says. Larger companies are bolstering their risk analyses, but smaller firms often lack the resources to do so. This imbalance leaves parts of Europe's industrial ecosystem vulnerable to supply chain interruptions.

To manage these risks effectively, Olaf highlights the importance of digitalisation. "Europe must have a toolkit of solutions at the ready," he insists. Digital tools provide a means to mitigate disruption impacts, but Europe's progress on digitalisation lags behind other regions.

Olaf points to the factors that slow down Europe's funding process, particularly when comparing it to China and the USA. "Bureaucracy, for one, is a major factor in the EU," he states. "Securing funding for new projects in Europe can be painfully slow. By the time we've secured the funds, the project might already be outdated."

Beyond funding speed, he believes there is a need to make publicly funded innovations more accessible across Europe. "European institutions should ensure broader access to innovations, as consultancy firms often monopolise these outputs, privatising them for profit" he cautions. "EFFRA can play a role in streamlining access to these tools, ensuring they serve the companies that helped fund them – and good dissemination is key here"

Addressing the skills gap

These digital innovations, with technologies like AI, IoT, and digital twins, offer the transformative potential to fuel Europe's reindustrialisation and the enable the 'smart factories' that enhance productivity, foster innovation, and redefine the global manufacturing landscape. EFFRA is a key player in this digital transformation, promoting advanced manufacturing, but there is a skills gap in Europe's manufacturing workforce that will need closing first. Olaf believes it is the shortage of talent in data analysis, software development, and algorithm expertise that further complicates these reindustrialisation ambitions. "Manufacturing is the sector generating the most data," he explains. "Yet, we're not using this data effectively because skilled analysts and developers are in short supply."

This gap is particularly evident in small and medium-sized enterprises, which often lack the expertise to harness data insights both within manufacturing processes but also in the supply chain. "These supply chain insights are also crucial. Data can reveal where parts are sourced, track inventory, and identify bottlenecks, helping companies, for example, understand disturbances in the supply chain and predict where potential issues might arise."

> "In sectors like automotive electrification and medical devices, we often over-engineer solutions, making them expensive and inaccessible for many. By creating cost-effective, innovative products that meet market needs without over-engineering, we can stay competitive."

The European Commission's AI initiative is a step forward, he notes, providing companies with resources for data processing and analysis. "Small and medium-sized companies can now upload their data and gain insights that help them manage internal processes and even predict supply chain issues," he says.

When it comes to the types of skills Europe needs, he stresses the importance of data analysis and software development in production environments. "Labour scarcity makes automation essential, but it's not a one-size-fits-all solution. Europe needs skilled human resources to manage both robotic and manual labour efficiently."

Olaf further believes Europe could benefit from a targeted migration policy to bridge the skills gap. "Europe is close to the African continent, and a structured, legal initiative to attract skilled labour from there could be mutually beneficial," he says, though he recognises the political sensitivities. "It's not about open borders; it's about creating focused pathways for skilled workers that meet Europe's specific needs."

Building technological independence

The need for Europe to reclaim some level of technological independence is another recurring theme. "In areas like software development, we should be building our own workforce here in Europe," he asserts. "While outsourcing to India or Malaysia may offer short-term cost savings, Europe's reliance on external talent pools leaves it vulnerable in the long term."

This approach extends beyond software to critical green technologies, which he views as fundamental to Europe's future. "Europe has been a leader in green technologies, but we've lost ground, as we saw with the solar panel market, which is now dominated by China," he warns. To prevent repeating this loss with hydrogen or other renewable energy solutions, he believes Europe must strengthen its manufacturing base for green technology. "This is about retaining control over our advancements in critical areas and supporting them with local production capabilities."

This technological sovereignty is clearly an essential factor in Olaf's vision for Europe's industrial future. "Take medicine," he continues. "Europe leads in medical research but also has high production costs. In sectors like automotive electrification and medical devices, we often over-engineer solutions, making them expensive and inaccessible for many. By creating cost-effective, innovative products that meet market needs without over-engineering, we can stay competitive."

Olaf also uses the example of China's BYD car company which has been highly successful because it produces its own batteries and designs cars with market needs in mind. "In contrast," he says, "we're often reliant on external suppliers for critical components, like batteries. European policymakers need to consider direct support for strategic production investments, but this must be approached sustainably. Investment should amplify returns rather than provide short-term relief."

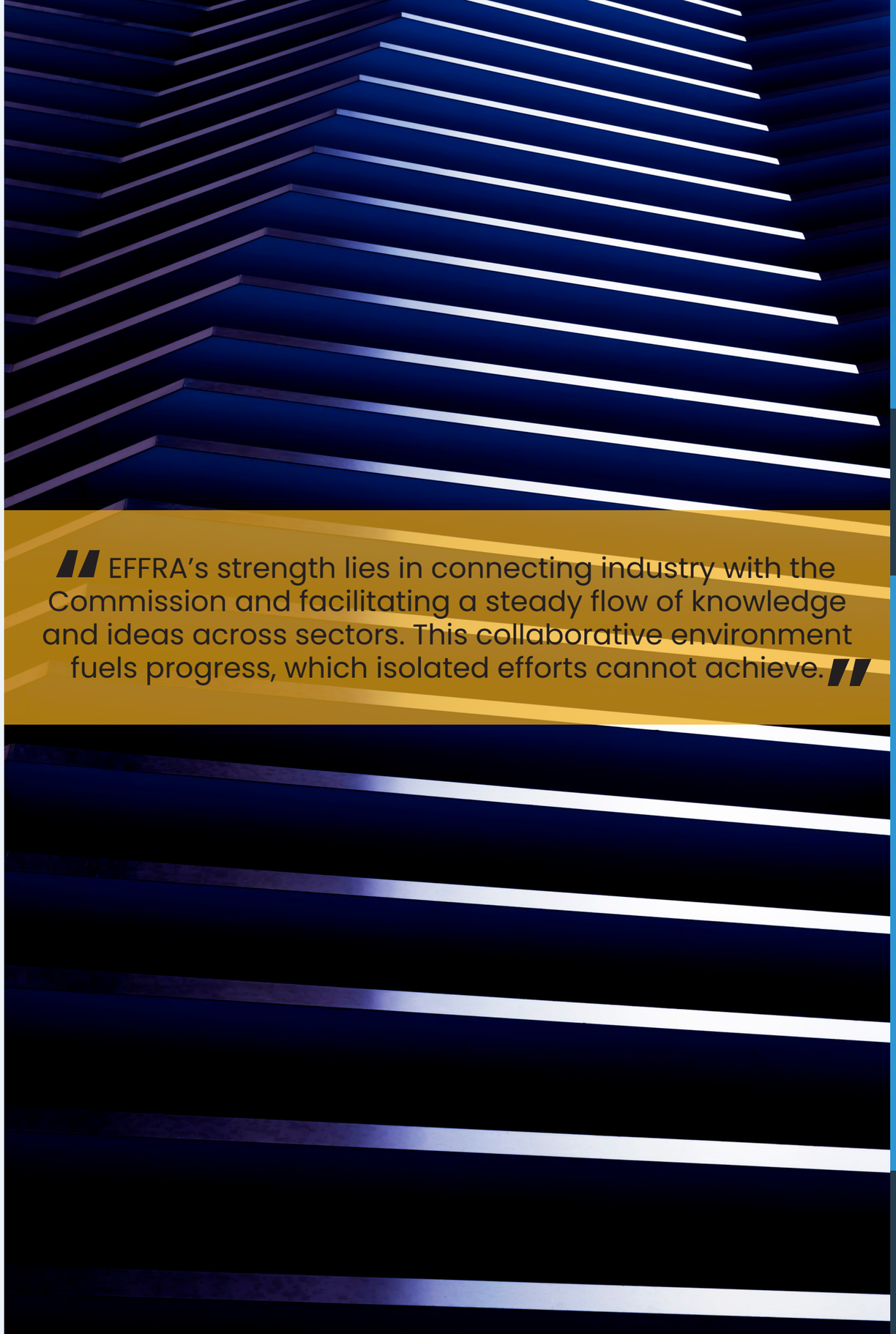
A blueprint for Europe's industrial future

Reflecting on EFFRA's role in this industrial transformation, Olaf looks forward to a supportive ecosystem that fosters collaboration and accelerates solutions. "EFFRA's strength lies in connecting industry with the Commission and facilitating a steady flow of knowledge and ideas across sectors. This collaborative environment fuels progress, which isolated efforts cannot achieve."

The future of Europe's manufacturing landscape will be defined by data, he believes, but also by strategic independence in critical resources, such as energy, materials, health, and mobility. "Initiatives like the semiconductor collaborations with Intel and TSMC are a positive start, but we need more collective investment," he stresses. "Maintaining manufacturing in Europe requires a commitment that transcends market fluctuations."

Looking ahead, he envisions a Europe where data-driven insights, strategic autonomy, and collaborative investment come together to build a robust industrial ecosystem. "The success of Europe's industrial future rests on steady investment in essential infrastructure, and fostering skills and innovation to support manufacturing resilience," he concludes.

In the push for reindustrialisation, it seems, Europe's industrial leaders are calling for nothing short of a paradigm shift - one that positions the continent as a global beacon of sustainable, technologically advanced, and resilient manufacturing. EFFRA's commitment to advanced manufacturing and collaborative innovation underscores this vision. Although the challenges are formidable, with strong financial backing and strategic alignment, achieved through close collaboration between industry and policymakers, Europe is poised to lead the way in a global reindustrialisation movement that could shape the future of industry worldwide.



Enabling companies to adopt new technologies in a way that minimises risk to their production processes, products and profitability is a key element of meeting head on the industrial challenges facing Europe. We speak to Herman Derache, MD at Sirris, the Belgian technology organisation providing the support industrial companies need to make the most of key areas of digital development including in advanced manufacturing, innovation management, digital transformation and the green transition.

Herman Derache | MD, Sirris

Guiding technical innovation: helping companies address industries' big challenges

In conversation . . .

EFFRA: *Perhaps we could start, Herman, with you explaining a little bit about yourself and your role at Sirris and at EFFRA?*

Herman Derache: For 10 years now, I have been the Managing Director at Sirris. I've spent almost my entire career here, starting as a researcher, then becoming a technical consultant, and eventually moving through different management roles. For the past decade, I have been in the position of Managing Director, while over this period I have also been a Board Member at EFFRA. Sirris is the technology advisor for the Belgian technology industry, and we help companies innovate by adopting available technologies.

Our work focuses on helping companies adopt these technologies in their processes and products in a way that minimises risks and maximises value. We have more than 170 people on our team, and we handle approximately 1,200 different industrial projects each year. These projects vary in size: some are very small, involving just a few days of advice to steer a company in a specific direction, while others are larger, spanning extensive industries. Overall, we reach more than 1,000 different companies a year with our services.

EFFRA: *So, guiding technical innovation is how you would see this? This seems to be a very hands-on approach – you are consulting with the companies. Can you explain in a little more detail about how that actually works, the process you go through, and the benefits that brings to Belgian industry?*

HD: It's indeed a hands-on, long-term process. Our approach begins with gaining a vision of the big challenges facing our industry. We gather insights about both upcoming challenges and opportunities presented by new technologies. This vision helps us identify topics that represent shared challenges for hundreds, even thousands, of companies. We then focus on these specific topics and work to build practical knowledge and know-how around them. To achieve this, we tap into knowledge from nearby research centres, university labs, and European partners, allowing us to build our own expertise, and it's here that cooperation at the European level comes in, for example in EFFRA projects. In this way, we can offer hands-on, actionable knowledge to the companies we support. We work on a rolling timeline of about two to three years and constantly reinvent ourselves, especially as new technologies like generative AI become relevant. Today, for example, we're exploring how GenAI can enhance productivity in manufacturing in a very practical way.

Convincing companies of a technology's relevance for their specific challenge is essential, and then we reach a point where we present our project or advice to them. Notably, most of our projects are initiated by requests from the companies themselves - about 70% of the projects we do start from a question they bring to us.

EFFRA: *More than a thousand projects a year is an extraordinary amount. How do you decide which projects to prioritise? What are you looking for, and how do these issues tie in with the broader European goals and those promoted by EFFRA?*

HD: Our project selection is an interactive process with the companies. We aim to prioritise projects where we can create the most impact. For example, if we're hired as a subcontractor for some engineering work, we might guide that company toward a commercial outcome. But if we see the potential to elevate the company's maturity in a certain area and connect them with the right commercial

“Productivity has always been a priority, but now topics like material circularity and climate change are equally critical. We must continually revise our roadmaps to address these emerging challenges, and EFFRA’s model, bringing together industry, research and government, has proven to be an effective way to do this.”

technology providers for a true innovation step, then we’ll focus on that. Given our time constraints, we balance the potential impact with the amount of time we can dedicate to each company. It’s also a paid service, so companies must be motivated enough to invest in the project themselves.

EFFRA: *You mentioned that it’s your collaborative relationship with research institutes as well as with companies that brings innovation to market. Could you explain that partnership model in a bit more detail, and what are the benefits of “collaboration” in this context?*

HD: The main advantage of this collaboration is that we don’t have to invest in creating the technology ourselves. The initial stages of technology innovation - basic research at universities and applied research at many research centres - are very costly and often require government funding. By leveraging knowledge and technologies developed through these funds in various projects and across EU countries, we avoid duplicating this costly development work.

This approach is also why we participate in European projects: technology knows no borders. When valuable technologies are developed somewhere in Europe, we can access them and make them available to Belgian companies. This approach fulfils our mission without the need to invest in everything ourselves, giving our Belgian members and clients access to expertise they don’t have to build or finance themselves. They simply pay for the advice they receive from us.

EFFRA: *Now, putting your EFFRA hat on, how do you think their framework supports this collaborative approach, and in what ways can this effort support organisations like Sirris?*

HD: EFFRA’s main purpose is to direct European funding for research toward addressing industry’s needs. The European Commission values R&D but doesn’t necessarily know the specific, real-time challenges industry faces. EFFRA acts as a mechanism to set up roadmaps and foster collaboration between the research community, industry, and the European Commission - a kind of “triple helix” that helps build a roadmap largely influenced by industry while keeping the research community involved. This ensures that the Commission’s calls for projects focus on relevant topics, are well-timed, and have appropriate funding to attract the right consortia. This approach contrasts with how things were over 15 years ago, before EFFRA was established. Back then, calls for projects were more ad hoc and not always aligned with industry’s actual needs. EFFRA was one of the first public-private partnerships created between the Commission and a research community, and it’s been very successful - perhaps even too successful, as now there are over 40 such partnerships, and some consolidation might be beneficial.

Through EFFRA, we’ve demonstrated that the Commission needs this industry-driven model, and that it works. It provides a framework for addressing evolving challenges - productivity has always been a priority, but now, topics like material circularity and climate change are equally critical. We must continually revise our roadmaps to address these emerging challenges, and EFFRA’s model, bringing together industry, research, and government, has proven to be an effective way to do this.

EFFRA: *While we’ve reached this point, let’s discuss the topics central to Europe’s manufacturing future that interest you. Specifically, I’m talking about advanced manufacturing, innovation management, digital transformation, and the green transition. How does Sirris work towards these goals, and what do you see as priorities for optimising manufacturing systems? Could you give examples of current approaches and how you see these evolving?*

HD: It’s a complex challenge. The ultimate goal is a productive manufacturing industry firmly embedded in Europe, with a much more localised supply chain that produces greener, less energy-intensive products, incorporates circularity in material fields, and supports greener production facilities that use less energy and materials. This includes placing the human at the centre of production, where they oversee and control operations. Achieving sustainable manufacturing is not only about the green side of sustainability but also about economic viability, delivering value that benefits society and sustains our current standards.

EFFRA: *OK, so one key aspect is managing innovation and implementing it into industries. Could you elaborate on how the management strategies you employ become actionable for businesses, especially for SMEs? And using Belgium as an example, can you explain how these strategies impact a country’s industry?*

HD: Our goal is always for the company we are working with itself to lead its innovation, so we need a motivated CEO, CTO, or operations chief who is fully committed to innovation. This doesn’t mean they need the capacity to manage the entire project independently - often, parts are outsourced to the market, such as to suppliers, automation companies, and digitisation firms. What we provide is similar to an architectural role, guiding the design of a new product or production facility, and following up on implementation to ensure goals are met. If a company lacks project coordination capacity, we provide that support; larger companies may handle coordination themselves but seek our advice at other key stages.

EFFRA: *Moving on to digital transformation and focusing on Belgium again, what are the main challenges, such as integrating AI, and are these challenges common across countries? How are you addressing them?*

HD: There’s still a long way to go with digitising manufacturing itself. While our products, like machinery and trucks, are often cutting-edge globally, many manufacturing facilities lack, for example, interconnected machines. Connections between suppliers, customers, and their customers are often not digital, which holds back areas like production planning, predictive maintenance, and stock management. Many companies are still far from modern methods of managing production. Additionally, data is often scattered and incomplete, making it unready for AI applications. The process usually involves first getting the basics right, organising, digitising, and only then preparing data for exploitation, starting with basic statistics and ultimately enabling AI applications.

EFFRA: *It’s interesting how you separate the digitalisation of the actual manufacturing process from that of the logistics around it - stock, planning, etc. It’s a nuanced approach.*

HD: Exactly. We have both target companies with their own products, like assemblers or producers, and also the suppliers who don’t have proprietary products but possess the facilities for specific types of production. Each of these entities needs to innovate, both in their products and processes. Product innovation has historically been prioritised as it’s essential to market survival, but process innovation has often been overlooked. This has changed with initiatives like EFFRA’s “Factory of the Future” vision, which Belgium, Germany, Sweden, Italy, Spain, etc. have embraced, moving toward focused improvements in manufacturing.

EFFRA: *So I assume sustainability, or the green transition, is a key driver here. What specific technologies are available now that can support this shift, and how might they benefit companies yet to start this journey?*

HD: Absolutely. The energy transition is both a challenge and an opportunity for many of these companies. About 300–400 of our customers, for example, are building solutions for energy transitions - products like windmills or components for solar panels. For users, or what we call “problem owners,” step one is reducing energy consumption in their facilities, driven largely by energy costs. Moving to renewable or fossil-free energy sources is a more significant challenge that requires substantial investment, so it’s harder to motivate companies without legal mandates. Long-term, we’re looking at CO2 capture and other technologies, but the immediate goals are efficiency and renewable energy.

In terms of materials, circular models are essential. This requires a value-chain approach, from sourcing recycled or reused materials to planning for end-of-life disposal or reuse. Companies need to design products for disassembly, extend product lifespans, or refurbish worn-out items to as-new condition. We help them develop tailored circular strategies based on their sector, with easier applications in B2B environments, where supply chains are more predictable than in B2C markets.

EFFRA: *You touched on my next question, which is about future priorities. What are Sirris’s focuses over the coming years, and how do these reflect industry needs, especially for Belgian companies?*

HD: The ongoing challenge is maintaining competitiveness, which requires constant innovation in both products and processes while making optimal use of technologies like AI, automation, and IoT. Today’s technology offers plenty of opportunities, but the key is deploying it effectively. Success in this area allows companies to improve productivity and sustainability together, which is critical for both local and European competitiveness.

EFFRA: *What do you see as the main barriers to Europe’s industrial competitiveness on the global stage?*

HD: One major barrier is high wage costs, especially compared to countries in the Far East, Africa, or South America. For Belgium, in particular, it’s not only wages but also additional employee costs, including taxes and social security, which are significant. Lowering wages isn’t a realistic solution, so our production must be more efficient. Energy costs and availability also pose challenges; we need affordable, reliable energy, potentially from offshore wind, solar, or nuclear sources. And finally, over-regulation creates complexity for companies, as they navigate both European and individual national regulations, making compliance a significant burden. Reduced and streamlined regulations, along with optimal use of our talent and resources, could strengthen Europe’s industrial base.

EFFRA: *Finally, in an ideal scenario, how could collaboration between research, industry, and the European Commission improve to better meet these challenges?*

HD: One improvement would be to consolidate resources, as there are currently over 40 partnerships across various vertical and horizontal sectors. They need reorganisation into more effective governance structures. EFFRA’s area of focus, manufacturing, intersects with many other topics and verticals, so a coordinated approach would help manage the cross-sections. It might be time for a strategic redesign to streamline efforts and make this collaboration model more impactful and robust for future challenges.

How EFFRA helps ride the ‘Perfect Wave’ of change in automotive manufacturing

As Manager of Research and Technology Development at Volvo Group, Johan Svenningstorp leads Volvo’s efforts to navigate a rapidly changing automotive landscape. He shares his insights on the importance of the European Factories of the Future Research Association (EFFRA) network and its critical role in shaping the industry’s future.

The automotive sector is weathering what Johan Svenningstorp calls the “perfect wave” of disruption. “The Volvo Group has almost 100 years of experience which has led it to the fine tuning of our processes such as creating diesel engines and integrating them into our products,” he says. “Then suddenly, we’re told that our product might not run on diesel at all, and it should be electric,” he elaborates, further identifying this particular challenge as the first of the three waves that make up a “perfect wave” hitting manufacturing industries hard.

The second of Johan’s waves is autonomy. “Volvo has built its reputation on being a premium brand,” he says. “This means a sleek finish and comfortable driver experience. But what happens to this when there is no driver at all? What becomes premium then? This is another big challenge we have - instead of building trucks, we’re manufacturing computers on wheels.”

The final wave impacting his industry is automation - the reimagining of cognitive and physical tasks in manufacturing. From collaborative robots to autonomous transporters, Johan sees changes in every process.

He believes these three pressures, which are being faced in some form or other in all sectors of manufacturing, risk overwhelming European manufacturers. “These three waves are crashing at the same time and European manufacturing industries are drowning as they try to keep up with the demand,” he warns.

But he also believes that his industry, like all industries, can

Johan Svenningstorp | Manager, R&D, Volvo

work together to meet these challenges - and this is where EFFRA becomes such a key player.

“EFFRA acts as a translator,” says Johan. “The organisation is able to explain to policymakers why manufacturing processes are as vital as the products themselves and by gaining this support, we can begin to address this three-wave attack.”

In Volvo’s case, Johan explains that this means focusing on and prioritising one aspect - the customer and, subsequently, automobility. “This might come at a cost to other areas of the business, meaning we aren’t quite where we want to be when addressing things like the cost of diesel engine trucks,” he says. “But, as an industry, we need to talk about efficiency and we need to bring costs down for the consumer, and we can learn from research how to do this.”

Translating research into practice

Johan identifies how Volvo’s engagement with EFFRA brings strategic benefits. “EFFRA provides us with a seat at the table, allowing us to guide the direction of European manufacturing,” he says. “It bridges the gap between visionary research and practical application.”

He also believes that EFFRA challenges companies like Volvo to step outside of its comfort zone by enabling them to encounter solutions from industries completely different from theirs. “It pushes us to innovate in ways we might not have considered on our own,” he says.

“For example, we met with Bosch at the EFFRA assembly a couple of years ago and this led to us visiting their factories to see their ‘Factory of the Future’ concept and that resulted in several new project ideas.”

Digital twins, AI, and the future

Johan is a champion of digital transformation but warns against the over-simplification of thinking every problem can be solved by digitisation. “There’s no such thing as one digital twin, for example. Each serves a unique purpose, whether it’s predicting a robot cell’s movement or assessing welding risks,” he explains. “But not everything needs a digital twin - some challenges, like mice gnawing on cables, require simpler solutions that are not practical or viable to simulate with a digital twin.”

The same can be said for AI, which is disrupting every aspect of our lives now, including in industry. “In any industry, it seems you cannot make any product without adding AI,” He says. “Now that’s all fine, but we should remember that AI is a hammer - a very useful hammer, but a hammer. There are many different applications for it, which is excellent, and I think there could be no end to how useful that hammer can be for many of the mundane tasks, but don’t expect it to be brilliant for the ‘brilliant’ tasks.

“It can be utilised for boring tasks which humans have historically wasted many hours doing, such as moving numbers from an Excel sheet to a PowerPoint, or collecting data from each part of a factory and visualising them,” he continues. “AI is perfect for this, and I am more than happy to hand these mundane tasks over to AI and expect in the future to get copilots to help us with all of the application tasks - but this is only useful if it allows humans to focus on being brilliant and completing brilliant tasks.”

Sustainability and the role of partnerships

Volvo’s sustainability goals, from electrification to circularity, rely on collaboration and EFFRA is also at the heart of this effort by bringing collaboration to the table as well as helping to set the agenda for how industry achieves these political goals.

> **Details matter. Small hurdles can block progress. EFFRA provides a hands-on environment to address these challenges and share results.**

"When you are facing these perfect waves, you can begin to neglect other areas of importance - such as sustainability," Johan explains. "The EFFRA network allows us to return later and leverage the great work being carried out by our EFFRA partners on issues such as circularity. Right now, I know many small, practical issues are stopping Volvo from meeting its goals with circularity and this is where information sharing is vital.

"Details matter - small hurdles can block progress. EFFRA provides a hands-on environment to address these challenges and share results."

Johan believes improvements could still be made to ensure this EFFRA approach becomes even more valuable for meeting specific industry needs, and it's through leaner, more reactive projects and better communication that he believes the biggest advances can be made. "There is room for growth," he says.

"EFFRA could evolve to better meet industry needs, particularly by reducing project lead times and improving its storytelling," he continues. "Too often researchers complete a project and move on without seeing the value their project is producing in the real world, and I feel this needs to be shared better."

Why EFFRA matters

So, for Johan, it is clearly EFFRA's emphasis on collaboration, innovation, and efficiency that is so crucial for navigating the challenges that lie ahead in European manufacturing.

"The main benefits for Volvo's engagement with EFFRA are leverage, fresh perspectives, and the network itself," he says. "Through EFFRA, we've gained insights and partnerships that we couldn't achieve alone.

"If there is an area of research we know we need to focus on but we do not have the time to invest then we can utilise our leverage with universities and other partners who face the same problem. If we spend 1,000 hours solving this issue, we can get 5,000 hours accumulated from our EFFRA partners.

"Being challenged in this way is vital. Is this the right problem we need to be solving? This is where cross-industry partnership can offer a fresh perspective."

In an era of unprecedented transformation, Johan believes that organisations such as EFFRA hold the key to ensuring European manufacturers not only survive but remain competitive in the face of the waves of change currently engulfing them.

EFFRA must remain the voice for European manufacturing

Juliane Heß | Director, Bosch Rexroth

Juliane Heß has spent 18 years working at Bosch and is currently Director of Service Operations Repair and Field Service within the Industrial Hydraulics business unit of Bosch Rexroth. She is also the co-chair on EFFRA's board of directors. She discusses how she believes Europe is lagging behind other manufacturing markets and the work that is needed to prevent it falling further behind.

Juliane Heß has been the vice-chair of EFFRA's board of directors for little more than a year, but it is clear there are few better positioned in European manufacturing to understand the challenges the sector currently faces and how to address them.

Juliane joined Bosch as an economic engineer 18 years ago. A series of roles in the manufacturing environment have seen her garner more responsibility, from coordinating the digitalisation in manufacturing of all Bosch Rexroth plants worldwide to her current role as Director of Service Operations Repair and Field Service for Industrial Hydraulics. During this time, it has become apparent that European manufacturing faces two chief challenges.

"I believe the main issues we face are deindustrialisation and the increasing complexity in the global structures that are influencing competitiveness in Europe," Juliane asserts. "We know this is a global challenge, not just one for European manufacturing. The industry is becoming more and more competitive in the world and, in Europe, where we were once the frontrunners in several industries, such as automotive, things have now shifted somewhat.

"If it is not possible for companies to produce their goods competitively in Europe anymore, and if the right support for industry isn't there, then they will leave for another market and set up or increase production elsewhere. As an industry, we need to ask what can be done to bring these jobs and production sites back?"

For Juliane, the answer to this question is clear and she calls for better support for the European manufacturing industry to make it competitive again with good infrastructure, digitalisation and a well-trained workforce.

Both Bosch Rexroth and EFFRA promote schemes that prioritise bridging the skills gap for Europe's manufacturing workforce after it was highlighted in the recent Draghi report on European competitiveness by former Italian Prime Minister Mario Draghi.

In the report, he made it clear that one of the major drawbacks to innovation in the industry is a skills shortage in modern, digitised manufacturing processes. The report also predicted that by 2024, the workforce will shrink by around two million workers annually.

"We need to invest in the training of our workers because we need the best to be able to compete," Juliane says. "At Bosch Rexroth, we focus on high performance in our company, solid innovations and corresponding investments."

EFFRA as a voice for investment

In July, EFFRA joined more than 100 other European associations in urging the EU Institutions to significantly increase the budget for the upcoming Framework Programme for Research and Innovation (FP10). EFFRA set itself four aims for its role with FP10.

1. **Promoting collaborative research:** EFFRA emphasises the importance of a strong partnership for advancing manufacturing technologies and ensuring efficient market adoption, enhancing European competitiveness globally.

2. **Focusing on competitiveness:** EFFRA supports prioritising European industrial competitiveness and sustainability in FP10, aligning with its mission to drive technological innovation and address industrial needs.

3. **Leveraging expertise:** EFFRA's extensive network of industry leaders, research organisations, and academic institutions pools resources to tackle complex technological challenges.

4. **Stimulating private investment:** EFFRA aims to reduce risk and uncertainty to attract private investments in RD&I, supporting the EU's green and digital transitions.

EFFRA chairman Olaf Pannenbäcker has also cited competition, primarily stemming from the advancements in the North American and Asian markets, as a reason why the extra funding for Europe to maintain competitiveness is vital. Meanwhile Juliane underlines that as 'the voice' for Europe's manufacturing industries, EFFRA must leverage its 15 years of collaborative work to drive the industry forward and secure this funding.

"EFFRA is the voice, from industry to institutes, and so it is key in bringing in investments because of its great network," she says. "Its 15 years of work are an asset to European manufacturing and put it in a strong position to secure the necessary funding. EFFRA is also important for smaller companies as it allows them to contribute to projects they would otherwise not be involved in. The industry is stronger when it is working together and as these times are tough for everyone, this collaborative strength is even more important."

With this in mind, Juliane always encourages others to join EFFRA to further the work its network has achieved, citing collaborations between institutes, RTOs and other partners which are helping to shape the agenda for European manufacturing.

"It makes so much sense both as an industry and as an individual company to join EFFRA," she stresses. "One of the obvious benefits, and this is crucial, is that you get a lot of information.

"We are so many people and our knowledge is broad on many and varied aspects of manufacturing, so often we only discuss a few small areas of our own expertise in our own industry," she continues. "But EFFRA's influence runs much deeper, and its network makes much wider areas of expertise available to all.

"There could be a topic related to supply chain management, to materials or anything else, and you will find research being carried out to help you. You can build a network of partners and exchange information for mutual benefit and joint projects."

What can Europe learn from the last 15 years?

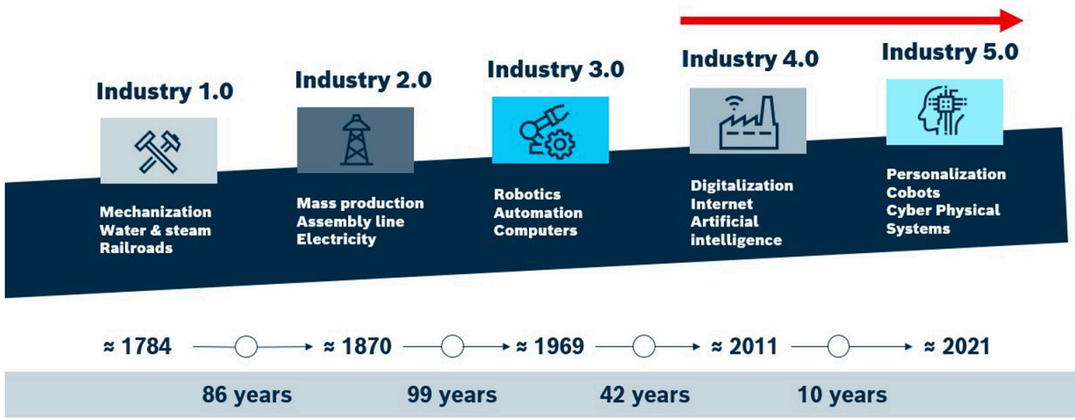
Digitalisation continues to advance at a seemingly ever-faster pace across Europe. "As the graph on this page illustrates, there have been five revolutionary industrial milestones since the first industrial revolution and there is an obvious ever-decreasing time span between advances and an overlap in content between them, too, especially in the last two stages.

"In the transition from Industry 4.0 to Industry 5.0 in manufacturing, the focus shifts to enhancing interaction between humans and machines. Industry 5.0 leverages the synergy between highly precise machinery and the creative capacity of humans.

"The digitalisation of manufacturing processes is a mandatory prerequisite for supporting the optimisation and creation of added value," she continues "This ranges from an increased support of manufacturing staff, via enabling the circular economy through seamless tracking along processes to increasing the efficiency by utilising AI technologies. Already today, almost every second Bosch plant uses AI in manufacturing, thus taking modern manufacturing to a new level."

Production systems at companies such as Bosch have advanced immensely in the last 15 years and, although unable to predict where the next five years will take the industry, Juliane is certain that progress can only be reached with this human-centric approach to innovation.

The five revolutionary industrial milestones



The future we build together: Manufacturing as Europe's cornerstone

As EFFRA marks 15 years of driving innovation in European manufacturing, the focus shifts to the challenges and opportunities of the future. Manufacturing, the backbone of Europe's economy, is at a crossroads, facing the need for sustainability and digital transformation. By fostering collaboration across industries, research institutions, and policymakers, EFFRA has championed resilience, innovation, and shared progress. Now, as Europe navigates a rapidly changing global landscape, the mission is clear: to ensure manufacturing not only endures but thrives as a cornerstone of prosperity, sustainability, and societal well-being. Turn the page to read more

Manufacturing the future: 15 Years of EFFRA and beyond

As EFFRA celebrates its 15th anniversary, it's an opportune moment to reflect on the past and look forward to the future of European manufacturing. Over the years, one lesson has stood out clearly: cooperation is essential for building a sustainable, resilient, and autonomous Europe.

Manufacturing, often taken for granted, is not just about producing goods - it is the backbone of Europe's economy, its source of stability, and a driver of innovation. It provides over 32 million jobs and contributes nearly 20% to the EU's GDP, anchoring the livelihoods of countless communities. In an age where services and software often dominate discussions, manufacturing remains a solid and irreplaceable pillar of European prosperity.

The challenges facing manufacturing are immense and evolving. Global competition, environmental imperatives, and the rapid pace of digital transformation demand collective action on a scale never seen before. No single company, industry, or government can navigate these waters alone. That's where the importance of platforms like EFFRA becomes clear. By fostering partnerships, facilitating discussions, and creating opportunities for collaboration, EFFRA has become a vital enabler for innovation in European manufacturing.

Through its Factories of the Future and Made in Europe roadmaps, EFFRA has aligned diverse stakeholders to pursue shared goals, ensuring that Europe's manufacturing sector remains competitive while meeting sustainability targets. Manufacturing is at the forefront of innovation, driving advancements in materials science, robotics, and artificial intelligence. Industries like aerospace, automotive, and pharmaceuticals are key innovators, setting standards globally. Over two-thirds of private-sector R&D investment in the EU comes from manufacturing industries, underscoring its critical role in shaping the future. And beyond that, manufacturing is also a driver of societal well-being and welfare.

Volatile times have shown us that resilience is as important as innovation. From supply chain disruptions to shifting geopolitical landscapes, manufacturers across Europe have been tested in unprecedented ways. But in these moments, collaboration has proven to be the most effective tool. By bringing together industries, researchers, and policymakers, EFFRA has supported projects that demonstrate how cooperation strengthens not only individual businesses, but the entire sector. These efforts are paving the way for cleaner, more efficient, and robust manufacturing systems that are fit for the future.

Looking ahead, the path is both ambitious and clear. To remain a global leader, Europe must invest in technologies that prioritise sustainability and autonomy. This means embracing energy-efficient processes, circular economy practices and digital innovation.

It also requires a renewed focus on equipping the workforce with the skills needed to thrive in a rapidly changing industrial landscape. Perhaps, most importantly, we must continue to elevate manufacturing in the public and political consciousness - not just as an industry, but as a cornerstone of Europe's wealth, independence, and identity.

> "The next 15 years will bring new challenges and opportunities. Manufacturing must adapt, transform and innovate, and the work ahead will require even deeper collaboration. As EFFRA looks to the future, it remains committed to its role as a facilitator, connector and advocate."

Through its unwavering commitment to innovation EFFRA has played a catalytic role in fostering a shared vision for the future of manufacturing. By elevating the industry's societal role and harnessing the immense power of digital transformation, EFFRA has positioned European manufacturing as a global leader in sustainability and technological excellence.

This collaborative approach not only strengthens global competitiveness but also ensures that manufacturing remains a key driver of economic growth and societal progress, shaping a resilient and sustainable future for all.

Europe's manufacturing sector is more than a source of economic output - it's a testament to resilience, innovation, and shared progress. By investing in people, technologies, and sustainability, Europe can navigate the challenges of the next 15 years and emerge not just as a leader in manufacturing, but as a model for inclusive and forward-thinking industrial growth. Through this lens, manufacturing is not merely an industry; it is a commitment to the betterment of society and the planet.

The next 15 years will bring new challenges and opportunities. Manufacturing must adapt, transform and innovate, and the work ahead will require even deeper collaboration. As EFFRA looks to the future, it remains committed to its role as a facilitator, connector and advocate.

Through shared vision and cooperative action, we can ensure that European manufacturing not only endures but thrives - remaining a beacon of resilience, ingenuity, and progress for generations to come.

Embrace AI and European manufacturing will thrive on the global stage

Professor Riikka Virkkunen discusses how AI, data-driven collaboration, and innovation are key to building a resilient and competitive European manufacturing sector, with EFFRA leading the way in closing the gap.

Professor Riikka Virkkunen | VTT Technical Research Centre, EFFRA board and co-chair of MiE Partnership Board

As AI advancements continue to rumble on across all sectors, European manufacturing stands at a critical crossroads. Riikka Virkkunen, Professor of Practice at VTT Technical Research Centre of Finland, EFFRA board member and co-chair of the Made In Europe and the previous Factories of the Future partnership boards, believes digital transformation, particularly that which uses the power of this advancing AI, is essential to Europe's industrial resilience.

It is particularly in her work with EFFRA and at VTT that Riikka aims to address and remedy the main challenges with using AI in industry, and with the need for digital collaboration it necessitates, as she believes this will help stop European manufacturing from 'losing ground' to competing markets.

"This certainly is a crucial moment," she says. "In fact, I have the feeling that this is a continuation of the work we have been doing with digital transformation and the data economy already in EFFRA, and AI is simply building on this. Creating value from data with AI isn't new, but the methods are developing very fast, so it feels much more real than before."

For Europe, embracing these tools is essential, but Riikka is quick to caution that applying digital tools like AI to manufacturing is far more challenging than in many other sectors. "You cannot directly apply large language models or other tools that might be easy to use in digital applications to manufacturing, as it's much more based in the physical world. You need to consider legacy machines, systems that need to be highly reliable and safe, meaning there has to be absolute trust with AI otherwise you face dramatic consequences."

Unlocking the potential of shared data

Europe's manufacturing future hinges on collaborative innovation. As industries continue to work alongside each other more and more, cross-industry partnerships and open digital platforms have become vital. According to Riikka, EFFRA promotes cross-industry data-sharing and open platforms to boost productivity and innovation. "Our goals for Europe, if we consider the digital methods and the manufacturing sector, are that there are huge challenges we need to solve and we need to show the sector that there are solutions that can work and can be trusted."

She proposes that, for manufacturers, the goal is not just productivity but also flexibility and resilience, particularly as companies contend with volatile markets and a growing demand and need for sustainable solutions.

"Data platforms are very important. Without sharing the data, you limit yourself to working within just your company's means. It provides a basis to build upon, so you need to have access to it if you want to innovate further," she says. "There are some very nice examples already within Made In Europe and in the previous Factories of the Future partnership. The research and innovation projects have tried to boost circularity with the help of cross-sectoral data platforms. For example, one project focussed on how circular batteries can be realised so that older batteries in cars can be recycled and used in stationary applications in the energy sector."

Digital collaboration has already shown that it can drive sustainability, reusing materials to benefit multiple sectors. However, data sharing remains a challenge, particularly for smaller companies. "It can be difficult to use AI methods and share data with supply chains, or customers," Riikka admits, although, EFFRA is working to create solutions that benefit both SMEs and larger corporations.

The role of AI and data in transforming manufacturing

"There are companies all over Europe who have already utilised digital tools, particularly AI, to their benefit in terms of productivity, reliability, and sustainability," observes Riikka with examples such as predictive maintenance, logistics, operations support and quality assurance powered by AI. Implementing AI, however, is not without challenges.

"One major challenge for industry using AI and digital collaboration is that of their legacy systems," she explains. "The task of updating 20 or 30-year-old interfaces on machinery is extremely challenging as not all of the important equipment is AI-compatible right now – and this increases costs."

For many small and medium-sized enterprises (SMEs), the cost of AI implementation can lead to hesitance with AI integration. Without a clear vision for return on investment, there is often a reluctance to invest in digital tools.

> "To make AI sustainable, we might have to stray from using it just for fun. This is an incredible tool and, in some respects, is already sustainable but if we are not using it to solve complex issues or in a useful way, we will eventually have to foot the bill with the climate impact."

The skills gap also remains a persistent hurdle. "There are significant gaps in the workforce - not only to use these digital tools but also to change ways of working and continuously adapt to updates," Riikka says. "Bridging this widening skills gap is a top priority on EFFRA's agenda, as well as how technology is being developed to be user-friendly."

Riikka also acknowledges the sustainability issues AI poses. "To make AI sustainable, we might have to stray from using it just for fun," she says. "This is an incredible tool and, in some respects, is already sustainable but if we are not using it to solve complex issues or in a useful way, we will eventually have to foot the bill with the climate impact. "However, AI is also a tool for creating more sustainability in our systems," she continues. "Several years ago in Finland, we already had an example of a learning system in a company that was producing pulp bales of a higher quality and also sharing information across a network to help other companies achieve the same quality more efficiently and cheaper. This also links back to circularity and the sustainability that brings - AI can be vital in achieving this."

Emerging research priorities and innovation

Riikka believes that for Europe to maintain its competitiveness, it must keep pace with emerging research priorities, particularly in sustainability and circularity and she believes AI as an essential tool in this effort. "Manufacturing is a key player in circularity because it's hard to achieve circularity without a manufacturing method," she explains, pointing to AI's ability to enable smarter resource management, reduce waste, and support circular business models, helping Europe transition to a more sustainable industrial landscape.

EFFRA has been actively involved in initiatives that seek to develop these priorities. Projects under the Made In Europe framework, for instance, investigate sustainable production methods, from recycling automotive batteries to developing energy-efficient manufacturing processes. "Learning how to use AI for energy-efficient and circular manucturing is imperative, not from an EFFRA point of view but from a world view," Riikka argues.

Building Europe's digital workforce

The success of digital transformation in manufacturing depends on a skilled workforce which is capable of working with these technologies. Riikka reiterates the urgency of closing the skills gap as it remains one of the main drawbacks to industry-wide digital collaboration: "EFFRA is very welcoming of SMEs in its collaborations. There are many SMEs in Made In Europe research and innovation projects and in these partnerships, there is a lot of information-sharing.

The future

Anyone can register with EFFRA's innovation portal and learn how others have solved similar issues they may be facing.

"Many RTOs, such as VTT, actively participate in these research projects, helping to spread information to smaller companies through various languages and SME-friendly services," she continues. "We also need to help create easy-to-use decision making and skills development tools that support work communities, with a people-first mentality."

EFFRA is certainly committed to addressing the skills gap by providing innovative solutions that help upskill workers "in a way that feels achievable and beneficial". Of course, as Riikka warns, this task is a long-term one. The need to continuously update the workforce's skills, including at the management level, address gaps in digital literacy, and foster a culture of adaptability is paramount.

"But, we cannot think European funding is the key for all the SMEs in the manufacturing sector," she explains. "I think it's very important that we develop SME-friendly tools and engage partners who can assist with delegating these tools across customer networks with small companies involved. We also need to see larger companies and their networks benefit through these initiatives to help grow the industry as a whole. This would be a powerful and positive action."

A united front for a global future

With initiatives like Made In Europe, EFFRA is showing a commitment to transforming European manufacturing into a more efficient, resilient, and sustainable sector. AI and data-driven technologies can serve as powerful tools in this effort, but their successful implementation will require collaboration, strategic investment, and a focus on workforce development.

As Riikka concludes: "We have been losing ground in many sectors - starting with chips manufacturing a while ago and now in the car industries which means the whole value chain, which has previously been strong, is beginning to struggle. If I had one key message for European manufacturing it would be to continue and I would stress the need to solve sustainability and circularity issues. As an industry, I believe we are still ahead on this topic but I would love to believe this is something we will soon see more benefits from, first in Europe and then globally."

> "It's very important that we develop SME-friendly tools and engage partners who can assist with delegating these tools across customer networks with small companies involved. We also need to see larger companies and their networks benefit through these initiatives to help grow the industry as a whole. This would be a powerful and positive action."

EFFRA's partnership model: A catalyst for innovation

Dr. Patricia Wolny is project manager and EC advisor at Project Management Agency Karlsruhe (PTKA), an autonomous unit of KIT, which is mandated by Germany's Federal Ministry for Education and Research (BMBF) to implement research policies and programmes in the field of production, services and work. As such, she is perfectly placed to offer an outside perspective on how EFFRA's partnership model can be a potential catalyst for the funding of future European manufacturing innovation.

Dr. Patricia Wolny | Project Manager, PTKA

For more than a decade, the European Factories of the Future Research Association (EFFRA) has served as a vital bridge between research and industry, driving collaboration to address manufacturing's evolving challenges. From fostering innovation to shaping European priorities, EFFRA's partnership model remains one of its most significant achievements, ensuring stakeholders across Europe can navigate the changing landscape of modern manufacturing in the EU.

While working as Project Manager and EU expert at PTKA and as a National Contact Point (NCP) for EU programmes, Dr. Patricia Wolny has seen EFFRA acting and performing first hand. In her role advising German stakeholders and acting as an external expert for the EU Commission, she works closely with EFFRA to observe and interlink national and European industrial priorities.

Reflecting on EFFRA's unique approach, Patricia explains: "EFFRA is an instrument that acts as a forum for the EU manufacturing community, which indirectly also benefits regional and national levels. It provides stakeholders with information, networks, and access to opportunities in European industrial research and innovation.

"The partnership model brings together industry and academia to co-create research agendas that align with both industrial needs and European policy objectives," she continues. "This collaboration ensures that the future priorities of manufacturing are shaped collectively, benefiting everyone involved.

"In fact, from my experience, the shaping of the research agenda is a joint and collaborative process between industry and academia and several other stakeholders including innovation, technology transfer and more. And that's the beauty of this format.

"Also, aside from EFFRA and in very close relationship to it, there is the European Technology Platform (ETP) Manufuture EU, where manufacturing stakeholders come together to elaborate on current challenges and future vision in and for manufacturing. Again, this is a mixed group of academia, industry, and public bodies representatives, who all provide input and trigger momentum of certain topics."

A platform for progress

EFFRA's ability to unite stakeholders makes it a unique contributor within European manufacturing. Its partnership model provides companies, research organisations, and policymakers with a shared framework to tackle the sector's most pressing issues.

Patricia highlights its events as an example of EFFRA's ability to bring together EU-level interests and to potentially reach out to the national level, too: "An initial step, for instance, was taken a few years ago by inviting member state delegations to a joint workshop," she says. "Events like these provide an opportunity to align priorities and foster dialogue between national and European stakeholders."

However, Patricia also believes there is still room to expand this collaborative approach through more formal

arrangements. “There are no formal collaborations between EFFRA and member state structures such as the NCPs,” she explains. “Creative formats, such as workshops or joint initiatives, could strengthen these connections further.”

Transparency is another cornerstone of EFFRA’s success, and Patricia is sure that the exchange of knowledge, discussion, and information flow it offers provides a baseline for transparency and a wider understanding. “This openness at the pre-competitive R&D&I level allows stakeholders to share their progress and learn from others,” she says. “What can be seen, is that once the partnership is proactive and vocal, it is capable of pushing through its case. That’s one of the strengths of the instrument.”

Translating research into real-world impact

One of EFFRA’s most significant contributions to industrial development over the past 15 years has been its ability to promote and support the transformation of research into practical, impactful solutions for manufacturing. There have been many success stories over the years and Wolny believes the organisation’s proactive engagement with Horizon Europe, the EU’s flagship research and innovation programme, in particular demonstrates this strength.

> “Striking the balance between deeply rooted regional capacities and value chains, even on an urban scale, and international, global business relationships could be one approach towards thriving as an industry.”

“Through its partnership model, EFFRA provides a platform to build networks and jointly shape priorities,” she says. “By creating co-creation opportunities between industry and academia, it bridges the gap between visionary research and practical application.”

EFFRA’s ability to foster long-term collaboration partnerships also adds to its impact. “Bringing together stakeholders from different backgrounds ensures that EFFRA’s reach extends beyond single projects. It amplifies the collective impact of research and innovation initiatives,” she explains.

Challenges of working with member states

Looking ahead, Patricia stresses the need for EFFRA to open up even clearer channels of engagement to further collaboration between member states and their networks.

“Further exchange, discussion and information flow would offer the base for better transparency and a wider understanding of each other’s current activities and focus,” she says. “I believe this can be easily promoted through sharing information about initiatives, events, thematic orientations, for example, and by inviting regional and national stakeholders to events, potentially giving space to relevant contributions and interventions.

“The truly active players in EFFRA are usually restricted to a few representatives, who can dedicate time and effort,” she continues. “The broader stakeholdership, however, are those who apply for calls and most of them are not active EFFRA members so an enhanced exchange with other networks would support the reach-out to those actors as well. Work is already happening to a certain extent but EFFRA can continue to build on this and fill this gap.”

The evolving Horizon Europe framework, alongside preparations for Framework Programme 10 (FP10), will shape EFFRA’s future activities. Indeed, EFFRA has already started work on setting down some key research strategies based on industry needs over the next 10 years, something Wolny believes is a vital first step.

“Early identification of future research and innovation needs is essential for a substantiated strategy in EU manufacturing,” she says. “What might be really interesting would be a strong joint vision statement about manufacturing research and innovation in Europe,” she suggests. “This could propel the long-term competitiveness of European industries and ensure manufacturing remains a strategic priority.”

EFFRA’s continued focus on sustainability, digital transformation, and circularity positions it as a key player in providing European manufacturing with this guidance over this period. Patricia believes that fostering stronger interfaces between EU, regional and national funding priorities can further improve EFFRA’s ability to drive meaningful change in this area.

“European manufacturing could thrive by standing out in terms of hi-tech innovation, clean operation, long-term corporate vision and strategy accompanied by organisational innovation and the embracing of environmental and social responsibility within its strategy,” she says when considering this focus.

“Striking the balance between deeply rooted regional capacities and value chains, even on an urban scale, and international, global business relationships could be one approach towards thriving as an industry.”

Advice to stakeholders

As EFFRA marks its 15th anniversary, its partnership model stands as a testament to the power of collaboration. By bringing together diverse stakeholders to address manufacturing’s challenges, EFFRA has helped to shape a more resilient, innovative, and sustainable industry.

Patricia reflects on this legacy: “EFFRA has created a platform where stakeholders can come together to exchange ideas, build networks, and jointly shape priorities. This collaborative approach has enabled manufacturing to adapt to changing times while maintaining its competitive edge.

“In my role at PTKA, and as an NCP, I want to see even more stakeholders connect with EFFRA over the coming years, to get even more information and to participate more. This engagement helps us to understand the many topics as well as identify potential collaboration opportunities.”

> “European manufacturing could thrive by standing out in terms of hi-tech innovation, clean operation, long-term corporate vision and strategy accompanied by organisational innovation and the embracing of environmental and social responsibility within its strategy”

The future

EFFRA's role in Europe's industrial ecosystem

EFFRA's influence extends far beyond its membership, with the association being at the very heart of Europe's manufacturing innovation ecosystem. By bridging the gap between industry, policymakers, and researchers, EFFRA plays a pivotal role in ensuring that the European manufacturing sector remains globally competitive, sustainable, and resilient.

Key to the success of this mission is EFFRA's unique position representing private industry in a manufacturing partnership with the European Commission. Since its inception in 2009, EFFRA has shaped transformative programmes such as Factories of the Future (FoF) and Made in Europe (MiE). These initiatives have driven sustainable manufacturing innovation and strengthened Europe's leadership in advanced technologies, circular industries, and flexible production systems, all in line with what are seen as the key requirements of industry itself.

EFFRA achieves this by working with industry to define the European manufacturing research agenda. Through comprehensive consultations, including open calls for feedback from manufacturers and stakeholders, EFFRA ensures that research priorities align with the needs of Europe's industrial base. This collaborative approach guarantees that the EU Framework Programme's calls for proposals reflect the shared vision of a competitive, green, digital, and human-centric manufacturing sector.

Through EFFRA's engagement and outreach initiatives, EFFRA not only supports its members but also provides invaluable services to the wider manufacturing community, facilitating partnerships, disseminating project outcomes, and fostering knowledge exchange.

EFFRA's dual role as a strategic partner of the European Commission and an advocate for industry ensures it remains at the centre of Europe's green and digital transformation, driving innovation for a manufacturing sector that's ready for the green, reindustrialised Europe of the future.

Engagement and outreach

EFFRA engages extensively with Europe's industrial community through a diverse array of activities:

Strategic consultation

Leveraging the Innovation Portal to gather input on research priorities and foster stakeholder collaboration.

High-impact events

Organising large-scale gatherings like the Manufacturing Partnership Days and the European Manufacturing Conference, which provide platforms for dialogue, idea exchange, and showcasing innovation.

Pathway development

Producing R&D roadmaps and pathways that guide European manufacturing towards long-term sustainability and global leadership.

European Manufacturing Conference 2024

EFFRA plays a vital role in supporting start-ups that emerge from its projects funded Factories of the Future (FoF) or Made in Europe, principally acting as a bridge between the cutting-edge innovation they develop and the industrial ecosystem they are seeking to enter. By fostering collaboration, enhancing visibility, and enabling access to critical resources, EFFRA provides a robust framework for start-ups to thrive in an increasingly competitive and complex market.

Supporting start-ups on the road to success

Central to EFFRA'S mission to support the start-ups that emerge from its projects is the creation of opportunities through collaboration. Start-ups often struggle to integrate their innovations into established value chains or secure partnerships that can accelerate their growth. EFFRA addresses this by fostering connections between emerging companies, established industries, research institutions, and funding bodies. This collaborative environment helps start-ups co-develop solutions that meet real industry needs while leveraging the expertise and infrastructure of larger players.

Visibility is another cornerstone of EFFRA's support. Through conferences, publications, and networking events, EFFRA ensures that the achievements of projects and their subsequent start-ups are presented to potential clients, investors, and collaborators within the European manufacturing community. This exposure not only highlights the potential of emerging technologies but also positions start-ups as integral players in advancing Europe's industrial goals. A recent example of this has been the launch of Projects Magazine through which EFFRA exposes projects' latest research and innovation directly to a focused industry audience looking to implement new technologies.

EFFRA is focused on shaping European funding programmes, ensuring alignment between industry needs and funding priorities. As such, it does not directly fund start-ups, but its projects provide pathways to essential financial support as well as access to advanced manufacturing infrastructure. For start-ups navigating the challenging transition from research to commercialisation, these resources are invaluable.

By fostering an environment where technological innovation meets market demand, EFFRA empowers start-ups to find workable and realistic exploitation pathways from concept to commercialisation. In doing so, it ensures that the breakthroughs developed through its European-funded projects are not just ideas but transformative solutions contributing to the competitiveness and sustainability of European manufacturing.

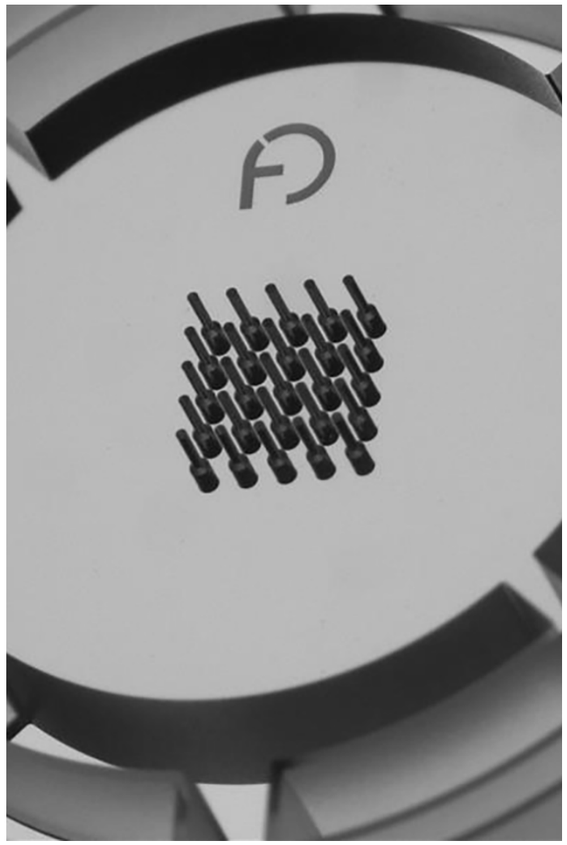
Read about an EFFRA start-up case study on next page

Tech transfer to conquering the world: My journey through innovation and entrepreneurship


Nicoletta Casanova

Nicoletta Casanova tells the story of how a call from a FoF project and support from EFFRA led to the formation of a successful global company and her own journey from engineer to accidental entrepreneur.

As with many other entrepreneurs, my journey began with a dream - and a fair share of uncertainty. After earning my degree in civil engineering in Zurich, I never imagined my professional path would take such an unpredictable turn. However, a weekend in Ticino, where I had returned to take a paragliding course, changed everything.



It was there that I discovered a region teeming with small entrepreneurial ventures I never knew existed. I began working for a materials testing institute, an environment filled with curious minds and visionary experimenters. I was immediately involved in a collaborative project with the Swiss Federal Institute of Technology in Lausanne - one of the first technology transfer initiatives between academia and industry.

That project altered the course of my life. It led to the creation of SMARTEC SA, my first start-up, pioneering fibre optics for structural monitoring. This was my first entrepreneurial venture and my introduction to photonics, a field of physics I never anticipated would define my future. SMARTEC grew, merged with a Canadian group, and was eventually acquired by a large American corporation. It was a clear success. At the time, I thought it was the perfect moment to take a break, travel, and breathe. Fate, however, had other plans.

The call that reshaped my future

My sabbatical lasted a mere seven days. A call from a Ticinese industrialist friend changed everything: “We have an extraordinary European project coming to an end, and we need you,” my friend said. That call took me to a trade fair in San Francisco, where I encountered the revolutionary technology from the European collaborative Femtoprint project. This femtosecond laser 3D printer could create complex microdevices in glass without requiring a cleanroom environment - a transformative innovation.

Back in Switzerland, I drafted a business plan and began pitching to investors. Leveraging the prototype developed through the Factories of the Future initiative and with EFFRA’s support, I founded FEMTOprint SA in 2013. Starting small, with just three people in a modest office, we quickly established ourselves as a leader in the manufacturing of complex glass microdevices.

> “Each step I’ve taken, each challenge I’ve faced, has contributed to a cultural shift toward a future where merit, not gender, defines success.”

FEMTOprint today: A vision realised

Today, FEMTOprint employs more than 40 professionals across Switzerland and the United States and operates out of a cutting-edge 1,500-square-metre facility. With a global client base spanning industries like watchmaking and medical technology, we continue to push the boundaries of what’s possible. FEMTOprint has become synonymous with innovation, precision, and excellence in microfabrication.

A woman in a man’s world

Being a woman in a male-dominated sector has never intimidated me. Throughout my journey, I’ve learned that skills, determination, and a clear vision outweigh any bias. Of course, there have been challenges, but I’ve never allowed them to derail my path. Each step I’ve taken, each challenge I’ve faced, has contributed to a cultural shift toward a future where merit, not gender, defines success.

What the future holds

My journey is far from over. My ambitions for FEMTOprint are to expand its technological reach, venture into new markets, and contribute to the development of innovation ecosystems through associations and technology parks. It’s my way of giving back to the community that supported me and continuing to dream.

Being an entrepreneur means facing challenges daily, but those challenges reveal your true worth. If I could go back, I’d do it all again - with even more energy and passion. And perhaps, one day, I’ll finally take that trip North to see the Northern Lights. But only for a week, I promise.

LMS
Laboratory for Manufacturing Systems & Automation

EFFRA project case study

The RENÉE project is anchored in the principles of the circular economy, and aims to revolutionise remanufacturing by addressing resource scarcity, reducing waste, and extending product lifecycles. At its core, the project is about more than the technology required to do this - it also provides a vision of a resilient, adaptable, and sustainable manufacturing future, a perfect case study of an EFFRA project.

RENÉE: Leading the way to circular manufacturing

The manufacturing sector, while essential to Europe's economic stability, is also a significant consumer of materials and energy and a key contributor to waste. Remanufacturing offers a compelling solution, conserving resources and reducing emissions. However, its potential remains constrained by several barriers.

Uncertainty looms large in remanufacturing, with the unpredictable quality, quantity, and timing of returned products complicating operations. Variability in the state of these products demands extensive inspection, testing, and sometimes re-engineering, making traditional systems inefficient and costly.

Furthermore, ensuring remanufactured products meet the same quality standards as new ones adds to the complexity, while gaps in digital infrastructure hinder collaboration and traceability across supply chains.

The RENÉE project, which is coordinated by LMS University of Patras in Greece, addresses these challenges with a comprehensive approach that leverages cutting-edge technologies, robust digital frameworks, and human-centric solutions.

Flexible, human-centric remanufacturing

RENÉE seeks to reshape remanufacturing through a combination of artificial intelligence (AI), advanced robotics, and collaborative digital systems. Its vision is not merely to solve existing problems but to build a robust framework for future remanufacturing operations that are sustainable, efficient, and economically viable.

Central to RENÉE's strategy is the integration of generative AI (GenAI) into adaptive decision-making systems. By analysing the unique conditions of each returned product, GenAI will generate tailored strategies, optimise workflows, and enhance diagnostics, ensuring flexibility and precision. Complementing this is a robust digital infrastructure based on Digital Product Passports (DPP) and the Asset Administration Shell (AAS).

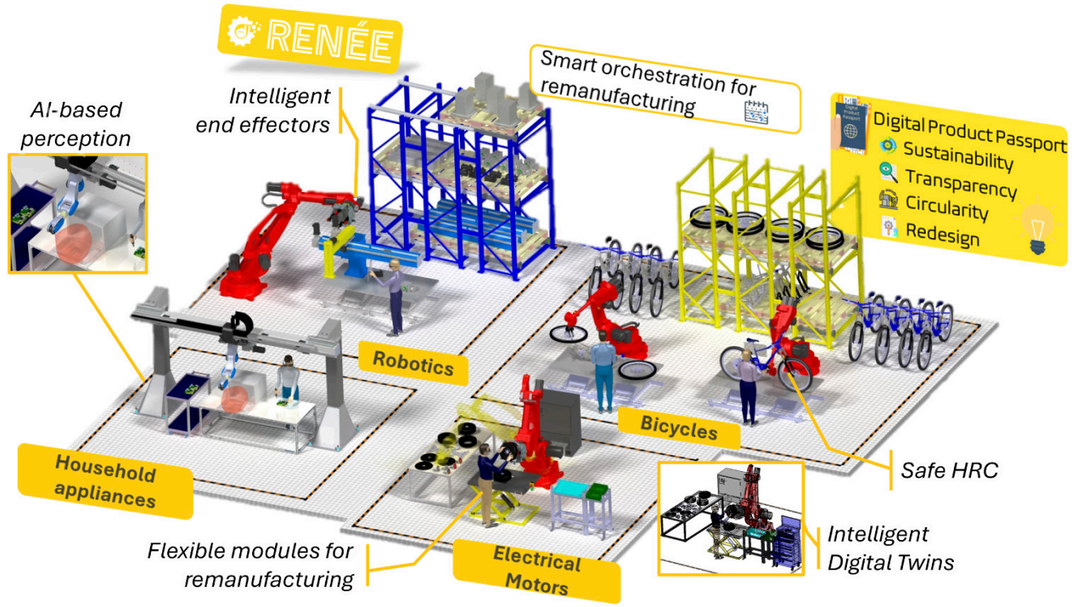
These tools provide standardised frameworks for data exchange, enabling seamless communication, product lifecycle traceability, and efficient supply chain management.

But innovation doesn't stop with technology. RENÉE recognises the importance of empowering the workforce to adapt to new tools and processes. A dedicated training and educational platform will upskill and reskill workers, supported by advanced operator support applications. This ensures that the transition to advanced remanufacturing is as much about people as it is about machines.

RENÉE's ambitions are rooted in five interconnected objectives that address the technical, economic, and societal aspects of remanufacturing.

1. Optimising remanufacturing strategies
Developing sustainable methods for product classification, component reuse, and operational efficiency.

2. Building advanced digital infrastructure
Establishing secure, interoperable systems for data exchange and lifecycle management.



3. Innovating cognitive robotics
Equipping robots with intelligent sensing and adaptive capabilities to handle diverse, one-of-a-kind remanufacturing tasks.

4. Empowering the workforce
Providing tailored education and support to operators, ensuring seamless integration of new technologies.

5. Validating solutions through pilot cases
Demonstrating the scalability and feasibility of RENÉE's innovations across key industrial sectors.

The RENÉE project will test these solutions in four diverse industries, each offering unique challenges and opportunities to showcase the flexibility and effectiveness of its approach.

In the e-mobility sector, EMOTORS focuses on remanufacturing electric motors - a critical step in addressing resource scarcity and reducing the environmental impact of electric vehicle production. By recovering and reusing significant components, this pilot not only conserves materials but also mitigates the effects of supply chain disruptions.

At ARCELIK, the spotlight is on household appliances. RENÉE's AI-driven tools and robotics will extend the lifespans of these everyday items, minimising waste and conserving valuable resources. This pilot exemplifies how remanufacturing can seamlessly integrate into consumer goods industries.

The CAMPETELLA robotics pilot explores the potential of a "robot-as-a-service" model, emphasising lifecycle accountability and continuous upgrades. By remanufacturing hi-tech components, this initiative highlights the agility and modularity of RENÉE's solutions in a cutting-edge sector.

Meanwhile, at DECATHLON, the focus is on bicycles—a symbol of sustainable mobility. By remanufacturing bicycle components, this pilot reduces the demand for new production, conserving raw materials and energy while promoting eco-friendly transportation.

Each pilot will demonstrate RENÉE's adaptability, showcasing how its technologies can address specific industrial challenges while aligning with broader sustainability goals.

Setting the standard for circular manufacturing

RENÉE's impact goes beyond technical innovation. By embedding detailed business planning and defining key performance indicators (KPIs) - including cost savings, resource efficiency, CO2 reduction, and lifecycle extension - it provides a clear roadmap for assessing the economic and environmental benefits of remanufacturing.

These insights guide stakeholders in adopting circular practices, ensuring that RENÉE's solutions are both practical and scalable.

The integration of advanced technologies like cognitive robotics, GenAI, and digital twins not only optimises processes but also establishes a new benchmark for efficiency and sustainability. By demonstrating the economic viability of its approaches, RENÉE makes a compelling case for industries to transition to circular models, reducing dependency on raw materials and cutting carbon footprints.

A future of sustainable manufacturing

Through its innovative solutions, RENÉE positions itself as a leader in Europe's transformation toward a climate-neutral and resource-resilient economy. Its pilot projects demonstrate the tangible benefits of circular manufacturing, proving that sustainability and profitability can go hand in hand.

As industries face mounting pressure to address global challenges, RENÉE offers a manufacturing ecosystem where waste is minimised, resources are conserved, and innovation drives progress. In doing so, the project not only redefines remanufacturing but also sets the stage for a sustainable future.

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European industrial innovation: Ensuring company needs are met by EU projects

Enrico Callegati of IMA Group explains the importance of working with EFFRA to ensure innovation emerging from its projects meets the needs of manufacturing companies and fosters the collaboration required for industrial integration.

In recent years, European industry has faced growing pressure to address global challenges such as sustainability and digitalisation while maintaining competitiveness. To support these priorities, the European Union launched ambitious programmes like Next Generation EU and Horizon Europe, which not only provide vital funding but also strengthen the research and development infrastructure through collaborative networks involving companies, universities, and innovation centres.

In Italy, this commitment has been further reinforced by the National Recovery and Resilience Plan (PNRR), which aligns European funding with national and regional resources to accelerate the digital and sustainable transformation of Italian businesses.

IMA Group has established itself as a proactive leader in the adoption and management of projects financed by Next Generation EU and Horizon Europe, showcasing how successful innovation requires the seamless integration of technological expertise and collaboration. IMA's involvement in key projects spans crucial areas such as environmental sustainability, digitalisation, and automation. This integrated vision of research and innovation is bolstered by IMA's engagement with associations like EFFRA, seen as a pivotal platform for coordinating industrial collaborative research in Europe.

EFFRA enhances the competitiveness and resilience of European industry by promoting advanced and sustainable technological solutions that address the emerging needs of manufacturing enterprises. Specifically, through the Made in Europe programme, EFFRA connects public and private resources, fostering cross-sector cooperation to enable cutting-edge technologies that improve energy efficiency, reduce environmental impact, and increase production process flexibility. For IMA, participation in networks of this calibre, and the projects they facilitate, is not merely a business opportunity but a true driver of change. By collaborating closely with international partners, the company not only develops innovative solutions but also elevates the technological culture of the sector, achieving new benchmarks of excellence.

Collaboration for a sustainable and digital transformation

IMA views participation in European projects as essential for achieving new levels of industrial innovation, where the sharing of know-how and resources enables challenges to be tackled that no organisation could address alone. For instance, projects financed under Horizon Europe enable the integration of ecodesign methodologies and life cycle analysis into production processes, helping to build a supply chain increasingly oriented towards sustainability. This type of public-private collaboration is crucial for strengthening the entire industrial ecosystem, fostering not only innovation but also European competitiveness on a global scale.

Through its global IMA Digital initiative, IMA Group integrates the Internet of Things (IoT), immersive technologies, artificial intelligence, and advanced monitoring systems to optimise production and meet the automation demands of European industry. Platforms like EFFRA play a vital role in overcoming manufacturing challenges, ensuring continuous technological innovation and professional development. These public-private collaborations bridge technological gaps, supporting the growth of a resilient and sustainable European industry.

Participation in these projects represents a turning point for the industrial sector, demonstrating how European cooperation can drive innovation towards a greener, more digitally advanced future.

Projects with IMA participation

Sustainability and technological innovation initiatives

QUEST: (Quantification and Reduction of the Environmental Impact of Automated Packaging Processes): Coordinated by IMA, QUEST employs life cycle analysis (LCA) methodologies to reduce the environmental impact of packaging processes, promoting eco-friendly design.

BIO-LUSH: In collaboration with international research institutes, BIO-LUSH investigates the use of underutilised biomass to create high-performance bio-based fibres for sectors such as food packaging and the automotive industry.

FLASH: (Flexible Laser-based Manufacturing through Precision Photon Distribution): FLASH focuses on developing flexible laser-based manufacturing technology, minimising waste and improving digital control. It incorporates three laser sources emitting at multiple wavelengths, enabling dynamic beam shaping within a flexible robotic cell featuring diverse delivery heads.

BIOTOOL-CHF: (BIOmarker-based diagnostic TOOLkit to personalise pharmacological approaches in Congestive Heart Failure): This project aims to develop a medical diagnostic device to enhance the efficacy of diuretic therapy for heart failure patients by integrating diagnostic and prognostic data with clinical and demographic characteristics.

Digitalisation and automation initiatives

PLaaS+ (PLC as a Service): This project aims to transform traditional automation systems into resilient and intelligent platforms by integrating IT and operational technology (OT), enhancing industrial process management.

AI4Work: Focused on human-machine interaction, AI4Work promotes safer and more transparent working environments through digital twins and advanced robotics.

MATRIX: Developed by IMA, MATRIX introduces innovative techniques for robotic liquid handling, essential for maintaining efficiency and precision in packaging.

Revolutionising recycling and inspiring younger people

Thelma Annweiler is a young entrepreneur with a vision to revolutionise recycling with hi-tech AI and robotics, and while doing so, she also wants to inspire the next generation of manufacturing innovators.

In an era where waste management has become a critical component of global sustainability, Thelma Annweiler, the young and dynamic CEO and co-founder of Arctech Robotics, is leading the charge in transforming an industry that has long been overdue for a technological overhaul. From her new company's outset, her ambition has been crystal clear: to leverage AI-powered robotics to prevent fires caused by hidden batteries in waste products at recycling facilities - an issue that has plagued waste management plants worldwide, often with devastating consequences.

"Battery fires are a huge problem in waste facilities. Hidden batteries can easily cause fires if not detected early," Annweiler says, referencing several serious incidents that have highlighted the urgency of addressing the problem. "We started Arctech Robotics with a simple but critical mission, which is to bring technology into this space and make it safer."

Thelma's co-founded the company with Hanna Lund, Siri Stockfleth and William Onstad, while pursuing a master's degree in entrepreneurship at OsloMet in Norway, and the overarching goal was to modernise recycling processes. The solution they started working on from the start was to combine advanced AI with robotics. "We're using an X-ray machine that detects batteries on a conveyor belt and a six-axis industrial robot that then removes the batteries," she explains. "The AI integrates machine learning to ensure precision, especially since most of these batteries are hidden inside objects, which presents a significant challenge."

The challenge and the opportunity

What makes Arctech's approach so innovative is that the startup is addressing an industry that has traditionally been slow to adopt advanced technologies. "The waste management industry is really manual," Annweiler says. "There is a lot of manual labour involved, and even basic automation like conveyor belts is missing in many facilities. Our aim is simple – to bring robotics into the sector to enhance productivity and improve safety."

The solution, while seemingly simple, required a great deal of collaboration between industry experts, researchers, and students to get off the ground and Thelma is quick to credit and thank the many partners who have supported her company's development. These include local waste management companies, Trondheim Municipality, research institutions, while robotics companies have loaned equipment to support the development of Arctech's solution.

"So far, it's been the kindness of others that has helped us get to this point," she acknowledges, adding that the next big step will involve securing funding to transition her team from students to full-time innovators.

While the technology itself is impressive, it is the bigger picture that drives the company's overall mission. Fires caused by hidden batteries are a global problem, with waste management facilities around the world facing the same risks. Thelma hopes to roll out her solution in Norway by 2026, with plans to expand into the EU by 2028. "We're working closely with the industry to create a solution that not only works in the lab but is practical and effective in the real world," she says. "We want to be on the ground, talking to potential customers and making sure this is something they can and will use."

Inspiring youth to enter manufacturing

Thelma is not only solving a technical challenge though. She is also deeply concerned about the future of the manufacturing industry and the dwindling number of young people entering the sector. "I think a lot of young people find it difficult to start their career in manufacturing because it can be hard to find a way into the industry, especially if you lack years of relevant work experience. I believe this might be a part of the reason why fewer younger people enter the industry today," she observes.

But she believes that manufacturing has become one of the most exciting sectors for young people to explore. "There is so much potential in manufacturing right now, particularly in fields like robotics, AI, and sustainability. But many young people don't see that because they don't have a direct connection to industry – and that should change."

Thelma's own experience as an entrepreneur in manufacturing has been shaped by this exact challenge. "I didn't come from a technical background," she explains. "I studied business. But I've learned so much by diving into this field. It's not as intimidating as it might seem, and the people in this industry are incredibly welcoming and eager to share their knowledge."

For Thelma, bridging the gap between young people and a career in industry will be all about breaking down barriers and creating stronger connections between academia and industry. "We've been lucky to work closely with the industry from day one, but I know that's not always the case for other students from other academic backgrounds. If what you are learning in academia does not align with what is happening in industry today, it can be difficult to understand how industry is operating."

The role of EFFRA in supporting the future

Thelma believes organisations like EFFRA are critical in fostering these connections between academia, industry, and emerging technologies. "EFFRA and EIT Manufacturing have both been very supportive in helping young entrepreneurs like me get a foothold in this industry," she says. "They're pushing for more youth engagement in manufacturing, which is so important."

> "They're actively working to make manufacturing a more appealing career choice for younger generations by showcasing the exciting innovations happening within the sector."

EFFRA's role in advancing technology in industry, which includes the integration of AI, robotics, and other digital tools into manufacturing, has opened doors for startups like Arctech Robotics. Thelma describes how EIT Manufacturing has provided valuable support, while EFFRA has not only provided networking opportunities but also facilitated access to cutting-edge research that informs her company's development. "They're actively working to make manufacturing a more appealing career choice for younger generations by showcasing the exciting innovations happening within the sector."

She sees a bright future for manufacturing, driven by innovation and sustainability. "The younger generation is more focused on making sustainable, greener choices in everything they do, and that's where manufacturing has to evolve as well," she points out.

"We're developing robots that can solve a very specific environmental problem, but there are so many other opportunities to make an impact. We need to disrupt the way we think about manufacturing. It's not just about production lines - it's about solving the world's most pressing challenges with technology, creativity, and collaboration."

For Thelma and her team at Arctech Robotics, the future is bright, and they are ready to lead the way into a new era of sustainable, hi-tech manufacturing.

Being an EFFRA member

EFFRA is a membership-based association anchored in the values of cooperation, discussion, co-creation, fairness and innovation. Since its inception, EFFRA's membership has been steadily increasing and expanding into new regions of Europe. As of 2024, the Association counts over 200 members, many of which are associations and clusters, and a network of more than 15 000 people, in over 30 countries.

The Association's members have exclusive access to all EFFRA's events such as EFFRA's General Assembly, brokerage and matchmaking opportunities, webinars on a variety of topics, and working groups. Members also get early information on directions for upcoming Made in Europe calls, get updated on relevant calls for proposals and funding opportunities, on public consultations as well as relevant news of the EU political scene through the EFFRA newsletter, where they can also promote their events and activities.

EFFRA's dissemination promotion tools also allow its members to promote project updates, events, and surveys beyond the newsletter, through EFFRA's social media (LinkedIn, X-Twitter) and website, as well as sporadic collaborations with relevant media outlets.

The Association's members shape EFFRA's strategic R&D roadmap and have the opportunity to influence European manufacturing research, network with industry experts and stakeholders within and beyond EFFRA's membership, and participate in Horizon Europe projects. They are also invited to participate in the Working Groups. These address key topics in manufacturing, exchanging knowledge and proposing solutions to ensure the continued competitiveness and sustainability of European manufacturing. There are currently six different Working Groups that were launched in March 2024:

1. **Productive and Flexible Manufacturing**
2. **Circularity and Re-Manufacturing**
3. **Humans in the Workplace**
4. **Energy Sector Needs**
5. **Transport Sector Needs**
6. **Exploitation of Research Results**

EFFRA is pivotal in ensuring that Europe's manufacturing sector remains competitive, innovative and sustainable. Through its collaborative approach, strategic partnerships, and focus on research, the Association helps shape a future where Europe leads in high-value, sustainable production. Becoming part of EFFRA enables organisations to directly contribute to this transformation and help Europe maintain its leadership in global manufacturing.

If your organisation is interested in becoming an EFFRA member, check the Association's website (www.effra.eu) for more information.

GATEWAY to manufacturing excellence

EFFRA's Innovation Portal is a central resource designed to showcase the transformative outcomes and commercial potential of European manufacturing research.

As a dynamic repository, it hosts a wide range of information about projects funded through various European programmes, such as Factories of the Future and Made in Europe, alongside other initiatives.

The portal provides an accessible overview of project results, demonstrators, and innovative solutions, highlighting their benefits for industry and their commercial potential. It also acts as a broker, enabling companies or research organisations to find suitable partners for ongoing research and development. Stakeholders can explore:

Detailed project updates: Stay informed about progress and achievements.

Result and demonstration sections: Discover tangible outcomes and their applications.

Collaboration opportunities: Publish project ideas or find partners through the portal's online brokerage services.

By fostering connections and sharing cutting-edge advancements, the Innovation Portal serves as a crucial tool for driving collaboration, accelerating innovation, and ensuring the practical implementation of research in manufacturing. Whether you're seeking inspiration, partnership, or solutions, the Innovation Portal opens the door to Europe's leading manufacturing ecosystem.

Visit the Innovation portal at:
www.effra.eu/effra-innovation-portal/

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