

Data-sharing for a greener future

How can JIDEP contribute?

As the global push toward sustainability moves beyond a trend to becoming necessary, we must address the inertia and challenges in securing a circular economy. JIDEP – a joint project by manufacturers, technology companies, and leading research organisations – proposes an ambitious but technically astute way to encourage companies to share valuable data.

Industrial progress has long been defined by competition. From automotive giants to renewable energy pioneers, companies thrive on proprietary knowledge – data that gives them a strategic edge. But what if the very data they protect so fiercely could also unlock vast new opportunities for collaboration, efficiency, and sustainability? This is the ambitious promise behind an audacious but remarkable project to transform how industries share and use data.

The Joint Industrial Data Exchange Platform (JIDEP) is powered by a diverse consortium of partners, including

manufacturers like ALMAS Partecipazioni Industriali, Precision Varionic International, and TPI Composites; technology solution providers such as Adscensus, Arteevo Technologies Ltd, and Technovative Solutions Ltd; energy provider Zorlu Enerji; and research and innovations centres such as Centro Ricerche Fiat and those at Brunel University London, Vorarlberg University of Applied Sciences, University of Trento, University of Cambridge, and University of Pardubice. Together, they hope to provide a high-tech answer to addressing the inertia and challenges in securing a circular economy.

The global push toward sustainability isn't just a trend; it's a necessity.



JIDEP is the future many have been waiting for. It is a platform designed to usher in an economy where recycling materials and life cycle analysis become standard practice across industries. It holds out the tantalising possibility that industries could share information securely yet transparently, work together to reduce waste and develop innovative solutions for sustainability. But there's a catch: the very companies JIDEP hopes to attract are the ones most protective of their data. And that raises a crucial question.

WHY SHARE A MOST VALUABLE ASSET?

The importance of data-sharing to the future of industry is undeniable. If companies could safely share data about composite materials, renewable energy technologies, and advanced manufacturing processes, it could lead to breakthroughs in recycling materials, the design of more sustainable products, and even the development of new markets for used resources. But let us not kid ourselves. Data are often a company's most valuable asset and not the first line to be given away.

Take the automotive industry, for example. The rise of composite materials has revolutionised vehicle design, improving fuel efficiency and safety. However, companies are understandably hesitant to share data about these materials. After all, the right composite blend could give one automaker an edge over its competitors in weight reduction or durability. For many companies in the automotive industry, sharing data is akin to handing over the keys to their competitive advantage.

Similarly, in the renewable energy sector, companies developing advanced wind turbines or solar panels would be cautious about revealing the proprietary methods that make their technologies more efficient or cheaper to produce.

JIDEP's promise of secure and transparent data sharing sounds compelling, but why would companies voluntarily expose their hard-earned secrets to potential competitors? Here is where the challenge lies: the proposed benefits of JIDEP are vast, but they collide with the harsh reality of industrial strategy. So, what does JIDEP offer to overcome this?

BLOCKCHAIN: THE KEY TO OVERCOMING RELUCTANCE

At the heart of JIDEP's strategy is a proven encryption technology within peer-to-peer networks: blockchain – the same technology driving cryptocurrencies like Bitcoin. But in JIDEP, blockchain serves a very different function – it is all about trust. By leveraging Distributed Ledger Technology (DLT), JIDEP aims to create a platform where data can be shared without fear of misuse. The blockchain ensures that every transaction is secure, transparent, and, most importantly, immutable. This means that once data is shared, it cannot be altered or tampered with.

The platform also employs smart contracts, which allow companies to define exactly how their data can be used. Think of it as a digital contract that automatically enforces the terms of use. If a company only wants to share data with trusted partners or restrict usage to specific applications, the smart contract ensures those terms are followed.

So, is blockchain enough to address companies' deep-rooted reluctance toward sharing data? Well, that depends on who you ask. Blockchain provides the infrastructure for secure data sharing, but trust issues in the industrial world often go beyond technology. Companies must first believe that the platform will work as intended, and even more, they must see a clear benefit that outweighs the perceived risks.

MATERIAL PASSPORT: A GATEWAY TO THE CIRCULAR ECONOMY

One of JIDEP's most intriguing solutions is the Material Passport – a digital record



Data Reusability

Development of ontologies for enhanced exchange and reuse of industrial data

- Use FAIR data principles
- Data reusability

OB1



Collaborative Spaces

Build a collaborative ecosystem

- Leverage data exchange across the entire value chain
- Cross-sectional circular European value chains for the remanufacturing, reuse, and recycling of high-added-value components

OB2



Digital Tools

Develop tools for boosting the overall sustainability of diverse industries

- Material passport for better understanding of material's circular property
- Secure collaborative space

OB3



Transformation

Increase autonomy and reinforce the resilience of European industries

- transform resources into valuable and non-substitutable resources

OB4



Platform Validation

Validate JIDEP tools and platform

- Automotive, renewables, and PCBs use cases

OB5

The Joint Industrial Data Exchange Platform (JIDEP) objectives.



JIDEP is undeniably ambitious, offering a vision of a future where data sharing transforms industries and helps usher in a more sustainable world.

that tracks the properties and usage history of materials throughout their lifecycle. In a circular economy, where materials are reused and recycled to reduce waste, the Material Passport is a game-changer. It enables companies to know precisely what materials they are dealing with, including how they've been processed and how they can be reused.

For example, wind turbine blades, made from composite materials, are notoriously difficult to recycle. But with a Material Passport, companies would have access to detailed information about the materials used in each blade, allowing for easier recycling or repurposing once the turbines reach the end of their lifespan. Similarly, automotive companies could use Material Passports to track vehicle components, ensuring that valuable materials like aluminium or high-performance composites are recovered and reused.

But here is the challenge: to truly unlock the potential of the Material Passport, companies need to be willing to share data about their materials – data that many view as proprietary. So again, we are back to the tension between collaboration and competition. How can JIDEP convince industries that sharing this information will ultimately benefit them?

A CASE FOR COLLABORATION

To understand why companies might take the plunge, let us consider the broader context of the circular economy. The global push toward sustainability is not just a trend; it is a necessity. Governments

are imposing stricter regulations on waste management, carbon emissions, and resource use. For companies that rely on resource-intensive processes, such as manufacturers of composite materials or those in renewable energy, meeting these regulations without innovation could prove costly.

JIDEP offers a way to innovate without starting from scratch. By sharing data on materials, processes, and recycling techniques, companies can collaborate to create solutions that are more cost-effective and environmentally friendly. The circular economy is not just about recycling; it is about designing products and systems that keep materials in use for as long as possible. JIDEP's Material Passport and life cycle analysis tools give companies the information they need to optimise the design, manufacture, and eventual reuse of products.

However, the incentives for companies to participate must be clear. JIDEP needs to demonstrate that data-sharing doesn't mean forgoing a competitive advantage – it means gaining access to a broader pool of knowledge and resources that can drive innovation. If a company can improve its life cycle analysis by leveraging data from other industries, it can reduce costs, increase efficiency, and better meet environmental standards. But will that be enough to convince industry giants to change their ways?

THE STRATEGIC IMPERATIVE

JIDEP partners are not naive to the complexities of industrial collaboration.

They know that for the platform to succeed, companies must see data sharing not as just a risk but as an opportunity. Here is where JIDEP's collaborative spaces come into play. These virtual environments are designed to facilitate partnerships between industries that may not have previously collaborated – say, a renewable energy company working with an automotive manufacturer to explore new uses for recycled materials.

By providing a secure, blockchain-powered platform where such companies can engage in joint projects without fear of intellectual property theft, JIDEP offers a unique value proposition. Imagine a scenario where an automotive company needs to find new ways to recycle composite materials from end-of-life vehicles. Through JIDEP's collaborative spaces, they could partner with companies in the renewable energy sector that have already developed innovative recycling techniques for wind turbine blades. This kind of cross-sector collaboration could reduce costs and spark new product innovations.

Moreover, the platform's use of smart contracts allows companies to set the terms of their engagement – whether they are sharing for a one-time project or a longer-term partnership. This level of control is critical for companies wary of sharing too much.

THE FINE LINE BETWEEN PROMISE AND REALITY

JIDEP is undeniably ambitious, offering a vision of a future where data sharing transforms industries and helps usher in a more sustainable world. However, the project must navigate the tricky balance between the promise of collaboration and the reality of industrial competition.

Blockchain technology and smart contracts offer powerful tools to overcome trust barriers. Still, it is the tangible benefits – like improved life cycle analysis, access to new markets through recycling materials, and enhanced resource efficiency – that will ultimately convince companies to participate. JIDEP partners are catalysing a profound shift in how industries operate, even compete, and how they can collaborate to solve the world's most pressing sustainability challenges.

Behind the Research



Dr Faranak Bahrami



Dr Florian Maurer

E: faranak.bahrami@brunel.ac.uk E: florian.maurer@fhv.at W: www.jidep.eu
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Research Objectives

The Joint Industrial Data Exchange Pipeline (JIDEP) project aims to design and develop a digital platform where industrial data is available for sharing and connecting manufacturers from different sectors into a collaborative, mutually beneficial knowledge and data sharing relationship.

Detail

Bio

Dr Faranak Bahrami is a Research Fellow leading the Composites Processes Theme at Brunel Composites Centre. Faranak's research focuses on novel processes and the joining of composite materials. Faranak's background is in Mechanical and Materials Engineering. She is currently the Technical Coordinator of the JIDEP project.

Dr Florian Maurer is a senior scientist at the Business Informatics Research

Centre of the FHV – Vorarlberg University of Applied Sciences, Dornbirn since 2011. His research focuses on the areas of digital transformation and innovation, Industry 4.0/5.0, and entrepreneurship as well as strategic decision-making in systems (Game Theory, Systems Theory, and Thinking). Florian completed his doctorate at the Chair of Information Systems I, Innovation and Value Co-Creation, Friedrich-Alexander University of Erlangen-Nuremberg.

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JIDEP Partners:

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Personal Response

What is the most common pushback you get from industry players about JIDEP, and how do you counter it?

JIDEP addresses industrial challenges that shift the centre of management and organisational decision-making. Industrial managers have a close eye on the JIDEP project's progress and actively discusses the project results. These project stakeholders are involved in external communication events, such as workshops, conferences, and demonstrations.

