Digital Product Passports: Pioneers for the Sustainable Economy

Whether climate protection, circular economy, or resource efficiency: Without transparent value and supply chains, many political targets and goals threaten to fall into the void – if only because progress cannot be verified in a comprehensible way. Digital product passports can bring more clarity. The compliance and sustainability specialist iPoint-systems, based in Reutlingen, Germany, is driving their development.

iPoint

By Daniel Maier, iPoint-systems

"Digital product passports are promising tools for collecting, among other things, the increasingly important sustainability data in a standardized, transparent, and comparable format," says Angelika Steinbrecher, Senior Expert Compliance, Sustainability & Innovation at iPoint. The digital passports, which are currently being developed to market maturity in Reutlingen and elsewhere, are intended to reveal the provenance — the "history" of a product — as transparently as possible: Show where it comes from, how and under what conditions it was produced, and what raw materials it contains.

Broadly applicable, politically desired

This is important, for example, for climate protection or in the fight against exploitative working conditions. Transparent and standardized value and supply chains are also a prerequisite for the circular economy, which the European Commission and the German government are committed to implementing. The idea behind this — to reuse the materials built into all kinds of products again and again after their service time — is a key requirement for limiting the consumption of natural resources and avoiding waste and greenhouse gases.

Political support for the introduction of digital product passports is therefore correspondingly strong: They are mentioned in the European Commission's Green Deal as well as in the European Sustainable Products Initiative and the forthcoming EU Battery Regulation. The German government also wants them. The German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection would even like to see them issued for all products in the long term.

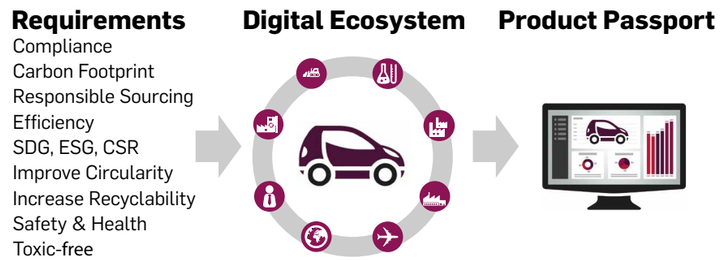
Benefits clearly proven

Numerous companies have also long since recognized the benefits of digital product passports, not least promoted by the further increase in requirements for the ecological or social sustainability of their products. These requirements are reflected in more and more regulations and new reporting obligations, which in turn means the collection and processing of even more information and data, ultimately resulting in higher costs. Digital product passports promise to mitigate this effort and the associated costs.

Consumers would also benefit from digital product passports. They could make their purchasing decisions on the basis of transparent product information and, for example, use the passports to see at a glance where and how a smartphone was produced or how well its components can be returned to the material flows at the end of its life cycle. With digital product passports — for example as an app — consumers could then consciously choose the most sustainable cell phone.

Digital product passports can show their strengths particularly in the case of resource-intensive products such as batteries and rechargeable batteries. The upcoming European Battery Regulation picks up on their basic idea by focusing on a circular and preferably low-carbon cycle for industrial and electric vehicle batteries. It also takes a holistic look at issues that were previously considered separately: from the responsible procurement of the necessary raw materials and minimum proportions of recycled materials to the disclosure of their carbon footprint and specifications for recycling the batteries.

Digital product passports would also be a great benefit for packaging and plastics: Private recycling companies and municipal waste management companies could use the information from the passports to feed their sorting systems and use this data to recycle individual plastics in a more targeted way than before. In other words, based on the information stored in the passport, they could decide whether packaging is better recycled, thermally recycled, or composted.



Digital product passports build business ecosystems

Complete resume

In fact, digital product passports are suitable for almost any product: from rechargeable batteries and cell phones to televisions and steel pipes to washing machines and roof tiles. With passports, each of these products would be issued with a complete resume until at least the end of the first life cycle, and their impact on the environment and society would be standardized and comprehensibly disclosed. This facilitates sustainable design, manufacturing, and purchasing decisions and paves the way to the circular economy.

"Digital product passports are essential for this," says Joerg Walden, iPoint founder and expert on digital product passports. "They are an excellent tool for implementing and scaling the circular economy, which can help overcome previous challenges in implementing the circular economy — for example the lack of transparency, of standardization, and of data exchange," Walden continues. "The real changes will be achieved when product passports serve as an opportunity to restructure common just-in-time innovation models and, in turn, business partners' business models."

To move them from the concept phase to market maturity, the midmarket company has initiated a whole series of collaborative projects and project participations. Work is being carried out across sectors and industries in the automotive and battery sectors, in electronics and aerospace, and always with the aim of bringing together the respective value chains from the raw material level to recycling.

CE-PASS: Basic research with and for the automotive industry

One industry to which iPoint experts pay particular attention is the automotive industry — since the pressure to act in terms of sustainability is particularly great here. In order to accelerate the transition to a circular economy, iPoint has been involved in the CE-PASS project since the beginning of 2022, together with two renowned Austrian research institutions and the automotive supplier AVL, which is also based in the Alpine Republic.

In the course of the project, a digital product passport is to be developed for two application scenarios — assemblies of an internal combustion engine and a traction battery for electric vehicles — among other things. These scenarios combine Industry 4.0 standards with the requirements of ecologically sustainable industrial production. Results are expected in 2024.

SDGs: Product passports pay off in several ways

Whether digital product passports will be introduced is no longer a question, even if it has not yet been finally clarified what detailed requirements they will place on companies. They have what it takes to become the gold standard for the transparent, comparable, and traceable disclosure of value and supply chains. They also have what it takes to bring the United Nations' 17 Sustainable Development Goals closer to the attention of the global audience.

Once they are ready for the market, digital product passports will contribute to them in several ways: for example, to Goal 8 on decent work and economic growth, as well as to the goals on climate protection (Goal 13) and on industry, innovation, and infrastructure (Goal 9). Digital product passports also offer huge potential for Goal 12, which focuses on responsible consumption and production methods and attributes a significant role to waste management and the circular economy. ■