



AUTOMOTIVE REUSABLE PACKAGING - A CHANGE CATALYST

Navigating to a sustainable future

A Capgemini point of view



A PARADIGM SHIFT IS NECESSARY TO MAKE THE AUTOMOTIVE SUPPLY CHAIN SUSTAINABLE

Automotive is one of the key sectors of the global economy, accounting for about 3% of the world's GDP, i.e. \$3tn. Annually around 85mn vehicles are produced, offering enhanced features such as safety, security, comfort, convenience, connectivity, and power. However, the industry has a significant environmental impact, and has caused visible damage to the planet. Hence, protecting the environment is not a matter of choice, but a necessity for our survival.

The automotive industry also faces increasing pressure from stricter and greener regulations that demand more sustainability. This challenges the industry's viability and profitability. Automotive OEMs are not the only ones affected; their entire business ecosystem needs to be more sustainable.

Therefore, OEMs and suppliers are assessing the whole automotive value chain to find opportunities to cut costs and achieve sustainability targets. The supply chain is a key contributor to both cost and sustainability in the automotive industry, given the number of suppliers and tiers involved.

REUSABLE PACKAGING PLAYS A CRUCIAL ROLE IN THE AUTOMOTIVE SUPPLY CHAIN

The automotive industry relies heavily on external suppliers and plants for various parts, such as engines, batteries, motors, dashboards, windscreens, electronic parts, and plastic components. These parts are often delicate and vulnerable to damage, contamination, and corrosion during transportation and storage. Therefore, they need reliable and effective packaging solutions that can protect them from various hazards.

With electric vehicles and lithium-ion batteries, there are new packaging challenges to ensure safe handling. Reusable packaging for battery transport must meet high government standards and conform with customer needs. Battery manufacturers and OEMs need UN-certified (to the UN 38.3 standard), automation-friendly, and customized packaging solutions.

However, many conventional packaging materials, such as cardboard and plastic film, are single-use and non-recyclable, thereby generating a lot of waste and emissions. Moreover, they are costly and inefficient to procure and dispose of. That is why many automotive manufacturers and suppliers are opting for reusable packaging, which supports a circular economy and improves supply chain and sustainability performance in multiple ways. Reusable packaging includes pallets, racks, bulk containers, hand-held containers, trolleys, bins, kitting bins, rubber masks for machined components, and dunnage. These materials can be used repeatedly, reducing the environmental impact and the cost of packaging.

With automotive players and businesses becoming increasingly conscious of sustainable practices, reusable packaging offers a viable solution that reduces waste, conserves resources, and lowers costs. The automotive industry relies heavily on streamlined supply chain operations to ensure timely delivery of components and finished products.

The Reusable Packaging Market Association estimated the global packaging market size as \$950bn in 2020. Approximately \$200bn of this reusable packaging market is considered as “transport” or “transit” packaging, of which roughly half of it (\$100bn) is estimated to be “reusable” packaging¹. Based on market research, Capgemini experts expect the automotive reusable packaging management software market to grow at 9.6% CAGR during the forecast period, between 2022 and 2027.

In accordance with their greater emphasis on sustainability and cost savings, automotive players are increasingly adopting reusable packaging solutions – a move that is critical for streamlining logistics operations and reducing waste and associated costs. The demand for reusable packaging is constantly increasing due to the cost-cutting pressures exerted on OEMs as they compete in the market.



The market outlook for reusable packaging is promising (with expected growth of 9.6% CAGR until 2027), given its economic and sustainability benefits and the growing demand for supply chain optimization.

¹ Reusable Packaging Association, Reusable Packaging Market Data and Statistics (<https://www.reusables.org/media-info/>), last accessed October 17, 2023



SUSTAINABILITY, COST, AND SUPPLY CHAIN RESILIENCE ARE THE CATALYSTS FOR REUSABLE PACKAGING ADOPTION

Sustainability

Many countries are enacting regulations that mandate the adoption of reusable packaging, especially European countries. Automotive companies too are increasingly seeking reusable, refillable, or recyclable packaging solutions that align with circular economy principles. The strategy is to use reusable packaging not only to reduce waste but also for durability and cost savings, and to foster brand loyalty through sustainable practices.

Cost-effectiveness

Cost-effectiveness is a key driver for the growth of reusable packaging in the automotive supply chain. Reusable packaging reduces the need for purchasing, storing, and disposing of single-use packaging materials, which can lower operational costs and environmental impacts. Reusable packaging also enhances the protection and handling of automotive parts, which can improve the quality and reliability of products. By adopting reusable packaging, automotive suppliers can optimize their logistics processes and increase their competitiveness in the market.

Supply chain resilience

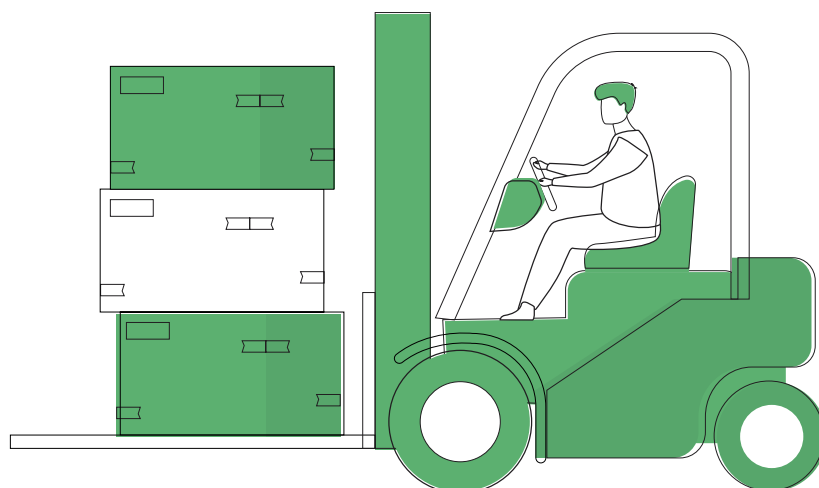
Intelligent reusable packaging management can enhance supply chain resilience by intelligent planning, process automation, improved reporting, and collaboration. In the automotive supply chain, reusable packaging can also protect sensitive components from damage and can increase business agility.

Automotive reusable packaging - change catalysts

The automotive industry is already familiar with reusable packaging, but still has the potential to reduce both carbon footprint (by up to 40%) and cost.



Sustainability and supply chain resilience are among the key priorities of the automotive industry. OEMs and suppliers are closely evaluating how to optimize reusable packaging management to achieve their sustainability and supply chain goals.





THE AUTOMOTIVE REUSABLE PACKAGING SUPPLY CHAIN IS WITNESSING SIGNIFICANT CHALLENGES

For most automotive OEMs and suppliers, harnessing the potential of reusable packaging is difficult at present. For example, they usually do not have sufficient visibility of the supply chain to locate existing packaging fast and accurately as it becomes available for reuse. A constraint here is that initiatives to reuse packaging cannot be allowed to delay delivery of parts, both because of those parts' high intrinsic value and because of just-in-time requirements on the assembly line – if reusable packaging is not available when needed, single-use cardboard packaging is often substituted. The rate of adoption of reusable packaging has increased significantly in recent years with the exception being times of supply chain crisis, where single-use cardboard has to be relied on. In addition, collecting, cleaning, and redistributing packaging can itself generate costs and emissions.

Key challenges faced by the automotive industry while managing its reusable packaging supply chain include:

- 1 High CO₂ emissions
- 2 Damage and loss in packaging management
- 3 High packaging costs
- 4 Manual processes
- 5 Complex packaging flow management
- 6 Lack of transparency and traceability
- 7 Managing contamination of parts during transportation

Managing reusable packaging within the automotive supply chain brings significant challenges, such as:

 Sustainability

 Cost-effectiveness

 Supply chain resilience

CO₂ EMISSIONS

CO₂ emissions due to use of cardboard and unoptimized processes



DAMAGE AND LOSSES IN PACKAGING MANAGEMENT

Significant losses and damage, triggering repairs and reinvestments

PACKAGING COSTS

High costs of procuring and maintaining returnable packaging



MANUAL PROCESSES

High risk of errors in decision-making due to manual reusable packaging operations

COMPLEX PACKAGING FLOW MANAGEMENT

Multiple stakeholders with different packaging-related requirements



PACKAGING TRACEABILITY

Lack of transparency and traceability as to when empties can be returned





THE INDUSTRY IS RELYING ON INNOVATIVE SOLUTIONS TO ADDRESS ITS CHALLENGES

The traditional paradigms of packaging management need to be left behind in favor of a landscape defined by technological disruptions, advances in packaging engineering, sustainability imperatives, and dynamic consumer preferences. Navigating these complexities demands a comprehensive understanding of the innovations reshaping the packaging industry.

Innovations in automotive reusable packaging management are aimed at reducing waste, improving efficiency, and reducing carbon footprint while optimizing cost. Some examples of such innovations are:

- 1 Connected returnable packaging, with technologies such as GPS and RFID and sensors that enable real-time tracking and monitoring of reusable packaging assets, such as pallets, crates, and containers.
- 2 Smart engineering solutions and materials that can adjust to different shapes and sizes of products, optimize space utilization, and protect against damage and contamination.
- 3 Usage of AI to forecast packaging demand.
- 4 Process digitization and automation.
- 5 Real-time collaboration platforms and solutions.
- 6 Circular economy models that promote the reuse, repair, and recycling of packaging materials, as well as the sharing and leasing of packaging assets among multiple stakeholders.

CAPGEMINI'S END-TO-END APPROACH HELPS CUSTOMERS TO ADDRESS REUSABLE PACKAGING MANAGEMENT CHALLENGES

Capgemini supports automotive clients with an end-to-end offer, based on both engineering and digital assets, that creates an efficient and sustainable model for reusable packaging management.

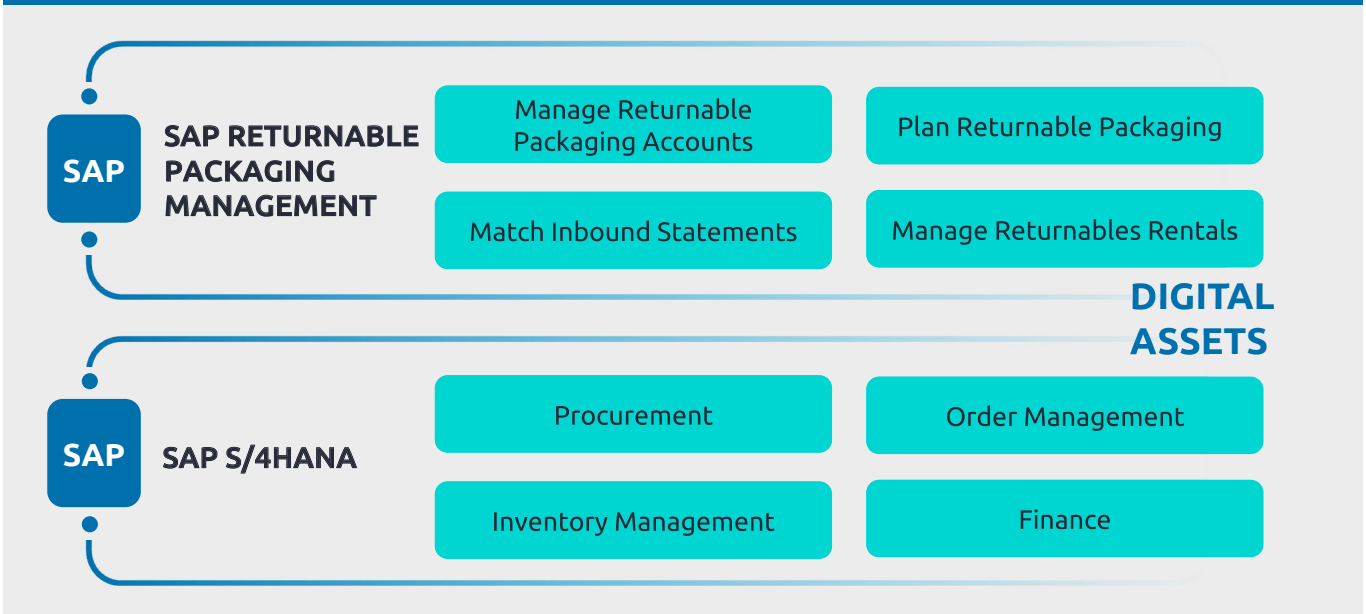
Capgemini has proven capabilities for design and development of sustainable packaging solutions, and for managing reusable packaging operations for automotive clients. Capgemini's key engineering services for packaging engineering and management include packaging economic and ecological (eco²) design, simulation, packaging development, procurement, packaging optimization, operations management, packaging traceability, packaging crisis management, and packaging data management – all with a dedicated focus on waste reduction strategies. The offer centers on the SAP® "Returnable Packaging Management" (RPM) product, which Capgemini has jointly developed with SAP, and complements it with a range of automotive-specific services.

As part of their multi-year joint initiative on automotive cloud solutions, Capgemini and SAP have worked together to provide a comprehensive offering to the automotive industry, based on SAP RPM.

SAP RPM is a cloud-based solution that manages the logistics of reusable packaging materials. It's a product on SAP Business Technology Platform. Key features of the SAP Returnable Packaging Management product are management dashboard, inventory and logistics management for returnables, planning and forecasting of returnable packaging, returnable rental calculations, and vendor self-service portal for downloading account statements, ordering materials, and raising issues.

Capgemini's Automotive Reusable Packaging solution coverage

CAPGEMINI ENGINEERING ASSETS



Capgemini and SAP have worked together to provide a comprehensive offering to the automotive industry, based on the SAP Returnable Packaging Management product.



SUMMARY

The automotive supply chain needs a paradigm shift to become sustainable. One of the key factors is reusable packaging, which has economic and environmental advantages that can optimize the supply chain. However, there are many challenges in managing reusable packaging, such as high emissions, damage, costs, manual processes, and lack of visibility and traceability. Against a backdrop of future-focused intelligent reusable packaging management, a sustainable and digitally driven solution is required to manage automotive reusable packaging.

Capgemini's end-to-end packaging-as-a-service solution, powered by SAP's Returnable Packaging Management system and Capgemini's engineering solutions, will help automotive clients transform their reusable packaging supply chain and achieve their targets for sustainability, cost, and supply chain resilience.

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Capgemini is proud to be collaborating with SAP on an end-to-end packaging-as-a-service solution for automotive, combining SAP's Returnable Packaging Management with our industry-specific digital and engineering capabilities and expertise. Our Automotive Reusable Packaging solution will help our clients transform the way they manage packaging in the supply chain, enhancing both sustainability and cost-effectiveness."

Alexandre Audoin

EVP, Head of Global Automotive Industry, Capgemini

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With sustainability widely recognized as one of the automotive industry's biggest challenges, I'm delighted to support our valued partner Capgemini in the launch of Automotive Reusable Packaging – a powerful solution that enhances the packaging engineering process, while improving tracking and tracing capabilities. Building on SAP's industry-leading Returnable Packaging Management, this solution will enable automotive OEMs and suppliers to transform the way they manage packaging in the automotive supply chain, and make significant progress toward their sustainability and cost-effectiveness goals."

Hagen Heubach

Global Vice President Industry Business Unit Automotive, SAP



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About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided every day by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of nearly 350,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering, and platforms. The Group reported in 2022 global revenues of €22 billion.

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