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XXII ASAP FORUM – DAY 1: Leading the Servitization Journey

Edited by:

Lucrezia Songini, Mario Rapaccini, Roberto Sala,
Damiano Petrolo, Laura Scalvini, Maria Spadafora, Veronica Arioli

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Leading the Servitization Journey**

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**Università degli Studi di Bergamo
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The ASAP research centre on service management and innovation in industrial firms

ASAP is the Italian "Interuniversity Research Centre on Service Innovation and Management in Industrial Enterprises-ASAP SMF", founded by the Universities of Bergamo, Brescia, Florence, and Eastern Piedmont. ASAP is among the reference research institutions at the European level, on the subjects of servitization, service business and service operations management. It carries out research, training, workshops, and conferences, and promotes networking and dissemination. In the ASAP Community, university research groups, and companies collaborate for innovating service design and management, and change management for the strategic development of the "service business". In particular, the Centre aims to:

- promote, organize and carry out scientific research activities and projects in the broad domain of "servitization" (innovation through services in industrial enterprises);*
- disseminate the results of research activities through events, conferences, workshops, and webinars to facilitate the meeting between the world of research and the world of business;*
- foster, by collaborating with innovation ecosystems and university spin-offs, processes of innovation and technology transfer to companies;*
- encourage the opening of internship positions for trainees, students, graduates, doctoral students, and research associates of the Universities involved, within the institutions, and companies that collaborate with the centre;*
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- fostering contact and exchanges with local and national public institutions to prepare regulatory and industrial policy instruments on issues in the domain of interest.*

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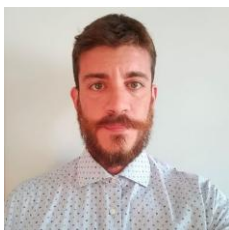
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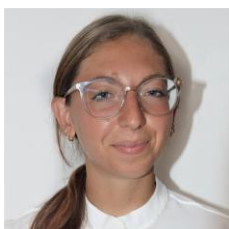
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The following persons have directly contributed to the preparation of this report through their testimonies: Giuseppe Gardoni (Scandicar SpA), Antonio Milella (Tetra Pak Packaging Solutions), Massimo Paganoni (ABB SpA), Alessandro Polce (Stulz SpA).

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EXECUTIVE SUMMARY

The session “Understanding and guiding servitisation” of the XXII ASAP Forum explored how manufacturing companies can manage the transition towards service-oriented business models in an increasingly complex economic, technological, and regulatory environment. Through the joint contributions of academic researchers and industry practitioners, the session highlighted servitisation as a systemic transformation affecting business models, organisational structures, sustainability strategies, regulatory compliance, and skills.

The discussion on Everything-as-a-Service (XaaS) business models, illustrated through the Stulz case, showed how advanced servitisation enables long-term value creation by shifting the focus from product sales to usage and performance-based offerings. While these models offer economic, relational, and environmental benefits, they require significant organisational change, new capabilities, and a gradual implementation strategy to overcome market resistance and internal barriers.

The ABB case demonstrated the importance of integrating economic and environmental impact assessment when designing and selling Product–Service Systems. By combining Total Cost of Ownership and Life Cycle Assessment, the proposed model supports more informed customer decisions and strengthens service-based value propositions, while highlighting the need for robust data and a broader, multi-stakeholder perspective.

The session also addressed corporate resilience in the face of regulatory change, focusing on the EU Data Act through the Tetra Pak case. The findings showed that proactive regulatory management, supported by cross-functional coordination and data governance, can transform compliance requirements into opportunities for innovation, competitive advantage, and enhanced digital services.

Finally, the Scandicar case highlighted skills as a critical enabler of servitisation, particularly in the automotive sector. The analysis revealed growing skill gaps, the central role of soft and digital skills, and increasing challenges in attracting and retaining qualified personnel. Addressing these challenges requires a holistic approach centred on employee experience, inclusive leadership, and continuous capability development.

Overall, the session underscored that successful servitisation depends on integrating business model innovation, sustainability, regulatory readiness, and human capital development, positioning services as a key driver of resilience and long-term competitiveness.

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On the first day of the XXII ASAP FORUM (20 November 2025), the session “Understanding and guiding servitisation” took place. Eng. Roberto Sala (University of Bergamo) structured the session around four presentations that discussed scientific approaches and models for understanding, assessing, and governing the factors that enable servitisation. An academic researcher and a company manager jointly delivered each presentation.

1. ADVANCED SERVICES AND XaaS BUSINESS MODELS: STULZ’S CHALLENGES AND HOW TO ADDRESS THEM

The opening presentation, “*Evaluating Everything-as-a-Service business models*”, featured contributions by **Laura Scalvini (University of Brescia)** and **Alessandro Polce, Sales and Marketing Director at Stulz**. The objective of the presentation was twofold: on the one hand, to define the *Everything-as-a-Service (XaaS)* model and propose a framework for its adoption; on the other, to illustrate the practical challenges of implementing the framework through the Stulz case.

The XaaS model is a **servitized business paradigm** in which the offering **integrates product and service** to generate superior value for the customer. Its distinctive feature lies in a shift in focus: from selling the product to selling its use, availability, or the results it achieves. In this context, ownership of the product remains with the supplier. This transfer of ownership implies that the manufacturing company assumes risks that historically rested with the customer, in particular, **financial and operational risks**. The adoption of the XaaS model entails significant benefits for all parties involved:

1. **Benefits for the provider:** Under an XaaS model, a stable, recurring revenue stream can be achieved. It becomes possible to build a long-term relationship with the customer, going beyond the single moment of sale. The resulting offering is value-added, often highly customised, and consequently complex for competitors to imitate.
2. **Benefits for the customer:** Reduced initial investment (lower **CAPEX**) and improved management of operational risks associated with the asset, risks that the provider at least partially assumes.
3. **Environmental benefits (sustainability):** By retaining ownership of the asset, the provider is incentivised to maximise the asset’s efficiency of use throughout its life cycle, thereby extending the product’s longevity as much as possible. This contributes to reducing resource consumption. The integration of services related to end-of-life management supports the development of circular economy paradigms and the reduction of greenhouse gas emissions; therefore, the XaaS business model also delivers environmental benefits.

Despite these advantages, adopting XaaS models is complex. Companies are required to radically transform their organisational structures and internal culture and develop new capabilities to implement the new model successfully.

The Stulz case: motivations and strategic risks

Stulz provides air conditioning and cooling solutions for data centres. Servitisation has been identified as a competitive strategy, as the solutions offered are highly critical to customers’ businesses: cooling directly affects the availability of Stulz’s customers’ computational infrastructure (data centre operators). The availability of a **Tier 4 data centre** must exceed 99.995%, allowing for only 25 minutes of downtime per year. The market increasingly demands a continuous and adequately high level of service to ensure the proper functioning of cooling and refrigeration systems. Added to this is the complexity introduced by recent regulations on refrigerant gases. Today, gases with a lower impact on the ozone layer are used, but they are flammable, posing risks to personnel operating in data centres. Customers are not experts in this field and therefore turn to Stulz for the operation and maintenance of refrigeration systems. This opens up opportunities to envisage an “advanced” form of servitisation based on the development of XaaS offerings.

However, the **risk of being a first mover** has been identified. Beyond the inherent difficulties of implementing XaaS offerings, pushing the XaaS business model before the market is ready to absorb it can be risky.

The research conducted by the team at the University of Bergamo focused on identifying the actions required for adopting XaaS models in the manufacturing context, integrating existing scientific knowledge and developing a new adoption framework. The collaboration with Stulz resulted in the conceptualisation of two specific XaaS models: a first model involving the rental of the refrigeration system (**Rental-as-a-Service**) and a more advanced **Cooling-as-a-Service (CaaS)** model, which is essentially a **pay-per-result service**. Within the research collaboration, the operational flow of CaaS was analysed using the 4M technique (Man, Machine, Method, Material); **Key Performance Indicators** were defined to monitor and control each activity; and a **Service Blueprint** was developed to map customer interactions and identify drivers of satisfaction and dissatisfaction. This enabled the identification of the organisational interventions Stulz will need to implement to adopt the new business model. In particular:

- **Product engineering:** a significant redesign of the chiller is required to simplify maintenance activities and spare parts management, ensuring that maintenance is schedulable, straightforward, and effective throughout the entire contract duration.
- **Organisation:** an intervention is needed in the organisational structure and in cultural and value alignment, particularly between the sales and service networks. This can be supported by standard checklists and continuous training, which are essential to allow new XaaS models to coexist with traditional sales. A redesign of internal processes is also required, with clearly defined roles, tools, and responsibilities.
- **Marketing:** customer segmentation logics need to be revised, particularly by identifying the different needs that may drive demand for Rental and CaaS services. Customers must be classified by pain points, expectations, and requirements regarding critical operations, level of solution customisation, and so forth.
- **Pricing and costing:** further interventions concern the definition of pricing mechanisms. For CaaS, a structure with a fixed and a variable component is envisaged, while Rental relies on a fixed fee. To determine prices, it is essential to identify and estimate costs across the entire life cycle and to rely on simulation environments to ensure business sustainability.
- **Legal and finance:** contractual clauses need to be revised, responsibilities clearly defined, and adequate insurance coverage secured to address both financial and operational risks.
- **New ecosystems:** the logistics of the new model require strengthening the service and dealer networks, as well as engaging new partners such as ESCO/EGE companies, given that energy efficiency is the key element of the CaaS offering.
- **Technologies:** enabling technologies primarily consist of remote system monitoring, which requires specific capabilities related to data access security and data sharing.
- **Communication:** persuasive communication is required to convey the distinct values of service offerings to customers effectively. Internal training, supported by learning by doing, is essential to managing this complexity.
- **Sustainability:** to enhance the value of CaaS, it is also necessary to highlight the resulting energy savings and the corresponding environmental footprint, using these aspects as commercial value propositions. End-of-life management and the possibility of multi-customer use of the same chiller are also considered.

What are the main challenges in implementing Rental and CaaS offerings at Stulz?

Alessandro Polce pragmatically quoted Mike Tyson: *“Everyone has a plan until they get punched in the face”*. Despite the developed plan, implementation encountered concrete difficulties. The main challenge was market resistance: Stulz adopted a gradual strategy, starting with Rental, a necessary step given the difficulty of convincing customers to move from a **CAPEX** model (purchase expenditure) to an **OPEX** model (recurring

operating expenditure), both because of related tax benefits and because of a lack of cultural readiness and openness to innovation. Customers appear hesitant to experiment with innovative offerings that are advantageous for both parties and often wonder “*where the catch is*”. Internal barriers also emerged, particularly within Accounting and IT departments. The transition to recurring sales causes significant concern for the Chief Financial Officer. Changing internal processes and adapting management accounting models, the chart of accounts, and corporate information systems all represent significant obstacles to change.

Stulz is working to overcome these barriers by improving communication to identify the right customers (first movers, early customers) and by managing internal constraints to prevent the organisation from reverting to the traditional model once pressure is eased, due to an “elastic deformation” effect. The ultimate objective remains **CaaS**, potentially with consumption-based pricing (e.g., litres per second of chilled water). Despite the complexity, the transformation process has been launched and is robust and evidence-based, marking the beginning of a continuous adaptation process.

In conclusion, the transition to XaaS models is complex and requires a comprehensive transformation of the company. The shift from “*producing and selling*” to “*guaranteeing results and maintaining value over time*” affects how the company is organised, how it communicates, plans, invests, manages operations, and develops. The necessary capabilities, such as data management skills, are fundamental to sustaining long-term success. The Stulz case demonstrates the importance of frameworks to support these transformations. Ultimately, success depends on the courage of top management to address internal and external resistance, starting, if necessary, with less advanced service models to gradually reach the full potential of **Everything as a Service**.

2. ECONOMIC AND ENVIRONMENTAL IMPACT ASSESSMENT: AN INTEGRATED MODEL FOR THE SERVICISATION OF ABB

The second presentation focused on the integrated assessment of economic and environmental impacts. The research was presented by **Veronica Arioli** from the **University of Bergamo** and **Massimo Paganoni**, **Global Head of Electrification Service Portfolio at ABB**. The presentation addressed the crucial issue of quantifying the benefits generated by servitised models and by **Product–Service System (PSS)** offerings. In particular, the core research question can be formulated as follows: *which PSS offerings are actually sustainable, and under which conditions?* The underlying assumption is that a customer cannot make an informed choice without a rigorous quantification of the sustainability of a given solution relative to available alternatives. The study, therefore, focused on developing a **decision-support system** for selecting PSS offerings that explicitly accounts for both economic and environmental impacts.

ABB Electrification Service (ELSE)

ABB is a Swiss–Swedish group with a global presence. The Electrification business division accounts for approximately 40% of the Group’s total revenues. It is responsible for designing, manufacturing, and servicing solutions for electricity distribution, ranging from medium-voltage (around 40,000 V) to domestic 200 V. The functionality of specific devices, such as short-circuit protection equipment, must be guaranteed at 100%, without failures, except for very short interruptions that are planned well in advance for inspections and maintenance. The Service organisation delivers three distinct types of services.

1. **Care** includes services for managing the installed base throughout the life cycle, such as preventive maintenance, repairs, spare parts supply, and digital services such as remote monitoring and predictive maintenance, generally governed by medium- and long-term contractual agreements.
2. **Modernisation** consists of interventions aimed at upgrading distribution systems by replacing selected components to extend their useful life and/or adapting technologies to new regulatory requirements.

3. **Advisory Service** includes consultancy services for the design and management of electricity distribution networks, and experiments are currently underway to develop solutions in the form of Everything-as-a-Service.

The importance of sustainability assessment at ABB

ABB has ambitious sustainability targets that are intrinsically linked to service operations. Maintenance and modernisation activities extend the lifetime of equipment and therefore have direct implications for environmental impact. However, ABB's main challenge lies in balancing economic and environmental factors. While the most environmentally sustainable solutions are often also the most cost-effective, ABB nevertheless needs to demonstrate to customers, from the quotation phase onward, the economic savings and environmental benefits resulting from specific engineering choices. An increasing number of customers are willing to pay a premium price for ABB solutions if a lower environmental impact can be demonstrated, supported by specific **Product Declarations**.

To support this dual perspective, a simulation model was developed that integrates two of the most widely used methodologies for quantifying economic and environmental costs: **Total Cost of Ownership (TCO)** and **Life Cycle Assessment (LCA)**. The model was developed from the customer's perspective and incorporates key requirements emerging from a preliminary literature review. The main features of the simulation model are the following:

- **A focus on the entire product and service life cycle**, with particular attention to the use and end-of-life phases, where service provision has the greatest impact;
- **The integration of the two sustainability dimensions** to provide a systemic view;
- **The inclusion of stochastic and uncertain variables** related to product behaviour.

Development phases and application of the model to the ABB case

The development of the simulation model followed four main phases:

1. **Conceptual model development:** identification of life-cycle variables contributing to the calculation of TCO and tonnes of CO₂ equivalent.
2. **Simulation model development:** creation of a parametric model that can be configured according to the solutions and configurations proposed to different customers.
3. **Data collection:** inclusion of product data, cost data, and conversion factors for tonnes of CO₂ equivalent.
4. **Results generation:** calculation of the TCO and environmental impact, both expressed in tonnes of CO₂ equivalent, for each analysed scenario.

To test the model's effectiveness, nine ABB Electrification service offering scenarios were compared. Some scenarios referred to specific **Service Agreements**, while others involved no contractual agreement and relied solely on spot, reactive, and transactional services. All scenarios were analysed over a time horizon of approximately 30 years, corresponding to the estimated average lifetime of a well-maintained distribution system.

The core of the results lies in the graphical representation of the comparison between scenarios, which combines the economic dimension (TCO) with the environmental dimension (CO₂ eq). This visualisation is fundamental because it enables customers to make more informed decisions by clearly identifying three categories of scenarios:

1. **Scenarios to be avoided:** are both more costly for the customer and more environmentally impactful.
2. **Sustainable scenarios:** deliver both economic savings for the customer and a lower environmental impact.
3. **Trade-off scenarios:** require an evaluation based on customer priorities; for instance, a scenario may be economically advantageous but more environmentally impactful, or vice versa.

The trade-off analysis supports ABB in the sales phase by quantitatively illustrating the different impacts of the offerings, and particularly the convenience of moving towards **Service Agreements**.

A sensitivity analysis was also conducted to examine how result values (TCO and tonnes of CO₂ equivalent) vary as the determining parameters change. This analysis identified four main variables that most strongly influence the results:

1. Reliability improvement induced by preventive maintenance activities, which is a key element demonstrating service effectiveness;
2. **Product failure rate**;
3. **Availability of product** stock at the customer site;
4. **Distance between the customer site and the ABB support centre**, a factor that affects results only in the environmental dimension, presumably due to logistical and technician transport impacts.

These findings highlight for ABB the critical elements to focus on to improve service delivery and define a sustainable offering that is consistent across both dimensions.

The integrated assessment model achieved its objective of enabling customers to make more informed choices regarding both economic and environmental savings. From the provider's perspective (ABB), the model offers quantitative support during the sales phase and highlights critical elements for improving service delivery, particularly for Service Agreements. However, two main limitations of the current model were identified:

1. **Data availability**: assumptions were required when data were unavailable or insufficiently reliable.
2. **Limited perspective**: the model focuses solely on the customer's perspective, neglecting the provider's.

Future research aims to overcome these limitations, particularly through more targeted data collection. Above all, the model is expected to be expanded to test more advanced scenarios, such as use-oriented or result-oriented models - similar to the **CaaS** model developed by Stulz and discussed in the first presentation. The inclusion of the provider perspective in the TCO calculation is also essential to initiating a **multi-stakeholder approach**, enabling ABB to define an appropriate fee to propose to customers that ensures economic sustainability for both parties.

3. CORPORATE RESILIENCE IN THE FACE OF REGULATORY UNCERTAINTY: THE TETRA PAK CASE AND THE IMPACT OF THE DATA ACT

The third presentation of the XXII ASAP FORUM, entitled "*Resilience – Assessing the impact of new regulations*", highlighted one of the most topical challenges for servitised manufacturing companies: how to transform legislative changes from a mere regulatory constraint into a **catalyst for business opportunities** and a **driver of corporate resilience**.

The presentation was jointly delivered by **Maria Spadafora (University of Florence)**, who presented the results of a study on the **readiness of connected machinery manufacturers**, specifically regarding the **EU Data Act**, and by **Antonio Milella**, Director of Connected Experience at **Tetra Pak Packaging Solutions**, who shared his company's operational strategy.

The context: a volatile and complex regulatory environment

Europe is characterised by the continuous introduction of regulations that significantly impact the industrial sector, generating both risks and opportunities. In recent years, regulations such as the **GDPR (2016–2018)**, the **NIS1 Directive** and the subsequent **NIS2 (2022–2023)**, the **AI Act (2024)**, the **Cyber Resilience Act (2024–2027)**, and the **Machinery Regulation (2023–2027)** have followed one another. Regulation across these areas creates considerable operational and managerial complexity, while also generating volatility and uncertainty within corporate management systems. At the centre of the discussion was the **EU Data Act**, which is

scheduled to enter into force in September 2025. This regulation aims to establish harmonised rules for fair access to and use of data generated by connected products. Companies, therefore, need to understand how to handle these situations effectively to avoid an operational standstill.

Proactive change management: Tetra Pak's control tower

Antonio Milella illustrated **Tetra Pak's proactive approach**. Tetra Pak is a leading company in food and beverage packaging and services. In such a dynamic regulatory environment, Tetra Pak has established a **Corporate Affairs function** that acts as a “*control tower*”.

This function is responsible for:

1. **Overseeing and monitoring changes** originating from public administrations or governmental bodies.
2. **Positively influencing policies and legislative discussions** (for instance, reference was made to the new Packaging and Packaging Waste Regulation 2025/40 – PPWR, which regulates the recycling and reuse of containers).
3. **Creating a link between companies and policy makers** in order to clarify operational models and adaptation pathways to legislative bodies.

The objective is to align decision-making processes and ensure that **Tetra Pak's Strategy 2030** accounts for regulatory compliance.

Launching the EU Data Act programme

To address data regulation specifically, Tetra Pak launched an **EU Data Act Programme**. This programme is not limited to mere compliance; instead, it pursues clear strategic objectives:

1. **Compliance**: the first aspect concerns how to prepare all internal divisions and organisations (i.e., inform and equip them to coordinate) to meet legal requirements.
2. **Competitive advantage**: the second aspect concerns how to transform risks into opportunities and extract the maximum value for customers from new regulations. In this case, it involves understanding how sharing and using data collected by connected machines can enable Tetra Pak and its customers to improve the performance of their services. In effect, regulatory change becomes an opportunity to position the company more strongly than competitors.

The programme defines milestones and timelines for each action, assesses **skill and system gaps** for compliance, and manages **employee training and communication with stakeholders**. To ensure resilience in the face of such a pervasive transformation, Tetra Pak manages adaptation through four interconnected pillars, considered an equation whose proper management ensures performance: **People, Processes, Systems, and Data**.

1. **People**: It is essential to establish cross-functional collaboration among departments such as IT, Legal, and the various business areas. New roles and responsibilities are defined, and training is provided for employees affected by the Data Act.
2. **Processes**: Work focuses on redefining processes for collecting customer requests, ensuring they are standardised and transparent. It is necessary to understand how to bridge procedural gaps and ensure that new processes are aligned with systems.
3. **Systems**: Capable of capturing customer requests regarding data sharing must be identified, and, above all, secure solutions for data sharing must be assessed and implemented.
4. **Data**: sources are mapped, and relevant data types under the regulation are identified; data quality is assessed; metadata are determined; data ownership and the risks associated with sharing are identified.

Through this **holistic approach**, Tetra Pak aims not only to be compliant but also to promote innovation and unlock new business opportunities, ensuring that data is shared securely and in a standardised manner.

Results of the ASAP research: readiness and emerging strategies

Maria Spadafora presented the research, which investigated **the readiness (level of preparedness)** of connected machinery manufacturers regarding the implications of the Data Act.

Triggers and involved functions: the research found that, in most cases, the initial trigger to address the Data Act is endogenous, arising within the **Corporate Affairs/Legal function**. This function acts as a regulatory control tower, closely monitoring changes. **Exogenous triggers** (such as customer requests or trade associations, such as ASAP) are less frequent. A significant result concerns internal involvement: although cross-functional working groups are present (with techno-regulatory expertise), **Service Sales involvement** was found to be either non-existent or very limited. This gap is critical, given that the European Commission's objective is to leverage **80% of the data generated by connected machines that is currently unused** to create a data-driven economy.

Emerging strategies for servitisation

The analysis of corporate responses made it possible to classify levels of strategic proactivity:

1. **Reactive approach (regulatory constraint):** The initial level, in which companies see the Data Act exclusively as a constraint and focus only on regulatory compliance.
2. **Proactivity (competitive advantage):** Companies view compliance as an opportunity to gain a competitive advantage. The Data Act becomes a sort of "seal of assurance" to sell to non-European customers. A Data Act-compliant machine conveys a message of trust, transparency, and stronger data protection, overcoming one of the main barriers to connectivity: customers' reluctance to share their data.
3. **Advanced proactivity (strengthening digital services):** At this level, the Data Act is seen as a lever to review and enhance the digital service portfolio. Since the OEM's informational monopoly weakens (the customer can access data and become self-sufficient), the company must develop new, high-value-added digital services to maintain and strengthen its relationship with the customer.
4. **Maximum proactivity (data-driven ecosystem):** the most advanced level involves viewing the Data Act as a catalyst for creating an integrated solution in collaboration with other actors in the supply chain (e.g., IoT platform providers and industrial automation systems). This approach enables **new data-driven business models** that create value across the customer's entire production process, rather than just on a single machine.

The Tetra Pak experience and the ASAP research show that **resilience in the face of complex regulation** is not merely about legal compliance; it requires a **holistic, proactive strategy** that invests in **People, Processes, Systems, and Data**. The Data Act represents a challenge, but above all, an unprecedented opportunity for manufacturing companies to accelerate the development of **advanced digital services**, positioning themselves as leaders in an economy increasingly driven by transparency and the secure circulation of data.

A company's ability to use regulation as a **lever for innovation**, rather than endure it, is an accurate indicator of its strategic resilience, turning a potential threat into a lever for creating ecosystem value.

4. WHICH COMPETENCES FOR SERVISATION IN THE AUTOMOTIVE SECTOR: HOW SCANDICAR IS ADDRESSING AN INCREASINGLY COMPLEX LABOUR MARKET

The final presentation of the XXII ASAP FORUM session on "Understanding and guiding servitisation" focused on a crucial enabling factor for the transition towards services: **competences**. The session was presented by **Damiano Petrolo**, ASAP researcher at the **University of Eastern Piedmont**, and by **Giuseppe Gardoni**, **owner**

of Scandicar S.p.A., a major dealership and service station for the Scania and Isuzu groups. The session analysed the mismatch between the skills required and those actually available on the labour market in the automotive sector, with the aim of facilitating the development of the service business.

Damiano Petrolo introduced the topic by highlighting a potential paradox of the transition: companies are well aware of where they want to go with their strategic plans for service business development, yet they struggle to find all the necessary skills on the labour market. The objective of the research was to map and define the skill profiles required—also from a future-oriented perspective—to manage ongoing transitions and the increasing complexity driven by the growth of the service business. Initially focused on the role and job profile of the Service Manager, the research then investigated more technical roles, such as **Workshop Manager, Warehouse Manager, Service Advisor, Technical-Administrative Back Office**, and **Mechatronic Mechanic**.

The output of the research is a **Competences Dictionary** that categorises capabilities into six domains:

1. **Basic Competences**
2. **Operations Management Competences**
3. **Marketing and Customer Management Competences**
4. **Digital Competences**
5. **Business and Organisational Competences**
6. **Soft Skills**

More than 100 questionnaires were collected, mainly from workshops in Northern Italy, predominantly authorised repair shops (71%). Data analysis provided a clear snapshot of the skills currently required and how they are expected to evolve over the next five years. The main findings are outlined below:

Roles

The **Service Manager, Workshop Manager**, and **Service Advisor** emerge as the professional figures requiring the most diversified, deep, and broad skill sets, spanning multiple domains of the skills dictionary. By contrast, the **Warehouse Manager, Back Office**, and **Mechatronic Mechanic** are characterised by more vertical and homogeneous skill sets within a single domain.

Looking ahead five years, the number of skills required is expected to increase significantly for all roles, indicating a strong need for investment in training. From this perspective, the most critical profile is the **Mechatronic Mechanic**, followed by the **Workshop Manager** and the **Service Advisor**. In particular, all technical roles are expected to be strengthened with both **digital competences** and competences related to **work organisation and management**.

Critical Competences

At present, Soft Skills are considered the most significant and critical competencies for all analysed profiles. Among these, **problem-solving, effective communication, collaboration, customer orientation, and flexibility/resilience** are regarded as crucial. Looking forward, these competences remain fundamental for service business development. However, **Digital Competences show the strongest growth trend**, effectively becoming the second most important category of skills required in the future for all profiles.

Scandicar and the skills challenge

Giuseppe Gardoni raised a clear warning signal. The automotive workshop sector is facing an emergency, first in attracting qualified professionals and then in retaining them within dealerships and service networks. Gardoni suggests that this issue affects many industries, but it is particularly acute in the automotive sector, which is undergoing rapid transformation. Sixty-seven per cent of private customers are willing to purchase a vehicle online, 61% to book service appointments online, and 87% of dealerships declare themselves ready (or believe they are ready) to implement **Artificial Intelligence** in their operational processes. One in three vehicles is no longer sold outright but is offered through **Long-Term Rental (LTR)** contracts. Service organisations therefore find themselves negotiating with multinational players, under conditions that heavily affect prices, revenues, and profit and loss statements.

The difficulty in recruiting and retaining staff is further exacerbated by demographic factors and the sector's image. Demographic decline will have a significant impact, progressively reducing the labour pool: estimates indicate **12 million fewer workers by 2060**. A survey by Il Sole 24 Ore shows that while 23% of young people would consider becoming a mechanic, 28% would feel embarrassed to say so. Moreover, 63% still believe it is a dangerous and dirty job. These data highlight how unattractive the workshop mechanic profession is perceived to be. The difficulty in sourcing personnel with technical skills is extreme: vacant positions for mechanics and workshop technicians reach **70%**, compared with a market average of **45%**.

As for retention once young talents are hired, another challenge emerges: workforce fluidity. Some studies indicate that 40% of Gen Z workers intend to change jobs within a year.

To address the recruitment challenge, workshops establish partnerships with **ITS and technical institutes**, leverage manufacturers' **internal academies**, and implement **reskilling initiatives** for existing staff. Provocatively, Gardoni states that "the best hire is the loyal employee who does not leave". To enhance retention rates, Scandicar adopts the **Employee Experience** paradigm, articulated along three main dimensions.

1. **Workplace climate:** the working environment must be perceived as attractive and stimulating. The adoption of welfare policies and the development of mechanisms to improve employee well-being and psychophysical health are essential. Scandicar, for instance, participates in the *Welldone* project in the Parma area.
2. **Training initiatives:** employees must perceive a clear growth path. They need to understand what they can learn within the company, who will train them, and whether a personalised development process exists within the organisation, specifically designed for them.
3. **Salary and recognition:** while compensation matters, it is not the primary lever. Beyond adequate pay, the variable component of compensation should be based on **qualitative and quantitative KPIs** that fairly and transparently assess the employee's contribution and importance to the company, not solely on productivity.

McKinsey data were used to show how employee priorities have changed dramatically over a very short period. In 2023, the main reasons for staying with a company were pay and benefits. In 2024, within a different geopolitical climate, these factors dropped to fourth place. The top three priorities influencing both company choice and retention have become security, understood broadly as organisational solidity, type of contract, and development prospects, **work-life balance**, and **relationships with colleagues** (i.e. *organisational climate*).

The development of the service business requires managers and entrepreneurs, especially in SMEs, to adopt a **proactive, holistic approach** to attracting and retaining skilled talent. **Positive leadership styles, inclusive approaches**, and the **ability to promptly neutralise toxic situations** such as shouting, humiliation, and discrimination are essential. Programmes that facilitate knowledge exchange across generations must be activated. Soft Skills are an indispensable foundation for everything else.

Finally, for the **Service Manager**, a reallocation of time is required: time must be taken away from day-to-day operations and invested in **strategic and operational innovation of the processes** under their responsibility. Just as the transition to XaaS models requires shifting the centre of gravity from the product to the result, a competence-based service business must **shift its focus from compensation management to the overall employee experience**.