XVIII ASAP Service Management Forum

Servitization & Circular Economy

October 27th - 28th 2021

WHITE PAPER

Sponsored by

Media partners:

Authors

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The ASAP Service Management Forum

ASAP is the Italian community on service management and servitization. University research centres and companies collaborate for innovation in service design and management, for the strategic development of "service business" and change management. ASAP is the reference point on the national scene, and among the main ones in Europe, in the domain of service management.

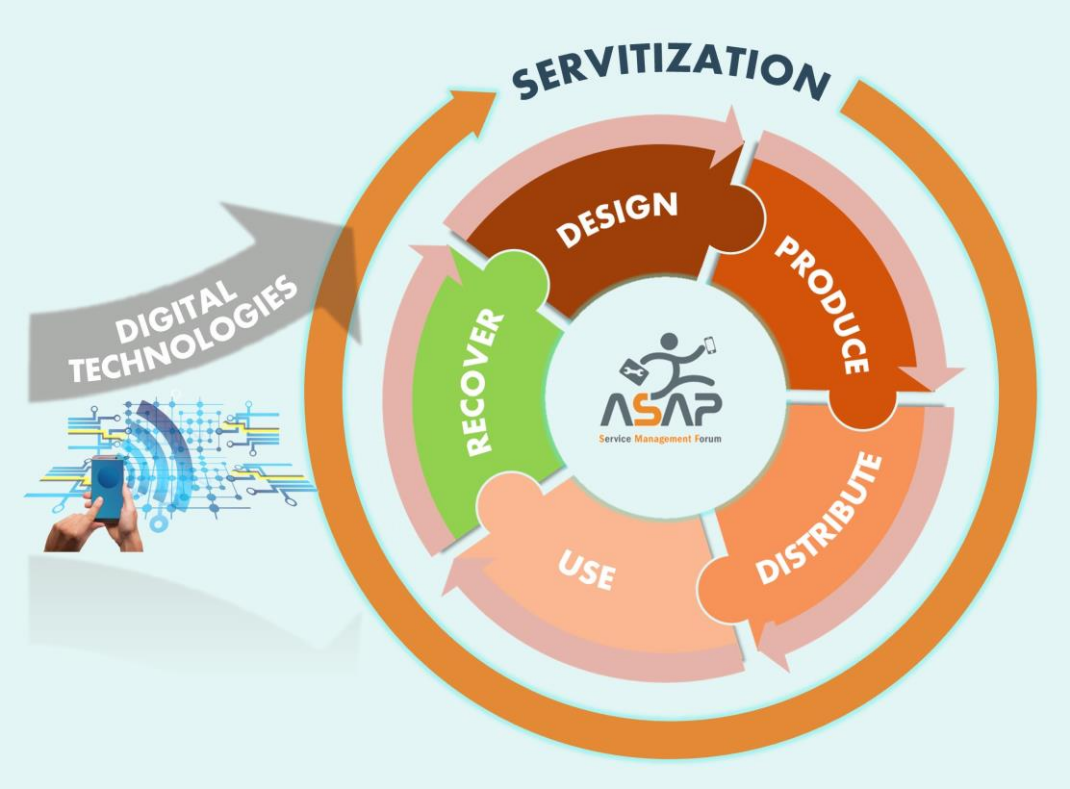
The community (2021)

Premise

The need to move towards circular and more sustainable economic models has been even more stressed by the Covid pandemic and by data certifying the climate change effects.

European public institutions show an increasing emphasis on promoting a Circular Economy transition, notably through the “Next Generation Europe” program and the funding that will be available, such as the Italian PNRR. At the single company level, however, how to undertake this transition and its impacts are often still to be understood and planned.

Advanced services, digitalization and «servitized» business models may have a great role in helping companies move to a “circular” paradigm and achieve not only environmental but also economic and social benefits.



Several speakers have taken part to the conference, including Walter Stahel, one of the founding fathers of the concepts of “Circular Economy”, promoting the “Everything as a service” concept since 2010 with his book “The Performance Economy”.

The conference had more than 250 participants along the two sessions:

- **October 27th, 2021 “Servitization & Circular Economy: Exploring the synergies”** (*english session*)
- **October 28th, 2021 “Servitization & Circular Economy: Si può fare”** (*italian session*)

This white paper summarizes the main evidences from the conference.

Session 1 – Exploring the synergies

The synergies between Circular Economy and Servitization have been addressed by: academic speakers, top managers from multinational companies presenting their strategy towards sustainability and best practices, technology companies describing how asset management systems and data contribute to the development and execution of circular business models.

Circular economy and servitization: a trend, a need, a strategy

Sergio Cavalieri, Chancellor at the University of Bergamo and founder of the ASAP initiative and **Nicola Saccani,** Associate Professor at the University of Brescia and past coordinator of the ASAP initiative, introduced the session. Sergio recalled the evolution of scientific, dissemination and networking activity made by ASAP since its inception in 2003 as a research project funded by the Italian ministry of Research. Nicola introduced the conference topics and submitted a poll to the audience, about how companies interpret servitization strategies in relation to environmental sustainability goals. As shown by the results (Figure 1 Poll Results: Circular Economy & Servitization), environmental benefits are perceived as only a "side effect" of servitization strategies by more than half the respondents, while for 32% servitization strategies are defined and implemented intentionally in order to achieve sustainability goals. Regulations are the moving forces of servitization strategies oriented to circularity only for 11% of the respondents.

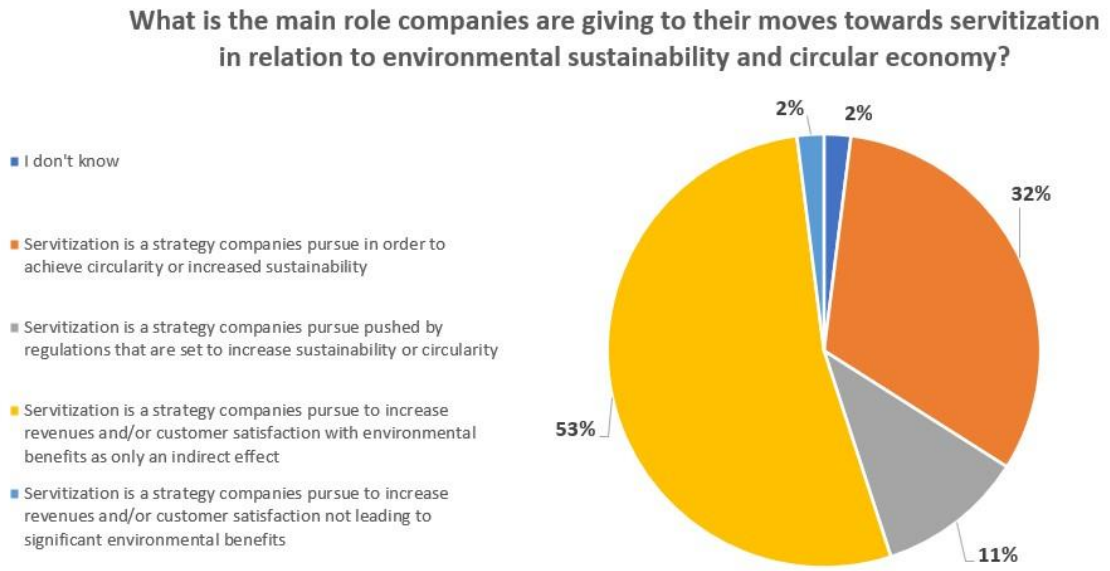


Figure 1 Poll Results: Circular Economy & Servitization

Walter Stahel is a founding father of the circular economy, since his prize-winning paper 'The Product Life Factor' in 1982. Since long time he promotes the 'service-life extension of goods - reuse, refill, reprogram, repair, remanufacture, upgrade technologically' (he wrote a report for the European Commission on the topic in 1976) and the “Everything as a service” concept (since 2010 with his book “The Performance Economy”). We asked Walter to provide us with an overview of the synergies between circular economy and “servitization”, as well as to outline obstacles and future trends.

Walter explained that the objective of the circular economy has always been to maintain the value and quality of the stocks of natural, human, cultural and manufactured capital at the highest level for the longest time possible. This implies a motivation of the owner-managers to reuse, repair, refill, remanufacture – the era of ‘R’- and the availability of skilled local labour and workshops.

The objective of the circular industrial economy is also to maintain the value and purity of the stocks of man-made (synthetic) material (the era of ‘D’) at the highest level for the longest time possible. The era of ‘D’ started with the Anthropocene in 1945. Before, mankind used natural materials which were mostly compatible with Nature’s circularity. After 1945, synthetic materials and nuclear energy, with qualities greatly superior to natural ones, increasingly replaced the former. This implies a responsibility for the manufacturer to take charge of the end-of-life problems, by de-linking metal alloys and chemical compounds, and de-constructing infrastructure and objects made with synthetic materials.

The transition to the circular economy without compromising growth and profitability is possible if companies change their business models, from the linear take-make-distribute and outright sale (followed by use and dispose by somebody else) to selling the use of products for as long as possible. This means retaining ownership and liability over the full service-life of their materials or objects – shifting from the linear to the performance economy.

This then implies a systems design including loss and waste prevention over the full product-life. If manufacturers remain in the linear economy, fleet managers may take the role of selling the use of manufacturers’ objects, imposing their quality standards on producers to increase their profits. This is already the case for real estate, railways, infrastructure. This trend is fuelled by scientific progress in fully circular energies, materials and long-life components (electric motors replacing combustion engines).

Circular economy levers and the role of servitization: planning, simulating, executing

Gianmarco Bressanelli, Research Fellow at the RISE Lab – University of Brescia, discussed how the adoption of circular economy levers, and in particular servitization, can be planned, simulated and executed. Levers for (re-)design for circular economy can be grouped into four categories based on the domain they affect: 1) *product design*, 2) *production process*, 3) *business model* and 4) *supply chain*. *Digital technologies* and “Industry 4.0” have the transversal role of enabling and accelerating factors.

A five-step model for assess and prioritize the levers to be adopted was presented (Figure 2 How to proceed?).

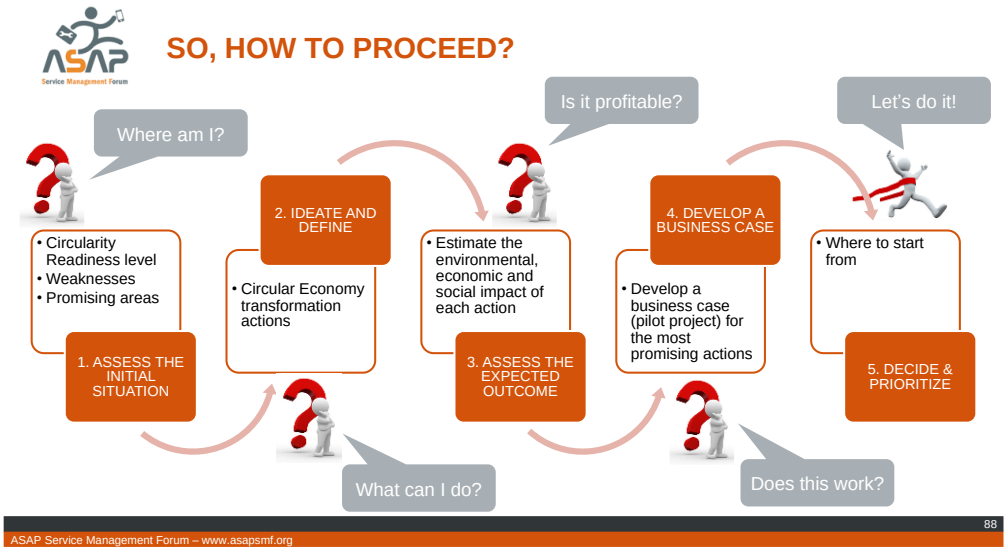


Figure 2 How to proceed?

Gianmarco focused then on *Step 1: "Assessing the Initial Situation"* and illustrated a tool developed by RISE Lab at the University of Brescia that provides a circularity score for a company and suggests improvement directions (Figure 3 Assess the initial situation C-Readiness: An example).

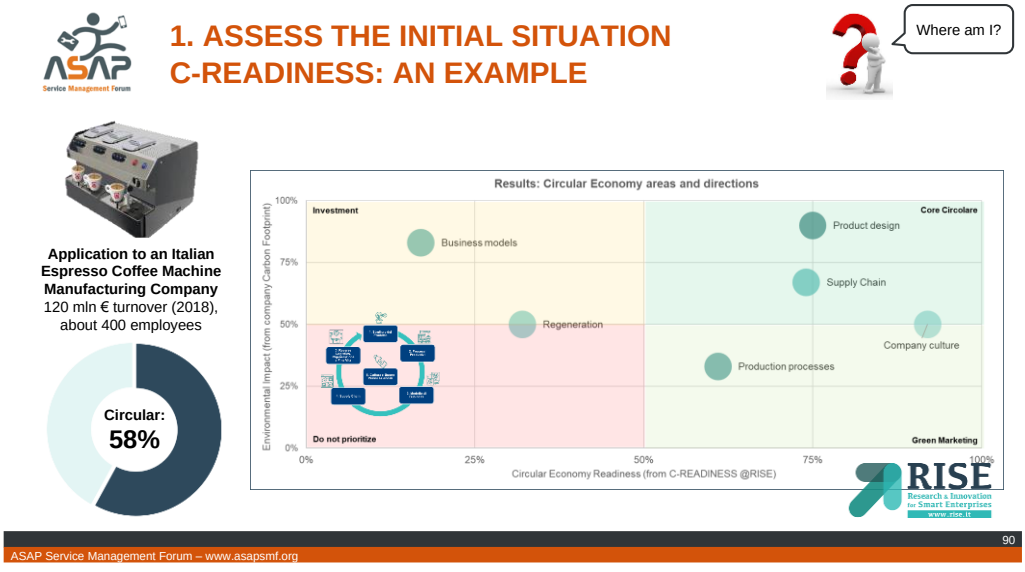


Figure 3 Assess the initial situation C-Readiness: An example

As well, once defined the potential actions towards circular economy, it is important to simulate their impacts on the three dimensions of the environment, economic viability and social impact. A model was presented by Gianmarco to this purpose, and an application in the washing machine industry where eleven scenarios (i.e. actions on the different lever categories) were assessed, being able to find options that were at the same time beneficial to the environment, the manufacturer and its supply chains, the customer and the society.

Niklas Lindskold, Head of Sustainability and Security at Electrolux Professional, presented the company's strategic approach towards sustainability and some relevant projects currently ongoing in the washing business.

An analysis of the carbon footprint has been made by Electrolux Professional. Based on that an in order to support the achievement of the objectives of the Paris Agreement, the company set four directions for action (Figure 4 Ultimately, nothing should be lost and everything should be transformed):

- Develop energy efficient/low consuming products
- Reducing impacts from refrigerants with high GWP
- Resource efficiency throughout the value chain
- Use of renewable energy

Since long time the design of washing machines is oriented to modularity (making easier disassembly and recycling activities) reliability, and circularity, using recycled materials as input. New programs described by Niklas foster the concept of product upgrade for lifecycle extension, product-as-a-service through full-service rental to customer instead than sales, and sharing programs of laundry systems for apartment blocks.

Figure 4 Ultimately, nothing should be lost and everything should be transformed

Asset lifecycle monitoring and optimization: services for sustainability

In the following part of the session, **Coen Jeukens**, VP Global Customer Transformation at ServiceMax, "puts the asset at the centre" and addressed whether and how monitoring and servicing capital goods in field increase environmental sustainability.

"Asset centricity" in the philosophy of ServiceMax allows focusing on the asset to maximize uptime & outcome while minimizing operating cost. Coen then described how advanced services can increase sustainability (Figure 5 The five sustainability opportunities for service execution), acting on different dimensions: increased efficiency, effectiveness in dispatching field service engineers, improved spare parts management, digitalization of service processes and new service models.

Figure 5 The five sustainability opportunities for service execution

The final part of the speech focuses on the move towards product-as-a-service business models, that couple the ability to satisfy customer needs focusing on the outcome of product usage with the reduction of the environmental footprint.

Alberto Rostagno, Vice President for Services at Dematic, guided the audience across the domain of optimization and modernization services for capital goods and their role for sustainability, with a special focus on Oil&Gas, where he spent the greater part of his career.

Alberto highlighted how the evolution in the service offering needs to be aligned with the customer strategy, so has to be developed step by step with key customers. As well, synergies but also the potential trade-offs between green and economic aspects of modernization services should be taken into account. Green factors are becoming of utmost importance in sectors like the Oil&Gas. But in this industry (as many others) both providers and customers have very complex organizations, and you need to consider counterpart at different levels: local, corporate, functional, specific BU… Therefore, changing the existing model requires hard work. The recipe suggested by Alberto in order to align Service, Digital and Green solutions, includes:

- Applying the right strategy for operations and maintenance (Figure 6 Basic Products vs Expander Offer)
- Upgrading Units & Inject new Technology
- Applying Data & Digital Services

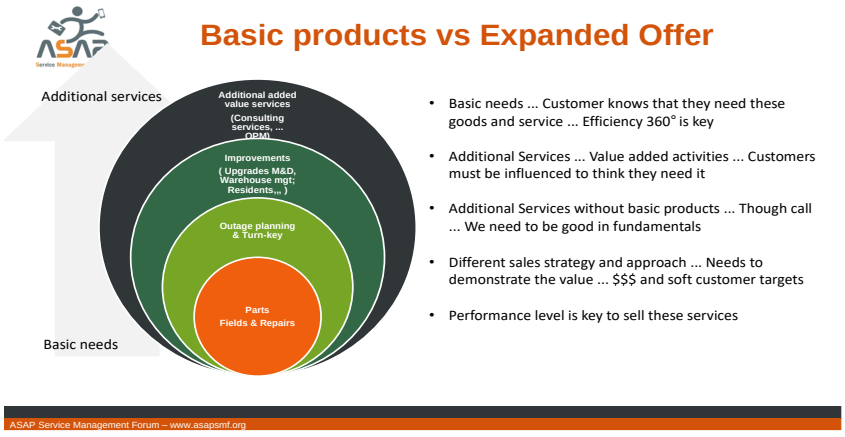


Figure 6 Basic Products vs Expander Offer

Then, **Stefano Butti**, founder and CEO of Servitly, provided the technology company point of view on the role of digitalization and data in favouring the change of paradigm towards circular and servitized business models. Stefano highlighted the differences between connected services and "traditional services" and the benefits related to these services - that can be achieved through the Digital Product Service System (or DPSS, Figure 7 Servitly DPSS (Digital Product-Service System)): increased product health (and uptime), optimized performance, energy consumption and quality, streamlined processes, enablement of advanced pricing models.

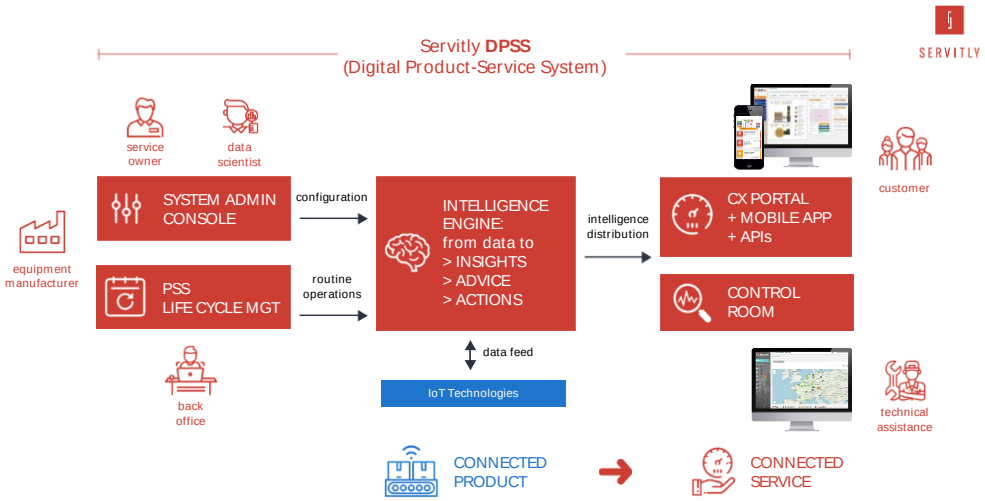


Figure 7 Servitly DPSS (Digital Product-Service System)

Besides that, data collected from the asset support the development of circular offerings, as tracking the product allows to make the best decision at the end-of-use, defining the best options for refurbishment or recycling, support contractual obligations, and reverse logistics efficiency and effectiveness.

Last, the established circular business model and operations at Ricoh have been described by **Alessio Ristuccia**, head of Service Planning at Ricoh Italy, and **Xavier Battinger**, head of Business Development at Ricoh France.

The offer of sustainable services has been initiated in the '90es by Ricoh. Alessio described the market context and company strategy on this domain (Figure 8 Synergies to support sustainability), and an example of collection and reconditioning of small printers using for replacement activities (swap for product on warranty).

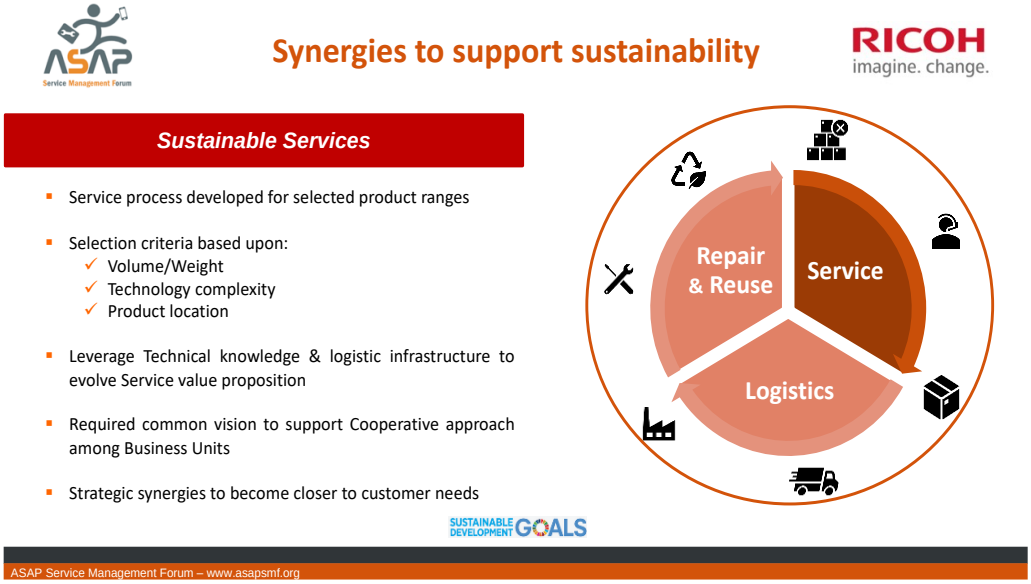


Figure 8 Synergies to support sustainability

Besides that, Ricoh has an entire product line of reconditioned product, and more reconditioning activities. Xavier took the audience in a "guided tour" of Ricoh "green" factory in Wettolsheim (France). With more than 600 employees, the facility carries out collection and material recovery, Reconditioning/Reuse of the GreenLine product family, repair of several components such as electronic cards, and has a thermal center. Moreover, repair of third-party products is carried out (e.g. professional vacuum cleaners).

Figure 9 A green-oriented factory to support our set of services

Key takeways

Thanks to the speech of Walter Stahel, we understood that reconditioning, renovating (or re-manufacturing) goods, from buildings to machinery to durable products, makes it possible to replace energy and materials with labor, a renewable and non-polluting resource. So, we need to think about an economy based on work and "local" services instead of consumption, and that the best investment for our future is the investment in people and their skills.

From the point of view of companies, in order to increase the demand and interest of customers beyond environmental motivations, it is necessary to work on the pricing of the product-service, and on the ability to make clear the risks and responsibilities that are mitigated through an “as-a-service” offer. But first you need to move from a "sell and forget" mentality to a "sell and service" approach

We also realized that for manufacturing companies (the "OEMs" of a physical product) "going downstream" i.e., entering the business of services related to the use of the asset is a strong lever to launch circular business models. Conversely, if they focus only on the sale of the good, they could be an element of resistance to the adoption of circular paradigms. But beware, what today may appear to be a leap forward and a risk (entering the service business and changing business paradigm) in the future could become a "defensive" and obliged move, in order to stay in the market.

We confirmed that digitalization, "servitization" and sustainability are three evolutions that go hand in hand, and in particular through asset tracking (thanks to connectivity).

But for companies (as our survey told us) "servitization" is still primarily a business choice, which brings with it sustainability benefits as a collateral rather than strategic element.

In short, there is still a long way to go, but the "puzzle" is slowly being put together.

Sessione 2 – We can do it!

The second session of the XVIII Forum focused on Small and Medium-sized Enterprises (SMEs), with the aim of understanding how such companies can also undertake sustainability paths through the development of servitization strategies and/or the implementation of circular and green services.

Federico Adrodegari, coordinator of the ASAP initiative and Researcher at the University of Brescia, opened the day by recalling how, at a time when the issues of green industrial transformation are high on the political and social agenda, ASAP felt it was particularly important to pool expertise in these areas to understand how these goals can actually be achieved. But while the general trend is clear, at the individual company level there is often still a lack of understanding of how to undertake this transition and how to prepare for the impacts, especially in SMEs.

According to ASAP, an answer may come from an approach based on advanced services, digitisation and "servitized" business models, which has already proven capable of helping companies move towards a "circular" paradigm and achieve not only environmental but also economic and social benefits.

Mario Rapaccini, Professor at the University of Florence and ASAP pas coordinator, in his speech "Servitization and green transition in SMEs, can it be done?" illustrated how in the current context, permeated by the presence of SMEs, more and more importance is being given to the transition from products to digital services, a priority objective with respect to other competitive strategies and sustainability objectives. Servitization, a key constant in this transformation, is therefore a strategy of interest to SMEs which, perhaps more than other companies, face numerous challenges on this path. At a cultural level, it is indeed necessary for top management to become aware of the importance of green services, in a process defined as "Epiphany". At the same time, customer resistance must be overcome by working to better understand their needs and involving them in the co-design of solutions that generate new value. Finally, it is crucial for SMEs to identify the right enabling technologies to facilitate and govern such a complex transformation.

These three points were the subject of a study conducted through working groups during the ASAP Community Meetings, which were attended by more than 30 managers and experts and resulted in a dedicated white paper. Suggestions for action included the use of external partners, through a collaborative process, increasing the involvement of employees and customers, i.e. those already connected to the company but often not very involved, and participation in associations, communities and alliances, which are often useful for overcoming the obstacles that these types of investments require. The combination of servitization and green transition in SMEs can therefore be achieved, as the evidence shows, but there is still much work to be done.

Mauro Bellini, Director of Industry4Business and ESG360, then moderated the session, focusing on the existence of a direct relationship between digital innovation and sustainability and on how the development of corporate social responsibility favours the economic results, instead than being a potential disadvantage on the profit side.

Mauro Paretti, Senior Marketing Manager EMEA at Servicemax, illustrated how 'Service is for everyone!' and how it represents the future for manufacturing companies. The daily challenges that lead to less and less sustainable margins, the evolution of job skills and the generational change in the world of work, as well as the change in customers' expectations, make it necessary for large companies but also for SMEs to reinvent themselves. Service therefore represents a turning point for companies' business: the sale of the product must be seen not as a point of arrival but as an opportunity to build a relationship with the customer, proactive and aimed at creating value for both. The differentiation of the offer is then fundamental, but not always easy to implement: Servicemax therefore helps companies wishing to undertake a path of digitalisation by providing knowledge taken from the analysis of markets and supporting the process of change management.

Alice Viscardi, Digital Process Specialist at Cosberg, a company that studies, designs and manufactures machines for the automation of assembly processes in the automotive, electromechanical and furniture accessory sectors, illustrates the servitization path undertaken by the company, with the aim of becoming a supplier of production capacity. There are two main drivers that have driven the transformation: the environmental perspective, with the possibility of reusing the plant for multiple applications by extending its useful life, and the market perspective, which requires time-based contracts and the possibility of renting. Cosberg, which in the 2000s was product-centric, is currently focusing on providing basic services aimed at maintaining the ideal conditions of the product (monitoring, training) while working on transforming the plant into a means of delivering production capacity. The machine, initially conceived and designed exclusively on the basis of the application mission to be carried out, is now seen as a modular product where PLC, interface, hardware and monitoring have the objective of adapting to several applications. At the root of this servitization path lies the change in the business model, from a "linear" type in which the customer owns the product and is responsible for its disposal, to a model that envisages a more participatory role for the manufacturer, supplier of production capacity. There is also: i) a more fine-grained segmentation of customers, with the entry of customers who in the past could not bear the initial cost of the plant; ii) a different configuration of costs, with greater risk on the company, and iii) of revenue streams, with the security provided by the initial sale progressively disappearing. The first step is to map the current processes, add new ones and then proceed with the development of fundamental digital tools for managing the lifecycle of the modules, and for monitoring performance. Servitization is therefore a feasible path, but it requires a well-defined structure and the use of available technology.

Nico Fontana, CEO of Montecolino, described the "New Business Model of carpeting for exhibition stands". Montecolino, which has been operating for 50 years in the textile flooring and covering sector, has over time carried out a double verticalisation, becoming a producer of its own raw material in 2016 and starting to provide installation, removal and disposal services in 2017, on the occasion of the agreement signed with Fiera di Milano. The company then used its experience in the disposal of industrial waste, committing to recycle 80% of the carpet used during events. To this end, it has committed to speeding up the removal process in order to obtain the least compromised product possible (140000 m² are removed in 4 hours). The collected material is then stored in skips and transported to compaction centres located in the immediate vicinity of the Fair, to reduce transportation costs.

Montecolino relies on external contractors for the processing, so as to make use of the expertise of others in plastic recovery. The material is then transformed into a plastic granule and used in the

plastics supply chain for extrusion and injection, by means of agreements that mitigate the fluctuating trend in the market for raw materials and ensure that the product is always used. In terms of expertise, the company has developed excellence in product reuse, to the real benefit of its customers. This is a key element in an industry where the cost of landfill disposal is increasingly high and regulations increasingly stringent. Through the voluntary use of certifications, the company has built up a reputation on the market. Montecolino future plans include the objective of achieving 100% recycling of the product used in the exhibition sector.

Ernesto Bertolino, CEO of Astelav, illustrated Ri-generation a business project with an environmental and social impact. Astelav is a leading distributor of spare parts for household appliances in the Italian and European markets and is active in the circular economy thanks to its 'Ri-Generation' project, aimed at extending the life of household appliances. The company, thanks to its strong product knowledge, recovers WEEE (waste of electrical and electronic equipment) from collection centres and reconditions them in its own specialized workshops where it employs also people in need. The selection of end-of-life appliances is carried out by trained specialists who are able to identify the potential. The damaged components are then replaced, as well as those that are worn out or likely to break in the short term, and the product is tested and sanitized, then offered for sale on the company website or physical shops. Training of people is therefore fundamental: Astelav has created its own workshop, the Rigeneration Lab, dedicated to unaccompanied migrant minors. The company therefore collaborates with organisations that are not necessarily close to its own business, such as prisons and consortia, expanding its supply chain not only from the point of view of the product but in a logic of "doing business".

Angelo Luigi Marchetti, CEO at Marlegno, a timber construction company for custom-built houses, standardised condominiums, large-scale works and exoskeletons for urban regeneration, presented the evolution path of the company. With the 2010 building crisis, Marlegno had to rethink its business model, moving from B2B to B2C and bypassing intermediaries. Given its small size, the company sought external expertise, assessment and open innovation, taking all the 'good advice' and bringing in a manager with multinational experience, thus setting itself an ambitious target. Today, the company has a turnover of 25 million per year and an entirely B2C business. Although it works in a very “slow” sector from an innovation point of view, it has decided to adopt an integrated approach in terms of architecture, energy, safety and environmental sustainability, backed up by external certifications.

Underlying Marlegno's strategy is the desire to design a building from construction to demolition, considering it as a set of materials which must be traced from the point of view of environmental impact, and which when added together give the building its value. In the past, the home was seen as a passive shell, where man had to adapt to space, but now, thanks to enabling technologies, it can adapt to the needs of its inhabitants, collecting data and activating behaviours to ensure the necessary comfort.

Stefano Butti, Founder and CEO di Servitly, held a speech about 'DPSS solutions supporting servitization and the circular economy for SMEs', i.e. digital systems serving the product. Servitly's task is in fact to offer a system to help companies by exploiting IoT technologies to create a high added value service. The starting point is the connected product: then data are retrieved and transformed them, thanks to an “intelligence engine”, into actions to be taken. However, this intelligence must be distributed to all actors in the chain. One can decide to provide the service provider (or manufacturer) with all the information, creating a control room that suggests the activities to be carried out to the customer, or to exploit a digital system that speaks directly with the customer, providing him with support structures, or to rely completely on the machine, which alone adapts its configuration on the basis of the data collected. Companies are helped along the way by integrating the intelligence, which usually already exists, with software and by introducing key figures, such as the data scientist, who interprets the data and transforms it into information and intelligence, and the service owner, who is responsible for service design. With regard to service design, it is necessary to reconsider product design, designing the product itself according to the service it will provide, also from the point of view of sustainability.

Circularity stories:

To learn more about the topics discussed during the second session of the XVIII ASAP Forum, discover the "Circularity Stories" in these interviews of our speakers with Mauro Bellini (***in Italian only***):

Cosberg: dalla produzione di impianti alle “missioni produttive” nel segno della sostenibilità
https://www.esg360.it/case-history-esg/cosberg-dalla-produzione-di-impianti-alle-missioni-produttive-nel-segno-della-sostenibilita/

Una sostenibilità da red carpet, grazie a Montecolino
https://www.esg360.it/case-history-esg/una-sostenibilita-da-red-carpet-grazie-a-montecolino/

Con la Cognitive House di Marlegno verso un’edilizia più sostenibile e orientata ai servizi
https://www.esg360.it/esg-world/con-la-cognitive-house-di-marlegno-verso-unedilizia-piu-sostenibile-e-orientata-ai-servizi/

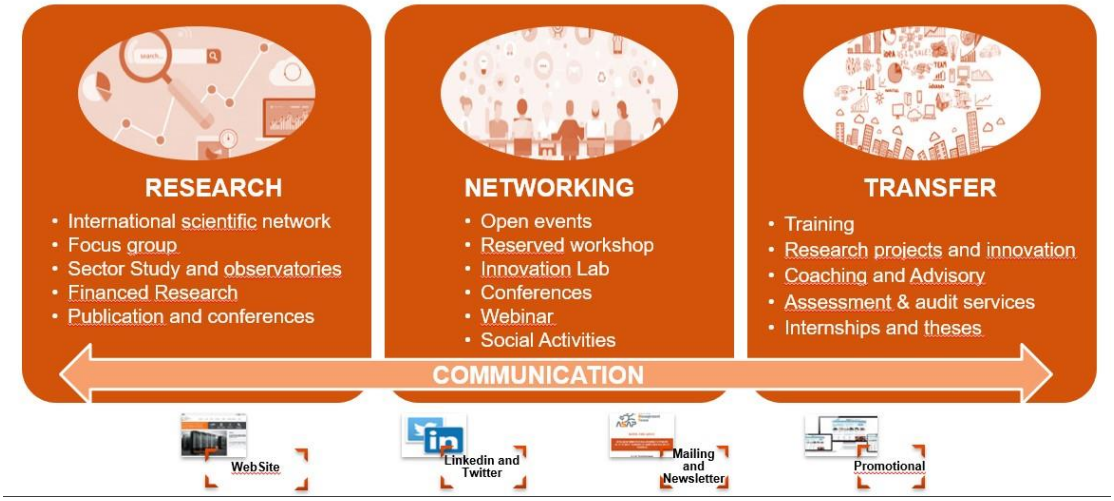
Ri-Generation: Astelav “allunga” la vita agli elettrodomestici unendo inclusione e sostenibilità

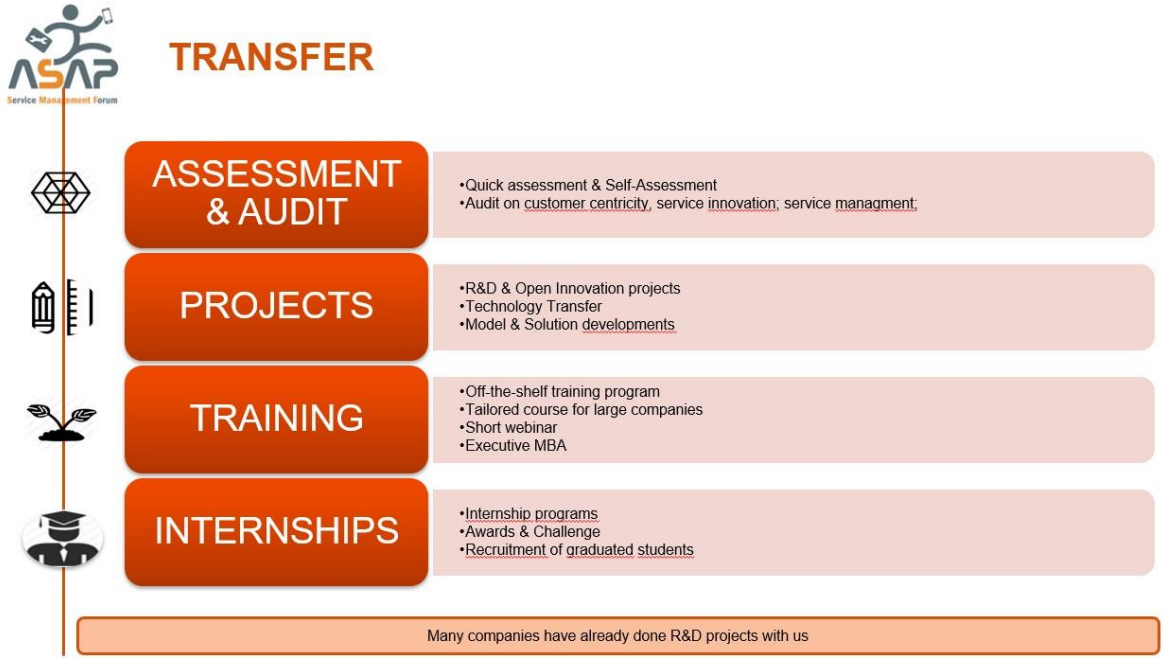
https://www.esg360.it/digital-for-esg/ri-generation-astelav-allunga-la-vita-agli-elettrodomestici-unendo-inclusione-e-sostenibilita/

Being part of the Community

Since 2003 ASAP is the community of reference where academic research centers and companies collaborate for innovation in service design and management, strategic service business development and change management.

ASAP promotes culture and excellence in service management and servitization through research, networking and solution transfer.





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Researcher at the Department of Industrial and Mechanical Engineering at University of Brescia, where he teaches in the operations management area. Since 2011 he is a member of the RISE Laboratory (www. rise.it) and his research activity concerns the areas of supply chain management and service management, in particular the servitization and digital servitization fields. He is author of numerous of scientific publications on national and international conferences and journals. He is cur- rently the national coordinator of the ASAP Service Management Forum (www.asapsmf.org) an industry-academia community about servitization and product-service systems, performing research, transfer projects with companies and dissemination activities in these fields.

Linkedin

Nicola Saccani

Associate Professor at the Department of Industrial and Mechanical Engineering at the University of Brescia (Italy), where he is part of the RISE laboratory (Research and Innovation for Smart Enterprise, www.rise.it). He is member and past coordinator of the ASAP Service Management Forum. His research activities concern service and supply chain management, with particular reference to the impact of phenomena such as the digital transformation, servitization, and circular economy on business models, supply chain configuration and operations management. He is author of several scientific publications in such fields. He has also taken part to several company transfer projects on such topics.

Linkedin

Laura Scalvini

Graduated in Economics and Commerce - Banking and Finance and with a long experience in the bank sector, she then undertook a degree in Management Engineering. She is currently a research fellow at the RISE Laboratory of the University of Brescia.

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ASAP Service Management Forum is the Italian community on service management and servitization. University research centers and companies work together to innovate the design and management of services and to develop the “service business” and the change management. ASAP is the reference institution on these topics at the Italian level, and one of the most important about service management at European level. It carries out research activities, training, workshops and conferences, promoting networking and dissemination of research findings and best practices.