

SERVITIZATION

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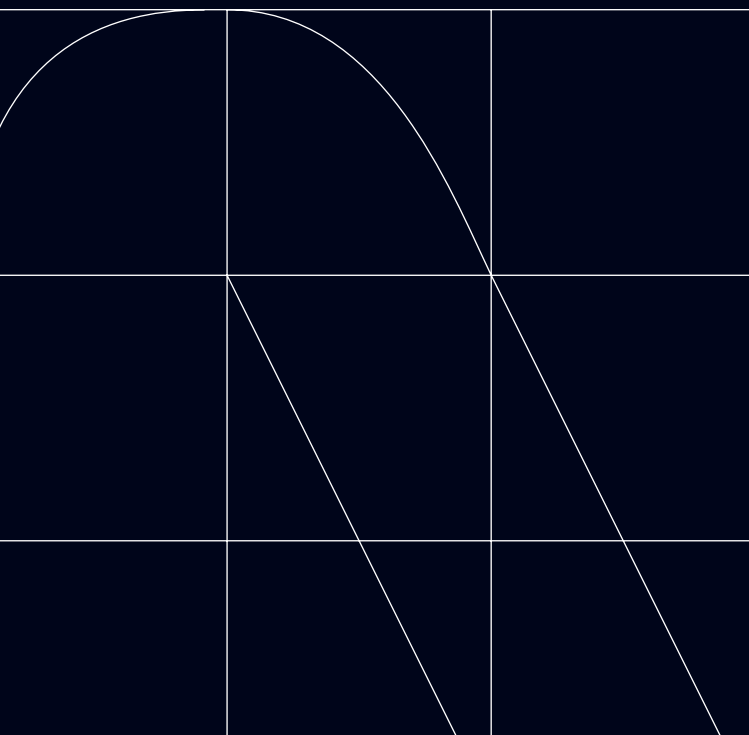
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PART ONE

The Case For Servitization

The global economy is moving towards Service-based models, in which customers buy the benefits and outcomes of a product, rather than the product, itself. This is the process we call Servitization.

End user customers are becoming more attracted to the simplicity and added value of buying servitized products, so it is essential for product and service suppliers to move confidently and rapidly to a service-based model. Early adopters are likely to gain rapid competitive advantage. Those who hesitate may lose share and see their margins squeezed.

B2C SERVITIZATION

The speed of change towards Servitization is not even, with market leaders in consumer goods and such “virtual” products as banking, insurance or creative content leading this movement for change- and profiting from doing so. In these markets, customers are familiar- and comfortable- with the idea of buying a combination of products and services in a single package. It makes sense to them, which is why leading players in these sectors have moved to Servitization quickly and easily.

The same approach is now, step by step, becoming more normal for some larger manufactured items, as well. Vehicle manufacturers, for example, have for many years teamed with finance companies and dealerships to wrap car

purchase with value added services, ranging from leasing to warranties, customized features through to long-term service plans.

Today, we are all aware that motor vehicles can often be defined as connected platforms on wheels. That opens up the potential for new added value services that range from entertainment to connecting with smart city functions to advice on hospitality, travel options and much more. This is just one example of how a core product can be the access point to value added services of many different kinds. This is becoming more and more a normal part of life, and in a growing number of market sectors.

THE CHALLENGE OF B2B

Manufacturers of large-scale capital goods have always found it challenging to adopt a service-based model, yet the same basic value vs risk calculation operates in this world, just as it does for B2C. Based on emerging evidence from the market, backed by the impact of new technologies, NTT DATA believes the

potential benefits of Servitization are becoming increasingly attractive.

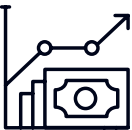
That’s why even the most conservative of businesses are now investigating Equipment as a Service (EaaS), in which customers do not buy the product but instead pay for the output and benefits of that product.

UNLOCKING
SERVITIZATION BENEFITS

Benefits delivered to B2B suppliers by Servitization include:



Improved cashflow. Servitization reduces risks and eases cashflow for suppliers. This ensures more regular payments, reducing financial peaks and troughs, making the planning and development processes more predictable and less risky, while building confidence among shareholders and investors.



Move from CapEx to OpEx. Servitization offers a relatively simple way to transition away from CapEx, which immediately unlocks new sources of capital for investment in future-focused, revenue-earning developments. That's because Servitization means customers no longer have too much of their capital tied up in things: equipment, storage, buildings, heating and cooling, people... Once businesses move to OpEx, they normally gain an immediate competitive advantage.



Customer intimacy and trust. Service-based contracts lead to closer and deeper interaction between customer and supplier, potentially fostering better levels of mutual understanding. This should lead to new opportunities for upsell by suppliers, while ensuring improved loyalty, based on enhanced satisfaction as production assets perform better for longer.



Platform retro-fit, longer asset life. This is potentially one of the most important- but least understood- benefits of Servitization, which involves transformation of core systems and incorporation of emerging technologies during long-term ownership. Within a service-based relationship it becomes easier to retro-fit the installed base with new components and functionality, as they become available. Servitized products stay at best practice levels for longer, and even deliver improved performance as they are extended and developed.

Servitization enables manufacturers and other goods suppliers to maximize their own investments, improve margins, reduce cost of sale, enhance cashflow and achieve better loyalty and repeat sales. This is not the complete story, of course as there are some.



Targeting and personalization. Wrapping a core product inside a package of services makes it easier to target precise customer requirements, leading to increased loyalty and lower cost of sale. Direct market experience, backed by recent research studies, suggests that early adopters in Servitization are growing faster than similar companies in the same field. That explains why leading research specialist IDC has found that 91% of suppliers are now actively considering the move to Servitization.

Obstacles to Servitization

In some industries, such as Critical National Infrastructure (CNI), customers are reluctant to allow data monitoring, analytical or automation software to be deployed from cloud-based platforms, which is a key element for most forms of Servitization, due to security concerns.

We should also acknowledge that some manufacturing business models are still dependent on the big injection of capital that comes from a major sale: restructuring finances to enable a service-based approach is not easy and has to be very carefully planned (and it also requires strong financial backing).

Servitization has to be carefully planned and executed in order to deliver the full benefits, yet it is clearly a positive move for most businesses. The main reason for this is:





DEMAND FROM THE MARKET

Production and distribution across all industries are changing fast, demanding higher levels of customization, improved reliability, a wider range of choices and more sustainable products. Servitization will play a major role in helping to make this transition faster, more profitable and lower risk.



It is very hard to meet these high expectations without moving to a service-based model. Emerging requirements include:

- Higher levels of customization, as customers across most industry sectors increasingly demand products that are highly customized to their exact needs, and which are able to evolve as requirements change.
- Improved reliability, which can only be delivered through improved proactive and predictive support packages, backed by the ability to upgrade and retrofit.
- A wider range of choices, delivered by moving from a small number of standard products to a larger

variety of products, built in smaller production runs.

- More sustainable products, a major attitude shift that is putting pressure on manufacturers to improve their operational efficiency and environmental performance.

Major changes are happening right across manufacturing, as the dominant model of recent decades (centralized production, global supply chains...) is gradually replaced by a more targeted, localized approach, in which smaller production runs of multiple variants becomes the norm. Servitization will play a major role in helping to make this transition faster, more profitable and lower risk. So how can product companies make this approach work for them?

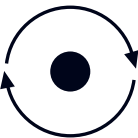


PART TWO

A New Technology Landscape

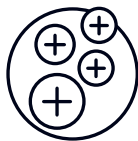
Before analyzing technology changes, let's look at how servitization can be offered to the customers and how it affects to the ownership of the products.

BUSINESS MODELS



Leasing is not a new model for service-based delivery: it has been available in some industries for a very long time. It involves the manufacturer / supplier remaining the owner of the products used by their customers, which pay a leasing fee for specific forms of usage. Today, however, it is being extended and deepened in some innovative ways, for example by Rolls Royce, the world's second largest

aircraft engine manufacturer. The company now leases its engines to customers, which generally pay only for the hours of carry operation (when aircraft powered by these engines are in the air).



Value-added services unlock the full value of Servitization but require higher levels of innovation from supplier and customer, alike, and a stronger role for technologies related to connectivity, monitoring and automation. This concept requires the manufacturer / supplier to use sensor (IoT) and potentially Edge technology to monitor performance, offer proactive intervention when indicated and also out activities such as performance enhancing retro-fits to an approved formula. In this mode, the supplier becomes a much more active and interventionist presence, working as a business partner, rather than vendor.

Perhaps even more important is the way that Servitization impacts the development, testing and evolution of products, which are now designed from the start for constant change. Products become platforms that will evolve in operation. Remote monitoring and management systems are factored into basic designs, leading to higher levels of collaborative working in operation, together with the ability to develop and implement new capabilities, functions, and services during asset life.

To maximize the considerable potential of Servitization, therefore, you need to rethink core processes as well as making good use of new technologies. Changing to service-based models requires a new mindset as the essential first step.



MARKET DEVELOPMENTS

One of the technical obstacles to full Servitization is the traditional technology divide between Operational Technology (OT) and Information Technology (IT). In the world of IT, virtually all projects are service-based. Hardware requirements are either included within a service contract, with upgrades, updates, patches, and security interventions included, or increasingly remain in the cloud, as users move to Platform as a Service (PaaS) models.

In other words, nobody needs to be persuaded that Servitization works (and is completely natural) in IT management. For OT, however, the situation is still very different. Proprietary technologies, with strong IP protection, dominate, and although there is now a clear move towards development of PaaS for OT, the current industry “hype cycle” expects full adoption to require some years of cautious testing and step by step implementation.

The idea of OT PaaS matters because full Servitization for capital goods requires a new level of agility in managing the different components that go towards making up a viable service / product hybrid. Just as software and pure services companies are adopting “composability” as the key to rapid

development of targeted, multi-variant offers, so we need to see a similar move to composable products in the world of OT.

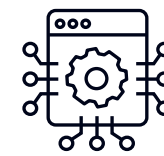
We are still some distance from that but forward-looking manufacturers, using “Industry 4.0” related techniques, are making rapid progress towards this approach. Even in the absence of common industry standards for OT PaaS, ambitious companies are developing their own solutions in response to market demand.

In particular, we see manufacturers moving gradually away from the “globalized” model that has dominated over the past several decades (large scale production in “low cost” countries, with global supply chains and limited variants) to a more flexible approach based on smaller production runs of larger numbers of variants, with shortened supply chains and manufacture geographically closer to the market.

These developments in the world’s industrial markets all help to push product companies towards Servitization. This approach reduces their risks, improves their cashflow and enables them to target more accurately, while profiting from added value services.

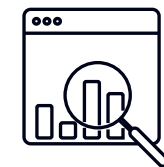
ENABLING TECHNOLOGIES

We have already seen that development of OT PaaS is a key factor in giving product companies the in-built flexibility they need for very rapid response to market developments. Yet we should also note that an enabling framework for the growth in Servitization already exists. Some key components have been in place for decades, in fact. To supplement a product with added value services, the minimum requirement is:



APIfication, the term used for the technique of using standard interfaces (APIs) to enable faster, more secure use of components from a range of different sources in building services, either as standalone software offers or as adjuncts to products. By using APIs, product developers do not need to possess, own or even access the full capability of an external service. Instead, they are presented the specific features they need for their own added value service, accessed via a secure abstraction layer.

Use of APIs has transformed the discipline of rapid IT service development. Servitization is enhanced and enabled by the same flexibility and agility in joint product / service development, and APIs are key to this service-based products, as well.



Performance monitoring, delivered by connected products, in which connectivity is built into the design of the individual product, itself, with wearable medical monitoring technology as a key example. This enables the vendor (now service partner) to track performance in a timely and detailed fashion, so that predictive maintenance can take place. Most industrial products are fitted with sensors as a matter of course, and more and more of these are now internet-connected, so that real time data can be delivered.

In the near future, we believe that an integrated Industrial Internet of Things (IIoT) network will enable authorized partners to access these rich data streams with great accuracy and in real time.



Data analytics, which permits the service and support partners to identify issues, opportunities for optimization and likely future failures. Most vendors now offer basic support services based on historical analysis, enabling customers to close down their own product management teams, cutting out the inconveniences that used to occur through false alarms and multiple alerts.

The growing power of analytics, supported by machine learning algorithms and even Artificial Intelligence (AI), increasingly enables service providers to fine-tune production systems remotely, while continuously optimizing performance.



Profile Management, which enables better understanding of specific target customer groups, built from data drawn from interactions of many different kinds and over extended time periods. This is essential for enabling enhanced targeting and customization.

Profile Management depends on rapid and effective data analytics, as defined above, together with access to data drawn from online transactions, all while staying compliant with increasingly restrictive privacy regulations.



Intelligent networks and Multi-Access Edge (MEC), the next evolutionary development for cloud, enables automated interventions, based on agreed protocols actions from Edge devices, while opening the possibility of new user interfaces based on Augmented and Extended Reality (AR, XR), to further enhance control and management options.

Distributed cloud, enabled by low latency connectivity from 5G roll-out, is gradually making it easier to control fleets of assets from (very) remote Centers, while ensuring that hyperautomation can be applied systematically yet safely.



To unlock all the potentially vast benefits of Servitization, the existing network requires continuous enhancement. We need to bring true composability into product development, as well as for services, and this requires OT PaaS to become more universally available.

To be clear, this combination of enabling technologies forms a natural, evolutionary step forward from the systems and capabilities currently in place. Sensor arrays to gather data are ubiquitous. Data analytics engines to assess the data and understand current and future status are also commonly installed. Connectivity through cloud, though not universally used (we have noted earlier some obstacles to this), is nevertheless in growing use because it enables real-time intervention.

To unlock all the potentially vast benefits of Servitization, the existing network requires continuous enhancement. We need to bring true composability into product development, as well as for services, and this requires OT PaaS to become more universally available.

THE NEW TECHNOLOGY MANAGEMENT LANDSCAPE

Major IT providers, with the hyperscale cloud companies leading the way, have started to build technology environments that foster development and management of Servitization across multiple industries.

Figure 1 below gives an indication of what such an environment could look like, reflecting the way that a

Servitization framework is being developed within a global cloud business. It is notable for its avoidance of a proprietary approach: the components are provided by a wide range of suppliers, and can be easily switched for others as required, or as new options with better performance become available:

In headline terms, moving from left to right:

- Data is gathered from IoT devices, then ingested and processed in Edge systems, which are empowered to carry out specified automatic interventions when required.
- Data gathered at the Edge is passed in real time through secure connections into the cloud, where it is assessed for safety and then passed via a massive scale grouping and organizational solution to:
- Business logic engine, which defines the correct path for further review and analysis, supported by machine learning and multimedia recognition and analysis functions.
- Further actions are carried out via serverless functions and data is stored in serverless environments.
- Customer notification is highly proactive, not just a result of events that require intervention.

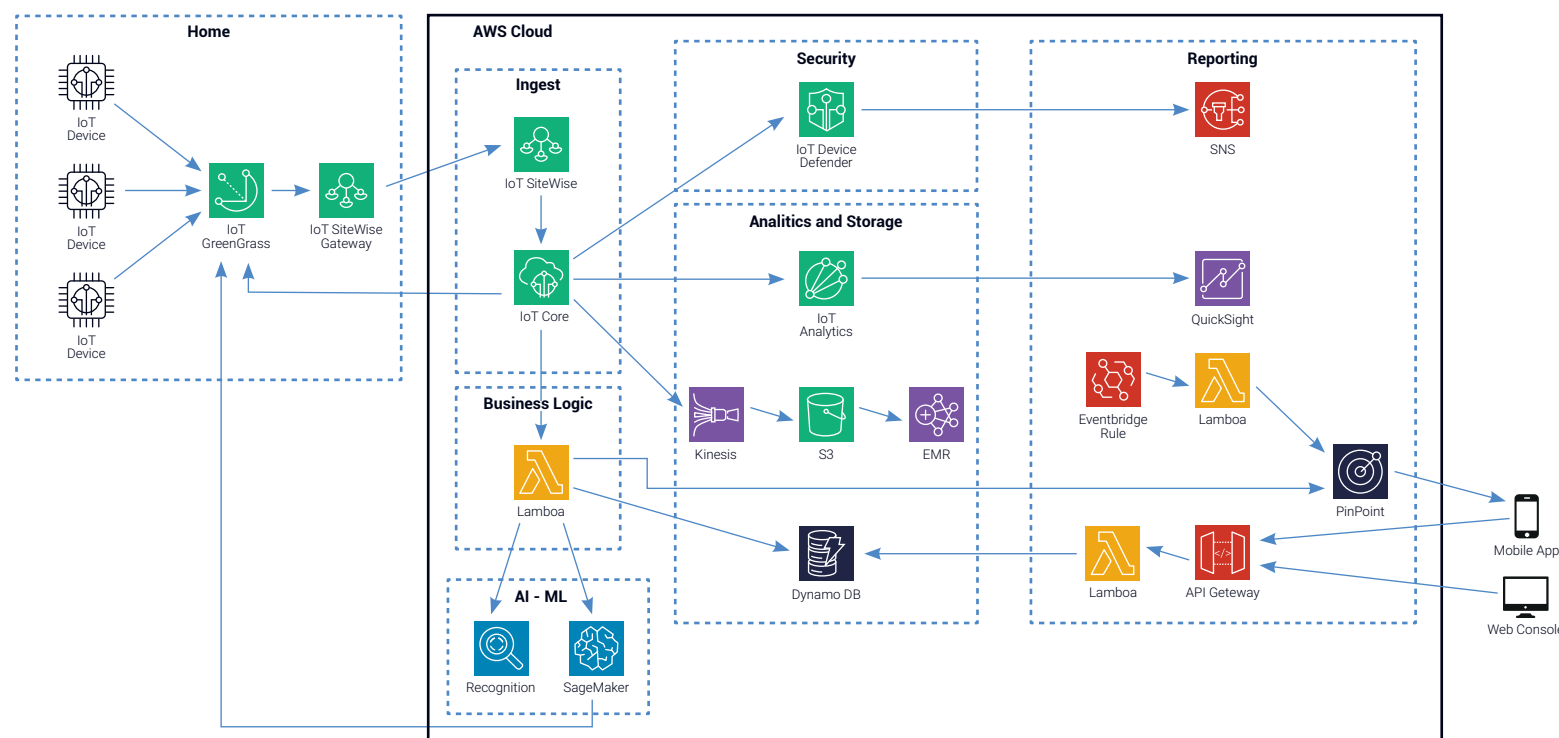


Figure 1: the integrated Servitization technology landscape.

Servitization framework is being developed within a global cloud business.

The entire environment is a connected, developing, growing system in which customers feel that they control events, rather than being controlled by them. Once all products, production assets, control systems and service delivery mechanisms are interconnected within a common, standards-based environment, it becomes possible to apply full Servitization to any sector and any process.

Essentially the same environment will enable customers to:

- Manage large fleets of production assets (smart machines in factories) across the world.
- Control systems that interface with supply chains (at ports or elsewhere in the logistics lines).
- Optimize traffic flows across smart cities, roads, and rail systems, enabling all relevant factors (scale of traffic, available road and parking space, timings for journeys, air pollution, public safety and many more) to be factored in and properly managed.

- Monitor health-based systems, including medical devices in the home, clinician availability and access, integrity, and pedigree of medicines.
- Add value to retail and financial services, enabling better targeting of offers, managing payments and enabling decarbonization of supply chains.

We are heading towards a fully services-based economy because that is essentially what both customers and vendors need and want. The nervous system of this emerging economy is the data flow permitted by IoT, networked cloud and real-time analytics, as defined in the diagram above. We are not yet at the point where this approach can be delivered in full, but some of the benefits are available now, and profitable engagement should be a priority for most businesses and in most sectors.

Once all products are interconnected within a common, standards based environment, it becomes possible to apply full Servitization to any sector and any process.



Next Steps

Moving to a Servitization model requires change across most aspects of a business. It involves the organization, core processes technologies employed and, above all, the blend of people in the business and how they are managed. In other words, this is a major change program and must be viewed as such.

The good news, however, is that it should not, in fact cannot be treated as a “big bang” event. This is a process of steady, evolutionary change, which happens step by step over a period of years. On the one hand, that makes it less disruptive and stressful, while keeping both risks and costs under control. On the other hand, it is essential to develop a detailed, realistic roadmap for change, and make sure this is properly followed. NTT DATA bases our Servitization design and adoption process on a cloud-based approach that we use to help businesses make the often-challenging move to digital native status through Cloud adoption.

A CLOUD-BASED APPROACH

NTT DATA's Cloud-Based approach helps clients and partners understand the potential for Cloud adoption, manage their move to the digital native world and help in adopting disruptive business models, such as Servitization. This systematic approach enables customers to identify the priority technologies, review their processes and organization, and move fast to smooth integration of the composable elements needed to manage transition.

Our approach is illustrated at a top-level schematic level in figure 2 below:

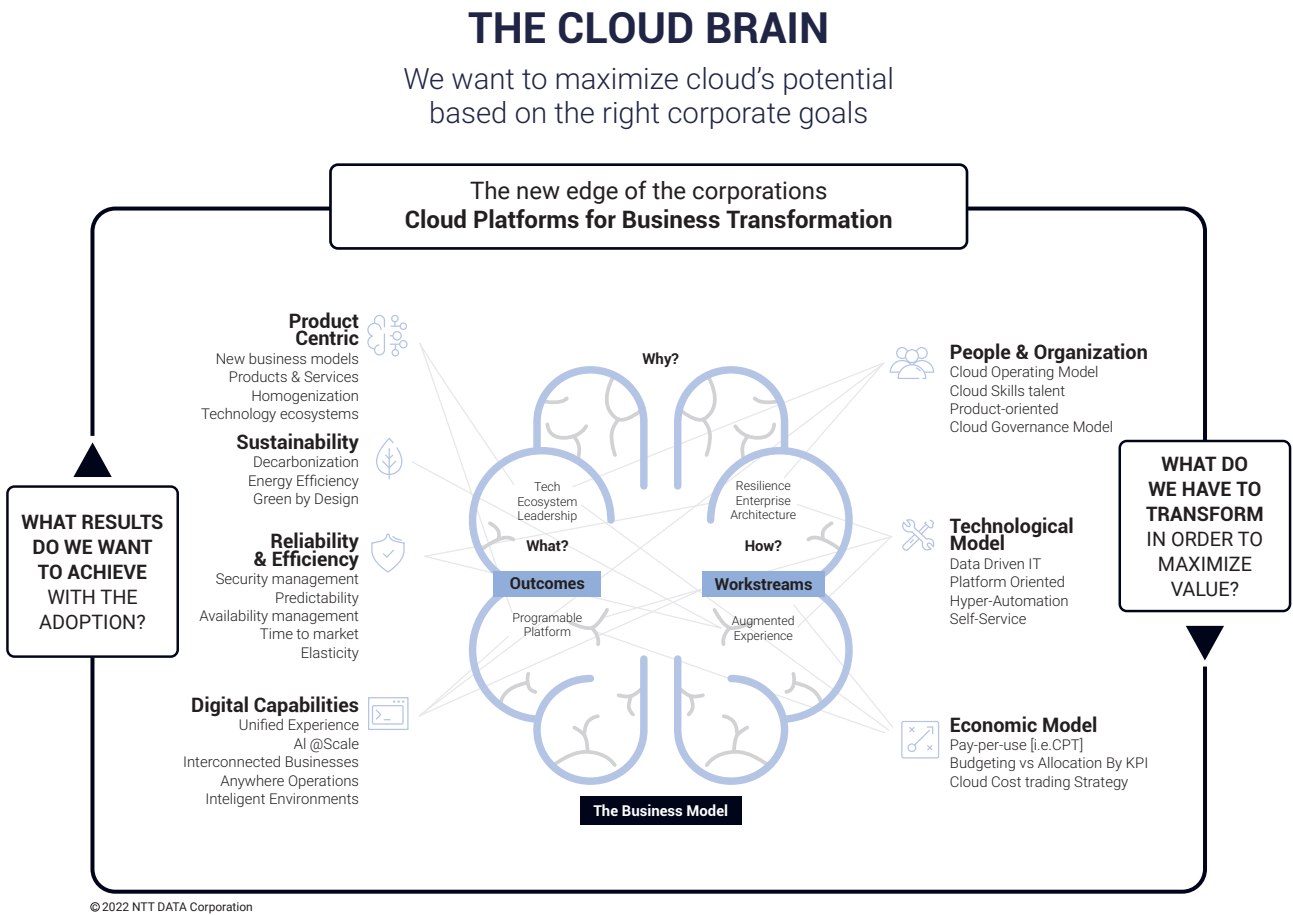


Figure 2: Identifying objectives, goals and transformational activities required to enable smooth cloud adoption.

This graphic reflects our strong belief that a change in mindset is needed as the first step in successful cloud adoption.

- On the right, we see a simplified definition of the transformation tasks, impacting the organization, technology and economics of the business.
- On the left, we see the outcomes targeted through transformation, incorporating a product-centric approach, higher sustainability performance, greater operational efficiency and a decisive move to becoming a digital native business.
- The transformation required is achieved through a new business model in which programable platforms within a new technology ecosystem play a key role.

In the move to Servitization, deep collaboration will be required with customer functions and teams, while close working with a wider partner ecosystem is also essential. Transformational change requires visionary thinking for sure, but this must then be supported, supplemented and enabled by pragmatic and results focused project capabilities.

The NTT DATA Core Cloud team delivers this through Advisory Services.

CORE CLOUD TEAM



Advisory Services. This is the first step to transformation, establishing strategic priorities and communicating the new approach to Servitization, while building a clear and reliable roadmap to the future. The advisory function helps to:

- Formulate Servitization strategies, through market analysis, scenario development and accurate forecasting.
- Evaluate current organizational structures and processes, then develop options for step-by-step developments.
- Build, test and revise a roadmap to the desired future state, with input from customer and partner teams.

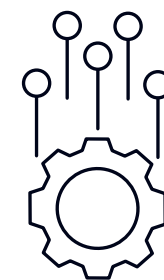
The NTT DATA Cloud Consulting team will work with all relevant stakeholders to assess options, priorities the benefits of Servitization and build strong designs for future organizational structures.



Applied Innovation. In this next stage of development, NTT DATA will work with stakeholders, together with selected partners to design, test and produce innovative new Servitization options. Core capabilities include:

- Architectures and technologies related to service-based offers and enabling environments.
- Collaborative development platforms, integrating capabilities and systems from multiple partners.
- Innovation-focused product and service creation, based on analysis of market opportunities.
- Implementation of new concepts, such as OT PaaS, EaaS and smart systems to support service-based offers.

At this stage, we will reach into the complete NTT DATA extended ecosystem to locate the most appropriate skills and expertise needed to build innovation teams with customers.



Adoption and go to market. In this final stage NTT DATA will work to implement the wider change programs required to maximize the potential for Servitization. Our Adoption process deploys capabilities related to change in culture, organizational structure, business processes and technology. They are skilled in:

- Rethinking the current organizational paradigms to identify options for change, improvement, and long-term development.
- Mobilization and management of internal teams, collaborative deployment of external partner ecosystems.
- End to end communication of new concepts, building the case for change, problem solving and assured delivery.

Outcomes based approach, ensuring that realistic goals are both set and met.

Using these capabilities, matched by specialized input from across the NTT DATA ecosystem, the team will help enterprises to turn new ways of thinking into new ways of operating, organizing and competing successfully in the market.

EFFECTIVE CHANGE MANAGEMENT

NTT DATA believes all business leaders should be realistic about what is involved in moving to Servitization for their enterprise, and should make sure they have effective, experienced support to help them through this challenging period. They are likely to need:

- **Consulting**, helping you know where you stand today, defining your key objectives accurately and assessing your maturity in everything from IT to organization and culture. NTT DATA's consulting team will work with and unite all functions and disciplines to build consensus, focus on priorities and create roadmaps to the future.
 - **Industry-specific support**, helping businesses understand which are the best opportunities for them. That means detailed analysis of market trends, best practice, emerging signals from customers and suppliers, backed by understanding of value propositions and customer appetite for change.
 - **Partner ecosystems**, because Servitization is a collaborative approach to the market. It requires a careful blending of capabilities in product design, manufacture,
- maintenance, service support, communication, marketing, and finance. Once opportunities have been defined, we will need to bring together the partners able to bring new dimensions to the original proposition, leading to co-creation of Servitization concepts that will be well accepted and prove successful in the market.
- **Fresh thinking**, because Servitization requires innovation in multiple dimensions, including conceptualization, planning, partnering, process management, people and organization. This is not a once-only stage of innovation: it requires innovative processes and thinking to be embedded into the structures and thinking of everyone involved. This requires changes to culture, mindset, and behaviors, which are likely to depend on hands-on support from skilled consultants for an extended period.
 - **Project leadership**, as moving to a Servitization model is a major change process, requiring businesses to invest time and effort in making this process as efficient and meticulous as possible.



Finally, Servitization is above all about integration. It involves putting together complex systems, solutions, offers from multiple providers and in all different dimensions: OT, IT, data management, intelligent networking, composability, platform thinking and more. The maximize the benefits, integration expertise is the critical component. That is what NTT DATA offers to every stakeholder.

About NTT DATA

NTT DATA supports clients in their digital development through a wide range of consulting and strategic advisory services, cutting-edge technologies, applications, infrastructure, modernization of IT and BPOs. We contribute with vast experience in all sectors of economic activity and have extensive knowledge of the locations in which we operate.

NTT DATA is a top 10 global IT services provider, headquartered in Tokyo, with over 140,000 employees and operating in more than 50 countries.

We strive to build a unique and open community of people, led by shared values, that has become an extensive network of collective talent, responsible for multiplying our skills and knowledge to respond quickly to the ever-changing needs of our customers and wisely anticipate the future.

We want to continue building a unique environment of collaboration that is creative, friendly, and supportive, allowing us to continue evolving together, both as a community and society, and thriving in a daily routine filled with new and enhanced possibilities.

NTT DATA, evolving together



Visit us at es.nttdata.com