DIGITAL CONTINUITY FOR CUSTOMER SERVICE

The missing link?

INTRODUCTION

Products performance and complexity increase steadily. Consumers and market expectations grow even quicker, in a global context that keeps changing course. *Product* usage is more volatile than ever and varies more rapidly than it takes for industry to adapt, broadening the gap between design and usage. In parallel, new business models have emerged, among which *Servitization*, where amortization and margin are subjected to *Product* usage, and deferred over time. But while Customer Service is at the front line of customer satisfaction, its teams are under stress as their dedication and talent can't balance their lack of valid, up to date information. Mastering this information requires assembling pieces of a jigsaw that are spread-out across manufacturer, suppliers and customers, reluctantly and parsimoniously shared.
Yet, for those who will overcome the challenge of transforming and improve customer intimacy, new growth opportunities are looming.

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STRUGGLING WITH THE SUPPORT

In both our professional and private lives, it feels that **Customer Service** could do better. Why do the answers we get are often not so relevant? Why do we have to repeat so much information - which should be out there somewhere already - before getting first answers? Why do we have to search across so many sources, websites, tools, social networks or forums before receiving an adequate information? Why are we lacking the Service Parts needed, why others seem to have been shelved for years?

Simultaneously, a slow but massive change in marketing paradigm is transforming our consumer behavior. The race for *products* performance and quality is driving their cost up, making them hardly affordable for the Customer, while manufacturers' profit sink with the global competition. In parallel, technologies and expectations change so rapidly, that they challenge the benefit of investing for the long-term in costly *products*. From a manufacturer standpoint, well positioned, adaptative and renewed *services* provide continuous, non-cyclic and high margin revenues. It's probably because of this contrast between fix, costly and low margin *products* and evolutive, pay-per-use *services* that Manufacturers and Customers have come to jointly plebiscite *services*. **This paradigm shift of moving the focus from *product ownership* to *produc*t**

outcome **is known as** *Servitization*, **and has a strong transformational impact**. Interestingly, this trend applies globally across industries: bicycle or electric car-pooling in our cities, gaming software available as one-off purchase or per subscription, or Performance-Based Logistics (PBL) for fighter jets. Ultimately, the *product* becomes free of initial payment, under the condition that the customer commits – or is less elegantly forced into – a single source provisioning for consumables, whether this is ground coffee or printer-ink. Not a new concept, as providing free oil lamps to create a large customer base for Standard Oil contributed to Rockfeller's fortune.

This massive transformation has an abrupt impact on Customer Services: in a *servitized* business, shortfalls that had progressively developed by lack of investment in Customer Services become simply unacceptable.

So how can we reverse the trend?

Customer satisfaction is the tip of a massive iceberg, combining vast amounts of information, parts, processes, skills, tools and solutions, and their orchestration is critical.
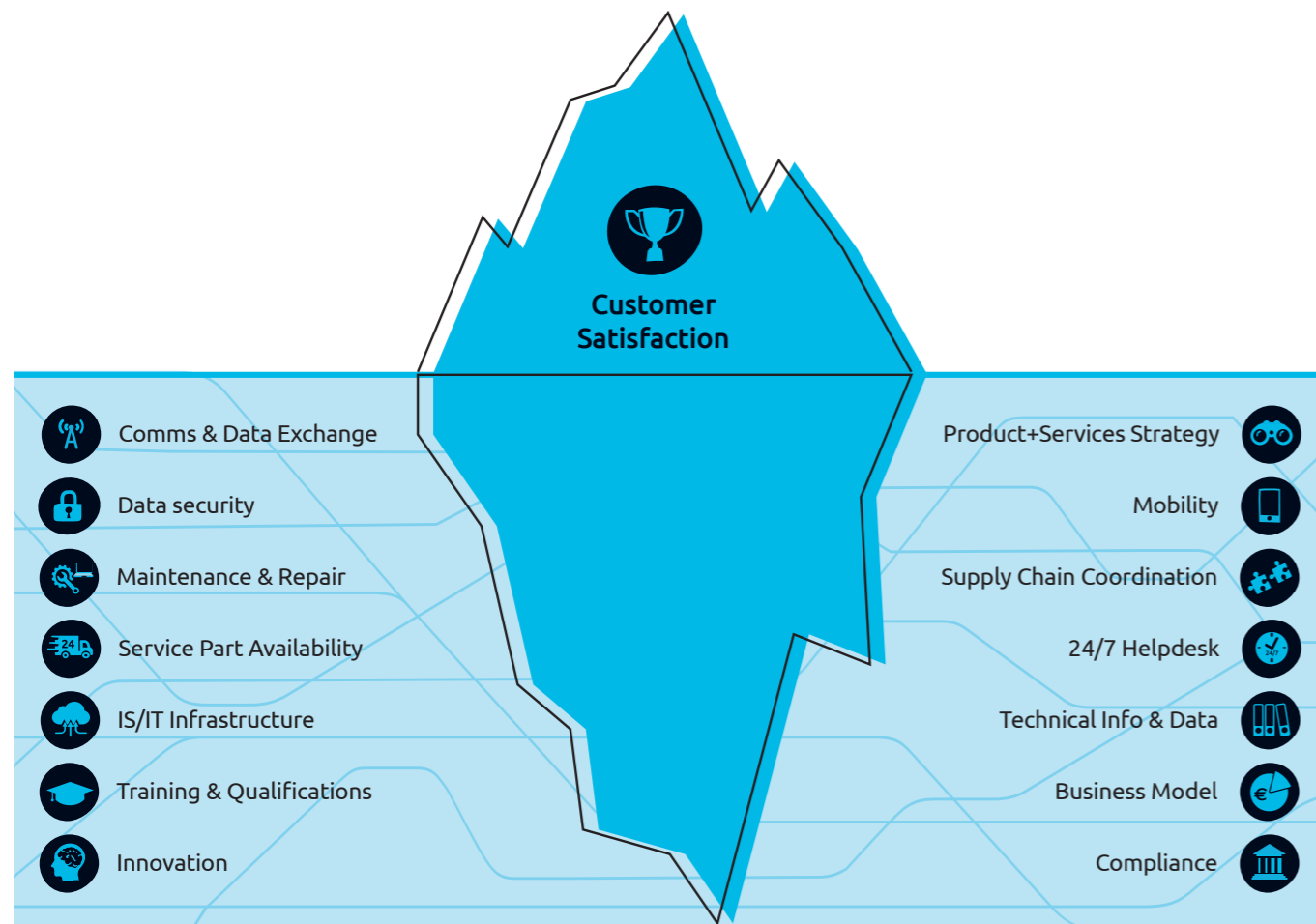
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HIGH VARIABILITY, LOW VISIBILITY

A first observation is that Customer Services generally lack the information they need to provide the quick, spot-on answer that customers expect, and there are again multiple reasons for this. Even in large production series, *products* are far from being uniform. Cars are individualized with catalogues of options that vary regionally and over time. Airliners are made of more than 300 000 parts produced by OEM and Tier-n suppliers that create, upgrade and decommission them constantly. Computers and smartphones change every 3 to 12 months, and their components even more often. Just keeping pace with the variety of *As delivered* configurations is a challenge.

A reason for this is that industries have traditionally invested in securing their development and production environment by priority over their support and services. Because they focus on accelerating their 'go to market'

and improving their Manufacturing Process, and because there is a dynamic vendors solution and integration partners offering, OEM have already invested in *Product Lifecycle Management* (PLM) solutions. But when it comes to Customer Services Information system, and although PLM leaders are increasingly investing in this area, the landscape is still fragmented in a galaxy of niche, home-made or software solutions often diverted from their original intended use.

Yet, the real fun begins after *products* entry into Service. Car tires and headlights get changed outside of the manufacturer's garage network (despite all its efforts to make this close to impossible…), airlines individualize their cabin layout and In-Flight Entertainment systems, consumers install and remove apps at the speed of light, military operate and adapt as they see fit. **The *As Maintained* or *As Operated* Configuration quickly deviates from the *As Delivered*, and if there is no feedback loop, the Original Equipment Manufacturer's visibility on the *products As Maintained* Configuration blurs dramatically. How can I help if I no longer know the *product* that is now operated?**

Customer Satisfaction

Comms & Data Exchange
Data security
Maintenance & Repair
Service Part Availability
IS/IT Infrastructure
Training & Qualifications
Innovation

Product+Services Strategy
Mobility
Supply Chain Coordination
24/7 Helpdesk
Technical Info & Data
Business Model
Compliance

Customer Satisfaction is the result of a tremendous coordination effort, largely facilitated by a cross-silos Platform

CASTING LIGHT WITH IN-SERVICE FEEDBACK

There are many ongoing initiatives to capture these in-service data, and at the dawn of 5G, we can only taste a flavor of it. In Aerospace and Defense, the ASD S5000F data standard was developed to structure and exchange in-service information such as configuration updates or reliability data. With the advent of the Industrial Internet of Things, the self-monitoring and transmission of health and usage parameters of Connected Objects have boomed. At a corporate level, this represents massive amounts of heterogeneous data, leading to yet another problem of how to draw value from them.

But even if not straightforward, the challenge is not so much technical – as analytics have soared and offer impressive data correlation solutions – it is also a matter of operational secrecy, of trade secrets and Intellectual Property Rights, and ultimately of privacy. Military don't want OEMs to know the GPS coordinates of where they operated, or whether ammunitions were shot. Maintenance, Repair and Overhaul (MRO) stations are not keen on communicating the time they actually needed to perform a task in comparison to that calculated by the OEM: if they do worse, it might hint at a lack of training or preparation, if they do better, it's a competitive advantage which becomes a matter of survival in a global market. As for ourselves as consumers, we all have to choose between "improving our customer experience" and maintaining a remainder of privacy, a choice that can be consciously done only if supported legally.

Again, there are ways to address these challenges, but it involves a collective transformation of mindsets. First and foremost, it is a matter of building and maintaining trust, through a balanced relationship, and contractually formalized. Trust used to rely on *product-based* brand-image. It now does on *Service* quality.

> **To collect data, OEM need to convince and demonstrate that they will respect this secrecy – through anonymization for instance –, and that what is felt as a pain, or loss of control by the Customer is compensated by *services* with a true added-value.**

ARE THERE ANY SOLUTIONS OUT THERE?

Yes, and many. So many it is difficult to choose from, to design a Customer Services enterprise architecture, and to build a transition roadmap.

CUSTOMER SERVICES DIGITAL TRANSFORMATION STRATEGY

First and Foremost, Manufacturers and Tier-n need to define and plan their digital transformation strategy, which in the end revolves around investment profile, revenue model and risk exposure in light of a particular business area, including response to market surge or collapse. This strategy definition shall be backed by new digital technologies, and the business solutions they enable.

A FAST-CHANGING SOLUTIONS LANDSCAPE

In PLM or ERP, a handful of vendors have emerged with global and modular solutions. They address different market segments, but altogether with their Commercial Off the Shelf solutions and Integrators supported custom developments, no stone remains unturned.

In Customer Services, there are also numerous solutions. They often started from a core function (maintenance management, technical publications authoring, service parts optimization, CRM…) and evolved into a broader set of associated capabilities. There are two notable trends, that of the PLM vendor which expand into SLM, and that of the Enterprise Asset Management or Computerized Maintenance Management Systems vendors travelling the opposite way. Comparing solutions is not straightforward as it leads to superimposing circles that only partially overlap.

DATA MANAGEMENT AND SECURED COLLABORATION SERVING AN INTEGRATED SUPPLY CHAIN

To mitigate the lack of knowledge on the *As delivered product*, a first step is to secure a logistics and technical information referential – the Logistic Support Analysis Repository – , and to ensure that it is managed in configuration with the same care as for design and manufacturing data.

Again, data standards, such as ASD S3000L, processes and vendor solutions exist to support building and maintaining such a reference. From a PLM standpoint, this referential feed the *product* Service Bill of Materials (SBoM) which from a logistic breakdown structure provides access to all support resources.

A sound and configuration-managed referential lies the ground for efficient, modern, user-friendly and dynamic technical publications, aggregating diverse sources of information.

Service Parts availability, in the adequate quantity and designation, at the right place and time is the visible result of a massive Integrated Supply Chain coordination effort. As for complex industrial *product* design and manufacturing, *product* support requires coordinating a broad range of well over a thousand Tier-1 suppliers.

System manufacturers emerge as natural leaders for such a coordination in face of the Customers, but Tier-1 OEM have already developed direct agreements with the end customers, creating an odd "coopetitive" – a mix of cooperation and competition – relationship with System Manufacturers.

Maintenance execution raises a particular complexity as the split of responsibility between operator, maintainer, manufacturer and third party is very dependent on the nature of the asset and on the customer's support strategy. Pending on *product* type, it is often subject to legal constraints, and sometimes strictly regulated (Aeronautics, chemicals, energy…).

As *Service* efficiency heavily relies on coordination, the need for secured collaborative SLM - Service Lifecycle Management - platforms becomes obvious. Such an environment needs to be made available, using blockchain to secure transactions, public or private cloud to support data storage or enable complex data processing.

Stakeholders run collaborative processes, and these collect, transform and produce data through flows that need to be enabled and secured. Once data governance is established, customer services portals, including machine to machine and human to machine interfaces must be developed, to ensure digital continuity and enable process automation.

DIGITAL ASSETS AND FLEET MANAGEMENT

A next capability level is achieved when digital continuity and analytics allow putting individual *products* in the perspective of a broader fleet, **to anticipate *product* behavior, *service* level and take preventive actions**. As such, digital twins allow gathering and representing heterogeneous data, and running simulations to anticipate on evolutions. **Fleet management solutions backed by real-time monitoring solutions allow anticipating capability shortfalls, and mitigating through re-scheduling or re-tasking, or to preventively restore the potential required**.

INTELLIGENT PRODUCTS ENGINEERING

Another of set of capabilities is being unveiled with the combination of **Connected *products* and 5G high capacity data exchange, together with big data or predictive maintenance solutions**. Contextualized data collection becomes automated, thus facilitating context understanding and queries qualification. The benefit of remote monitoring of consumer *products*, IT servers, engines or turbines will increase with more comprehensive real-time data sets becoming available. Over-the-Air software update allow correcting bugs, or enabling new functions as the demand evolves, without the need to return the *product* and suffer a temporary capacity loss. This was impressively illustrated by TESLA which remotely unlocked *Model S* battery capacity to help Florida drivers escape from the Irma hurricane

PROVIDING TECHNICAL INFORMATION

Technical Documentation, or more broadly technical content remains, the foundation of an efficient *product* Usage and Support, and in the end of a successful Customer Experience.

Technical Documentation must be reconnected to engineering and production data, to ensure configuration coherence. Content complexity has dramatically improved with *product* complexity. But ways of browsing and accessing the content have also diversified, and made information access much easier, with advanced search engine, natural language requests, context-based display, mobile access, or Mixed Reality restitution.

Information protection must nevertheless be guaranteed, to ensure that providing detailed information is not detrimental to Intellectual Property Right protection. Field Service and Remote Assistance will continue gaining efficiency, with tailored documentation, 3D mock-ups, video feeds and Augmented Reality guidance as a new standard.

A COLLABORATIVE, EVOLUTIVE AND SECURED CUSTOMER SERVICES PLATFORM

An SLM / Customer Services platform shall offer the interfacing and orchestration capabilities to support data interchanges along the supply chain and towards the Customer, with a combination of machine-to-machine and human-machine interactions.

Part of a digital thread that runs along the *product* lifecycle, and across organizations, it shall be consistent with the PLM, and host support engineering data such as maintenance planning, technical publications, service parts and tools information or training courses.

The SLM platform shall as well inherit from the serialized *As Delivered Product* Configuration from Manufacturing, and update it continuously into an *As Maintained*, through powerful configuration management solutions. In-Service data collection becomes meaningful when associated to the vast computing power offered by cloud analytics solutions, with a view to update support data, and therefore improve support and *service* efficiency. In addition, SLM platforms must offer the capacity of integrating smaller, fast-evolving "niche" solutions, including 3rd party services.

These can benefit from the large data sources and powerful computing power of the SLM platform to propose agile, innovative and business-specific applications. Scalability shall allow conforming to business trends as activity goes up…or down. Resilience to cybersecurity threats needs to be built-in, and continuously adapted in anticipation of new malware and intrusion attempts.

EMBRACE THE PARADIGM SHIFT

Ripping the fruit of Customer Service digital Transformation is neither immediate nor obvious. Surely, focused actions can significantly alleviate pains locally, and while these are worth exploring, they should not overshadow the need for Transformation.

First and foremost, companies need to decide which way they want to develop, analyzing the likely trends their markets are facing, considering what unlikely circumstances may disrupt their business. In complex supply chains, the make or buy strategy will be of the essence, to maintain customer intimacy while not being outran by technology pioneers.

The economic and operating model comes a close second, with the need to convince internally and externally that upfront investments and, delayed, fixed-price services contracts will be both competitive and profitable, in a conscious risk management approach.

Only then come Architecture and Solutions into consideration. As for now, the concept of a SLM platform, offering scalability, connectivity and flexibility, appears most suited to accommodate today and tomorrow's solutions. Solutions are numerous and fragmented, and a careful assessment and selection is required, as priorities and constrains differ.

But altogether, Digital Customer Services digitalization is a transformation journey, which must focus on the women and men who strive for Customer Satisfaction. Digital Continuity does not end at *product* Delivery.

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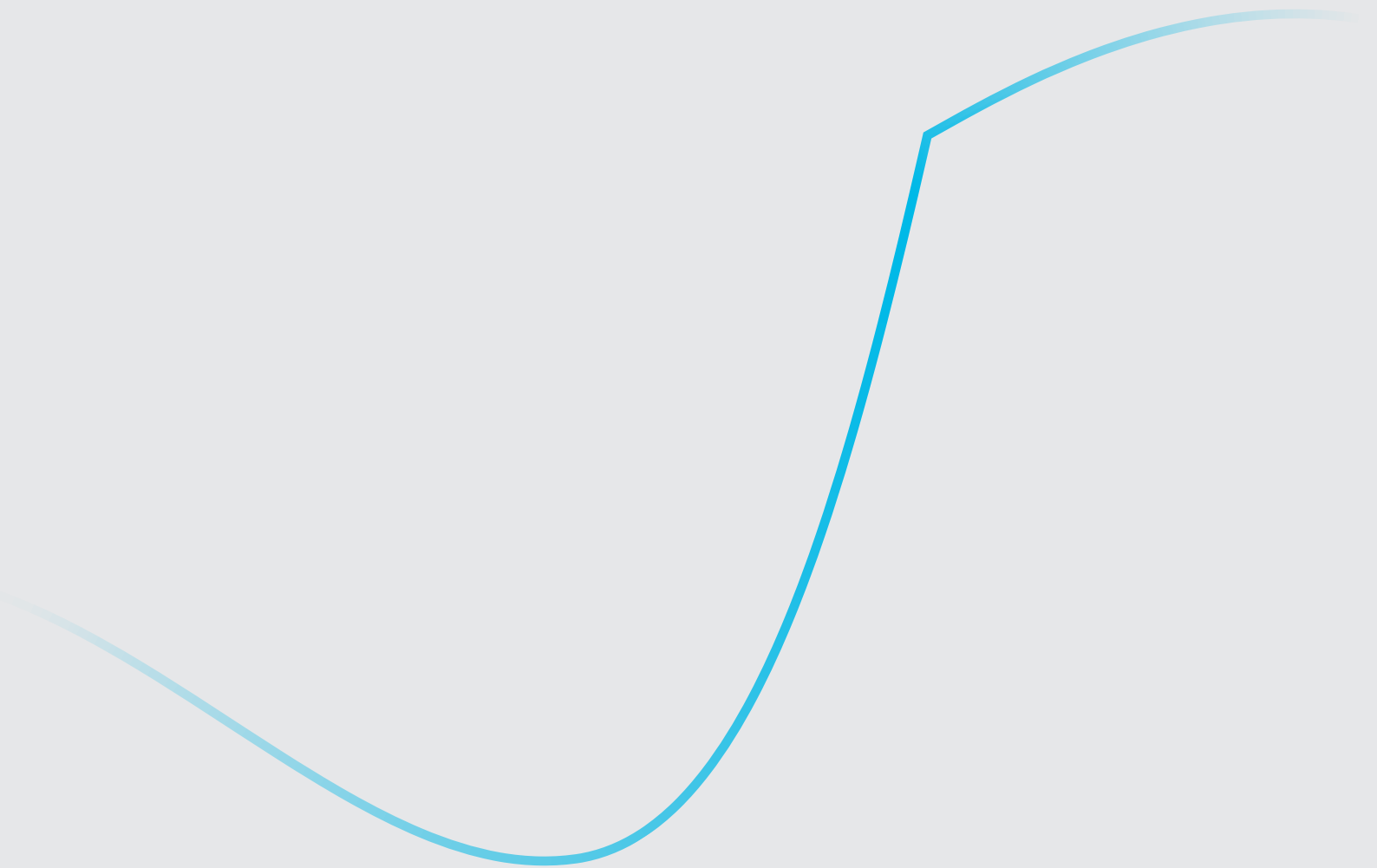
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