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Data-Driven Marketing

LEVERAGING DATA TO ENABLE BUSINESS GROWTH THROUGH
DIFFERENT MARKET CHANNELS

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Project Work

NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação

Universidade Nova de Lisboa

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DIFFERENT MARKET CHANNELS**

By

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Project Work presented as partial requirement for obtaining the Master's degree in Data-Driven Marketing, with a specialization in Digital Marketing and Analytics

Supervisor/Orientador(a): Professor Frederico Cruz Jesus

July/2023

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading

to its elaboration. I further declare that I have fully acknowledge the Rules of Conduct and Code of Honor from the NOVA Information Management School.

DEDICATION

I lovingly dedicate this thesis to the cherished memory of my dear mother, Maria, and my beloved grandmother, Albina. Though they are no longer with us, their unwavering encouragement to keep learning will forever resonate in my heart.

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ABSTRACT

The shift from mechanical and analog technology to digital electronics leading to the "Second Digital Revolution." With the rise of the Data Economy, companies need to redefine their role in this economy by evaluating their engagement. Data has become a valuable asset that can be monetized, and companies are leveraging it to scale their businesses. Schneider Electric, a top energy management company, uses innovative technologies and solutions to drive digital transformation.

This project was created to answer challenges faced by Schneider Electric in giving visibility to partners, monetizing data, and sharing data securely.

As part of the project deployment, qualitative analysis methods were used, including semi-structured interviews and use case analysis. Semi-structured interviews were conducted with service partners at different project stages to gather insights and requirements. Use case analysis was employed to define user interactions within the system. The interviews revealed service partners' need for tools to record and display inventory, access comprehensive product information, and receive proactive notifications. The use cases were developed based on these insights and aimed to address the partners' pain points while aligning with Schneider Electric's business objectives. Overall, these methods helped gather valuable input for the project and shape the solution design.

The project successfully improved the customer journey for all types of customers through the mySchneider portal, providing convenient access to customer information, service maintenance contracts, service visits, and reports. The methodology employed in the project can be applied to other initiatives and future enhancements, aiming to enhance customer satisfaction and increase business revenue. The project also has theoretical implications for marketing and customer relationship management, empowering businesses to develop effective strategies and cultivate stronger customer relationships. Agile project methodology was effective in navigating budget and timeline constraints.

The implementation of the project will support Schneider Electric's global offices and their services growth strategies through partnerships.

KEYWORDS

Data-driven; data monetization; agile; customer journey mapping; use cases.

Sustainable Development Goals (SGD):



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LIST OF ABBREVIATIONS AND ACRONYMS

AI	Artificial intelligence
ALM	Asset Life Management platform – Schneider Electric's internal platform to manage IB life cycle.
APIs	Application programming interfaces
B2B	Business to business
bFS	Bridge front office for services – Salesforce application
CJM	Customer Journey Mapping
DDBM	Data-driven business models
ERT	European Round Table for Industry
FM	Facility management companies
IB intel	Salesforce AI tool deployed for Schneider Electric
IB	Installed Base Information refers to all the technical and commercial data that is associated with the installed base of products or equipment.
IoT	Internet of Things – Innovative technology enabling the interconnection of objects and people through communication networks that allow them to report about their status and/or the surrounding environment and to react autonomously to events and changes in an appropriate manner.
KPI	Key performance indicator
MAU	Monthly active user – is an identified part user who had at least 1 activity within mySchneider portal in the past 30 days.
OEM	Original equipment manufacturer
UX	User experience
VoC	Voice of customers

1. INTRODUCTION

The Digital revolution began by transitioning from traditional mechanical and analog electronic technologies to digital electronics, which provided more efficient means for storing and transferring information. This shift marked a significant advancement in technology, leading to transformative changes in various industries and sectors. Digitalization allowed for improved data processing, increased connectivity, and the development of innovative digital devices and platforms that have revolutionized the way we live, work, and communicate. The Digital revolution has had a profound impact on society, enabling greater convenience, efficiency, and access to information and services. Usage is now moving forward, and we are in the "Second Digital Revolution" (Rindfleisch, 2020,p.1) with the rise of the Data Economy (Opher et al., 2016). As the data economy develops along with the technology evolution and the business needs for growth, "Companies will need to reinvent themselves by defining their desired role in the data economy through an evaluation of their engagement" (Opher et al., 2016,p.1). Historically companies managed different types of assets, physical or financial, but now in our days, they have a new type of asset - data – which they collect, report, and analyze.



Figure 1 - Data is the new oil (The Economist, 2017)

Companies are managing data coming from different sources as it is becoming easier to collect, store and analyze. The increase in data accessibility and the emergence of data-driven insights have led to significant growth in data exchange within and between companies. As a result, a new data economy has emerged, centered around utilizing data to create value through internal and external channels(Opher et al., 2016). Based on data published by the European Commission, the data economy in the 27 European Union countries and the United Kingdom was projected to surpass 440 billion euros in 2020. Furthermore, it is expected to experience further growth, reaching up to 530 billion euros by 2025(Petroc Taylor, 2022).

In the industry, energy management companies take advantage of the data economy by leveraging data to scale their business. This can be either because of the increasing demand for real-time monitoring and evaluation of energy consumption patterns by using energy management systems increasing the energy performance or by data sharing with their direct customer and/or business

partners and *"according to companies led by members of ERT, the most significant benefits from data sharing are developing and enriching services, training artificial intelligence (AI), improving customer experience, boosting operational efficiency, and differentiating products and services"* (European Round Table for Industry, 2021,p.4). Also, data has become a valuable asset that can be monetized, and this is *"an actual source of competitive advantage for businesses in the digital economy"* (Baecker et al., 2020, p.1).

In this context, Schneider Electric is one of the top ten energy management system companies in the world (Imran, 2022), developing innovative, connective technologies and solutions for safety, reliability, efficiency, and sustainability. Schneider Electric has more than 128,000 employees in over 100 countries. It drives digital transformation by integrating world-leading process and energy technologies to realize the full efficiency and sustainability opportunities for its customers' business, providing an endpoint to cloud integration connecting products, controls, software, and services. Schneider Electric enables lifecycle solutions from design and build to operate and maintain phases through a digital twin. Schneider Electric delivers capabilities to transform from site-to-site to integrated company management. Schneider Electric integrated solutions are built with safety, reliability and cybersecurity for homes, buildings, data centers, infrastructure, and industries (<https://www.se.com>).

When Schneider Electric started to deploy its new business models to growth after-sales services business, one of the strategies was to do it through its partners (customers), the ones that have a direct relationship with final customers which are not commercially covered or are unknown to Schneider Electrics and to use the IB to leverage business growth, but several questions were raised:

- How to give services partners or any other partner that tracks or manages, but doesn't own any installed base the visibility over this data for a stronger & faster link from IB data to Services growth?
- How to monetize that data?
- How could service partners share their data with Schneider Electric and guarantee their access to that data monetization?

To answer these questions, it was necessary to understand the business needs, the customer's needs, what tools and systems could be used, what is available in the market, what is used by the competition, what would be the end-to-end digital journey for the different types of customers and for these a project was created to deploy a technical and business solution.

In answering these questions, the remainder of this document is organized as follows: Section 2 presents the theoretical background; Section 3 introduces the project framework namely with the different used methodologies to deploy this project as well as the quality analysis performed; followed by Section 4, which comprises the discussion of findings, the practical and theoretical implications, the limitations, future work, and the conclusions.

2. THEORETICAL BACKGROUND

To be able to answer the business problem and start to define the project, it was important to understand what is being done today in similar industries, what are the industry trends in terms of data sharing and monetization, what research is being done that will support the project by bringing a more academic point of view. The literature review was done on two types of bibliography, research documents and articles from specialized publications, other industry players and industry organizations and focused on understanding how energy management manufacturers are using data for growing their business and what is the impact of data on their business and what is the data value. Also, research was done on different methodologies used for deploying data-driven projects as well as what digital experience is being used on Web B2B portals.

2.1. ENERGY MANAGEMENT MANUFACTURERS

Nowadays, Energy Management manufacturers, such as Schneider Electric, Siemens, ABB, and General Electric, among others, are revamping their business models and monetizing their data either using IoT data via subscription services and digital products, and this is not only a way of creating new products but also drives transformation across the companies, but also using enterprise data as a strategic resource. Taking advantage of the data economy and *"driven by digital technologies, manufacturers aim to tap into data-driven business models, in which value is generated from data as a complement to physical products"* (Stahl et al., 2023, p.1). As companies are using data to drive their digital transformation and this is not being done only by managing data and creating insights, but what companies are doing is sharing their data. Data sharing plays a crucial role in maximizing the value of high-quality data, as it enables the generation of more comprehensive and powerful data insights and analytics. By sharing data across different sources, organizations can combine diverse datasets to tackle complex business challenges and achieve their enterprise objectives more effectively. Gartner predicts that by 2023, organizations that promote data sharing will outperform their peers on most business value metrics (Goasduff, 2021).

The literature presents a lack of detailed information on how data is used in interactions in B2B specifically when companies are working together to use data to create value. (Holmes et al., 2023). If with the digital transformation, Industry 4.0, IoT, more data is available, and this has brought many opportunities for companies and different sectors, allowing more interaction between companies and also bringing a more challenging competitive environment creating a competitive advantage. Although this is still not enough, as not all B2B companies are using these resources with success, and many business opportunities are not detected (Holmes et al., 2023).

In a B2B context, data can be viewed as an inter-organizational resource where each company has its own distinctly different set of data and may view the value of that data in different ways. Specifically, data have been used to generate value in a wide variety of industrial sectors and to create value through innovation. However, there is a lack of research into how companies derive benefits from using information and data to deliver competitive advantage through customer value (Holmes et al., 2023).

Companies can share or re-use data between them to improve their internal processes' efficiency or to detect new business opportunities and grow their business. In the context of B2B interactions, data sharing can manifest in various ways, ranging from unilateral to collaborative approaches. Companies may engage in data sharing by exchanging data in exchange for payment, as part of a service provision, or even without any financial transaction involved (Arnaut et al., 2018). The way companies share their data depends on the different business strategies as they are the ones deciding to whom and what data they want to share, although they need to take into consideration the legislation that defines the type of access to the data that will be shared. Although in B2B data sharing normally the data shared is non-personal data or anonymized personal data, or data subjects have given their consent for sharing, there is still the need to accommodate market failures and fundamental rights over some type of data (Martens et al., 2020).

According to the European Commission study on data sharing between companies in Europe, five B2B data-sharing business models have been identified:

- Data monetization refers to the practice of generating additional revenue by companies through the data they share with other organizations. Companies can monetize data through various approaches, including the provision of services or engaging in data marketplaces.
- Data marketplaces serve as trusted intermediaries that facilitate the exchange of data between data suppliers and data users. These online platforms provide a secure environment for data transactions to occur, and the businesses operating the marketplaces generate revenue from the transactions taking place on their platforms.
- Industrial data platforms adopt a collaborative and strategic approach to data sharing. These platforms are typically restricted to a specific group of companies who voluntarily join these closed, secure, and exclusive environments. The primary goal of such platforms is to foster the development of new products/services or improve internal efficiency. Data sharing within industrial data platforms can be done for free, but fees may also be considered.
- Technical enablers are businesses that specialize in providing technical solutions dedicated to enabling data sharing. They generate revenue through activities such as setting up, using, and maintaining the technical solutions that facilitate data exchange. However, their revenue is not derived from the actual data exchanged but rather from the services they provide.
- Some companies adopt an open data policy, choosing to share data for free to stimulate the development of new products and/or services. By making their data openly available, these companies aim to encourage innovation and collaboration within their industry (Arnaut et al., 2018).

Data monetization can be achieved through different approaches and each of them offers distinct revenue-generation opportunities based on the nature of the data sharing activities. So, depending on their strategies, companies will use one or more business models and will interact with other companies for a specific business that can be either suppliers, partners, customers or even internal business or public institutions and academia (European Round Table for Industry, 2021).

The ongoing increase in data available gives companies the necessary motivation to leverage it to obtain an economic benefit, a. As already mentioned, data is now considered a valuable resource that can be monetized as an asset and "*can be an actual source of competitive advantage for businesses in the digital economy*" (Baecker et al., 2020, p.1) . Data monetization is raising its

importance in both research and practice driven by technological trends in the big data context; it is being treated by business leaders as a higher priority. So, companies that have defined a data and analytics strategic program and put the right foundations in place are also able to identify the opportunities to start their monetization efforts (Baecker et al., 2020).

According to (Baecker et al., 2020), there are several data monetization strategies identified, all allowing specific economic benefits. From those strategies, the following are the ones that touchpoint with Schneider Electric's business needs:

- Strategically open data to partners is a promising approach that can yield economic benefits, despite companies often feeling hesitant about pursuing it. This strategy involves granting third parties and suppliers access to specific portions of the company's data landscape through APIs. These third parties can utilize this data to develop additional products and services, align their processes, and create ecosystems and networks.
The economic benefits of this approach are various. Firstly, it allows companies to leverage the capabilities of their business partners, tapping into their expertise and resources to drive mutual value creation. Secondly, it enhances the co-creation of value, as the combination of different data sources and expertise can lead to innovative solutions and improved product or services offers. Thirdly, it facilitates the formation of new partnerships, fostering collaboration and opening doors to new market opportunities. Moreover, cost-sharing becomes possible when partners can access and utilize shared data, leading to efficiency gains and cost reduction. Lastly, the visibility of the company's data increases, enabling a better understanding of market dynamics and supporting informed decision-making.
- Data enrichment, which involves aggregating and transforming internal or external data sources, is another valuable practice. Consolidating the data landscape is particularly beneficial for large companies, as it allows various departments to directly access important internal data and information. This streamlines operations improve value creation within the company and expands the availability of data and information for analysis and decision-making. Additionally, it enables the extension and verification of datasets, ensuring the accuracy and reliability of the data being utilized.
- Building and strengthening customer relationships is another area where data plays a crucial role. By leveraging data, companies can gain insights into customer behavior and needs, enabling them to create and maintain lasting relationships. Data-driven strategies empower firms to offer innovative services, personalize customer experiences, and foster repeat purchases. The economic benefits of this approach include optimizing customer acquisition and retention strategies, generating trust, and confidence among customers, enhancing loyalty and satisfaction, and establishing recurring revenue streams.

Overall, strategically open data to partners, enriching data sources, and leveraging data for customer relationship building offer tangible economic advantages. Monetizing data by sharing data with partners is used as a means of value co-creation that can stimulate growth between companies in B2B relationships.

2.1.1. The impact of data on business

The emergence of the data economy will bring about significant transformations in supply chains, driven by evolving customer expectations and technological advancements. These changes will result in supply chains evolving into intricate mesh ecosystems. In response, production strategies will undergo a shift, and collaboration among organizations and ecosystems will foster a more open exchange of information and innovative ideas. To adapt to this changing landscape, companies will need to redefine their position in the data economy. They must carefully evaluate their engagement within these ecosystems to determine their desired role. This assessment will enable organizations to determine whether the establishment of new business units, engaging in joint ventures, or making strategic acquisitions will be necessary to effectively navigate and thrive in the data economy. By strategically evaluating their involvement, companies can position themselves to leverage the opportunities presented by the data economy and remain competitive in this evolving business environment. Data is now being generated from a wide range of sources, and advancements in technology have made it simpler to gather and analyze this data. As a result, there has been a significant increase in the availability of data, leading to a growing trend of data exchange among companies. This surge in data exchange has given rise to a new data economy, where the focus is on utilizing data to create value through internal and external channels. Companies are leveraging data-driven insights to enhance their internal processes and operations while also exploring opportunities to generate value by sharing data with external entities. This data-driven approach is transforming the way businesses operate and unlocking new avenues for growth and innovation (Opher et al., 2016).

Data has become as very valuable resource to drive business growth as a source of competitive advantage (Baecker et al., 2020). Companies are using data to leverage their business by using and monetizing it. As monetizing data has gained enormous importance, it is critical from a business point of view for many companies. The challenge is to define a business strategy to monetize their data and get the full benefit of it. According to European industry major players currently organizations often have limited access to comprehensive information across their vertical markets, particularly beyond their core activities. Acquiring business intelligence can be costly and burdensome. However, the advent of data sharing and data analytics, including AI, holds the promise of providing businesses with a broader perspective on all aspects relevant to their operations. By leveraging data sharing and analytics, businesses can gain better oversight of various areas that impact their operations. This newfound ability to access, share, and enrich business data forms the foundation for innovative services and business processes that transcend borders, industries, and individual companies. As a result, a diverse community of participants emerges, including suppliers, technology providers, independent software vendors, logistics providers, manufacturers, and start-ups. Each participant contributes unique data sources or services, further enriching the larger ecosystem and generating additional value. Industry data ecosystems can take two main forms. Firstly, they can be multi-company-led, involving collaboration and coordination among multiple organizations. Secondly, they can be single-company-led, where a large industrial player with sufficient scale launches a data network within its own ecosystem of partners, customers, and suppliers.

By embracing data sharing and participating in industry data ecosystems, organizations can gain a holistic view of their markets, drive operational improvements, and unlock new business opportunities in a rapidly evolving digital landscape (European Round Table for Industry, 2021).

In particular, B2B data sharing usage is growing within companies' ecosystems, and this is considered to be a driver of innovation, efficiency, and revenue growth, and this will lead to long long-term business value creation. Nowadays, some use cases are already in place for production processes optimization, maintenance operations, healthcare solutions, advisors for facilities management and many more.

2.1.2. Data-Driven Business Models

With innovation and new digital technologies, available more data is continuously being produced. This data can be collected, processed, and analyzed to obtain valuable information, insights and recommendations for the different actors in a company ecosystem, so for those companies, data has a big economic potential leading their strategies to DDBM. This has a very significant positive impact on margins, sales, customer loyalty, getting new competitive advantages or finding new markets. In DDBM, the utilization of data-driven services plays a pivotal role in creating, delivering, and capturing value. These services are instrumental in leveraging the power of data to drive various aspects of business operations and generate economic benefits. They enable companies to harness the potential of data to enhance their offerings, improve customer experiences, and ultimately increase their revenue streams. By leveraging data-driven services, businesses can unlock new opportunities, optimize processes, and achieve a competitive advantage in the marketplace. (Stahl et al., 2023).

Nowadays, many companies struggle to offer DDBM as these models are to make the change to create high customer value and more competitive advantages by leveraging new services. The utilization of data-enabled learning is becoming increasingly prevalent to enhance and personalize offerings. However, providers of such services must go beyond mere data utilization to establish strong competitive positions. This can be achieved by ensuring that the value derived from customer data is substantial and enduring, making the data proprietary and resulting in product or service improvements that are difficult for competitors to replicate. Alternatively, data-enabled learning can create network effects, further strengthening the competitive position of the providers. By focusing on these factors, businesses can harness the full potential of data-enabled learning to gain a competitive edge in the market (Hagiu & Wright, 2020). The utilization of data enables businesses to optimize their operations, improve customer satisfaction, and gain a competitive edge in the market. Thus, data plays a crucial role in shaping the way products and services are developed and delivered by companies (Marcinkowski & Gawin, 2020).

An example of DDBM can be applied to the facility management industry. The DDBM serves as a valuable framework for FM organizations, providing guidance on how to strategically prioritize activities and allocate resources toward generating business value from data. It emphasizes the importance of leveraging data to develop data-driven products and services that can be monetized. By following the principles of DDBM, FM organizations can unlock the potential of their data assets, drive innovation, and create new revenue streams. DDBM assists in aligning business strategies with data-driven opportunities, enabling FM organizations to maximize the value derived from their data and stay competitive in the market (Marcinkowski & Gawin, 2020).

3. FRAMEWORK

Nowadays, in the business world, data-driven projects are becoming more important as companies/organizations collect more and more data to grow their business. Managing a data-driven project can be very complex with many challenges, so a possible approach is to combine different methodologies. At Schneider Electric, for this type of project with the objective of sharing data and monetizing data through a digital customer experience, we use different methodologies, and for this project, it was used a combination of three methodologies according to the following framework (please see figure 2).

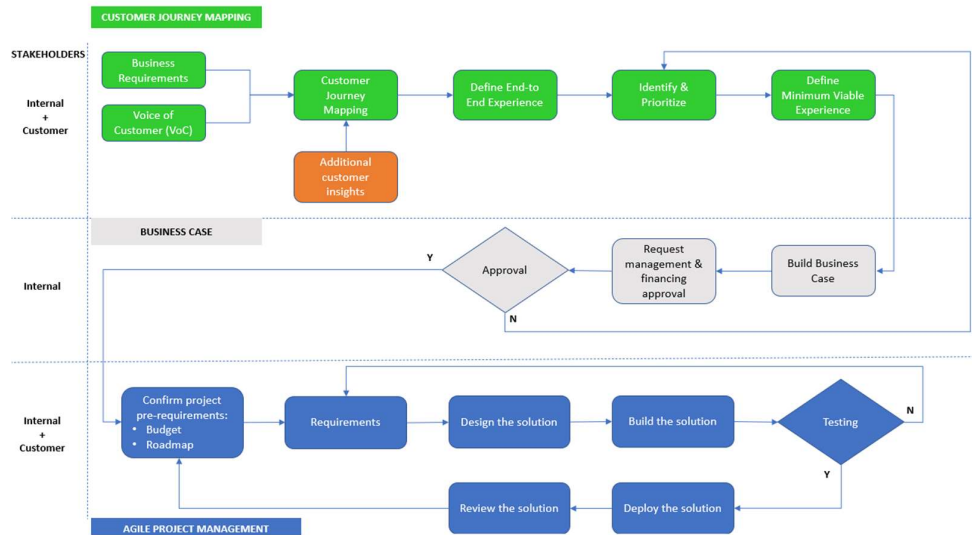


Figure 2 - Project Framework

3.1. CUSTOMER JOURNEY MAPPING

CJM is a method to understand the user experience – "*Walking a Mile in the User's Shoes*" (Marquez et al., 2015, p.1) and can support B2B sales and services processes. It allows to illustrate the customer's decision process from the customer perspective and gives a better understanding of the customer experience. This method allows building a CJM to facilitate innovation and insights to improve existing processes /services and/or create new ones.

Customer journeys are generally developed from a persona, and it is a sequence of a customer's direct and indirect contacts with a product or service for which a positive, negative, or neutral experience is classified. The value of the customer experience at each touch point influences the perception of the experience. A customer journey map is organized as a series of phases or stages that represent the different steps a customer goes through when interacting with a product, service, or brand. The customer experience at each phase is influenced by all the experiences the customer had. Customer journey mapping is a process that aligns with the principles of service design. It involves visualizing and sequencing the various touchpoints and interactions that occur throughout the customer's experience with a service (Micheaux & Bosio, 2019). This mapping begins from the initial contact with the customer and extends to encompass the complete journey of service

consumption. By documenting each step and interaction, businesses gain a comprehensive understanding of the customer's perspective and can identify opportunities for improvement and innovation. A customer journey map may include different types of information as a general description of touch points, storyboards, and graphic representations of emotional journeys. Identifying customer emotions is important to understanding where the customer is delighted or struggling in his customer experience to identify gaps that will allow to improve or get new solutions. The goal is to create a holistic view of the service, enabling organizations to deliver exceptional experiences that meet customer needs and expectations at every stage of their journey. Customer journeys have been applied mainly to marketing and service but not only (Micheaux & Bosio, 2019).

The literature describes different frameworks to create a CJM, but in common, it starts with the need to understand, as much as possible, the context in which customer touch points and experiences, as well as relationships between customers and the company/organization. This can be done by conducting interviews with customers and internal experts, and doing internal workshops using design thinking (Burghardt et al., 2017). It includes mapping touch an interaction points, Identifying the characteristics of effective journeys, mapping to identify and reach specific targets, measuring the strengths and weakness of customer experience, identifying the benefits and costs of journey mapping, defining priorities, and planning and implementing the CJM (Berman, 2020).

To get fully understand of our service partners' needs and align them with our growth strategy, an analysis was done of all Schneider Electric's service partners CJM (figure 3) already available for the different customer types that match our service partners.

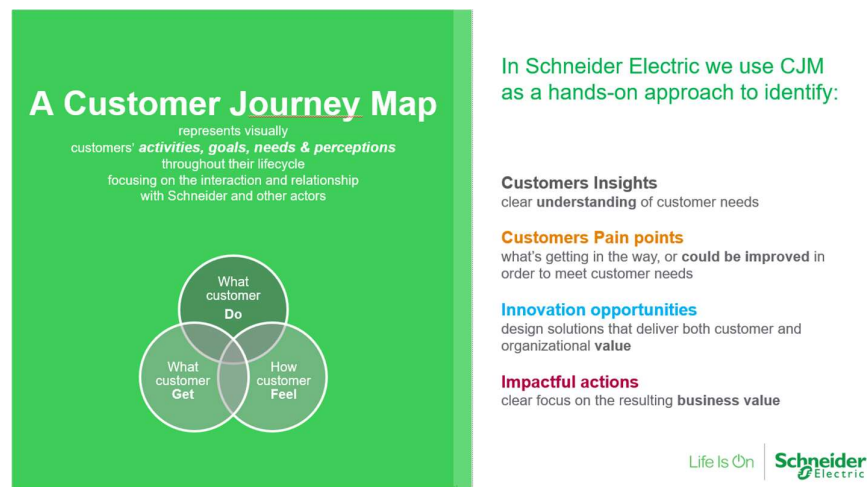


Figure 3 - What is the customer journey mapping

Our service partners are from different market channels; they are panel builders¹, contractors², IT resellers³, distributors⁴, and facility management companies⁵.

¹ Panel builder – Company specialized in constructing electrical panels. The type of panel may differ depending on the type of industry, but it includes design and construction panel layouts.

From the end-to-end CJM, we were able to understand what the customer interactions with Schneider Electric are, the ones that have a better experience and the ones that are pain points, how much effort a customer needs to do and their unmet needs as well as customer insights.

Although the CJM is very detailed and covers all customer journey steps, that are some aspects of the customer interactions with the Services Business that need to be clarified and for that, customer interviews were done with some service partners with whom Schneider Electric has regular involvement.

The customer interviews, as per the interview guide in the appendix A were conducted by country local teams, and the focus was on getting the customers' return on what they like, what they don't like, and what they want across the different steps of their customer journey with Schneider Electric.

From these interviews, an analysis was done on the customer feedback, and with that information added to the one already available from the existent CJM, a customer experience end-to-end was built, as detailed in Figure 4, followed by and alignment with the different Business stakeholders to define the priorities.

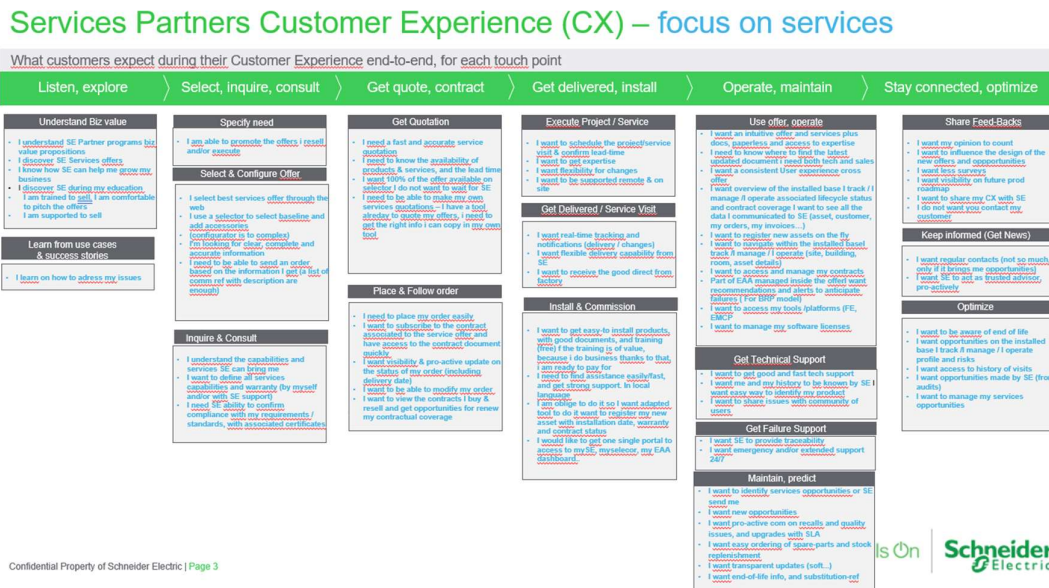


Figure 4 - Service partner's customer experience

This was the starting point for building the Business case and later, the use cases definition within the project deployment.

² Contractor – A Company hired by another company to work for a particular project during the project period. There are several types of contractors depending on the type of industry.

³ IT reseller – A company that purchases IT products or services from a manufacturer, distributor, or service provider and resells it to its customers. There are different types of IT resellers depending on their go-to-market.

⁴ Distributor – A company that acts as an intermediary between manufacturers and other companies take can be final customers or other intermediary companies.

⁵ Facility management company - A company that can perform many roles. It is responsible to ensure that its customer's sites (buildings, infrastructures, grounds) are well-maintained, safe, and secure.

3.2. BUSINESS CASE METHODOLOGY

A business case is a formal document that describes the reasons and intentions for project investment to justify it, and get the management authorization and the necessary funding to proceed for project deployment. It summarizes the benefits and recommended solutions as well as an overview of the scope of the work, costs, timeframe, and risks. The business case is subject to review throughout the project's lifetime (Marnewick & Einhorn, 2019).

The business case includes the project development defense as it is necessary to follow up with the necessary stakeholders. This will allow a more comprehensive understanding of the advantages, costs, and risks of the project, allowing them to make well-informed decisions. The objectives will be monitored and accountable, as responsibilities are clearly assigned, as well as any commitments to improve. Scrutinizing the business case allows the project to be continually optimized in response to company adjustments and changes that may happen inside and or outside the company. The business case finally requires the outcomes to be equal to the proposed after all deliverables are live and thereby guarantees that nothing is missed (Johanes, 2021) and (Einhorn et al., 2020).

According to some literature reviews it is possible to understand that a good project business case helps to improve projects performance and optimization (Johanes, 2021). A business case is a business tool to support the project manager in his project management and decisions making on the different project phases, always keeping the focus on the project objectives and will help him to make more realistic and accurate decisions.

To be able to start the project, there was a mandatory step that needed to be accomplished and it was the Business case (figure 5) submission to the management to get the project approval and necessary financing.

The business case methodology was used not only because it is a mandatory business practice at Schneider Electric but also because it allows a comprehensive view of why this project is needed, what we want to do, what our goals are, what resources are needed, what are the benefits and risks. This is also an important tool that will be used cross the project deployment as it will allow to monitor the project and, if it continuous to, make sense as per the organizational environment (Herman & Siegelaub, 2009).

Title: Services Partners Experience in mySchneider

Customer Type
Panel Builders, IT Resellers, Distributors, Contractors, FM's

Journey step affected:

Easy to find Search, Create navigation, Explore & learn	Easy to choose Select offer, Get price, Get availability	Easy to buy Place Order, Confirm order	Easy to get Follow my order, Receive order	Easy to use Setup & commissioning, Registration, Usage experience	Easy to maintain Monitor, activate & support, End of life take back
---	--	--	--	---	---

Customer/Business Problem Description	Suggested approach/solution description			Priority
As part of the Services initiative to grow our business through our Services Partners along with the use of the Installed Base data to leverage that growth aligned with the Services Partners need to get visibility on the Installed Base they track and share, the request to manage their Service Maintenance Contracts and the daily request to local Services teams to get access to service visit reports and managed the service visits scheduling on behalf of their customers there. Today the Services Partners E2E journey doesn't cover these specific needs creating not only impact on Services teams as well as customer dissatisfaction.	<ul style="list-style-type: none"> In order to answer this need we propose to have a more consistent E2E services partner digital journey cross platforms and cross the different Service Partners personas focusing on Partners pain points resolution through touchpoints across common architecture with <ul style="list-style-type: none"> 1 business suite (web/mobile) 1 digital toolbox suite 1 common back office for services data and opportunities We propose to organize their digital experience accordingly their different experience domains and using mySchneider as the business suite. 			P1
				Suggested timeline
				Q1 Q2 Q3 Q4
				Platforms/Tools affected
				Backend bFO / bFS /ALM
				Frontend mySchneider
Risk if deprioritized	Value impact			Stakeholders/Contacts
Process efficiencies will continue to increase as we move forward by increasing the number of new Services Partners as our Service Business Programs are being launched and we'll not be able to deliver a consistent E2E Services Partner digital journey.	Satisfaction (i.e. Δ +NSS)	Adoption (i.e. Δ +MAU)	Performance (i.e. Δ +\$)	Country All
Potential impact on satisfaction will come by providing a new services experience with the possibility to access and managed data	This will increase the mySchneider adoption for Service Partners as today is limited to some trainings and opportunities management	The possibility for managing contracts will have a positive impact on recurring business as well as IB management		N° of customers/potential users affected 600 partners
				Country contact -
				DCR Domain Leader -
				DCR Digital Leader -

Figure 5 - Business case for services partners digital journey

3.3. AGILE PROJECT MANAGEMENT METHODOLOGY

The focus on the literature review for Agile Project Management was not concentrated on the methodology itself but rather on trying to understand how this methodology can be used in different types of projects not only pure software projects.

For many years many methods for managing software have been developed, but in 2001 the manifesto for Agile software development (commonly known as Agile Manifesto) defined four core values and 12 principles, and it was created to state the common values and principles for all those methods, although it was mostly used for software projects it was never designed to be restricted to only software development (Vandersluis, 2014) more and more agile project management cross different industries and different types of non-software projects (Gustavsson, 2016).

The Agile Manifesto (Beck et al., 2001, p.1) states that agile practitioners have come to value:

*"Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan."*

Agile project management requires highly collaborative, flexible teams that can deliver constant (Beck et al., 2001) value through each iteration. This makes sense, considering that Agile is inherently introspective and focused on constant fine-tuning to optimize results (Davis & Watts, 2022).

According to Agile Manifesto, it is valued team interactions over the tools and processes; the software development over its documentation, the customer collaboration, answers to changes over the established plan. The 12 principles help the development process to become more agile and less

complex and to respond proactively to any changes that may occur and always taken into consideration the customer's point of view (Lopez, 2016).

Within the Agile methodology, there are different frameworks that have similarities as well as differences, but all follow the same Agile principles. The main ones are Scrum, Kanban, Extreme Programming, Lean and Crystal all presenting advantages and disadvantages and allowing the possibility to be combined between them. The one we focused on for this project was Scrum.

Kanban - is derived from a Japanese term meaning "just in time." In practical terms, the Kanban method involves organizing a board or table known as a Kanban board, which is divided into columns representing various stages of a software production project. As development progresses, the information on the board is updated, and new tasks are represented by "cards." This approach is not limited to software development and can be applied to other business departments like HR and marketing, providing visibility into team tasks. Kanban relies on effective communication and transparency, ensuring that team members are aware of the development stage and can track project status at any time. It primarily focuses on team capacity and is well-suited for processes with minimal changes. One of its main advantages is its simplicity, as it has been widely used in the industry for many years. However, a potential drawback is the lack of specific time frames, which could result in project delays.

Extreme Programming (XP) - is centered around the concept of finding the simplest solution that will effectively work, without overly focusing on long-term product considerations. It is a methodology that emphasizes communication, simplicity, feedback, courage, and respect, with a strong focus on customer satisfaction. XP enables developers to stay motivated and readily accept requirement changes at any stage of the development cycle, even during later phases. Teamwork plays a crucial role in XP, as the entire team collaboratively solves any encountered issues.

One of the main advantages of XP is its ability to improve productivity. Through the practice of "Extreme" levels of iteration, rapid feedback is achieved, leading to more responsive software development. Multiple versions can be built each day, with only those passing the testing phase being accepted. However, it's important to note that XP is primarily designed for teams working in close collaboration, which can pose challenges for distributed teams. This methodology heavily relies on the sense of community and co-location, making it less suitable for geographically dispersed teams (Al-Saqqa et al., 2020).

Lean – it is a methodology that methodology draws inspiration from the lean manufacturing principles established by Toyota, a renowned Japanese car manufacturer. Its core principle revolves around eliminating any activity that does not contribute value to the product or process.

One of the key advantages of lean methodology is its ease of scalability and adaptability to projects of various sizes. It can be applied to projects regardless of their dimensions, making it flexible in accommodating different requirements.

However, a potential drawback of lean methodology is that it can sometimes lead to a loss of focus. This is because tasks are often divided into multiple elements, which can make it challenging to maintain a clear sense of direction and prioritize effectively. Care must be

taken to prevent the dispersion of attention and to ensure that the overall objectives of the project are not compromised.

Crystal - is not just a single framework but a collection of frameworks known for their high flexibility. This methodology grants teams a significant degree of freedom to design and develop their own processes. It places a strong emphasis on team members and their interactions, prioritizing effective communication over rigid processes or tools.

One of the main advantages of Crystal is its emphasis on frequent deliveries. This approach facilitates the identification of any issues or challenges at each stage of the development process, allowing for timely resolution.

However, a notable disadvantage of Crystal is that it tends to yield optimal results when implemented by experienced and autonomous teams. This means that teams with a strong level of expertise and self-sufficiency are more likely to maximize the benefits of this framework.

Scrum - is the most widely adopted framework that prioritizes delivering maximum value within the shortest possible time. It is a team-oriented agile methodology that defines specific roles and establishes short iterative periods called sprints. During these sprints, the system is developed incrementally, producing a distinct artifact that coordinates the team's work. Scrum is widely recognized as one of the most popular agile methods available (Al-Saqqa et al., 2020).

What sets Scrum apart is its simplicity and focus on management issues rather than technical development practices. This makes Scrum applicable to a wide range of projects, not limited to software development alone. By emphasizing effective project management, Scrum enables teams to deliver value efficiently and adapt to changing requirements throughout the development process.

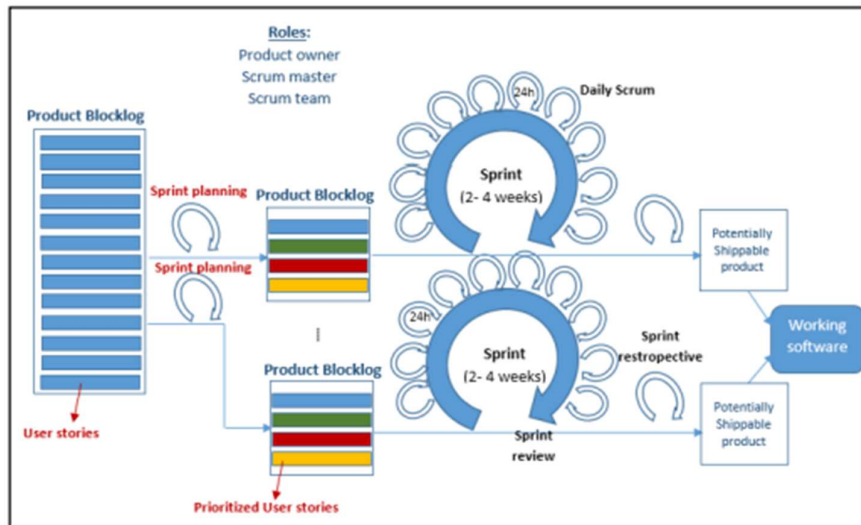


Figure 6 - Scrum life cycle (Al-Saqqa et al., 2020)

In the Scrum life cycle that are three stages as illustrated in figure 6:

Pre-sprint phase – During this phase, the primary focus is on establishing the overall objectives for the system under development. This involves forming the project team, identifying and allocating necessary tools and resources. The key deliverable in this phase is the creation of the product backlog⁶, which serves as a repository for documenting customer requirements, user stories, and features. The product backlog is a dynamic document that undergoes continuous updates throughout the project. It captures and incorporates newly created or updated user stories and features, while also revising priorities as needed. This iterative process ensures that the product backlog remains relevant and aligned with evolving project requirements.

Sprint⁷ phase – The sprint phase is where the actual development work takes place, divided into a series of sprint cycles. Each sprint cycle aims to deliver a new value-added component to the system. User stories are regularly selected from the product backlog based on their priorities and added to the sprint backlog. The team decides on the specific features and functionalities to be implemented during each sprint. Once the pre-sprint activities are completed, a new sprint cycle begins. During a sprint, the team is shielded from external distractions by the Scrum master. Daily progress and coordination take place through a meeting called the daily Scrum. This meeting ensures that features are implemented and tested on a daily basis, maintaining a steady pace of development within the sprint cycle. (Al-Saqqa et al., 2020).

Close phase – this phase marks the completion of the project requirements, where the agreed-upon goals between the product owner and the team are fulfilled. At this stage, the version of the product is deemed ready for release, and all necessary documents are finalized and made available. It signifies the successful culmination of the project, indicating that the project objectives have been achieved and the product is ready to be delivered to stakeholders. (Al-Saqqa et al., 2020)

In this Scrum methodology, it is important to refer to the three main roles:

1. Product Owner: is responsible for setting project goals, defining and prioritizing customer requirements, and validating the outcomes of each sprint. They serve as the liaison between the development team and stakeholders, ensuring that customer needs are met and aligning the project with business objectives.
2. Scrum master: acts as a project manager, enforcing and monitoring the values and rules of Scrum throughout the project. They communicate with external stakeholders, conduct Scrum meetings, and protect the sprint from external interference. The scrum master also tracks progress against the backlog, ensures the team is functioning optimally, and removes any obstacles that hinder the team's productivity. However, the scrum master does not assign or delegate tasks to the team.

⁶ Backlogs are the functions and features that will become a part of the final delivered project. Think of this as a large collection of scope items which have been described in terms of what they will mean to the users (Vandersluis, 2014).

⁷ A sprint is a short mini project just a few days in duration. All the tasks (backlog items) put into the sprint are expected to be completed within the sprint's duration. What's great about this kind of methodology in an enterprise project is that the work is tightly managed yet within the sprint itself, the team feels like they have a great deal of freedom (Vandersluis, 2014).

3. The development team is a self-organized and cross-functional group that collaborates to achieve the sprint goals and deliver a potentially releasable product increment at the end of each sprint. They are responsible for analyzing requirements, designing, developing, testing, and validating the software. The team possesses the necessary skills and expertise to complete the tasks independently.

The Scrum methodology offers several advantages, including its simplicity, team self-organization, and effective transparency and communication among team members. However, there are also some disadvantages, such as the lack of specific guidance on engineering practices, which may require additional considerations and implementation decisions by the team. (Al-Saqqa et al., 2020).

Organizations that adopt agile project methodologies can enjoy several benefits, including:

- Iterative Release of Functionality - agile methodologies promote the incremental release of usable functionality. This means that as each piece of the project is completed, the client can start experiencing the benefits and returns from the development. As the project progresses, the depth and complexity of the development increase, providing the client with a more comprehensive solution over time.
- Client Involvement and Collaboration: Agile methodologies prioritize the involvement of clients in the design and development process. Clients work closely with the development team as the project progresses, allowing them to see and provide feedback on the deliverables they receive. This close collaboration ensures that the project meets the client's needs and expectations effectively.(Vandersluis, 2014).
- Regular Testing and Review: Agile projects incorporate regular testing and review cycles. This enables continuous feedback at each iteration, ensuring that the project remains on track and aligned with the client's requirements. The iterative approach allows the project team to make informed decisions based on real conditions rather than relying solely on predictive models.
- Reduced Risk and Adaptability: Agile methodologies offer less risk and greater adaptability compared to traditional project management approaches. By embracing an iterative and incremental approach, agile projects can quickly adapt to changing circumstances and requirements. This flexibility allows the project team to make adjustments and improvements based on real-time feedback and emerging needs, mitigating risks and maximizing project outcomes.

Overall, agile project methodologies prioritize customer satisfaction, collaboration, adaptability, and continuous improvement through iterative development and regular feedback loops.

Once project financing was approved, we started the implementation phase to bring the project's value to fruition. In this particular project, we adopted the Scrum methodology. As a member of the project team, I fulfilled the role of a product owner. Additionally, our team was led by a team leader who ensured the smooth functioning of all processes. The team consisted of diverse roles such as data architects, UX designers, software developers, business analysts, and quality assurance testers. Throughout the agile project life cycle, various stakeholders participated in different stages, as depicted in Figure 7.

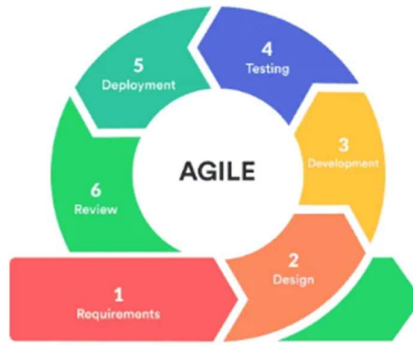


Figure 7- Agile project life cycle

The different Agile project life cycle steps are presented in figure 8.

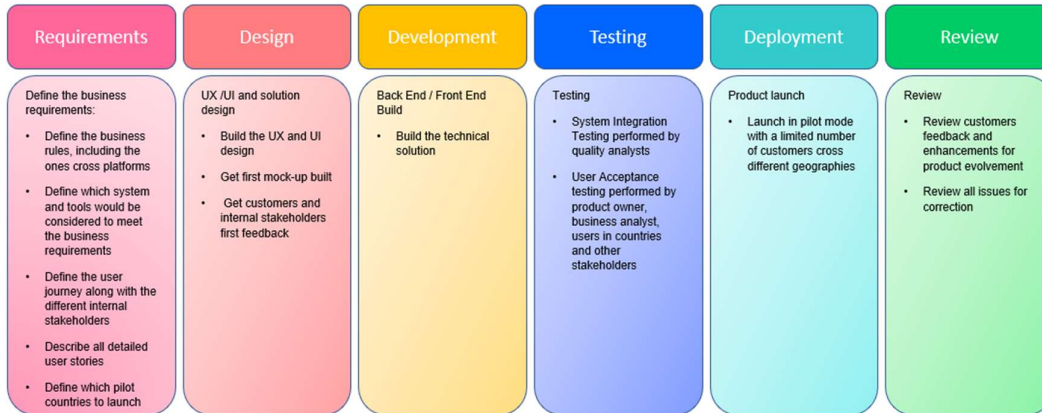


Figure 8 - Agile project life cycle stages

4. QUALITATIVE ANALYSIS

As part of the project deployment, there was a need for the use of qualitative analysis methods, namely semi-structure interviews conducted in different stages of the and the use case analysis to identify, clarify and organize the requirements to build the solution.

4.1. INTERVIEWS

For this project, it was used the, semi-structure interviews (Busetto et al., 2020), where a set of open-ended questions (Appendix A, tables 3,4,5) to guide the individual interviews with the different service partners cross different geographies. The goal of these interviews was to collect insights from services partners to get inputs for the different project phases as described in table 1. The interview script was defined with the services line of business and services operations stakeholders. The sample size was defined based on the country's indication, services partners' availability, and willing to participate (which was one of the roadblocks encountered during the project). The interviews were all conducted online, and the answers to the different questions were collected and used according to the purpose defined in table 1

Project phase	Purpose	Nº of service partners / type	Nº of questions	Interviews conducted by
During CJM	<p>Get additional insights on how services partners work, what their needs are to make their journey more digital and what are their pain points in the actual interaction with Schneider Electric Services business on three specific steps of the customer journey (figure 9):</p> <ul style="list-style-type: none"> - Get delivered, install - Operate, maintain - Stay connected, optimize <p>This will be the input to build the</p>	<p>Six /IT⁸ resellers</p> <p>One /Panel builder⁹</p> <p>Three /contractor¹⁰</p>	<p>15</p> <p>(Appendix A, table 3)</p>	<p>Services channel managers¹¹</p>

⁸ IT Reseller – Company that purchases IT products or services from a manufacturer, distributor or service provider and resells it to their customers. There are different types of IT resellers depending on their go to market.

⁹ Panel builder – Company specialized in constructing electrical panels. The type of panel may differ depending on the type of industry, but it includes design and construction panel layouts.

¹⁰ Contractor- Company hired by another company to work for a particular project during the project period. There are several types of contractors depending on the type of industry.

¹¹ Services channel managers – sales managers belonging to country sales organization responsible to manage all services partners accounts.

Project phase	Purpose	Nº of service partners / type	Nº of questions	Interviews conducted by
	business case.			
Design	Present the mockup¹² (Appendix A, figures 19, 20, 21, 22) to services partners, who are not the same from the first interviews, who are already digitally engaged with Schneider Electric, to get their first feedback on our proposal on a similar Web interface environment where our solution will be deployed.	Four /IT reseller Two /panel builder Three / contractor	Three (Appendix A, table 4)	Product owner
Review	Present the solution to the project pilot services partners to get their feedback on their user experience, what they like and don't like and what enhancements they would like to have. The interviews were conducted 3 months after the solution was launched.	Six /IT reseller One /contractor One / panel builder	Three (Appendix A, table 5)	Product owner

Table 1 - Interviews



Figure 9 - Customer journey steps

¹² The mockup is one output from the Design Solution phase, that will transform the static design files into an interactive experience that allows users to feel like the real experience.

4.2. USE CASES

Within the Agile methodology and as a complement to the requirements, the use cases allow a more comprehensive and less time spent on requirements analysis (Gallardo-Valencia et al., 2007).

A use case is a method to describe, up to some level of detail, and to document what a user will need to do to complete a function within a system (Vandersluis, 2014). In simpler terms, use cases are a method or tool that helps different people involved in a project or process to develop a common understanding. It is a way of creating a shared language and vision among all the individuals or groups with an interest or role in the project (Bittner & Spence, 2004).

The additional insights provided by the interviews during CJM, as described in 4.1, along with what was already known from the different customer types CJM allowed to define an end-to-end customer experience as per figure 4, and from it, a prioritization was done with the focus on services partners pain points and needs, but it was necessary to state the requirements that will allow starting the solution design, and for this, the use-case methodology was used.

From the minimum viable experience, the prioritization, and the budget available, five use-cases were defined, and then they were validated in several workshops with the different stakeholders – system architects, business owners, platform owners, and business analysts - for final validation as presented ahead in section 5.2 figures 12,13,14,15,16 and 17, prior to the user stories are build.

In the use-case description, we have taken into consideration the three essential elements (Brush, 2022):

- Actor – is the system user that will interact with the process and system – in our case, is the services partner (named as certified services partner as the business prioritization was focused on a type of services partners engagement with Schneider Electric).
- Goal – What is the expected outcome – in our case what the user wants.
- System - the process and steps taken to reach the goal – and we have described the functional requirements and expected behaviors.

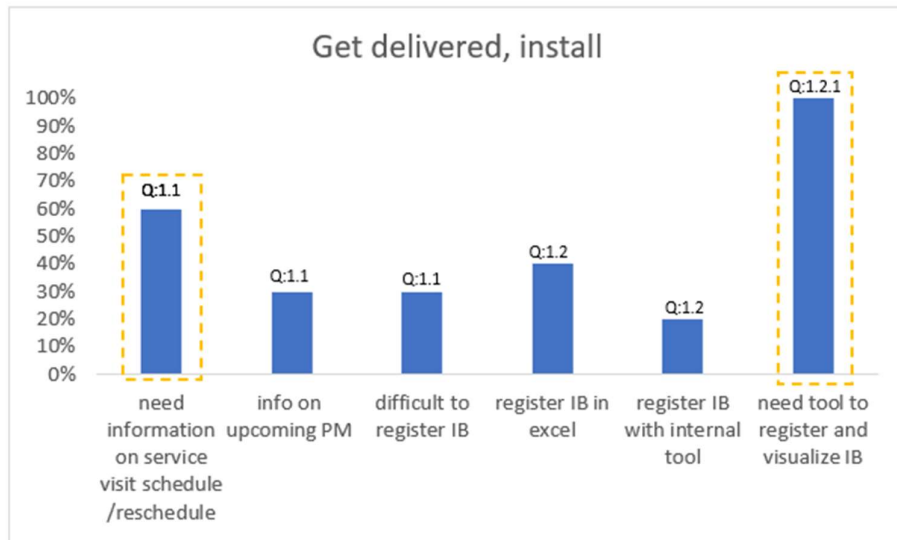
Along with the use cases, we have also delivered a first high-level flow diagram as per Appendix A, figure 23.

5. RESULTS AND DISCUSSION

This section will present the results and discussion from the interviews and use cases analysis referred to in section 4.

5.1. INTERVIEW RESULTS

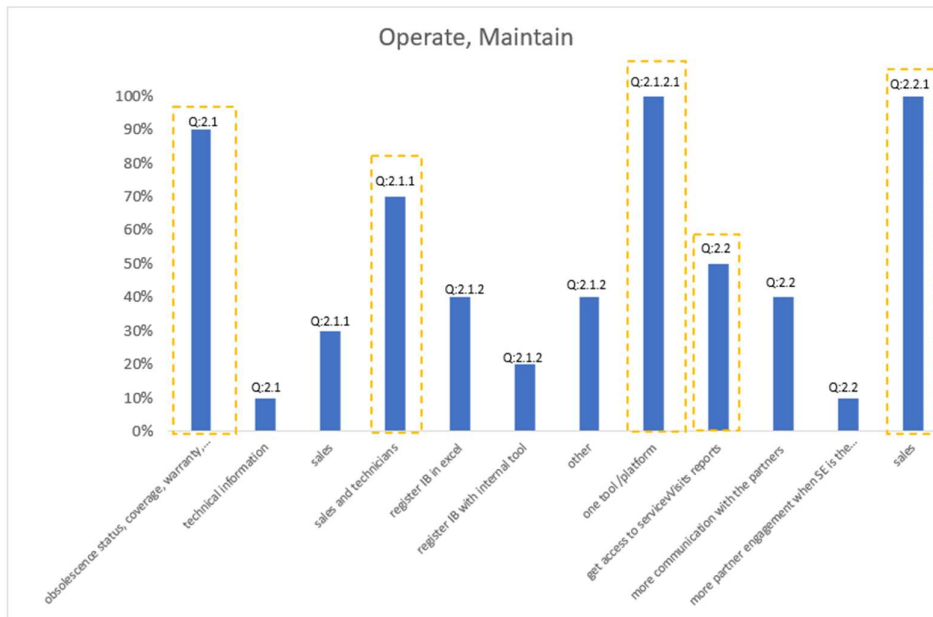
For the customer journey step "Get delivered, install", where the intent was to collect services partners need on services installation/maintenance scheduled interventions on site.



Graph 1 - Get delivered, install - insights

Every service partner expressed a requirement for a tool that can record and display an inventory of items. While 20% of them rely on an internal tool and 40% utilize Microsoft Excel for this purpose, 60% highlighted their need for information regarding the scheduling or rescheduling of service visits, as per graph 1.

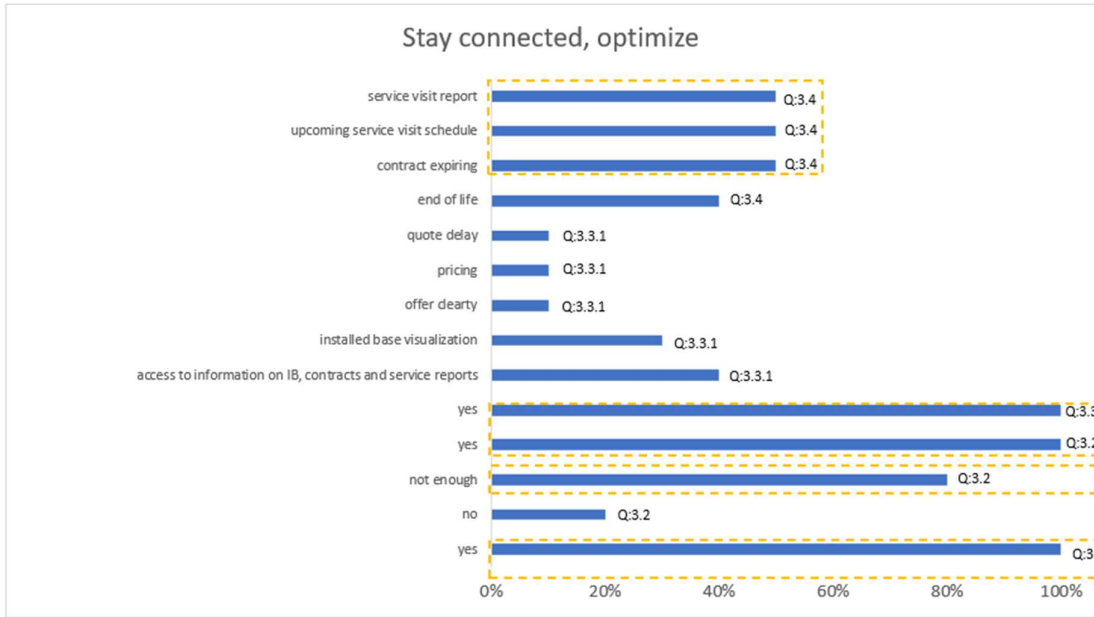
As per the customer journey step "Operate, maintain" where the purpose was to understand what service partners need to properly manage the IB.



Graph 2 - Operate, maintain - insights

Nearly all service partners require comprehensive information about the products they are selling and maintaining. They unanimously expressed the need for a single tool or platform through which they can access this information. This aligns with the preceding step in the customer journey. Additionally, 50% of the service partners require access to service visit reports for their sales purposes, while 40% have identified communication challenges with their sales teams, as per graph 2.

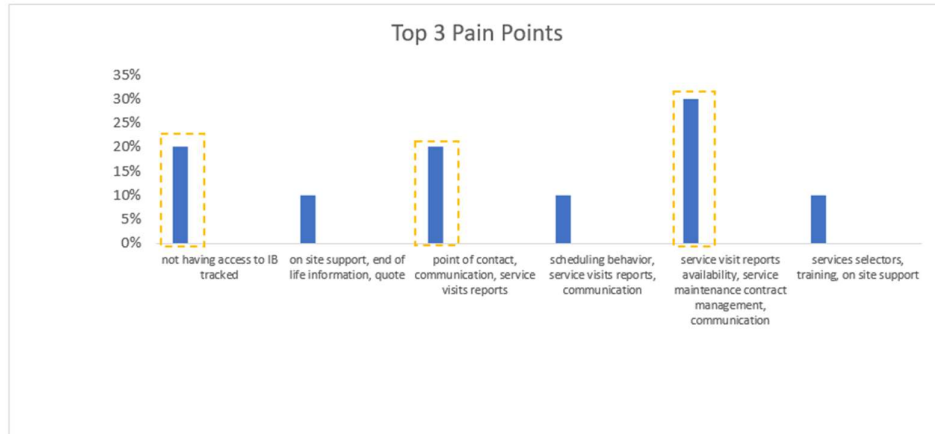
In relation to the customer journey step "Stay connected, optimize," the objective was to gain insights into the requirements of service partners in order to keep them informed proactively and enhance their business opportunities.



Graph 3 - Stay connected, optimize - insights

As shown in graph 3, all service partners, totaling 100%, expressed their desire to effectively handle their service opportunities and receive web-based recommendations. They also showed interest in expanding their field services by leveraging the inventory they manage. However, 80% of them expressed dissatisfaction with the current level of recommendations they receive based on their IB. Regarding notifications, 50% indicated a preference for receiving alerts regarding expiring service maintenance contracts, upcoming on-site service visit schedules, and available service visit reports. Furthermore, 40% requested to be notified when IB item reaches its end-of-life.

When asked about their three main pain points, service partners primarily emphasized the availability of service visit reports, communication challenges, and the management of service maintenance contracts, accounting for 30% of their responses. The second most common set of concerns, each representing 20% of the responses, included communication issues and difficulties accessing both IB information and the tracked Installed Base, as per graph 4.



Graph 4 - Top 3 pain points

In the design phase, a mockup of the solution was shared with a specific group of service partners, as indicated in table 1, page 18. The objective was to gather proof of concept before proceeding with the development of the final solution. To gauge their initial impression, a set of three questions was proposed. All service partners responded to the first question, while only two of them answered the second question. Additionally, only one service partner did not provide a response to the third question. The sentiment analysis yielded the following result (figure 10):



Figure 10 - word cloud - mockup presentation

In the final phase of the project, a series of interviews was conducted with the six pilot service partners. The primary goal of these interviews was to gather their initial impressions following the launch of the solution and obtain feedback to further enhance the solution according to their specific requirements.

Like the previous set of interviews, the aim was to capture the emotions and sentiments of the users after three months of usage. To analyze the sentiment expressed in these interviews, a sentiment

analysis was performed, and the results are depicted in figure 11. Every service partner responded to the first question, which sought their feedback on aspects they liked about the solution. However, only two partners provided a response to the second question, which inquired about any aspects they did not appreciate. The feedback from these two partners highlighted concerns regarding missing data and data quality. Remarkably, only one service partner did not offer any suggestions for further improvement or enhancement, while the other five made interesting suggestions /requirements that we will take into consideration for the next evolutions of this solution because at Schneider Electric we consider the VoC as the main input for our business.



Figure 11 - Word cloud - review

5.2 USE CASES CREATION

During the project review phase, six use-cases were defined and then validated in several workshops with the different stakeholders. The primary sources of input for developing the use cases were the insights derived from the CJM and the defined minimum viable experience, and the budget available. These inputs guided the creation of the use cases, ensuring that they aligned with the desired initial interaction experience for the service partners in the project.

The creation of use cases, as presented in figures 12, 13, 14, 15, 16, and 17, was carefully tailored to address the main pain points and needs of the service partners. The aim was to develop solutions that not only addressed their specific challenges but also aligned with Schneider Electric's business objectives. By understanding the service partners' pain points, the use cases were designed to provide effective solutions that catered to their needs while also meeting the strategic goals of Schneider Electric.

To enhance the use case, we decided to include an introduction for the user story. However, the challenging aspect of this project step was to articulate the requirements clearly and concisely while ensuring that the focus remained on addressing the pain points and needs of our partners. We also had to specify the platforms for both the back end and front end, as well as outline the expected customer experience throughout the partner journey steps covered by this project. It became apparent that we needed to consider not only the insights gained from partner interviews but also

the existing digital interactions with Schneider Electric. Our solution aimed to add another layer to this journey and further improve the overall experience.

From CX Touchpoints to User Stories



Pain point: Managing my Installed Base

As a Certified Services Partner,

I want a clear view of EU I cover installed base and associated lifecycle status

I want to register new/existing assets I have identified at EU I cover

...so I can manage assets more effectively

Requirements	CX Touchpoint	Epic	Platform	User story	User Story Description
	Maintain	Overview	ALM	View Overview	I want a clear overview on the sites I cover and installed base I track / I manage / I Operate by partner through overview
	Maintain	Overview	ALM	View Installed Base action center	I want to view all installed assets at the sites I cover along with modernize, request contract actions
	Maintain	Overview	ALM	Asset Registration	I want to register my assets and assign location on sites I cover / I identify
	Maintain	Overview	ALM	View Installed Base Service coverage	I want a clear overview on the assets I cover and installed base I track by / I manage by / I Operate by partner through overview
	Maintain	Overview	ALM	View Installed Base obsolescence status	I want a clear overview on the assets I cover and installed base I track / I manage / I Operate by partner through overview

Figure 12 - Use case 1- Manage my installed base

From CX Touchpoints to User Stories



Customer need: Managing my Installed Base

As a Certified Services Partner,

I want a clear view of IB I cover installed base and associated lifecycle status

I want to receive potential business recommendations

...so, I can manage installed base effectively

Requirements	CX Touchpoint	Epic	Platform	User story	User Story Description
	Optimize	Overview	bFS/IB intel	View recommendations for modernization	I want SE to send me recommendations for IB modernization on the installed base I managed / I operate by through overview
	Optimize	Overview	bFS/IB intel	View recommendations for new service contracts	I want SE to send me recommendations for IB not covered by a service maintenance contract or reaching their end of warranty period

Figure 13 - Use case 2 – Optimize my installed base

From CX Touchpoints to User Stories



Customer point: Delivering, installing and commissioning

As a Certified Services Partner, I want all the information needed on the EU sites I cover

I want to see the assets I cover

...so, I can support properly my customers

Requirements	CX Touchpoint	Epic	Platform	User story	User Story Description
	Install & Commission	Installed Base	ALM	View Installed Base list as I tracked by / I managed by/ I'm assigned by EU as operated by partner	I want list of all assets which I'm allowed to see in the install base list page <i>(all tree visible with asset rules applicable)</i>
	Install & Commission	Installed Base	ALM	View available services for assets section	I can view available services for assets section, select them but can't request for services
	Install & Commission	Installed Base	ALM	View IB details page	I can view the IB details page with all the sections in read only mode and document sections with upload document feature
	Install & Commission	Installed Base	bFS	View IB details page	I can view the IB details page with related contracts and upcoming services visits (same rules as applied on Services visits and Contracts)
	Install & Commission	Installed Base	ALM	Register an asset / View Installed Base I track	I want to register my new asset and view its external facet if I'm tracked by and internal facet if I'm managed by and operated by partner

Figure 14 - Use case 3 – Installed base detailed information

From CX Touchpoints to User Stories



Pain point: Managing my contracts

As a Certified Services Partner, I want a clear view of my Contractual Coverage

I want to view the contracts I buy & resell and get opportunities for renew my contractual coverage

...so, I can ensure the proper business follow up

Requirements	CX Touchpoint	Epic	Platform	User story	User Story Description
	Maintain	Contracts	bFS	View Current/Expired Contracts	I want to view a list of all contracts current and expired where <u>I am Sold to and Bill to</u>
	Maintain	Contracts	bFS	View Contract Details	I want to view my contract's coverage details including covered products and included services
	Maintain	Contracts	bFS	Renewal and amendment request	I want to request renewal and amendments for the contracts I visualize
	Maintain	Contracts	bFS	Dashboard – View Contracts Summary	I want to view summary of my contracts and I want to renew contracts from action center

Figure 15 - Use case 4 – Manage service maintenance contracts

From CX Touchpoints to User Stories



Customer point: Searching for information

As a Certified Services Partner, I want an effective search capacity I want to search from the information I have ...so, I can easily find the information I need

Requirements	CX Touchpoint	Epic	Platform	User story	User Story Description
	Optimize	Search	bFS/ALM	Global Search	I want to globally search for sites, contracts, assets, service visits
	Optimize	Search	bFS/ALM	Contextual Search	I want to contextually search for contracts, assets, service visits

Figure 16 - Use case 5 - Search

From CX Touchpoints to User Stories



Pain point: Preventive maintenance and service visits

As a Certified Services Partner, I want to view past and future service visits I want to view details of ongoing service visits ...so, I can properly follow my contracts coverage

Requirements	CX Touchpoint	Epic	Platform	User story	User Story Description
	Maintain	Service Visits	bFS	View Upcoming Service Visits	I want to view service visits for the assets I tracked by /I managed by /I operated by partner and no visibility of action column
	Maintain	Service Visits	bFS	View ongoing Service Visits	I want to view service visits for the assets I tracked by /I managed by /I operated by partner and view attached reports
	Maintain	Service Visits	bFS	View Past Service Visits	I want to view service visits for the assets I tracked by /I managed by /I operated by partner and view attached reports
	Maintain	Service Visits	bFS	View Service Visit Details	I want to view service visit details for the assets I tracked by /I managed by /I operated by partner on the service visits details page on read only mode (reports and associated installed products)
	Maintain	Service Visits	bFS	Service Visits visibility rule	I do not want to view Work orders for assets which I do not track by /managed by / operated by partner

Figure 17 - Use case 6 – View service visits

5.3 DISCUSSION OF FINDINGS

During the initial interviews conducted to gather insights for the CJM, a significant observation was made regarding the responses provided by the partners, regardless of their specific business type. It was evident that all partners expressed a common requirement for a tool that enables them to register and visualize the IB they work with. This refers to the installed products they purchase, incorporate for sale to their customers, or manage on behalf of their customers. Currently, most of these partners lack a dedicated digital tool, with only a few having an internal solution. In contrast, others resort to using Microsoft Excel, which poses limitations when managing many products across various customer sites.

Regarding the specific information they sought, most partners indicated the need for detailed data on obsolescence status, coverage, warranty, commissioning dates, and location information. This information was identified as crucial for both their sales and technical employees, indicating the significance of these roles in utilizing the requested data.

Continuing with the analysis, we further discovered a significant finding regarding the IT Reseller¹³ (refer to graph 2), which constitutes a substantial portion of our recurring services business. It became evident that all IT resellers expressed a specific requirement to access Schneider Electric service visit reports directly at customer sites. Presently, they face the inconvenience of having to contact Schneider Electric through phone calls or emails to obtain these reports.

The analysis of the three main pain points pointed out by the service partners during the first set of interviews shows differences between the needs of all three partner business types analyzed as per Appendix A, table 2.

Partner Business Type	Main 3 Pain Points
Panel Builder	Services selectors
	IB visualization
	On Site support
Contractor	On Site support
	End of life information
	Not having access to visualize IB tracked
IT Reseller	Final customers point of contact not updated for services visits scheduling
	Lack of communication
	Not having access to service visits reports

Table 2 - Main pain points per services partners business type

In general, panel builders and contractors share common needs related to the visualization of their IB and on-site support. These requirements revolve around effectively managing and monitoring the physical infrastructure they work with. On the other hand, IT resellers¹⁴ specifically emphasize their focus on service operations, particularly maintenance service visits. This highlights their interest in

¹³ IT Reseller – Company that purchases IT products or services from a manufacturer, distributor or service provider and resells it to their customers. There are different types of IT resellers depending on their go to market.

¹⁴ IT Reseller – Company that purchases IT products or services from a manufacturer, distributor or service provider and resells it to their customers. There are different types of IT resellers depending on their go to market.

streamlining and accessing crucial information related to ongoing service visits and ensuring efficient maintenance operations for their customers.

In this project, one of our primary focuses is addressing the pain points related to the IB, service visits, and service maintenance contracts. These areas are directly linked to the efficient management and execution of service visits. Other pain points identified during the interviews will be addressed in separate projects, and some of them have already been initiated. By prioritizing these specific pain points, we can provide targeted solutions and improvements that directly enhance the service visit process and overall customer experience.

One of our main goals for this project is to generate revenue from the data we provide to our service partners. We have confirmed that this objective is fully aligned with the expectations of our service partners, as they expressed a need for more recommendations to assist in their business growth.

As part of the CJM process, a minimum viable experience was proposed. This proposition was based on the identification and prioritization of the needs and pain points of service partners, as well as the business requirements of Schneider Electric. This minimum viable experience served as a key input for the development of the business case and the budget proposal, ensuring that the project aligns with the identified priorities and provides a valuable solution within the available budget.

An interesting aspect of this project that was also a learning experience for the team is related to the use case creation, where we realized a need to have a process flow process visualization to support the business requirements when validating them with the different stakeholders during the internal workshops.

When building the use case and an organized and methodical way, we could confirm what (Gallardo-Valencia et al., 2007) mentioned, as it can enable a more thorough and efficient process of analyzing requirements, which takes less time.

During the design phase, we received highly positive feedback from all our service partners, regardless of their business type, when we presented them with mockups. Their lack of preconceived notions or specific expectations regarding the data presentation worked in our favor. This feedback greatly supported our UX goals and overall project deployment. As a result, we confidently informed our team that we could proceed with the deployment and assured them that we were on track to achieve our project objectives.

Three months after the solution was launched, we gathered feedback from the project's pilot service partners. Since the solution was deployed on the mySchneider portal¹⁵, which they were already familiar with as our main business suite, it was intriguing to observe that their overall sentiment remained highly positive across all three service partner business types. Despite their specific business needs, the introduction of new features to the mySchneider portal¹⁶ had no adverse effects

^{15, 17, 18} mySchneider portal - is a comprehensive digital platform that provides customers with a range of tools and services to help them manage and optimize their energy systems and equipment. The portal is designed to be user-friendly and easy to navigate, with a focus on providing customers with the information and support they need to succeed.

on their user experience (UX); in fact, it improved it. Through these recent interviews, we were able to confirm that our solution successfully met the expectations of our service partners.

5.4 PRACTICAL IMPLICATIONS

Through this project, we have successfully improved the customer journey for all types of customers by introducing a new digital touchpoint specifically focused on services. With the implementation of the mySchneider portal¹⁷, partners now have convenient access to detailed customer information, and the ability to manage service maintenance contracts, view service visits, and obtain service visit reports. This application is designed for both web and mobile platforms, ensuring a seamless user experience. Importantly, this solution was deployed in a manner that benefits not only service partners but also other partners such as large OEM or FM. Although they may not have a business contract directly with our services business unit, they can effectively manage their own sites or their customers' sites using this solution.

Through analyzing the results of partner interviews, we have gained valuable insights that can be utilized for other projects and enhancements. Implementing these insights will be beneficial for Schneider Electric as it addresses customer concerns and needs, leading to improved customer satisfaction and loyalty.

The methodology employed in this project can be applied to various customer and data-driven initiatives. It can also be utilized for deploying new enhancements and services in future releases, aiming to enhance customer satisfaction, drive adoption of digital tools, and increase business revenue and profitability.

Another significant aspect of this project is that we provide partners with a personalized experience based on their subscriptions. It is worth noting that partners do not require a contract with Schneider Electric to access the data. This approach not only enhances the partner experience but also contributes to our goal of monetizing data.

5.5 THEORETICAL IMPLICATIONS

The primary focus of this project is to enhance the digital journey of service partners. While we identified some commonalities among partners of different types, we also discovered variations that are crucial considerations for the CJM process. It is important to acknowledge that a single, unified CJM cannot be created for all partners. Instead, we must consider the various touch points specific to each partner type. In B2B relationships, the customer journey involves multiple stakeholders who play important roles throughout the process. It is necessary to map these stakeholders and their interactions to fully understand and address their needs and requirements. By identifying and mapping the various stakeholders involved, we can ensure a comprehensive and effective customer journey analysis in the B2B context (Burghardt et al., 2017). When undertaking a project that encompasses multiple customer types, it is essential to consider and adapt to the various touch points and specific requirements that may vary according to the customer type and role. Each

customer type may have distinct needs and preferences, and it is crucial to accommodate these differences to deliver a personalized and tailored experience that aligns with their expectations. By recognizing and addressing these variations, the project can effectively cater to the diverse needs of different customer types, enhancing overall customer satisfaction and engagement.

CJM in the B2B context holds substantial theoretical implications for both marketing and customer relationship management. By providing businesses with a deeper understanding of the customer journey, as well as the needs and expectations of their customers, can empower businesses to develop more effective marketing strategies and cultivate stronger, more meaningful customer relationships.

In this project, an important aspect revolves around the documentation and availability of business requirements in a timely manner. However, it is crucial that business analysts and development teams have a complete understanding of both the business and user requirements. While the use case methodology employed in this project includes a concise user story description for each customer touch point, along with workshops involving various stakeholders, this approach may not be sufficient. To address this, it was considered good practice to supplement the requirements with mockups, which served as a specification for the developers (Medeiros et al., 2017). This not only allowed partners to provide initial feedback but also facilitated effective communication within the project team.

Given that this project deviated from a conventional IT software project, the implementation of Agile project methodology proved to be effective in achieving the project goals. In today's business landscape, projects often face constraints such as limited budgets and tight timelines, which was the case for this project. In order to navigate these limitations, various Agile practices were employed throughout the different project phases, emphasizing enhanced communication among stakeholders, *"knowledge sharing and transparency are in line with the vision of the Agile Manifesto's focus on interaction and responsiveness, Agile practice can have various effects on project success conditions"* (Sandstø & Reme-Ness, 2021, p.6), have proven to get expected results, although the success rate was not yet evaluated.

5.6 PROJECT IMPLEMENTATION PLAN

Once the project was deployed and launched, it became necessary to establish an implementation plan that would be in line with the services business strategy. This plan aimed to outline the specific steps and actions required to effectively integrate and execute the project within the existing services business framework. By aligning the implementation plan with the services business strategy, the project could ensure a cohesive and coordinated approach toward achieving the desired goals and outcomes.

To provide support to the countries involved, a deployment guide was created and published. This guide served as a resource for the country services, commercial, and digital customer experience teams, enabling them to gain a comprehensive understanding of the customer experience and the anticipated benefits for both Schneider Electric and the service partners. The guide also outlined the roles and responsibilities assigned to the global services team and the various country teams. Additionally, it detailed the end-to-end deployment process, providing a clear roadmap for successful implementation as depicted in figure 18.

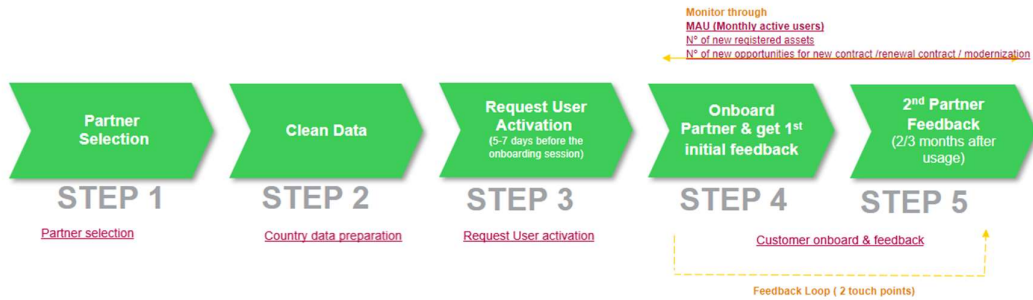


Figure 18 - End-to-end implementation process

To summarize the process, countries are required to select the partners who will have access to the solution. They must then perform data cleansing based on the pre-defined business rules. Following this, they need to request user activation, which enables partners to have a seamless and personalized experience. Throughout the onboarding process, countries collect partner feedback to ensure their satisfaction. Additionally, after two or three months of usage, further feedback is gathered, which aids in identifying areas for improvement and preparing for future enhancements.

To ensure the successful implementation of the project, measuring user adoption is a crucial aspect. In order to effectively track this, we have established a set of KPIs that will be monitored on a monthly basis allowing us to understand if the solution we have implemented is fulfilling the objectives of this project and, if there are some deviations, identify them and apply the necessary action plans and/or adapt the strategy where and when needed. The selected KPIs are as follows: MAU, number of registered IB and number of opportunities for new service maintenance contracts, service maintenance contract renewal and IB modernization.

6. LIMITATIONS AND FUTURE WORKS

6.1 LIMITATIONS

Recognizing and acknowledging the limitations of the developed solution is crucial for future endeavors. By identifying these limitations, we gain valuable insights that can be used to inform and improve future projects or iterations of the solution. During the project, we encountered and anticipated several limitations. The first limitation was budget constraints, which required careful planning and resource allocation. Additionally, the data model posed limitations on deploying certain automated functionalities, requiring us to find alternative solutions. We also faced limitations associated with backend platforms and business rules, which required us to work within its constraints and find workarounds when necessary. Despite these limitations, we were able to address and manage them effectively throughout the project. Ultimately, we encountered certain restrictions due to the partners' availability to engage in various stages where we required their input.

Another challenge we encountered was the limited availability of information and resources regarding data-driven projects of this nature, both from academic sources and competitors.

6.2 FUTURE WORK

All feedback received from partners, including requests for new functionalities and additional business requirements, will be carefully considered for future iterations of the project. The same framework will be employed, involving adjusting the CJM, defining priorities, and obtaining budget approval through Schneider Electric's internal system. The Agile methodology will be utilized for the deployment process. During the Agile design phase, there may be some slight deviations from the initial project framework. This is because, in certain instances, it may not be necessary to gather partner feedback for every single interaction.

The use of AI in providing customers with insights on asset health and enabling predictive maintenance based on asset operational data IoT has become increasingly prevalent in various industries. AI plays a crucial role in the application of data-driven approaches in Industry 4.0. Specifically, in the field of maintenance, there is a growing trend toward implementing a comprehensive digital maintenance model that incorporates AI capabilities to generate predictions and insights (Fordal et al., 2023).

AI-powered predictive maintenance involves leveraging advanced analytics and machine learning algorithms to analyze real-time or historical data collected from assets through IoT sensors or other monitoring devices. These algorithms can detect patterns, anomalies, and correlations within the data to identify potential issues or failures before they occur. By utilizing AI, businesses can proactively address maintenance needs, minimize downtime, and optimize asset performance.

The benefits of using AI for asset health insights and predictive maintenance are manifold. It enables businesses to move away from reactive maintenance practices and adopt a more proactive and preventive approach. By accurately predicting asset failures, companies can schedule maintenance activities more efficiently, reducing unplanned downtime and associated costs. Moreover, AI-driven

insights on asset health can help optimize asset utilization, extend equipment lifespan, and improve overall operational efficiency.

To implement AI for asset health and predictive maintenance, organizations typically need to establish a robust data collection infrastructure, including IoT sensors and devices that capture relevant operational data. This data is then processed and analyzed using AI algorithms, which can be trained on historical data to learn patterns and predict future asset behavior. The AI models can be continuously refined and updated as more data becomes available, ensuring their accuracy and effectiveness.

Overall, leveraging AI to provide customers with insights on asset health and enable predictive maintenance offers significant advantages for businesses in terms of improved operational efficiency, cost savings, and enhanced customer satisfaction.

7. CONCLUSIONS

This project aimed to address Schneider Electric's requirements for leveraging the innovation at the IB concept to drive business growth and meet the needs of their services partners. Throughout the project, our focus was on understanding the internal business requirements as well as the needs of the service partners. We accomplished this by developing a customer journey map that aligns with the digital touchpoints between service partners and Schneider Electric. By prioritizing these needs, we were able to define a minimum viable experience that would enable us to build a solution within Schneider Electric's web portal for partners.

What makes our solution unique is its ability to expose Schneider Electric's data to external companies, generating potential business opportunities while also enabling partners to track and share IB data. This empowers them to visualize the data along with additional insights, creating potential opportunities for business growth.

Throughout the project, we learned how to effectively combine various methodologies outlined in the framework (as depicted in Figure 2). Furthermore, the involvement of service partners played a vital role in different phases of the project, contributing to its success.

Implementing this project will support Schneider Electric's offices in more than 100 countries, enabling them to deploy their services growth strategies through partnerships across different lines of business.

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APPENDIX A

Customer Journey Step	Questions
1. Get delivered, install	1.1 What information do you need around services schedule (date, time, FSR, rescheduling, W.O)?
	1.2 How easy is it to systematically register the asset at installation?
	1.2.1 What should be improved?
2. Operate, maintain	2.1 What information do you need around the installed base you manage?
	2.1.1 Who needs this information?
	2.1.2 Where do you get this information today?
	2.1.2.1 where would you like to find it in the future?
	2.2 What information do you expect from Schneider Electric on services execution?
3. Stay connected, optimize	2.2.1 Who needs this information?
	3.1 How would you like to manage your services opportunities?
	3.2 Do you have enough recommendations based on the installed base you manage?
	3.2.1 Would you like to have recommendations through the web?
	3.3 Are you interested in developing field services for the installed base you manage?
	3.3.1 What are the challenges you face to do so?
	3.4 On what information would you like to be notified?
3.5 Can you remind us of the top 3 services pain points you would like to solve through a digital platform?	

Table 3 - Customer interview questions to collect additional insights for CJM

Questions
1. What do you think about the tool?
2. How closely does this align with what you had in mind?
3. How would this help you be more efficient in your daily role?

Table 4 - Customer interview questions to collect feedback on mockup presentation

Questions
1. What do you like about the New Service Features: Overview dashboard, Installed Base, Contracts, Service Visits?
2. What don't you like?
3. What would you like to add that would bring more value to you?

Table 5 - Customer interview questions for review phase

Results from mockup presentation interviews

Partner	Question 1	Question 2	Question 3
	What do you think about the tool	How closely does this align with what you had in mind?	How would this help you be more efficient in your daily role?
Partner 1 (IT Reseller)	Looking forward to more news on this platform. Looks amazing at first glance	Very useful tool for managing our contracts as today we have around 70 contracts	Today is time consuming to always go to SE and ask for the same information that will be available in mySchneider
Partner 2 (Panel Builder)	I see this as a good functionality	no answer	The information will be available at any time, I have access to create business opportunities. IB can be shared between SE and us
Partner 3 (IT Reseller)	Looks good	no answer	It is beneficial to share the IB in order to have more business
Partner 4 (Contractor)	Great	no answer	We can see all IB and quickly respond to our customers
Partner 5 (Contractor)	Happy with this	As we are aiming to be more digital this is the tool we see as corresponding to our actual needs.	It will work as a IB repository
Partner 6 (Panel Builder)	Beneficial	no answer	I'll be able to see the accounts I'm covering and the associated IB information
Partner 7 (Contractor)	Very interesting and useful	no answer	this will help us as we want services info access, upload our own reports visit and access to a standard report visit
Partner 8 (IT Reseller)	Thanks for the improvement.	no answer	The IB information is crucial for us to make our business more efficient. Contracts is a value added as can manage them properly instead of using our excel files.
Partner 9 (IT Reseller)	The new functionalities are good with the objective to create more business opportunities	no answer	no answer

Table 6 - mockup presentation interviews answers

Partner	Question 1	Question 2	Question 3
	What do you like about the New Service Features: Overview dashboard, Installed Base, Contracts, Service Visits?	What don't you like?	What would you like to add that would bring more value to you?
Partner 1 (IT Reseller)	I am impressed with the depth of information and history of each site and asset. My team will love this tool!	no answer	no answer
Partner 2 (IT Reseller)	It's great, gives a lot of information	no answer	Would like to have the possibility to export to excel
Partner 3 (IT Reseller)	Looks good	no answer	We would like to see more data
Partner 4 (IT Reseller)	I'm very excited about this and is the first time I get access to so much data.	no answer	I would like to have the possibility: to change the site name to have automated request on missing service visits reports 2 weeks after service visit To sort contracts by end date
Partner 5 (Contractor)	Good tool	Still need to add more sites not only the ones set as covered	Still need to add more sites not only the ones set as covered
Partner 6 (Panel Builder)	As positive aspects I see it is interesting I can see the assets localization and I can register assets and I can add documents and photos and this will help us on our daily management.	Need improvements as per data quality	Still need improvements as per additional functionalities and asset detailed information

Table 7 - review phase interviews answers

Mockup – screen shots

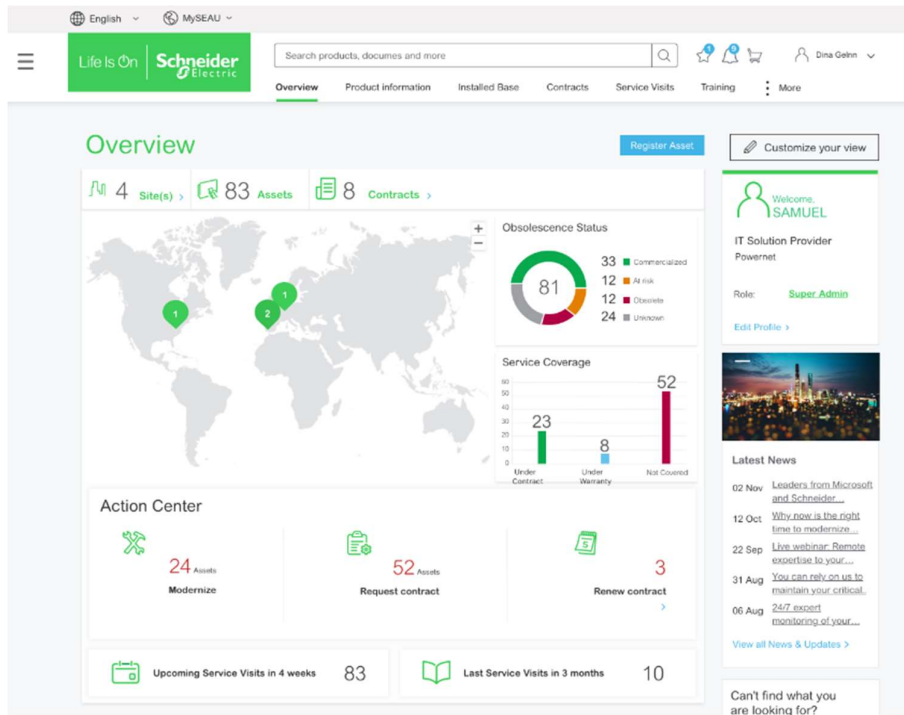


Figure 19 - Mockup demo – Overview

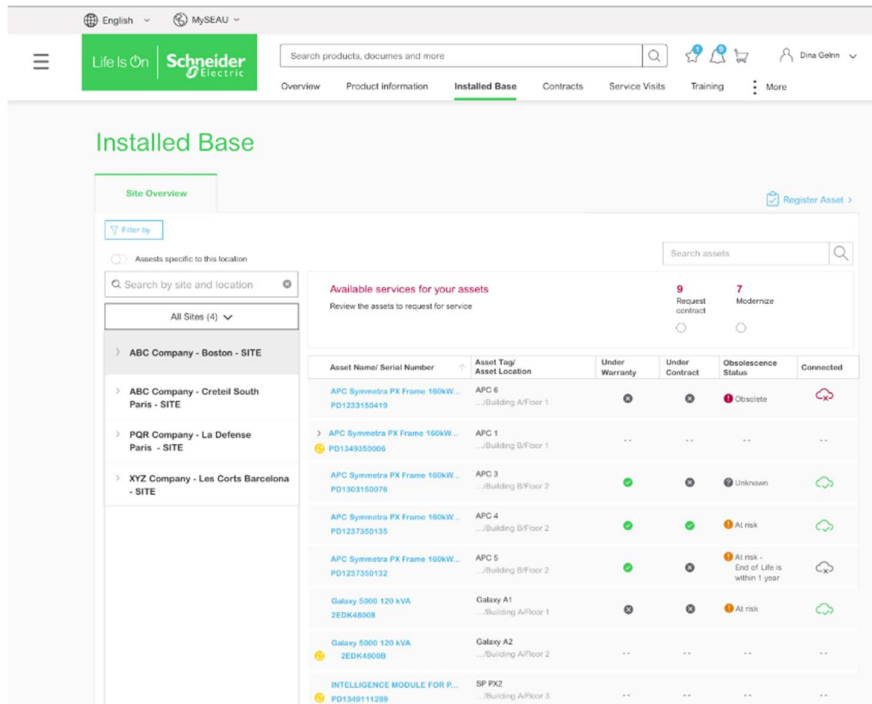


Figure 20 - Mockup Demo - IB details page

English MySEAU

Life is On Schneider Electric

Search products, documents and more

Overview Product Information Installed Base **Contracts** Service Visits Training More

Contracts

Your sites have 52 uncovered products

Current Expired

Search contracts

Filter by

Status

- Current
- Expiring
- Renewal in progress
- Amendment in progress

Date range

Start date

End date

Ok

Site

- ABC Company - Boston - SITE
- ABC Company - Creteil South Paris - SITE
- ABC Company - La Defense Paris - SITE
- ABC Company - Les Corts Barcelona - SITE

Select all

Contract name/num...	Site	Product...	Start date	End date	Status	Action
IT-1146106	ABC Company - Cr.	5	12/09/2017	12/09/2020	Expiring	Request for renewal
IT-12236107	ABC Company - Le.	8	15/10/2017	15/10/2020	Expiring	Request for renewal
IT-WB-3131-1111-743.	ABC Company - Le.	3	20/11/2018	20/11/2020	Renewal in progress	Contact us
DE-ITD-0199914578	ABC Company - Bo.	4	16/08/2019	16/08/2021	Current	Request for amendment
DE-ITD-0199914578	ABC Company - Le.	3	16/08/2019	16/08/2021	Amendment in progress	Contact us
DE-ITD-0199914687	ABC Company - Le.	3	16/09/2019	16/09/2021	Current	Request for amendment
IT-WADVULTRA-PX-6.	ABC Company - Cr.	5	08/07/2019	08/07/2022	Current	Request for amendment
DE-ITD-0149911211	ABC Company - La.	3	13/02/2019	13/02/2023	Current	Request for amendment

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Figure 21 - Mockup demo - Services Maintenance Contracts detailed page

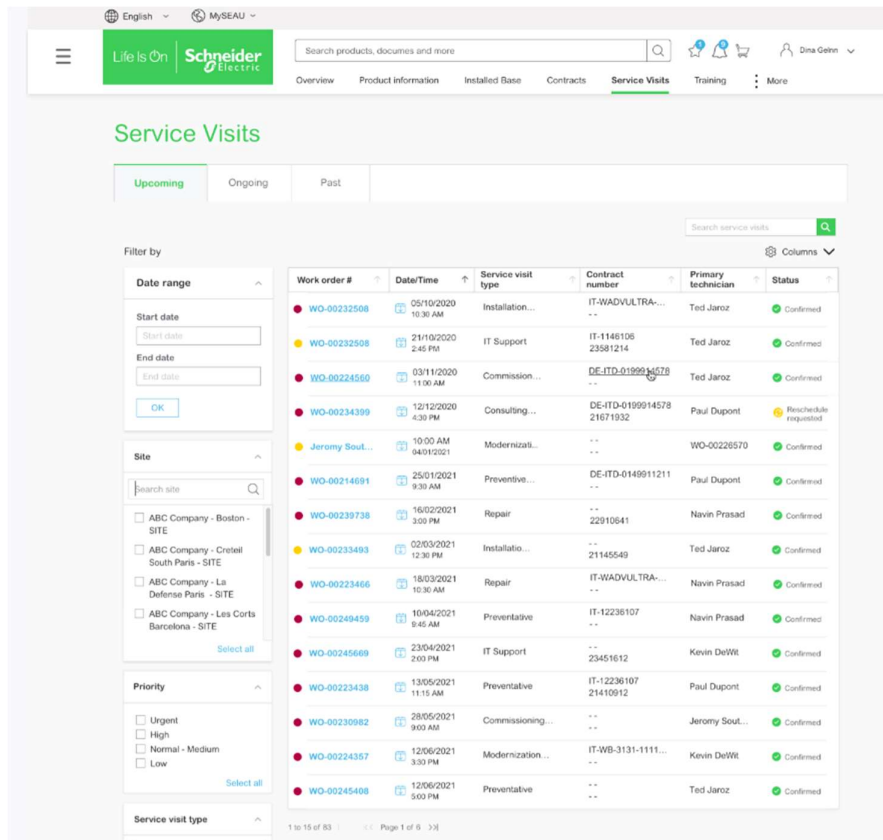


Figure 22 - Mockup Demo - Service visits detailed page

High Level Block Diagram Journey – Partner Flow

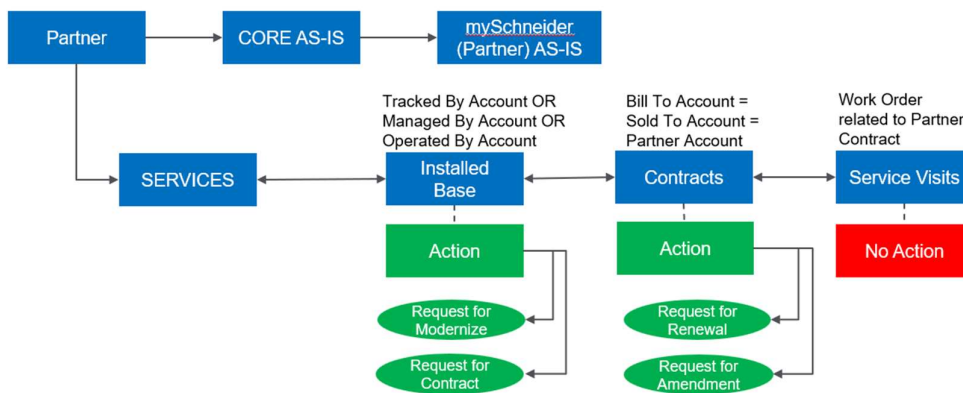


Figure 23 - Use case - diagram flow