Damyantiben Patel

Developing a Strategy to Deploy SAP Fiori Technology to an Industrial Customer

Metropolia University of Applied Sciences

Master's Degree

Degree Programme in Business Informatics

Master's Thesis

Date 10.05.2024

Abstract

Author:	Damyantiben Patel
Title:	Developing a Strategy to Deploy SAP Fiori Technology to an Industrial Customer
Number of Pages:	65 pages + 2 appendices
Date:	10 May 2024
Degree:	Master of Business Administration
Degree Programme:	Business Informatics
Instructor:	Zinaida Grabovskaia, PhL, Senior Lecturer

In many organizations, the key users of SAP business processes are utilizing the current standard SAP transactions practices using SAP GUI for many years already, or some of them have limited knowledge of SAP technology. Yet, the technology landscape is changing rapidly for SAP solutions and there is a demand of digital transformation, and such customers need to move forward with technology progress. SAP Fiori is a new technology offered by SAP which is designed to provide an improved and efficient user experience of SAP solutions. The results of interviews revealed that customers who have SAP system in use find it difficult to implement and deploy SAP Fiori due to lack of understanding, knowledge, or resources. To overcome this challenge, there was a need identified to have a strategy document of the SAP Fiori deployment which can be used as a reference document for getting all necessary information about SAP Fiori technology and its deployment.

The objective of this study is to develop a strategy to deploy SAP Fiori technology to an industrial customer. The outcome is the SAP Fiori UX Strategy document. The research approach of the Thesis was based on using the qualitative research methods to gain an in-depth understanding of user requirements, new technology adoption and challenges related to the current user experience of SAP applications. First, best industry practices were analysed to identify the knowledge needed for developing the strategy document. Then, the initial draft of the Strategy document was co-developed and subsequently validated with the key stakeholders during the interviews and discussions.

The final version of the Strategy document includes ten sections to guide the SAP Fiori deployment which can be used as a reference document for getting all necessary information about SAP Fiori technology and its deployment: 1) Introduction 2) Summary of SAP Fiori UX Strategy 3) Elements and benefits of SAP Fiori User Experience 4) SAP Fiori technical landscape 5) SAP Fiori design approach 6) Organization branding and theming in SAP Fiori 7) Fiori launchpad objects and tools 8) SAP Fiori design tools 9) The approach to Fiori implementation 10) Fiori deployment and configuration. In the modern business environment, SAP Fiori technology is considered the vital technology of SAP's strategy to enhance user experience of SAP platforms and applications. However, it is important to note that Fiori roadmap is dynamic, and it can be changed based on the market trends, technological developments, and thus customer need continuous support with this technology.

Keywords SAP, Fiori, User Experience Technology, Strategy

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1 Introduction

Nowadays, organizations are constantly striving to make their business processes more efficient. The development of technologies in IT field has given opportunities to use various applications to ease everyday activities during work and for leisure time. People are using numerous mobile applications especially outside of working life and the ease of mobile applications usage has made a significant impact on businesses, improving customer experience, increasing accessibility, improving efficiency, enhancing communication, and providing a competitive advantage. According to McKinsey's research, 37% of digital transformation efforts in end-user experience can be pursued over the next coming years and the research indicates that technology plays a critical role in business performance, productivity, growth, and businesses that adopt the latest technologies tend to perform better than those that do not (McKinsey 2020).

Increasing work efficiency and the continuous development of operations are primarily important characteristics for companies in terms of cost efficiency. SAP is a leading supplier of enterprise software solutions and systems for process development, and it is often highlighted as one of the most used enterprise resource planning solutions globally throughout the ages. Traditional desktop applications and solutions are being overshadowed by mobile applications as work is becoming increasingly of mobile nature and reducing reliance on specific locations.

Digital transformation in user experience is one of SAP's goals to deliver a modern and user-friendly experience of applications through the strategic use of technology. A new user experience technology known as SAP Fiori, is introduced, and developed by SAP. The objective of introducing SAP Fiori is to enhance the user experience and user interface of SAP business processes and softwares across different platforms and deployment alternatives. During this technology development, SAP's focus is to create a new user experience of the current business processes without making any variations to the SAP backend (SAP SE 1 2022, 25).

The purpose of the thesis is to develop a strategy to deploy SAP Fiori technology by the case company for an industrial customer.

1.1 Business Context

IBM (International Business Machines) is the case company of the thesis. IBM is known as one of the largest technology companies globally which was founded in year 1911 and headquartered in Armonk, New York (IBM n.d.). IBM has evolved from manufacturing tabulating machines and punch cards to providing enterprise software, hardware, and consulting services over the past years (Bellis 2019).

In the evolution of the technology industry, the contribution of the case company plays an impactful role. The numerous important innovations are pioneered which have revolutionized the way of working and our lifestyles. The IBM 701 is the first programmable computer which was developed in year 1953 which is one of the most notable contributions provided by the case company. The personal computer, known as IBM PC, was developed by the case company in year 1981 that played a major role in the PC industry (Bellis 2019).

Cloud computing and artificial intelligence solutions are the key focus areas of the case company in recent years; therefore, the significant investments are made in its cloud computing, IBM cloud which offers a variety of services such as “infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), and software-as-a-service (SaaS)”. IBM’s Watson AI technology is also developed and launched by the company which is highly noticeable in the market for its ability to analyse and handle vast quantities of data (IBM n.d.).

The case company is operating globally, and it is conducting its operations in over 175 countries throughout the world. It offers its business and services in diverse range of industries and clients, such as public sectors, financial institutions, health industry, etc. (IBM n.d.) In recent years, Red Hat was acquired by the case company which is a leading open-source software solutions’ provider (IBM Investor Relations 2019).

This thesis has been developed in the IBM Consulting department. IBM Consulting division offers consulting services to businesses and organizations worldwide. SAP technology offerings are a vital part of the case company’s business strategy. IBM Consulting provides consulting services to those organizations where the SAP software is in use and implemented in their businesses. A wide range of SAP solutions such as SAP S/4HANA, SAP SuccessFactors, SAP Ariba, and SAP Customer Experience are

offered by the SAP services of the case company. IBM consulting is well positioned in the market, and it is a recognized SAP service provider that delivers end-to-end SAP business solutions.

One of the latest targets of the consulting unit is to develop a strategy to deploy SAP Fiori technology to an industrial customer. SAP Fiori is a modern age user experience (UX) for SAP, based on contemporary design principles that provide a universal and consistent experience across different devices such as desktops, tablets, mobile phones, hand-held terminals, etc. This thesis relates to the SAP consulting group Finland in the case company, since it has potentials to win new customers and furthermore, moving to SAP Fiori poses advantages in pre-sales activities for the case organization.

1.2 Business Challenge, Objective and Outcome

In many organizations, the key users of SAP business processes are utilizing the current standard SAP transactions practices using SAP GUI for many years and some of them have seldom knowledge of SAP technology. But the technology landscape is changing rapidly and there is a demand of digital transformation in this fast-changing business environment. The demand for the platform and device independent services as well as user-friendly applications are well sought requirements for any organization to succeed in this competitive global market. The better user experience and interfaces of applications can influence significantly on the business values. SAP Fiori is relatively a new technology which is designed to provide an improved and efficient user experience of solutions.

SAP Fiori tends to develop progressively, and many organizations are also keen to implement it in their businesses. Many of the case company's clients have started to plan about replacing their current SAP or external business applications with SAP Fiori to enhance business practices and improve the user experience. However, many clients are struggling to embrace SAP user experience strategy in their business environments. They find it difficult to implement and deploy SAP Fiori due to lack of understanding, sufficient knowledge, and expert resources. To overcome this challenge, there is a need of a strategy document of the SAP Fiori deployment which can be used as a reference document for getting all information about SAP Fiori and its deployment.

Accordingly, the objective of this study is *to develop a strategy to deploy SAP Fiori technology to an industrial customer.* The outcome of the study is the strategy document.

1.3 Thesis Outline

The thesis is written using the seven gates approach; accordingly, it contains seven sections for seven different stages. Section one contains the introduction, business context, business challenge, objective, and outcome of the thesis. Section two covers the research approach, research design, data collection and analysis. Section three explains the project background comprising the subsections covering SAP and SAP Fiori Technology brief overview, case company affiliation with SAP, project details, internal customers and roles in the project, analysis of internal experience with SAP Fiori in the case company, and strengths, weakness, and development areas for the strategy document for SAP Fiori. Section four elaborates existing knowledge and best practices of SAP Fiori technology and its deployment. Section five presents the results from the development part, and section six from the evaluation part. Lastly, the section seven covers the conclusion of the thesis.

2 Method and Material

This chapter explains methods and materials which were used during the writing of this thesis. This section highlights the research approach and research design applied for the thesis. Additionally, it outlines the plan for data collection/gathering and analysis methods which is used in this thesis.

2.1 Research Approach

According to Nick (2023), research is a creative, methodical, and systematic process to gain new knowledge and insights, deepen understanding or find a new solution or concept. The research characteristics include a systematic approach, objective and unbiased, observed evidence, replicability, transparency, logical and critical thinking, peer review, and iterative process (Jain 2023). The research “onion” in Figure 2 shows how and what the research should be designed and conducted based on the goals of the study.

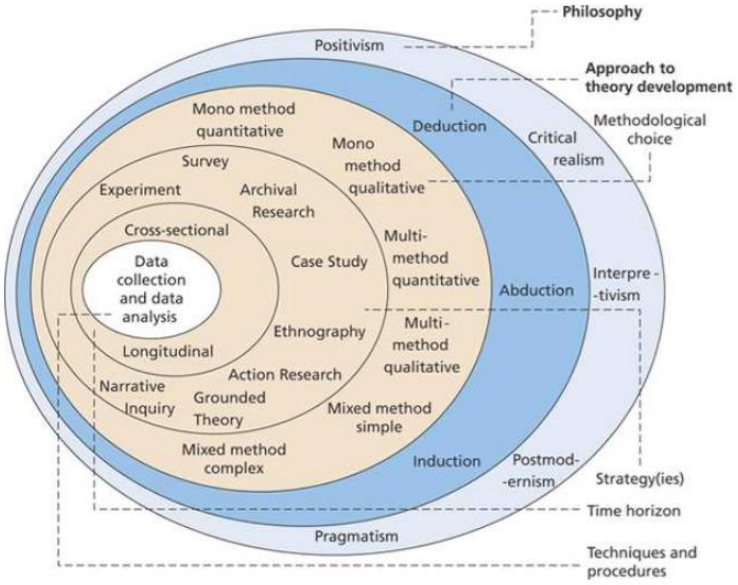

Figure 1. “Layers of Research Onion” (Thornhill et al. 2019: 208).

“Research onion” shown in Figure 1 includes multiple layers such as “Philosophy, Approach to theory development, Methodological choice, strategies, Time horizon and Techniques and procedures”. Various decisions need to be made while evolving the

research methodology as described in Thornhill's (2019) research "onion". Selecting a research strategy for business research includes a variety of strategies, as shown in Figure 1, among action research, case study research, archival research, and other less utilized strategies such as "experiment research, ethnography, survey, grounded theory, and narrative inquiry". Action research and case study research are among the most used approaches in the business field. The purpose of action research is to work closely with individuals, organizations, or groups to recognize and address problems related to the research topic through a collaborative and cyclical process. A cyclical process of action research includes planning, action, and reflection steps (Lewin 1959). A cycle of research planning, action and reflection are repeated and continuous process in action research. The end goal of action research is to develop practical results or solutions which may be applied in the business.

There are mainly two types of *research methods* used in data collection, namely qualitative and quantitative research. A qualitative research method focuses on investigating, for example, an individual's attitudes, behaviours, workshops, and opinions (Creswell 2014). Generally, non-numerical data is collected using qualitative methods for instance focus groups, observations, interviews, and content analysis. On the contrary, quantitative research is utilized to collect the data that can be analyzed by using mathematical methods to be processed statistically. Surveys, experiment results, and data analysis results are included in the quantitative research (Creswell 2014). To get a further comprehensive understanding of a specific subject, both research methods can be utilized together which is known as mixed-methods research.

This study is a project-based thesis where the qualitative research method is used after considering the goals and objectives of the topic. The qualitative research methods are used to gain an in-depth understanding of user requirements, new technology adoption and challenges related to the current user experience of SAP applications. Discussions and workshops with internal and external customers and user observations are used to collect qualitative data. Additionally, qualitative methods are used to discuss and evaluate the new SAP Fiori technology with stakeholders, internal and external customers. This research approach helps to identify key areas for improvement in digital transformation. The research strategy used for this thesis falls under Applied action research (in the sense of Kananen 2013). The first step revolves around identifying the problem and opportunity and defining the thesis objective. In this step, the thesis researcher collaborates with stakeholders to outline the goals, objectives, and scope of

the thesis. The second step focuses on analyzing the experience in the case organization and crafting the project plan. The thesis researcher worked with internal (SAP practitioners) and external customers to create the strategy document for Fiori technology. This includes interviews, discussions, and workshops to build knowledge and skills in the use of Fiori technology. The observation step includes collecting feedback from users and analyzing Fiori technology data to evaluate the strategy. The analysis and reflection step includes reflecting on the results and identifying areas for improvement. In this step, the thesis researcher and internal customers work together to identify what needs should be addressed in the new strategy document. Next, best industry practice is explored to identify the knowledge needed for developing the strategy document. Based on all these inputs, the stakeholders are reached again for co-creating of the strategy document. By engaging in this process, the Fiori UX strategy document is created which is personalized to the specific requirements, which results in developing a strategy document for SAP Fiori UX.

2.2 Research Design

The research design of this thesis undergoes five stages. The first step is setting a thesis objective and identifying the challenges. This thesis is project-based; thus, the second step covers the analysis of current practices as the project background. The third step collects the existing knowledge and best practices for deploying SAP Fiori technology; and the development part results in the initial proposal. The fifth and final step describes the validation path of the final proposal. Figure 2 illustrates all these steps of research design for this thesis.

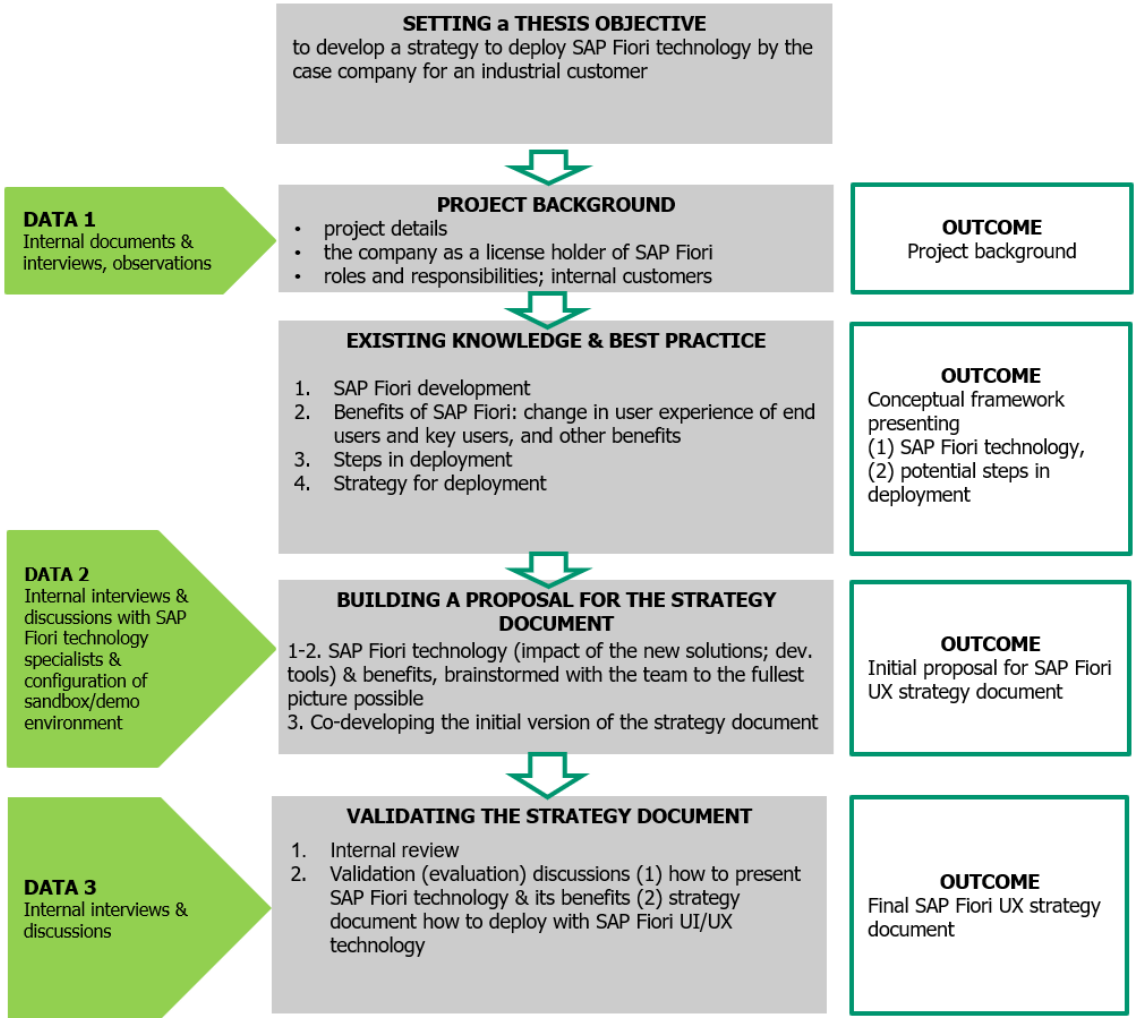

Figure 2. The research design of this study.

Figure 2 shows how the research design is created using three data collections. Data 1 helps to analyze the current practices in SAP Fiori deployment and client feedback which includes interviews, observations, and analysis of the internal documents. SAP practitioners are interviewed and extended with participant observations relevant to the objective of this thesis. Existing knowledge and best practices are explored in the next step. The development part of the initial proposal involves Data 2. The proposal is developed by using Data 1 and Data 2 which consist of internal interviews and discussions with SAP Fiori technology specialists and configuring sandbox/demo environment. In the final step, validation, stakeholders are reached for assessment and comments on the development part of the initial proposal. The final proposal is based on Data 3 which consists of internal discussions.

2.3 Data Collection and Analysis

Three key data collections rounds are used in this study which are described in previous section. Various data sources such as internal documents study, user stories, market research, interviews, discussions, and observations are leveraged in this study. Data 1 is collected for the project background, while Data 2 is utilized for building a proposal for the strategy document. On the other hand, Data 3 is conducted for validating the final strategy document. An overview of the Data 1-3 methods and collections used for this thesis is illustrated in Table 1.

Table 1. An overview of the three Data collections of this thesis.

	Participants / data source	Content	Date and duration	Documented as
	Data 1, Project background			
1	Internal documents & interviews, observations	Online interviews, discussions	February – April 2023 (in 2 months)	Field notes
	Data 2, Building a Proposal for the strategy document			
2	System setup & configuration	Collaboration with team	March – April 2023 (in 1 month)	Field notes & documents
3	User stories, market research	User experience analysis	January 2023	Documents (existing reports)
4	Internal interviews & discussions	Discussions	February – May 2023 (in 4 months)	Field notes
	Data 3 Validating the strategy document			
5	Internal interviews & discussions	Face-to-face or online interviews	April –May 2023	Field notes

As seen from Table 1, data was collected in three rounds for this thesis. In the first round, Data 1 was collected and utilized for the project background. Internal documents, interviews and the observations are involved as data sources in the Data 1 collection. In the second round, Data 2 focused on building an initial proposal for the strategy document which included SAP sandbox system's setup and configuration, user stories and market research as well as internal interviews and discussion on the initial version of the strategy document. In the third round, Data 3 was gathered while validating the final proposal of strategy document. Internal interviews and discussions were conducted from the case company for the final proposal.

Furthermore, internal interviews, discussions and observations were the main data collection method which is used for this study. Table 2 illustrates the key topics of interviews and discussions.

Table 2. Interviews and discussions main topics.

Interviews and discussions main topics	Total participants
1. Background details: please explain your role in the case company and work experience with SAP.	6/6
2. Have you worked on SAP Fiori projects earlier? If yes, share your experience of it.	4/6
3. What is the future of SAP Fiori technology in the market? Are we getting any RFP for SAP Fiori projects?	6/6
4. Why do we need SAP Fiori UX strategy document?	5/6
5. Which key elements of a Fiori UX technology would you like to include in the strategy document?	6/6
6. For whom would this strategy document be beneficial and how?	4/6
7. Please describe the current customer's and SAP's strategy towards SAP Fiori and digital transformation if you know any.	6/6
8. Which customers have implemented SAP Fiori already and are planning to implement it in near future?	6/6
9. Open discussions: would you like to share something else which we have missed or not discussed yet?	6/6

The interviews and discussions were arranged as semi-structured way as shown in Table 2 which held mainly online and only few face-to-face instances. The interviews and discussions were open-ended often around the mentioned topics in Table 2 as the interviewees were expert and have long working experience with SAP solutions. Observations of the thesis author, who is working in the case company as an SAP UX/UI lead were also one of data sources in Data collection 1. The data compiled from observations are documented as field notes.

In Data collection 2, the author conducted interviews and discussions with the same interviewees who were involved in Data collection 1 to get reviews on the proposal of the strategy document. It was vital to have discussions with them to get their feedback on the initial proposal of Strategy document. During this stage, the set-up and configuration of SAP's system was also required for building the proposal to compare the differences

between existing SAP solution and Fiori technology. The case company has provided all accesses and login details of the sandbox system which is mainly used for sales cases. However, user stories and Fiori's market research were also analyzed to gain understanding of the current trends and demand of this technology.

The same set of resources were used in Data collection 3 round to validate the final proposal of the SAP Fiori UX strategy document.

The other type of Data, for instance internal documents were also analyzed for planning and preparing the strategy document in the project background. The details of the internal documents utilized in the project background is documented in Table 3.

Table 3. Internal documents utilized in the project background as Data 1.

	Name of the document	**Number of pages/other content**	**Description**
A	IBM Insights on SAP.pdf	25 pages	How SAP enables the Virtual Enterprise, The challenges facing SAP and its customers, Breakthrough with IBM for RISE with SAP
B	Navigating The Fiori Conundrum.pptx	33 pages	Hands on Guide for Fiori App Selection for S/4 Cloud and On-Prem Implementations
C	SAP S4HANA User Experience Strategy.pptx	31 pages	SAP GUI deployment, Adoption of Fiori User Experience
D	Earlier Data Survey	Survey results	A study about Fiori UX strategy in a case company
E	SAP Fiori in S/4HANA Projects – Pitch Deck.pptx	11 pages	The case company's experiences and references, why is SAP Fiori important within S/4HANA programs?
F	S4 HANA Digital core.pptx	63 pages	Business pain: Strategic challenges for corporate IT landscapes

As seen from Table 3, various internal documents of the case company were analyzed during the study. These internal documents included reports, presentation slides and earlier data surveys which helped to gain understanding about SAP Fiori, SAP, and the

case company affiliation with SAP. The results from the project background are discussed next, in Section 3.

3 Project Background

This section discusses the background and details of the project that aims to develop the strategy document for SAP Fiori deployment. The section contains details about the SAP overview, SAP Fiori overview, the affiliation of the company with SAP, project details and describes the customers for this project.

3.1 SAP and SAP Fiori Technology: Brief Overview

SAP SE is a multinational software corporation which offers various business processes and applications for its enterprise resource planning (ERP) system using different technologies. "Systems, Applications, and Products in Data Processing" abbreviates SAP (Apple Information Systems n.d.). Globally, many companies have implemented SAP applications in their businesses to handle business processes in different business units. SAP was established in the year 1972 in Germany by *Dietmar Hopp, Hasso Plattner, Claus Wellenreuther, Klaus Tschira, and Hans-Werner Hector* who are former IBM employees (Raj 2020).

Accounting and financial applications were key focus areas of SAP during the initial years. SAP launched R/1 product in year 1973 which ran on mainframe computers, and it was its first product. In 1979, R/2 was released to support for a wide range of business transactions. R/2 product achieved extensive acceptance which established SAP's position as a key player in the enterprise software business (Amarmn n.d.).

SAP introduced new software for "human resources, production planning, and sales and distribution" business areas in the 1980s. The foundation of SAP Enterprise Resource Planning (ERP) was formed by integrating these products with R/2 product (Roan 2020). SAP started to develop client-server software in the 1990s that enabled users to access SAP software from desktop computers. As a result, SAP R/3 product was developed and released in 1992. It became popular in the enterprise software market globally. With R/3, SAP introduced a graphical user interface (GUI) that facilitated the utilization of SAP applications (Amarmn n.d.).

SAP expanded its product range and introduced new software for "supply chain management, customer relationship management, and business intelligence" in the 2000s. The NetWeaver platform was released in year 2004 which offered a

comprehensive suite of technologies and tools to enable the integration of applications with third-party software systems (Roan 2020).

SAP has been focusing on cloud-based applications and software in recent years. SAP launched SAP Fiori technology in year 2013 which is designed to provide an improved and efficient user experience of SAP applications (Amarmn n.d.). In 2015, SAP S/4HANA was launched which is the latest business suite built on SAP HANA (Roan 2020).

Figure 3 illustrates the history of SAP S/4 HANA evolution.

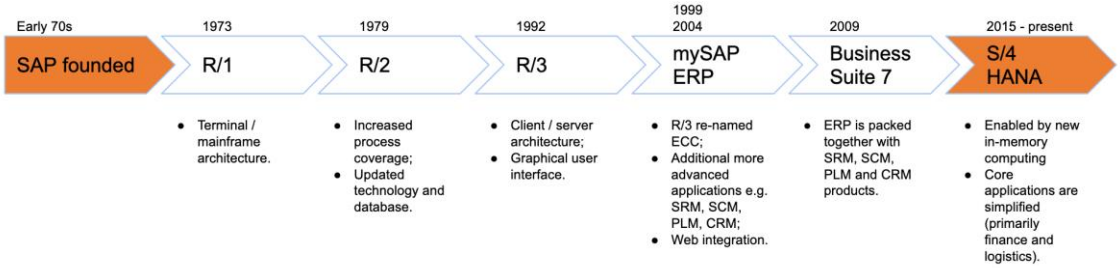

Figure 3. History of SAP S/4 HANA evolution (Roan 2020).

SAP examined all the functionality and transactions offered in SAP GUI and created a list of the most frequently used applications and transactions. SAP decided that it was time to renew these scenarios to make good on their mission. SAP Fiori was invented from this idea (SAP SE 1 2022, 25).

SAP Fiori represents the latest user interface and user experience of SAP applications. SAP Fiori prioritises an efficient and simplified approach and it is adaptable to a different device. HTML5 and SAPUI5 technologies are used to develop SAP Fiori applications (SAP 2019).

The main purpose of introducing SAP Fiori is to enhance the user experience and user interface of SAP business processes and software across different platforms and deployment alternatives. During this technology development, SAP's focus is to create a new user experience of the current business processes without making any variations to the SAP backend (SAP SE 1 2022, 25).

For SAP S/4HANA, Fiori is the go-to user interface utilizing the Fiori Launchpad as access point with Tiles (applications). All new innovations in S/4HANA will only be

available utilizing the Fiori UI like situation handling, Machine Learning etc. Fiori for S/4HANA is tasks based which means that end-users will only see Fiori tiles covering the tasks they are meant to use, making their daily work more intuitive and productive (Rheinwerk Publishing, Inc. 2022).

SAP is investing in Fiori and expanding its features; thus, the further innovation and enhancement of Fiori can be seen in the coming years. Nowadays, many companies are initiating and enhancing their digital transformation with SAP globally. Thus, the demand of this new technology has turned into a project in the case company to compare the traditional SAP transactions with SAP Fiori and prepare a strategy document which presents a comprehensive guide for SAP Fiori deployment for internal and external customers who are considering the implementation of SAP Fiori technology in the SAP landscape.

3.2 Case Company Affiliation with SAP

The case company is associated with SAP since it was founded as a joint venture between the case company and five ex-IBM employees in 1972. The one of SAP's initial technology partners was the case company. The case company is not only a global partner but also it received multiple honours for its collaboration with SAP. Subsequently, both companies have developed and implemented SAP software solutions in collaboration with each other. The partnership between the case company and SAP have strengthened throughout the years and enhanced their association to offer significant benefits to customers globally (ERP Today, 2022).

A variety of SAP consulting services such as implementation, migration, customization, optimization, etc. are provided by the case company. Additionally, infrastructure and hosting services for SAP solutions are also provided by the case company (IBM, SAP consulting services, n.d.). The development of new solutions is also done in a collaborative effort of both companies, such as the development of SAP HANA database, SAP Leonardo.

SAP launched "Rise with SAP" concept in 2021. The purpose of this initiative was to help customers to expedite the digital transformation and enable their transition to the cloud. The case company is crucial partner of SAP in this endeavour. The case company

announced its collaboration with SAP in year 2021 for the “Rise with SAP” program to provide end-to-end business scenarios to customers (IBM Insights on SAP, 17-19).

The license for SAP S/4HANA and SAP NetWeaver gateway is owned by the case company. These are the primary systems which are utilized for this thesis. The various factors such as deployment options, the total count of users and required functionality can be fluctuate the license cost for SAP Fiori and SAP S/4HANA. If company holds SAP ERP or SAP S/4HANA license, then normally SAP Fiori license is included. However, if there is a requirement to develop and deploy Fiori applications on a separate system then the additional cost of licensing needs to be paid (Interviewed stakeholder 1).

3.3 Project Details

As mentioned in Section 1.2, the objective of this study is to develop a strategy to deploy SAP Fiori technology to an industrial customer. The strategy document of the SAP Fiori deployment, an outcome of this thesis aims to provide the Fiori UX strategy, including its benefits, key principles, implementation methodologies, and best practices. The target audience of the document is internal and external customers of the case company who is considering or seeking information for developing and implementing Fiori deployment in their businesses.

This thesis project is done for pre-sales purposes; hence the sandbox/demo SAP environments of the case company are used instead of working on an actual customer business environment and configuration. Sandbox systems are available for the company’s SAP employees and these systems have all necessary standard configurations which are required for this project.

The purpose of developing a strategy document for Fiori technology is to provide guidance to business users, project teams, IT departments, and other stakeholders in knowing the essential stages of deploying and adapting Fiori. Establishing a UX strategy in an SAP environment can help in ensuring that all stakeholders in the organisation understand what tools to use and how to choose Fiori applications when new business requirements arise. This may help to ensure that everyone has a common knowledge and understanding when it comes to SAP Fiori. The goal of the strategy document is to offer readers comprehensive knowledge of the Fiori User Experience (UX) methodology, including its advantages, core principles, approaches for implementation, and best

practices. By referring to the strategy document, clients have the possibility to enhance their overall user experience which can help in maximising the benefits from their SAP investments.

3.4 Internal Customers & Roles in This Project

As the purpose of this study is to develop a strategy to deploy SAP Fiori technology to an industrial customer, the strategy document developed in this thesis aims to support the pre-sales activities and sharing knowledge experience with the internal customers first. Therefore, the customers of this project are SAP teams' employees from the Nordic and Asia countries, and it can be said that the target audience of this project is internal customers and later it can be used for external customers as per need.

There were different roles such as project manager (author of this thesis project), internal Fiori developers and functional consultants/stakeholders involved and having vested interests while developing the strategy document for SAP Fiori UX technology. As part of this study, there were a few rounds of internal interviews and discussions carried out among these roles. It is important to consider the needs and perspectives of internal customers when developing a strategy document as they will play a critical role in the adoption of the Fiori strategy.

The first role as the project manager, the author plays a crucial role in preparing and developing the SAP Fiori UX strategy document. The responsibilities of a project manager are to arrange discussions and interviews with Fiori developers, stakeholders, and other internal customers related to the Fiori technology and to ensure that this thesis project is aligned with the goals and objectives of the thesis.

The second role, Fiori developers play one of the important roles in this thesis project as they work closely with the Fiori technology, and they are up to date with the latest trends in the technology area. They have experience working in Fiori implementation and deployment projects thus it is important to involve them in the discussion and to learn from their past Fiori projects' experiences. This information can help to understand what can be included in the strategy document. As one of the Fiori developers stated:

> *"SAP Fiori technology is relatively new in the market, and we do not have any internal strategy document for it." (Fiori Developer 2)*

The third role, stakeholders help to provide inputs and feedback on the Fiori UX strategy document and has a vast interest in developing the strategy document. The fourth role is functional consultants who work in the sales and functional side of the business activities. It is important to listen to their thinking and perspectives about Fiori technology as they work as end-users of the Fiori applications and provide feedback on the Fiori application's functionality, features, user experience and usability. The collaboration with functional consultants in this project is to ensure that this study meets the outlook and needs of business and end users for the Fiori technology. One stakeholder during the discussion mentioned that:

> *"Many people in the community including me have not yet got the opportunity to work with Fiori and have very little knowledge about it. I am looking forward to seeing the strategy document covering the important aspects of the Fiori technology."* (Stakeholder 1)

As SAP Fiori is a new technology which can leverage organizations to scale new heights, this technology usage is growing very fast in the market. SAP Fiori is one of those technologies in which SAP invests significantly and encourages clients to replace SAP GUI with it. Hence, it is vital to advance knowledge and understanding of it for future projects and pre-sales activities also in the case company. One functional consultant stated that:

> *"Fiori can be utilized as a presentation layer for various SAP modules such as Warehouse Management, General Ledger, Accounts Payable, Accounts Receivable, etc. We can convince the client to adopt the Fiori technology in their business to accelerate their go-to-market strategy."* (Functional consultant 1)

The intention with the strategy document is to provide a single point of information related to SAP Fiori for internal customers of the case company. The document should provide high-level information and discussion relevant for each area which needs to be addressed to ensure full utilization of the SAP S/4HANA solution. As most of all SAP specialists are eager to gain new knowledge in this area, it becomes vital to learn about SAP Fiori and understand the pros and cons of this technology. It is also required to share knowledge and experience within the company.

3.5 Analysis of Internal Experience with SAP Fiori in the Case Company

The case company has vast experience in working with SAP implementation projects globally. In this digital age, organizations prefer to have a well-defined user experience strategy which can help to enhance user satisfaction, productivity, save user training costs, and stay competitive in the market. The case company has been involved and has helped its customers to integrate SAP Fiori technology with their existing SAP systems such as SAP ERP, SAP CRM and SAP SCM. The Fiori implementation demand is increasing rapidly in the market as this technology is used as the presentation layer of SAP S/4HANA applications.

The case company itself conducted a general survey to understand the demands and needs of its customers to develop the Fiori UX strategy and provide the services for this technology. The main purpose of the study was to learn about their experiences with SAP Fiori, to understand the current UX practices, and to analyse their opinions on the need for an SAP Fiori UX strategy document. The company used qualitative and quantitative data collection research approaches during the study. Around 20 SAP employees and 10 customers from different industries were invited for interviews who had already deployed or were planning to deploy SAP Fiori in their businesses.

The study stated that 55% of the interviewed customers had deployed SAP Fiori in their businesses. 60% of SAP employees and 70% of customers mentioned that a user-centric design approach is followed by them to understand the end user needs. While 30% of customers and 20% of SAP employees acknowledged that the recent user experience design processes are consistent and well-defined in their businesses. 90% of SAP employees think that developing the strategy document could be beneficial for them while 75% of customers stated a desire for this document. The main requests to develop such a document were to guarantee that all Fiori applications have consistency in user experience design, enhance overall end-user experience and improve engagement.

According to one of the stakeholders, there is a need to develop and design the company's own Fiori strategy to keep going with the latest market trends for user-friendly SAP applications. He mentioned that:

> *"Nowadays, end users do not accept poorly designed and developed SAP applications and to overcome this request, Fiori UX is our proposed technology for the SAP implementations."* (Stakeholder 1)

During the study, interviewees mentioned that the strategy document should include an overview of the Fiori technology and its advantages, the necessary technical requirements for its effective implementation, and a comprehensive, systematic approach aimed at helping organizations in planning, designing, configuring, and deploying Fiori applications. They also indicated that in the past, there was a request to prepare and develop the strategy document but it was never initiated due to some challenges such as stakeholder buy-in, limited involvement of resources and Fiori expertise.

The case company has worked with various customers in SAP Fiori implementation projects including designing and developing Fiori applications. SAP employees of the company have positive feedback and experiences with SAP Fiori technology. According to the case company's study, 85% of SAP employees mentioned that their productivity has improved using Fiori technology while 80% of employees stated that their overall user experience of applications has improved (internal data). One of the Stakeholders of the case company indicated that:

> "Many *Fiori projects are delivered by the company in other markets such as Asia, USA and the demand of Fiori implementation is growing fast recently. There is a clear interest visible in the global market towards SAP Fiori."* (Stakeholder 2)

The interviewed Fiori developers worked on the following Fiori implementation projects as described in Table 4.

Table 4. Fiori implementation projects list.

Project Name	Year (Project Duration)	Challenges/Business objectives	Outcomes
Technical upgrade (Basis, Security, ABAP and Fiori)	2020 (4 months)	Older version of S/4HANA was unable to use many retail-specific functionalities	Improvement in logistics functions Improved system performance

		and advanced Fiori applications	The customer was able to use new retail features with improvements Many advanced and easy-to-use Fiori applications were introduced
Migration from SAP ERP to S/4HANA	2021 (1 year)	To provide enhanced customer service, customer upgraded to SAP S/4HANA applications, which included the ability to provide real-time information to all supply chain partners	While the core systems were being migrated to the SAP S/4HANA platform, the customer commissioned parallel projects to deploy the future-facing solutions that would enable digital and automated operations. These included the SAP Fiori user interface.
Developing custom Fiori applications for IM processes	2022 (6 months)	User adoption and integration with the existing SAP system	Deployed Fiori applications improved user experience and satisfaction, provided mobile accessibility

Projects shown in Table 4 are explained by the interviewed Fiori developers as follows.

The need for “Technical Upgrade for Basis, Security, ABAP and Fiori” project’s execution was due to the fact that the customer was unable to use many retail-specific functionalities such as promotional offer management, app, analyze forecast of sales and stock and advanced Fiori applications with the older version of S/4HANA. The retail features were available in the latest versions only, thus there was a need to upgrade on the technical side as well. Fiori developer stated that system performance was improved, customer was able to use new retail features with improvements and many advanced and easy-to-use Fiori applications were introduced after the technical upgrade. This project was undertaken in 2020 and completed in four months.

The second project was implemented to provide enhanced customer service. Customer upgraded to SAP S/4HANA applications, which included the ability to provide real-time information to all supply chain partners. The project was one of the first of its kind in

Europe market in the client company. The global project aimed to connect the most relevant customer's suppliers and clients, delivering information transparency across the entire process, combined with advanced planning. The case company implemented this new, global business solution, in record time and with no downtime for the manufacturing plants. While the core systems were being migrated to the SAP S4HANA platform, the customer commissioned parallel projects to deploy the future-facing solutions that would enable digital and automated operations. These included the SAP Fiori user interface applications. This was the one-year long migration project held in year 2021.

One of the Fiori developers worked on a custom Fiori applications development project for Inventory Management processes. This project was started at the beginning of the year 2022 and finished in six months. There were some challenges such as user adoption for Fiori and difficult to integrate with the existing SAP systems. Thus, the custom Fiori applications were decided to develop based on users' needs. During this period, the project team worked closely with the customer to gather end-users' needs and requirements and understand the project scope and goals. They developed Fiori applications using the SAP UI5 framework, SAP Fiori 3.0, JavaScript and oDATA technologies. The outcome of this project was a real-time inventory tracking process resulting in automated inventory alerts and responsive design features. Fiori developer stated that:

> *"The deployment of Fiori applications was successful and there were significant improvements in Inventory Management processes which were noted in the customer's company"* (Fiori developer 1)

The collaboration and communication among all project team members, stakeholders, and customers are key aspects for the success of any SAP Fiori project. This helps to ensure that the business needs are understood correctly, and applications are designed, developed and deployed properly as the project requirement.

3.6 Strengths, Weaknesses & Development Areas for the Strategy Document for SAP Fiori in the Case Company

The main purpose of introducing SAP Fiori is to enhance the user experience and user interface of SAP business processes and software across different platforms and deployment alternatives. During this technology development, SAP's focus is to create

a new user experience of the current business processes without making any variations to the SAP backend. As one of the Fiori developers stated:

> *"So far, SAP applications have been developed with old practices where we needed different implementations for different UI landscapes. But after, the advent of Fiori technology, development efforts have been reduced due to its user-centric approach and design principles."* (Fiori Developer 1)

According to SAP, "New", "Renew", and "Enable" are three main components of SAP's user experience strategy (SAP SE 1 2022, 24). The SAP GUI is still the most preferable option which used by most end users to run business processes in their day-to-day work life. Approximately 300,000 screens and various functionalities are available in the SAP GUI. One of the stakeholders mentioned that:

> "SAP Fiori applications are intuitive, responsive, and role-based which functionalities are not available for SAP GUI applications." (Stakeholder 2)

However, the adaption of the new technology is also challenging for some end-users and developers. One of the developers described that:

> *"New learning was required to adapt Fiori as we are used to working with the traditional SAP user interfaces and applications"* (Fiori Developer 2)

According to one of the stakeholders, the strategy document would help employees and customers to understand a comprehensive and structured approach to deploying Fiori and it also enhances the overall user experience of SAP solutions which can help in maximizing the benefits from their SAP investments. Through this strategy paper, one is enabled to get all necessary information regarding SAP Fiori technology. Detail overview of SAP Fiori, technical requirements, and analysis of the key areas are covered in this document which must be considered to maximize the effective use of the SAP S/4HANA system.

Some interviewees also think that there are some weaknesses despite the technology offers benefits. One of the weaknesses is "Limited adoption" of technology. Many SAP system users are not aware of Fiori's capabilities, and they do not know how to use it or this technology can help them in day-to-day life. A second weakness is "Integration

challenges" which means it is not easy to implement Fiori with the existing SAP systems and other 3rd party solutions. It is complex and time consuming which requires involvement of expert resources for the implementation which are limited in the market. One of the Stakeholders stated:

> *"We are not able to find suitable Fiori experts, thus it is important if we develop this kind of strategy document then we can train junior resources for the Fiori technology"* (Stakeholder 1)

The focus areas of the strategy document include:

1) *overview of the SAP Fiori technology*
2) *a concept for the deployment of SAP Fiori technology (step by step)*
3) *a strategy document of the SAP Fiori deployment and implementation*

The focus areas are explained in detail in the Fiori UX Strategy document. Existing knowledge and best practise on SAP Fiori Technology is described in the following section.

4 Existing Knowledge and Best Practice on SAP Fiori Technology

This section discusses the available literature and best practices on the deployment and use of SAP Fiori based on publications by SAP, as well as from relevant SAP blogs, books, and articles that discuss it as best industry practices. Section 4 describes the SAP Fiori-related practices collected from the guiding documents and literature on SAP Fiori and includes the Overview, SAP Fiori development tools, benefits of SAP Fiori and required steps in deployment.

4.1 SAP Fiori Overview

The enterprise IT industry has evolved over the last years to adopt a more user-centric approach (Dart 2020). As new generations enter the workforce, they expect business IT to meet their experiences of consumer IT. SAP Fiori technology is a modern and new browser-based user experience (UX) or user interface (UI) for all SAP products to business users for all devices. This technology is offered as the strategic UX for most of SAP's latest products such as "SAP S/4HANA, SAP C/4HANA, SAP Data Hub, SAP Ariba, SAP Analytics Cloud" and many more. The idea of this technology is that instead of going to the regular ERP system with regular old SAP GUI that is used now, users can instead use this new SAP Fiori tool. SAP NetWeaver Gateway license covers the Fiori license cost; thus, SAP customers do not require to purchase a separate license for SAP Fiori components. SAP Fiori runs together with the SAP NetWeaver Gateway system (Dart 2020). Figure 4 explains how the SAP Fiori is developed and progressed over the years.

Figure 4. The development and progression of SAP Fiori (Dart 2020).

The evaluation of SAP Fiori is described in Figure 4. SAP announced SAP Fiori in year 2013 and it has provided a range of applications to enhance the user interface for SAP system since its evolution.

In October 2016, SAP released the SAP Fiori 2.0 version which signified a progression in user interface for SAP S/4HANA as well as SAP Business Suite. SAPUI5 technology versions 1.40 and above were utilized for this Fiori version which placed a better emphasis on users and their work processes. It was considered as the primary design for all SAP applications which offered a consistent and cohesive user experience for on-premises and cloud solutions (Khade 2023).

SAP launched the initial components of the SAP Fiori 3 design in September 2019. The primary objective of developing SAP Fiori 3 was to make it commonly adaptable to all SAP products. The latest design is built on SAPUI5 technology versions 1.65 and above that includes better background, personalized options, and many more other options (Khade 2023).

SAP has not released any newer version of SAP Fiori after the Fiori 3 version. As such, Fiori 3 version is counted as the latest version of SAP Fiori till the date.

4.1.1 SAP Fiori Key Design Principles

This section looks at the key design principles of SAP Fiori technology and approaches that are recommended for developments within the SAP development landscape.

In general, *design principles* mean a collection of guidelines which support developers and designers to create better design and enhance application's code readability. While the interface consists of a set of Fiori applications which are developed using SAP Fiori design guidelines and principles. According to the SAP, the key design principles of Fiori technology are as follows: "*Role-based, adaptive, simple, coherent, and delightful*" (Vanam 2019). Figure 5 shows the SAP Fiori five key design principles.

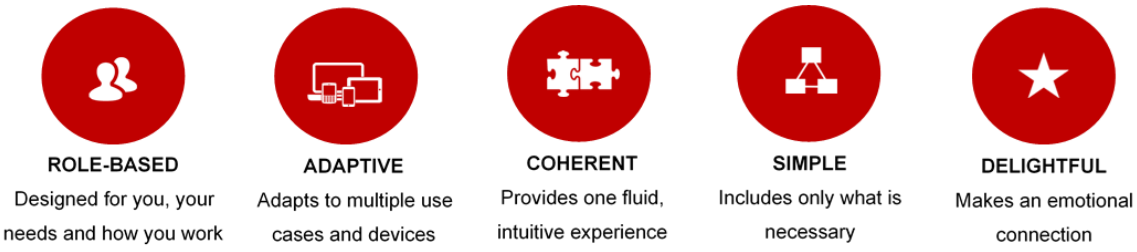

Figure 5. SAP Fiori Design Principals (Vanam 2019).

The SAP Fiori design principles shown in Figure 4 include five key principles as follows.

First, the *Role-based* design means that SAP Fiori is designed to be role-based to suit the individual requirements and demands based on various roles within the organization. Users can be granted access only to those applications that are allowed for their chosen role. The most important change that SAP has developed for Fiori technology is the adoption of a role-based approach. According to SAP, this feature enhances user efficiency and minimizes training expenses by providing users with only the required information and functionality of apps which they need to execute their day-to-day tasks (SAP SE 2022).

Second, the *Adaptive/Responsive* design means that SAP Fiori is intended to be responsive and adaptive. The user interface of applications dynamically adapts to various devices, screen sizes and resolutions. This approach ensures that applications should be responsive, run smoothly and users can use and engage with applications across a wide range of devices such as desktops, smartphones, tablets, etc. (SAP SE 2022).

Third, the *Coherent* design means that SAP Fiori is intended to be coherent ensuring a consistent appearance and user experience throughout all Fiori applications. This principle enhances user efficiency and minimizes the time required to adapt new technology (SAP SE 2022).

Forth, the *Simple* design principle means that SAP Fiori is intended to be simple and user friendly. With this principle, it removes complexity and minimizes the number of steps needed to be accomplished for a completion of task compared to the traditional application. This reduces human errors and enhances ease of use (SAP SE 2022).

Finally, the *Delightful* design principle means that SAP Fiori is intended to provide a pleasant and engaging user experience. The main purpose of this principle is to prioritize visual appeal, usability, and interactive features of applications. Fiori technology has a minimal threshold for adaption and optimizes the user experience (SAP SE 2022).

The SAP Fiori design is the first dimension which includes the graphic design, information collection, colours schemes, and patterns of collaboration. These all things are outlined in the SAP Fiori design guidelines (SAP Help Portal n.d.).

Cohesive user experience is provided by SAP Fiori to various clients in the principles dimension. It is vital that users have a consistent, coherent, simple, intuitive, and delightful user experience across all devices for optimal productivity and efficiency. These five design principles of SAP Fiori are essential for all Fiori applications. The most significant modification from traditional SAP user interfaces to SAP Fiori is the role-based approach (SAP Help Portal n.d.).

The better user experience and user interfaces of applications can influence significantly on the business value. It is believed that only better colours and fonts are considered as a great user experience, but it is misunderstood concept. Users can increase their productivity and can work on applications with more speed and efficiency with a better user experience. This also increases a higher rate of acceptance and reduces human errors. All these consequences have a positive effect on the business value immediately.

The design thinking approach is a foundation of the SAP UX strategy and consequently the development of SAP Fiori. This approach prioritises the human thinking where people with diverse backgrounds and perspectives can collaborate to improve their understanding and address challenges. Thus, it is important to understand the design principles of SAP Fiori technology.

4.1.2 Varieties of SAP Fiori applications

According to Bavaraju (2017), there are three types of SAP Fiori applications: “Transactional applications, Fact Sheets and Analytical applications”. These applications are categorized based on their functions, purpose, and the infrastructure’s need.

First, the *Transactional Fiori Applications* type shown in Figure 6 are designed and developed for performing transactional tasks such as approving and creating leave requests, purchase orders etc. The creation, updation and deletion of data are handled in this kind of application, and it also includes generating workflows and approval of business processes (Bavaraju 2017). This is the most common implemented applications type in the businesses.

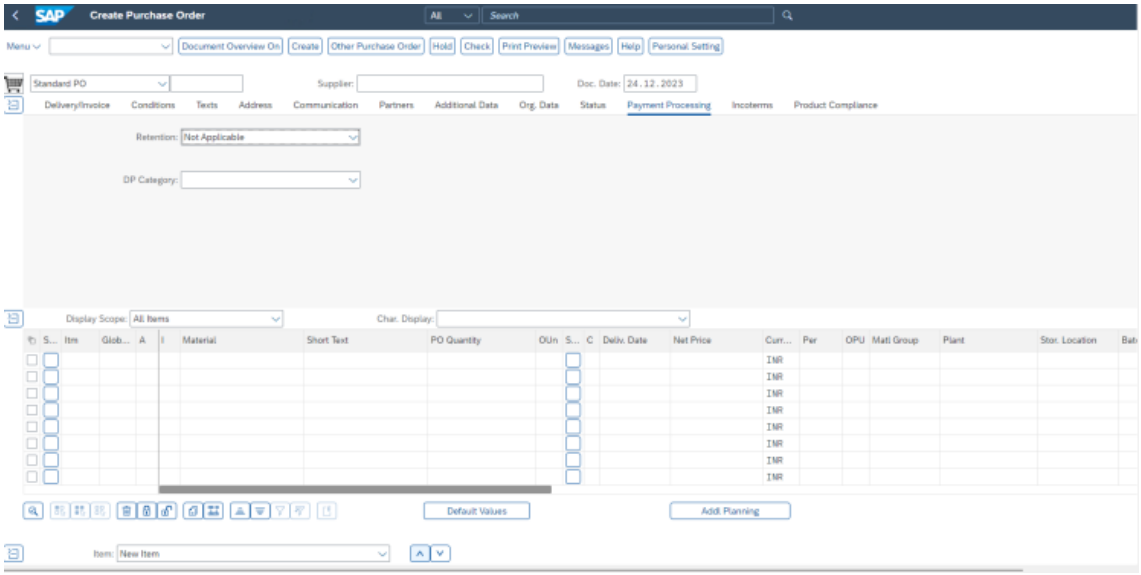

Figure 6. Transactional Fiori Application (Suhas 2024).

“Create Purchase Order” as shown in Figure 6 is one of the transactional Fiori applications examples. There are some examples of Fiori transactional applications listed as follows:

Sales representatives can create, manage, and track sales orders directly in the “Sales Order Management” transactional Fiori application. Customer and pricing details and product availability can be seen in the application. Within this application, users can manage delivery notes and invoices.

Another example where procurement end users can create, manage, and track purchase orders in the “Purchase Order Management” transactional Fiori application. The “Time Sheet Application” transactional application allows employees to add and track their work time, and vacation. This application allows managers to keep track of attendance reports and approve vacation time. Another example of a transactional Fiori application is the

“Inventory Management Fiori application” which allows warehouse employees to manage inventory and stock movements.

These applications perform optimally on the SAP HANA database, but these can also be implemented on any database that allows the performance related requirements. This type of applications enables users to run on any device and screen sizes (Geeksforgeeks 2023).

Second, *Fact sheets Fiori Applications* type shown in Figure 7 is utilized for searching and exploring contextual information and key facts about central objects used in customer’s business operations. This type of applications is launched using SAP Fiori Search from the launchpad or through navigation from other applications. SAP HANA database is the only database where this type of applications can run (Bavaraju 2017).

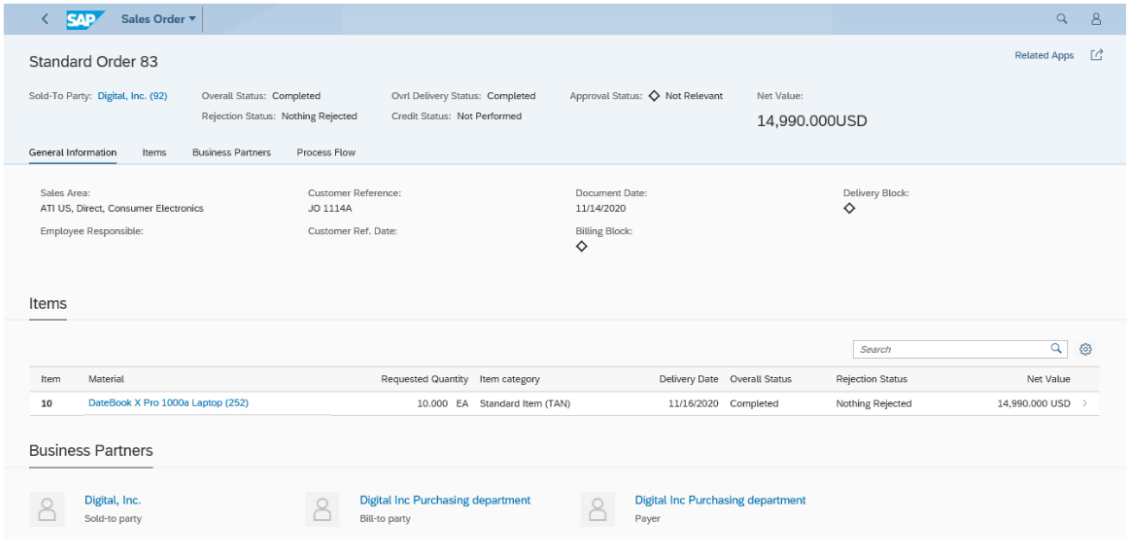

Figure 7. Fact sheet Fiori Application (Eursap 2021).

Fact sheet Fiori Application shown in Figure 7, can be used to navigate to Transactional Fiori Applications and track SAP transactions. A geographical map feature can be also integrated into some fact sheet applications. This kind of application can be launched through other fact sheet applications or Transactional/Analytical Fiori applications (Geeksforgeeks 2023).

Third, *Analytical Fiori Applications* shown in Figure 8 provide a visual overview over a complex topic which are used for monitoring and tracking purposes. This type of

applications provides insights into business operations by collecting and displaying analytic information and indicators, such as KPIs (Bavaraju 2017).

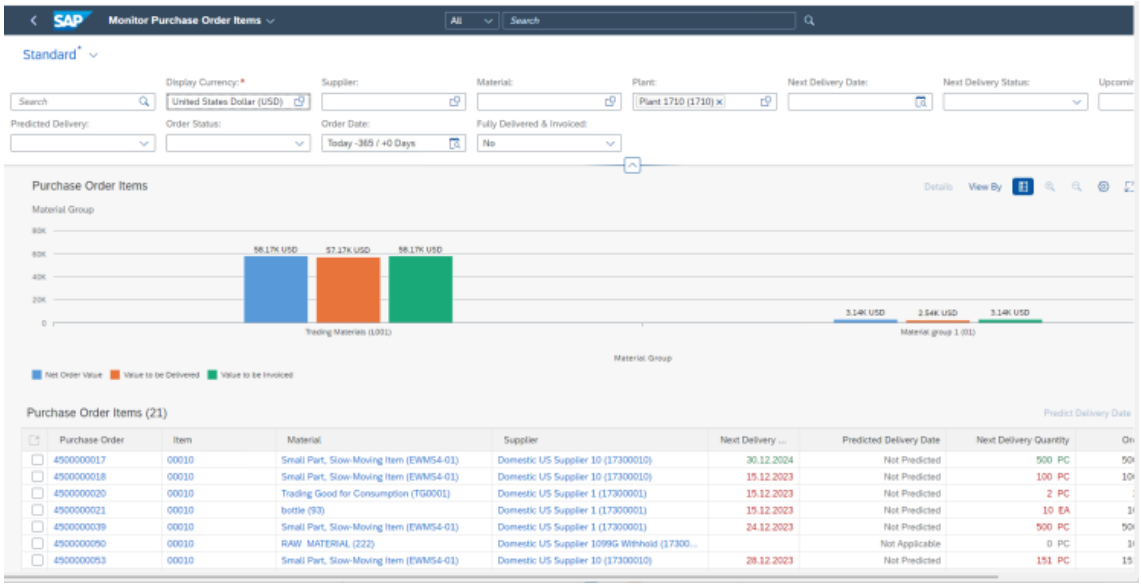

Figure 8. Analytical Fiori Application (Suhas 2024).

“Monitor Purchase Order items” the Analytical Fiori Application shown in Figure 8 is one of the examples of an analytical Fiori application. Advanced analytical capabilities are designed in the application. SAP Fiori elements Fiori template is used to build analytical Fiori applications. Interactive charts, graphs, tables, predictive analytics and data mining features are included in these types of applications. This type of application enables organizations to make data-driven decisions. For analytical applications, SAP HANA database is the only database where these can be compatible (Eursap 2021).

It is essential to understand the Fiori application types to maximise the value of SAP solutions. The right selection of application types can help a business's needs which can enhance user experience, productivity, cost savings, security, integration, and gain competitive advantage in the market.

4.2 SAP Fiori Development Tools

There are various development tools used to design and develop SAP Fiori applications. SAPUI5 framework and HTML5 technologies are used to build the SAP Fiori applications. User interface is developed with metadata driven approach for creating

freestyle applications. Fiori applications are hosted and launched on the SAP Fiori launchpad. SAP Fiori development tools consists of software tools, frameworks and technologies which allows developers to design, build, deploy SAP Fiori applications. The Fiori development tools are currently available only in SAP Business Application Studio based editors, which support in developing applications and controls (Bavaraju 2017).

Figure 9 shows SAP Fiori development tools and technologies which are utilized to build Fiori applications.

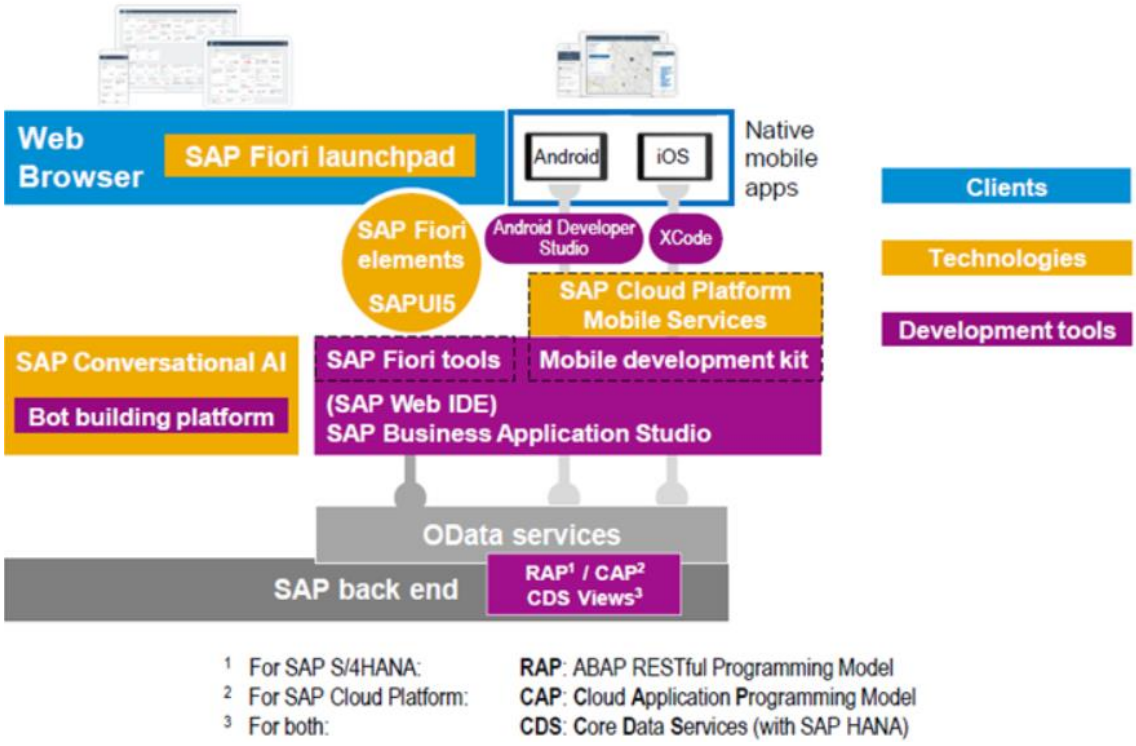

Figure 9. SAP Fiori Development Tools and Technologies (Hingorani n.d.).

Figure 9 illustrates the SAP Fiori technical landscape that is categorised into three different parts: “Clients, Technologies, and Development tools”. The blue colour represents “Clients”, the yellow colour represents “Technologies” which are used to implement a Fiori application and the last, the purple colour represents “Development tools” that are available to design and build SAP Fiori applications in the above Figure.

First, *Clients* is a web browser where the SAP Fiori applications run. It is important to consider that the HTML5 version must be supported by clients (Lankila 2019).

Second, *Technologies* which consists of the entire architecture, and programming model for developing, deploying, and operating SAP Fiori applications. This includes SAP Fiori Launchpad, SAP Fiori elements, SAP UI5, SAP Cloud Platform Mobile Services and SAP Conversational AI. The SAP Fiori launchpad is used to serve as a centralised hub for accessing and navigating between SAP Fiori applications. Fiori applications are developed using SAP Fiori elements templates while the SAP UI5 is a framework used to build SAP Fiori applications. SAP Cloud Platform Mobile Services and SAP Conversational AI are the newest services that are offered to develop “Mobile First” applications and chatbot technology.

Third, *Development Tools* that include SAP Web IDE or SAP Business Application Studio, SAP Fiori Tools, Mobile Development Kit, RAP (Restful ABAP Programming Model), CAP (Cloud Application Programming Model), CDS (Core Data Services) and a Bot Building Platform tool which are used to design and develop custom Fiori applications.

The *SAP Web IDE* or *SAP Business Application Studio* include editors that can be accessed from the SAP Business Technology Platform. These are cloud-based tools which run on a web browser, and are used to develop custom, Fiori elements applications. The SAP Business Application Studio is the latest web-based IDE which supports the entire lifecycle of applications. SAP Fiori tools can be installed as *a plug-in* to SAP Business Application Studio which adds extra benefits for developers to develop SAP UI5 and SAP Fiori elements applications.

A *Mobile Development Kit* as a plug-in is provided by SAP Cloud Platform Mobile Services for SAP Business Application Studio to develop native mobile Fiori applications for both iOS and Android. On the other hand, Android Developer Studio and Xcode can be also utilized for iOS and Android development. *RAP (Restful ABAP Programming Model), CAP (Cloud Application Programming Model), and CDS (Core Data Services)* are the tools used to read data from and send data to the SAP backend system. With CDS views, users can model their application data, which is stored in HANA. Users can build programming models using RAP and CAP for creating OData services for Fiori applications. A *Bot Building Platform* and *SAP Conversational AI* relate to a chatbot technology that comes with a continually evolving robot-building platform.

In conclusion, these tools play an important role to design, develop and deploy SAP Fiori applications and ensure that the output of applications is in line with Fiori design guidelines. The next section discusses the benefits of SAP Fiori.

4.3 Benefits of SAP Fiori

The recommended option for SAP Fiori is to check the relevant standard Fiori applications from Fiori apps library which is offered by SAP before developing any custom solution. If the standard application is not sufficient for the business needs, then it can be modified by extending the application to cover any functional deficiencies. If there is no appropriate Fiori application available in the Fiori apps library, then it is recommended to develop a custom application (Szirtes & Rivlin 2015). The benefits of SAP Fiori have both user experience and financial aspects. Figures 10 and 11 summarize the financial and user experience benefits which can be reached using SAP Fiori.

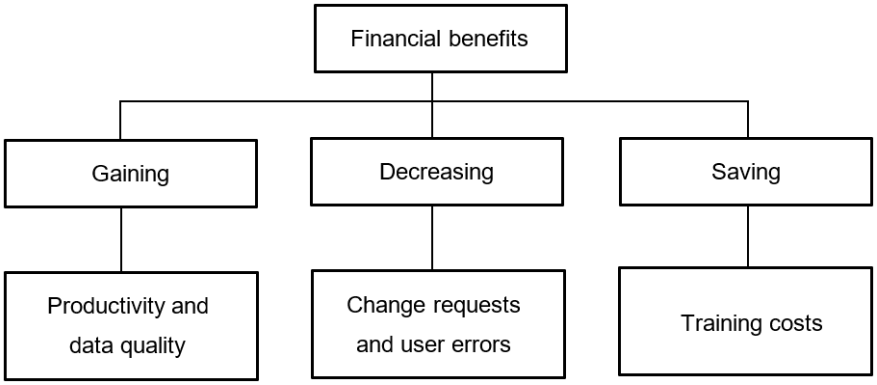

Figure 10. SAP Fiori financial benefits (Kärkkäinen 2020).

According to Kärkkäinen, SAP Fiori offers several financial benefits as shown in Figure 10 is as follows. First, *Gaining in productivity and data quality* means that users can complete tasks more efficiently with a simple and intuitive user interface of SAP Fiori applications. The total time of completing tasks and efforts has been reduced using Fiori applications compared to the manual processes (Bastaci, n.d.).

Second, *Decreasing in change requests and user errors* means that real-time data access is provided by Fiori to handle critical business data and insights which decreases user errors. A consistent design principle of applications allows users to navigate to the different applications that reduces human errors and need for the frequent change requests. The continuous improvement of Fiori technology allows users to work on the latest functionality.

Third, T*raining cost-saving* means that a simple user interface, consistency, role-based access, in-app help, and continuous improvement of SAP Fiori technology help businesses to save training costs. SAP Fiori is role and task-based which means that users can get access to only those applications which they need to work on in their day-to-day business. This feature saves training costs for those applications which they do not require to work (Afi Solutions 2022).

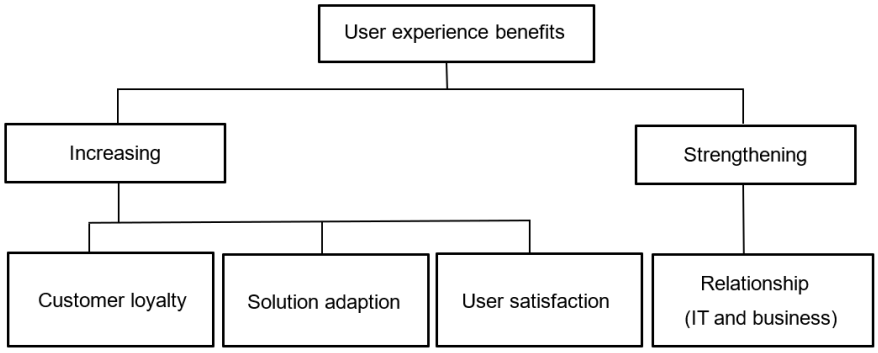

Figure 11. SAP Fiori user experience benefits (Kärkkäinen 2020).

According to Kärkkäinen, there are also some user experience benefits offered by Fiori technology as shown in Figure 11 as follows. First, *Increasing customer loyalty, solution adaption and user satisfaction* mean that Fiori technology has a minimal threshold for adaption and optimizes the user experience due to its design principles. SAP is expected to increase customer retention and loyalty, technology adaptation and user pleasure as well as strengthen a stronger interaction between business and IT through SAP Fiori (SAP SE 2023, 9).

Second, *Strengthening IT and business relationships* means that SAP plans to strengthen a stronger interaction between business and IT through SAP Fiori. Users can access business data from any mobile device, anywhere and anytime due to its mobile capabilities that can help to improve the responsiveness of SAP applications. This also allows better IT and business collaboration (Bastaci, n.d.).

These financial and user experience benefits can enable businesses to stay competitive and succeed through SAP Fiori implementation. The next section discusses the steps in the deployment of SAP Fiori.

4.4 Steps in Deployment for SAP S/4HANA

There is still lack of guidance offered for deploying SAP Fiori, as this is a new offering. Therefore, this section is developed using the more traditional guidance from SAP S/4 HANA to outline the key steps in its deployment as a basis for more specific deployment guidance that will be developed later in the separate strategy document.

SAP released S/4HANA in early 2015 which is a *real-time enterprise resource management business suite.* It is built on SAP HANA in-memory database that provides a customized user experience with SAP Fiori technology (Singh 2017). According to Venkatesh, the deployment of S/4HANA on on-premises can provide maximum control while the cloud deployment gives fast time-to-value. Both deployments include positive and negative aspects. However, an additional alternative exists in the form of a hybrid delivery architecture that enables the integration of both on-premises and on-cloud deployment (Golla 2020).

The on-premises version of SAP S/4HANA is deployed to an internal platform of organisation which is hosted on organization's servers and maintenance and management are handled by the organization. SAP updates are often published on a yearly basis and the respective team of the organization needs to implement and test the updates. The Cloud version of SAP S/4HANA is a *Software as a Service (SaaS)* solution that runs on servers owned by SAP and is also continually supported by SAP. Software updates occur on a quarterly basis (Golla 2020). Figure 12 illustrates a foundational structure of S/4HANA deployment with a cohesive data model, consistent semantics, and a unified user experience.

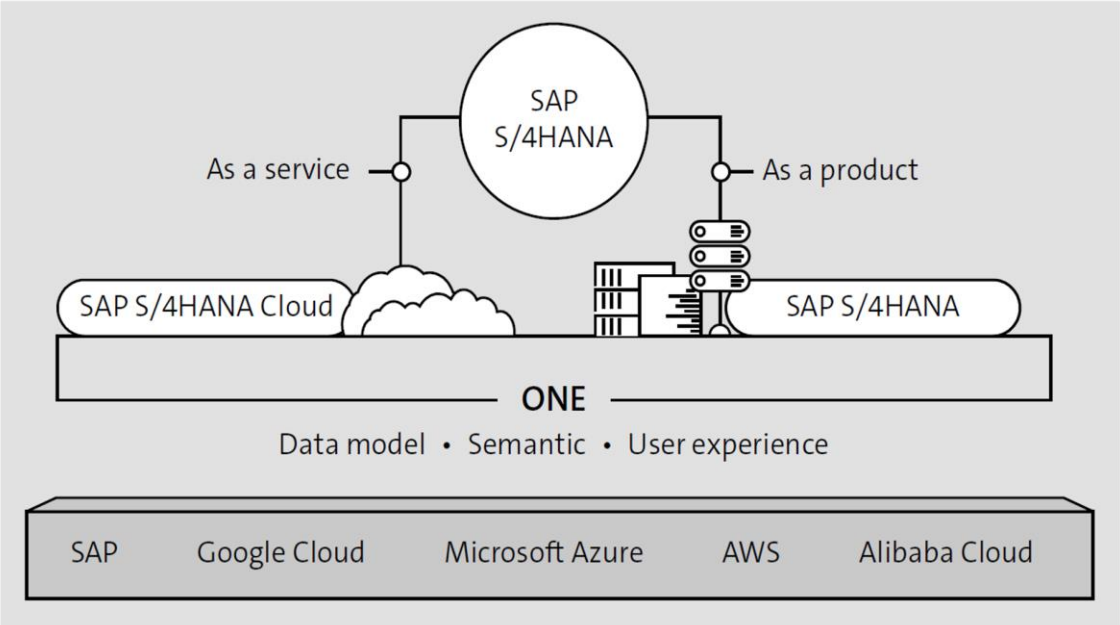

Figure 12. S/4HANA deployment possibilities (SAP Press 2021).

S/4HANA is designed and developed to work with any on-premises or cloud deployment option. On-premises and cloud deployment of SAP S/4HANA are described in detail in the following sections.

4.4.1 SAP S/4HANA Cloud Deployment

The cloud deployment of SAP S/4HANA is done on the cloud infrastructure of SAP. A monthly or yearly subscription-based pricing plan is offered by SAP. With this deployment option, businesses can implement software easily and quickly with low investment in IT infrastructure. Automatic updates are enabled that allows organizations to access the latest functionalities. Figure 13 demonstrates the steps of SAP S/4HANA cloud deployment.

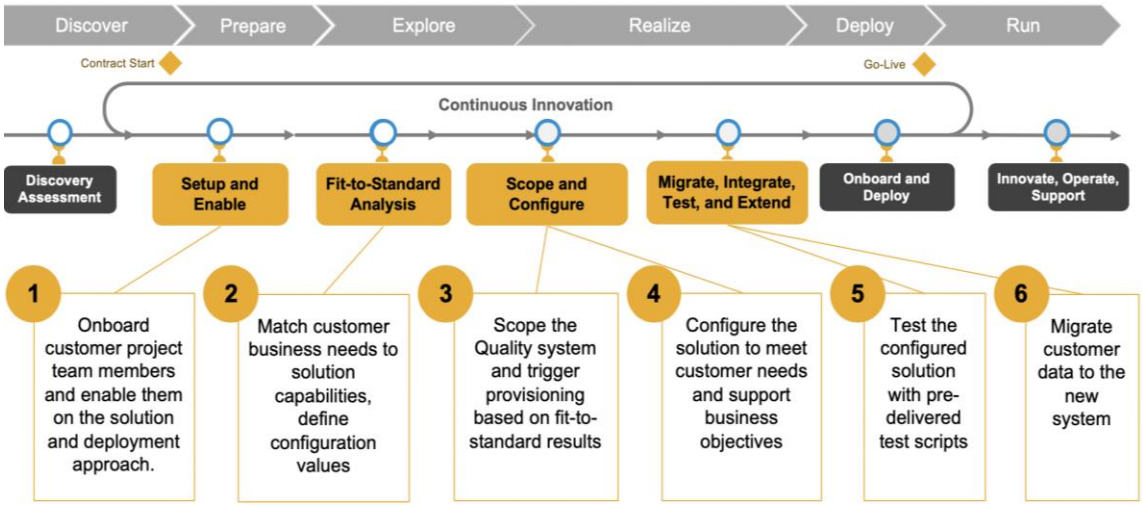

Figure 13. Deployment steps of SAP S/4HANA Cloud (Musil 2019).

As shown in Figure 13, the cloud deployment of SAP S/4HANA includes the following steps. First, *Setup and Enable* step is to onboard project team members and prepare them for cloud deployment approach. The project management methodologies such as SAP Activate and Agile are defined and project communication channels are set up during this step. During the preparation phase, it is important to confirm that the project team and stakeholders have understood objectives and goals of the project. This step is considered as a foundation of the project. The collaboration between the company and experienced partners/consultants ensures that this phase is handled efficiently and properly. (Krakowski & Stoddard, 2021.)

Second, *Fit-to-Standard Analysis* is performed in the explore phase of the project. SAP S/4HANA's capabilities are analysed and checked for the business requirements. A hierarchy of business processes is defined and reviewed by the team members in this phase. Additionally, the gaps between the standard processes and the business requirements are identified by the project team. All results gathered from analysis are documented to Fit-to-Standard Analysis document which is used for the S/4HANA cloud configuration. In the explore phase, project team ensures that business processes for the change requests and customization of the system are understood and considered. (Musil 2019.)

Third, *System Provisioning and Project Scope* is defined by the project team in the realize step. This phase involves activities such as identifying the business processes, implementation of functional areas and any other requirements. Project charter is created

to define the project's scope, goals, timeline, objectives, team roles and responsibilities. Key stakeholders review and approve the project charter. A project roadmap is also created to plan the project's milestones, deliverables, and tasks for S/4HANA cloud deployment. (Musil 2019.)

Fourth, the *Configuration* of the solution is also started during the realize step to meet business requirements and the project's objectives. The project team must ensure that all settings and configurations are implemented properly. (Krakowski & Stoddard, 2021.)

Fifth, During the *Testing* phase, the project team ensures that business processes and systems are functioning properly. User Acceptance Testing (UAT) is performed by business users who confirm that the cloud deployment of the business requirements is configured correctly and is ready for Go-Live. (Musil 2019.)

Sixth and Final, in the *Data Migration* step, the data is migrated to the S/4HANA cloud from the existing system during the final step of the project which includes activities ranging from mapping, transforming, and loading the data into the new system. Testing is done after data migration to ensure that all functionalities of the system is working properly. The project is ready for Go-Live after successful testing with S/4HANA cloud deployment. During the Go-Live, the system is launched, users are trained, and the system is monitored for any issues raised. (Musil 2019.)

The deployment process for SAP S/4HANA Cloud may be summarized into six main steps, but it can also vary depending on the specific requirements of the business and the complexity of the deployment. The duration of S/4HANA cloud deployment depends on the level of system's complexity, the total amount of data migration and the total count of users. According to one of the interviewed Fiori developers, the cloud deployment can be completed in a few weeks or several months that depends on the scope of the project and requirements.

HCS University (n.d.) stated some benefits that cloud deployment offers as follows. First is the *Scalability* benefit which means that business solutions or resources can be added or removed easily based on the business requirements. Second, the *Flexible Accessibility* benefit means that employees in the organization can access the SAP solution from remote places anytime due to the remote accessibility of the cloud. Third, the *Cost-effectiveness* benefit means that it reduces on-premises set-up needs, thus it

can save costs on longer term. Fourth, the *Maintenance and Upgrade* benefit means that SAP offers automatic maintenance and upgrades for the cloud solutions which allows running the latest version of solutions and applications in the organization.

However, there are also some drawbacks of cloud deployment as follows. First, the *Security* of business data is a foremost concern in the cloud for many organizations. According to Guruprasath424 (2023.), the organization needs to rely on the security practices of the cloud service providers. Data needs to be encrypted properly otherwise business risks can be caused due to data breaches. Second, *Internet connectivity* is required in the cloud deployment to access the system which may be challenging in some places.

The deployment process for SAP S/4 HANA Cloud is performed on cloud infrastructure which includes deployment of SAP systems and applications to the cloud rather than on-premises. SAP software and application data can be accessed from anywhere with flexibility compared to the SAP S/4HANA on-premises deployment. Organizations' business requirements, budgets and business priorities are the key factors to decide whether to go with cloud or on-premises deployment. The cloud deployment is the go-to option if the organization is looking for flexibility, scalability, and cost savings solutions.

4.4.2 SAP S/4HANA On-Premises Deployment

SAP S/4HANA on-premises deployment is done on the organisation’s own servers and is managed by the enterprise itself. It includes the traditional license pricing plan. SAP S/4HANA on-premises deployment is specifically developed for those businesses with a huge IT infrastructure and want the full authority of their systems and data. In this deployment, companies can customize their systems more flexible and can manage regular system updated by their own. (Raja 2018.)

According to SAP SE 1 (2023) the deployment of SAP S/4 HANA on-premises involves the following steps. First step, *Discover/Planning* of the deployment of SAP S/4HANA on-premises includes identifying the scope, goals, and objectives of the project. The required project resources such as hardware, software and team members are identified in this phase.

Second, in the *Preparation* phase, the infrastructure and business environment are prepared for the SAP S/4HANA on-premises deployment. The required hardware, software, network, and security settings are configured during this phase. The data migration plan is also prepared as a base for the installation step.

Third, During the *Installation and configuration* phase, the S/4HANA on-premises system is installed on the company's own server. The installation wizard and settings are installed, and the project team also ensures that the software and the financial and operational settings are installed properly.

Fourth, in the *Data Migration* phase, after installing the necessary software, the data is migrated to the S/4HANA on-premises system from the ECC system. This phase includes activities such as mapping, transforming, and loading the data into the new system.

Fifth, during the *Testing phase*, the project team checks that data is migrated properly and all business processes and systems are functioning properly on the on-premises system.

Sixth, *Training* step covers activities including providing trainings to the end users. The training sessions are conducted where project team provides training materials and relevant documentations.

Seventh, *Go-Live is the last step* with S/4HANA on-premises deployment which *is done a*fter performing successful testing and providing training to the end users. The newest version of the system is launched during the Go-Live phase. After launching the system, the project team monitors the system and fixes the issues if something is found.

The S/4HANA system is hosted in the organization's own data centre in the on-premises deployment. According to Guruprasath424 (2023), on-premises deployment offers some benefits as follows:

First benefit is *Control over data* means that organizations have full control of its data in the on-premises deployment as third-party dependencies are not included in this type of deployment. Second, *No Internet Dependencies* means that there is no need for internet connections to access on-premises solutions which enables always accessing the

solution. Third, *Security* means that organizations can get full control of its data and security through on-premises deployment.

Guruprasath424 (2023) also stated some drawbacks of on-premises deployment as follows. *Limited scalability* and *High costs* mean that a huge investment is required for on-premises software and hardware which restricts the rapid scale of the system. The high costs of SAP solutions cannot be afforded by the small businesses. Also, the on-premises deployment duration of SAP S/4HANA depends on the project's complexity and business needs. According to one of the interviewed Stakeholders, the on-premises deployment may take six months to two years or more for the completion.

After analysing both S/4HANA cloud and on-premises deployment options, the cloud deployment provides less time in deployment, flexible accessibility, scalability, automatic updates and lower upfront costs while the on-premise deployment offers control and security over the business data. The selection between cloud and on-premises deployments depends on the business’s needs, objectives, and goals. The next section describes the conceptual framework.

4.5 Conceptual Framework of This Thesis

Based on exploring business literature and industry best practice in Section 4, four key areas are considered as key contributing topics into the conceptual framework to provide a holistic approach to the SAP Fiori deployment strategy as listed below: (1) Elements of SAP Fiori, (2) SAP Fiori Technical Landscape, (3) Steps in Deployment, and (4) Benefits of SAP Fiori. These four areas should enable the customers to navigate the challenges of digital transformation effectively. Figure 14 illustrates the conceptual framework of this thesis.

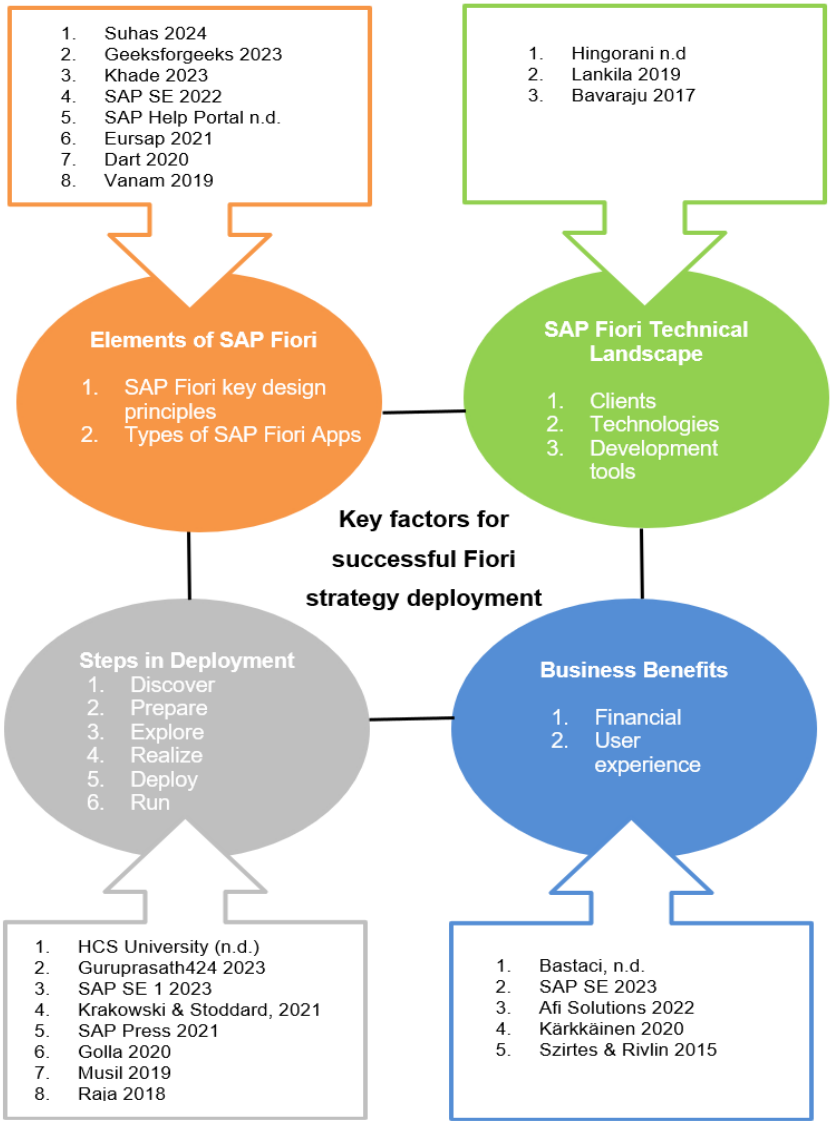

Figure 14. Conceptual Framework for the SAP Fiori deployment strategy.

The individual topics of the conceptual framework, presented in Figure 14, involve vital components associated with the SAP Fiori deployment strategy.

First, *Elements of SAP Fiori* include design principles and types of Fiori applications such as *Transactional Apps, Fact Sheets, and Analytical Apps*. These two characteristics provide the basic and overall understanding of SAP Fiori which is an important aspect of the study. SAP Fiori provides a set of design principles that are a collection of guidelines which support developers and designers to create better designs and enhance the application's code readability. These applications are categorised based on their functions, purpose, and the infrastructure's need. Without gaining knowledge in this area, it may be difficult to decide on the Fiori deployment.

Second, *SAP Fiori Technical Landscape* topic supports understanding the tools and technologies used to implement a Fiori application and how they interact with the SAP frontend on the SAP *Fiori Launchpad* and the SAP backend servers. The technical landscape is categorized into three: “Clients, Technologies and Development tools”.

Third, *Steps in Fiori Deployment* means Fiori deployment follows the steps such as *Discover, Prepare, Explore, Realize, Deploy and Run* to deploy Fiori applications from the development system to the production system. There are different activities and tasks performed in different phases. The readiness of the company to adopt Fiori technology is analysed and the scope, goals and objectives of the Fiori deployment project are defined during the Discovery phase. The project team prepares technical infrastructure for Fiori deployment in the Prepare phase. After that, in the Explore phase, the project team explores and assesses Fiori design options to meet end users' needs and requirements. The development and configuration of the selected Fiori applications commences in the Realize phase. The team also tests the deployed applications in the Realize phase. After successfully testing applications in the test environment, Fiori applications are deployed to the production environment in the Deploy phase. In the final Run phase, the project team monitors the performance of Fiori applications. Additionally, ongoing support, maintenance and end-user training are provided in this final phase. A careful readiness check, planning, system set-up, development, testing, deployment, monitoring, and support are required to ensure the successful completion of SAP Fiori deployment.

Fourth, *Business Benefits,* including financial and user experience benefits offered by SAP Fiori technology. These financial and user experience benefits allow businesses to stay competitive and succeed through SAP Fiori implementation. Thus, it is vital for a company to recognise these business benefits.

In conclusion, the existing knowledge and best practice on SAP’s new Fiori technology highlighted the core ingredients of the SAP Fiori deployment, with a focus on its design principles to enhance the user experience of applications. Establishing a user experience strategy in an SAP environment can help in ensuring that all stakeholders in the organisation understand which tools to use and how to choose Fiori applications when new business requirements arise.

5 Building the Proposal for the SAP Fiori UX Strategy Document

This section reports on building the initial proposal for SAP Fiori UX Strategy document as a result of the project needs, the conceptual framework, and along with the contributions from the key stakeholders of the case company.

5.1 Overview of the Proposal Building Stage

The proposal for the SAP Fiori UX Strategy document was built from the following sources: the information gathered about the needs of the deployment project (Data 1); the analysis of available literate and best practice from SAP blogs, articles, and materials (merged into CF), and along with the study of the case organization's best practices based on interviews (Data 2), all pulled together to build the proposal.

Data 2 was gathered from interviews and discussions at the proposal building stage. Interviews and discussions were conducted with the same interviewees who were involved in Data 1 collection. A table of contents was co-developed for developing the SAP Fiori UX strategy document.

Based on the stakeholder inputs, a series of steps were done during the creation of the strategy document. The first area in Fiori deployment strategy was described based on Data 1 which included interviews, the analysis of internal documents and the findings from the previous survey on the Fiori UX strategy. Second (Data 2), interviews and discussions were conducted with SAP consultants at the case company. The insights of interviewer and interviewees are described in Section 5.2. Third, the table of contents was formed for the strategy document as the first draft (in Section 5.3), which was further expanded based on detail feedback to the document in Section 6.

As mentioned in Section 2.2, Data collection happened in three rounds. In the first round (Data 1), discussions and interviews were intended to build an outline of the Fiori UX strategy document which was meant as an initial procedure to follow for the document. In total, six interviews were conducted at the case company: two with Fiori developers, two with key stakeholders, and two with functional consultants. The interviewees provided deeper understanding of Fiori technology and gave opinions for the strategy document. Next, Data 2 interviews were carried out to discuss and co-create the contents of the strategy document which involved gathering inputs for building the proposal.

During Data collection 3 interviews, detailed comments and inputs of the stakeholders were collected to validate the final proposal of the strategy document.

5.2 Findings from Data Collection 2

This section summarizes the insights gathered from the stakeholders during Data collection 2. The draft of contents of the SAP Fiori UX strategy document was co-created and discussed during these interviews and discussions. The initial plan (contents) of the Fiori UX strategy document pulled together by the stakeholders for further discussions is outlined in Table 5.

Table 5. The initial plan (contents) of the Fiori UX strategy document.

	Table of contents for the Strategy document
1	SAP Fiori UX Strategy 1.1 SAP UX Journey – From SAP GUI to SAP Fiori 1.2 Design Direction Overview 1.2.1 Technology Focus – User Experience as a Service 1.3 The Direction of SAP's User Experience Strategy 1.4 Role-Based Design/User Experience
2	SAP Fiori User Experience 2.1 SAP Fiori Dimensions 2.2 Benefits of SAP Fiori UX 2.3 Fiori Apps Reference Library 2.4 Key Design Principles of Fiori UX 2.5 SAP Fiori Application Types
3	SAP Fiori System Landscape 3.1 SAP Fiori Technical Deployment Options and Recommendations 3.2 Role Design – Step-by-Step
4	User Experience Approach / SAP Fiori Design 4.1 Fiori Launchpad 4.2 Components of SAP Fiori Launchpad
5	Organization Branding and Theming in SAP Fiori 5.1 Deployment and Configuration of Fiori Organization’s Theme 5.2 Import Theme

6	Fiori Launchpad Objects and Tools 6.1 Configuration Tool – Manage Launchpad Spaces and Pages 6.2 Configuration Tool – SAP Fiori Launchpad Designer
7	Fiori Deployment and Configuration

Next, Table 6 summarizes the suggestions from the stakeholders with the findings from Data 2 explained in detail below.

Table 6. Key stakeholder suggestions for building the Proposal (findings of Data 2) in relation to findings from the project background (Data 1) and the Conceptual framework.

	*Key focus area from **Data 1 & CF***	*Suggestions from stakeholders for the Proposal, summary (from **Data 2**)*
1	Scattered information about SAP Fiori needs to be documented in a single source of document	1 Decide central repository such as Box, OneDrive, or internal storage. 2 Compile learnings from different projects and literatures and store them into the central repository location. 3 Use the gathered data while creating an SAP Fiori UX strategy document
2	Competitive advantage	Developing SAP Fiori UX strategy document gives an advantage in winning the projects when competing with other organizations.
3	Fiori UX strategy document is required to understand the basics of SAP Fiori technology	1 Such a document proves to be useful for new-comers and sales representatives. 2 It should provide an overview of the technology for better understanding of business needs and demands.
4	No documentation available in the case company for SAP Fiori technology deployment	1 Sales representatives and customers of the case company often need the Fiori UX strategy document. 2 Outline the process for deployment and configuration. 3 Collect necessary inputs from SAP experts of the case company for the purpose of creating a strategy document.
5	Lack of willingness to initiate the efforts to create such a strategy document	1 Highlight the importance of having a Fiori UX strategy document. 2 Make collaborative efforts towards creating such a document.

		3 Emphasize the importance of user-centred design approach.

As seen from Table 6, there are several key suggestions provided by stakeholders to address the project needs and challenges.

To address first need, *Scattered information about SAP Fiori,* the stakeholders recommended, first, to decide central repository such as Box, OneDrive, or internal storage to store the summary data, second, to compile learnings from different projects and literatures and store them into the central repository location and third, to use the gathered data while creating an SAP Fiori UX strategy document.

For the second challenge, *Competitive advantage,* stakeholders proposed for developing SAP Fiori UX strategy document that gives an advantage in winning the projects when competing with other organizations.

For the third need, *Fiori UX strategy document is required to understand the basics of SAP Fiori technology,* stakeholders stated that such a document proves to be useful for new-comers and sales representatives. And they also mentioned that the document should provide an overview of the technology for better understanding of business needs and demands.

To handle fourth need, *No documentation available in the case company for SAP Fiori technology deployment*, stakeholders specified that first, Sales representatives and customers of the case company often need the Fiori UX strategy document, second, outline the process for deployment and configuration and third, collect necessary feedback and inputs from SAP experts of the case company for the purpose of creating a strategy document.

For fifth challenge, *Lack of willingness to initiate the efforts to create such a strategy document*, stakeholders recommended first to highlight the importance of having a Fiori UX strategy document. Second, make collaborative efforts towards creating such a document. And third, emphasize the importance of user-centred design approach.

Moreover, the interviewees suggested that the strategy document should cover the basics of SAP Fiori elements, details of SAP Fiori application types, business benefits,

deployment steps, launchpad configuration steps and recommended approach for Fiori deployment of the case company. One of the Fiori developers stated that:

> "*It is an important step to create a Fiori UX strategy document which contains all necessary information in a single source of document which can be referred to in all Fiori development projects."* (Fiori Developer 2)

Next, Section 5.3 contains the detailed look at the outline (table of contents) of the strategy document co-developed with the stakeholders.

5.3 Developing the Contents of the Fiori UX Strategy Document

The outline (table of contents) of the strategy document consists of seven sections focusing on a specific area associated with SAP Fiori. Figure 15 demonstrates the initial proposal of strategy document contents.

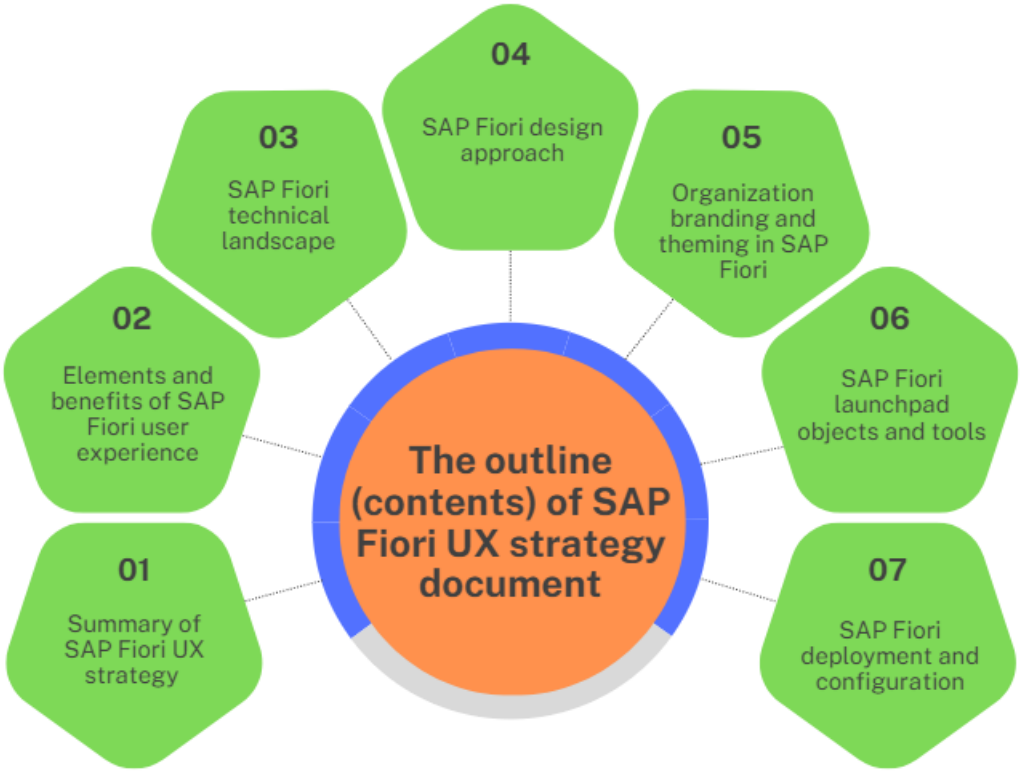

Figure 15. Initial proposal of the strategy document (contents).

Figure 15 shows that the initial draft of the Fiori UX strategy document consists of seven sections as follows. The first section, *Summary of SAP Fiori UX Strategy,* explains the user experience strategy of SAP and the direction of SAP towards Fiori technology development. The stakeholders highlighted that the readers should be able to understand the overall SAP's strategic approach towards user experience through this section. Moreover, stakeholders suggested to include summary of SAP Fiori UX strategy as Section two before adding any section for SAP Fiori contents. They stated that it should include SAP's user experience journey from SAP GUI to SAP Fiori and SAP's design direction overview in this section.

The second section, *Elements and benefits of SAP Fiori user experience,* provides the overview of SAP Fiori technology. Design, Principles and Technology, these three dimensions outline the SAP Fiori. The interviewees specified Section 3 as a vital part and at the end of the discussion with them, it was agreed to include these sub sections: 1) Fiori dimensions, 2) key design principles, 3) Fiori application types and 4) benefits of SAP Fiori UX in detail. One of the stakeholders stated:

> *"It would be good if you can explain this part using visual diagrams or pictures that demonstrate the concepts and make it easy for readers to understand."* (Stakeholder 1)

The third section, *SAP Fiori technical landscape,* illustrates the technical landscape/architecture to support the understanding of the tools and technologies which are used to implement a Fiori application and how they interact with the SAP frontend (SAP Fiori Launchpad) and the SAP backend (SAP S/4HANA) servers. The interviewees insisted to include more details of technologies and tools used in Fiori development.

The fourth section of the strategy document, *SAP Fiori design approach,* describes the Fiori launchpad and the components of Fiori launchpad. Initially, it was not in a plan to add such a section in the strategy document, but after having discussions with stakeholders, it was agreed to add it. This section explains all necessary components of SAP Fiori launchpad with visual aids. Two of the stakeholders and functional consultants mentioned that:

> *"People know that Fiori applications can be accessed through Fiori launchpad, but they have very less knowledge about other features of Fiori*

> *launchpad, and they do not know how it can be used for easy access, thus we need a separate section which includes details of SAP Fiori launchpad and its components."* (Stakeholder 2) (Functional Consultant 1)

The fifth section of the strategy document, *Organization branding and theming in SAP* Fiori, involves the activities of modifying the look and style of the SAP Fiori Launchpad and Fiori applications to match the organization's branding guidelines. Brand colours, logos, other visual components, etc. are modified using *UI Theme Designer*. Generally, organizations request to implement brand themes in Fiori thus stakeholders suggested that it is vital to understand how the deployment and configuration works in this topic. The case company's sandbox system was used for describing all required steps needed to be taken during the theme's deployment and configuration.

The sixth section of the strategy document, *Fiori launchpad objects and tools,* explains the connections between catalogs and groups or spaces including pages and sections with users through *PFCG* roles that are established in Fiori Launchpad. The administrator creates these settings to handle the application that can be used by the user, the screen configuration displayed to the user, and the operation when the user clicks the tile. This section explains these components in detail and how it can be configured for Fiori applications with figures. One of Fiori developers stated:

> *"Understanding the interconnections among the Fiori launchpad objects and tools is vital for efficiently configuring and personalizing the Fiori Launchpad."* (Fiori developer 2)

The seventh section of the strategy document, *Fiori deployment and configuration* includes all necessary steps required for configuration during the Fiori deployment. This includes *Discover, Prepare, Explore, Realize, Deploy* and *Run* steps of Fiori deployment. Stakeholders suggested to include all required transaction codes list which is required during the configuration. One of Fiori developers stated that:

> *"Having this kind of information in one place, can help juniors or new Fiori developers to understand the process flow of Fiori deployment and configuration. It can be also beneficial for others who want to gain knowledge in this area."* (Fiori Developer 1)

Summing up, the initial proposal of SAP Fiori UX strategy document contents provided all necessary key aspects of Fiori technology including an overview and its advantages, the necessary technical requirements, and a systematic approach in the deployment and configuration of SAP Fiori. Next, the validation of the proposal for Fiori UX strategy document is discussed in Section 6.

6 Validation of the SAP Fiori UX Strategy Document

This section describes the validation results of the initial proposal for SAP Fiori UX strategy document which was developed in the Section 5. There are three subsections presented: first, the overview of the validation stage, second, the findings from Data collection 3, and third, the final proposal for the SAP Fiori UX strategy document.

6.1 Overview of the Validation Stage

The same set of stakeholders interviewed for Data 2, validated the initial proposal of the strategy document. The interviews and discussions (Data 3) were conducted for the validation where the initial proposal of strategy document co-created with the key stakeholders in the previous step.

During Data collection 3, stakeholders who were involved earlier in this study provided their feedback on the strategy document. They were interviewed to share their views and opinions on the proposed strategy document's utility, functionality, and usefulness. Additionally, they were also asked whether they see this document offers positive outcomes for the business. The outcome of this study is the final version of the SAP Fiori UX strategy document which was updated and enriched based on Data collection 3.

6.2 Findings from Data Collection 3

During Data collection 3, the first draft of SAP Fiori UX strategy document was discussed with the stakeholders to gather their final opinions and feedback about the strategy document. Stakeholders feedback is shown in the below Table 7.

Table 7. Stakeholders feedback (Data 3) to each section of the strategy document from the validation session.

	The Strategy Document Section	Received Feedback
1	Introduction	*Adding new section:* Suggested to add *Introduction* section in the document as the starting point, so that readers can get the ideas about purpose and objective of the strategy document.

2	Summary of SAP Fiori UX strategy	Summary of Fiori UX strategy is overall informative but also stated to add two more subsections under this section which provides detail information regarding: 1) the direction of SAP's user experience strategy towards Fiori and explain design direction with technology focus (User experience as a service). 2) Describe Role-Based user experience design.
3	Elements and benefits of SAP Fiori user experience	This is vital section, and it is categorized well as agreed during Data collection 2. Also mentioned to add details about *Fiori Apps Reference Library* in this section as this library is the first and starting point to find the necessary details of business roles and the corresponding Fiori applications.
4	SAP Fiori technical landscape	In addition to technical landscape, two more subsections were suggested to add under this section: 1) Technical Deployment Options and Recommendations with advantages and disadvantages for three deployment options 2) Describe Role Design – Step-by-Step as SAP Fiori is role-based technology; thus, the role design is a crucial phase for implementing SAP Fiori.
5	SAP Fiori design approach	No changes are required. Necessary details are covered as agreed during the Data 2.
6	Organization branding and theming in SAP Fiori	This section covers the necessary details about deployment and configuration of Fiori Organization's theme, and it has also covered the steps about how the theme can be imported. All steps are well described with visual aids and transaction codes which are required for creating, exporting, importing the theme.
7	SAP Fiori launchpad objects and tools	The agreed contents (Data 2) are covered in this section, no need for any changes.
8	SAP Fiori design tools	*Adding new section:* Design tools are important to mention in the strategy document as these are required during the design phase of Fiori project.
9	The case company's approach to Fiori implementation	*Adding new section:* Prepare summary of *the case company's approach to Fiori implementation* based on SAP's best practices and the experience

		gained through successfully implemented projects by the case company.
10	SAP Fiori deployment and configuration	All technical steps are included in this section which required to configure during the Fiori deployment. It makes clear to understand with snapshots.

Table 7 summarizes the suggestions and feedback received from the stakeholders for the SAP Fiori UX strategy document contents. The findings and suggestions from Data collection 3 helped to enrich the contents of Strategy document.

These suggestions, as shown in Table 7, were used to revise the final version of the Strategy document as follows. The first section of strategy document, *Introduction,* was suggested by the stakeholders to be put in the document as the starting section. They mentioned that it would help readers to get ideas about the overview of SAP Fiori technology, purpose, and objective of the strategy document. One of the stakeholders stated:

> *"For any document, it is vital to include **introduction** section as it gives an overall view and purpose of the subject."* (Stakeholder 1)

For the second section of the strategy document, *Summary of SAP Fiori UX Strategy,* stakeholders stated that overall, this section is informative but also highlighted to add two more subsections under it in the final version which should provide detail information regarding: 1) the direction of SAP's user experience strategy towards Fiori and explain design direction with technology focus (User experience as a service). 2) Describe Role-Based user experience design.

For the third section of the strategy document, *Elements and benefits of SAP Fiori user experience,* stakeholders mentioned that this is a vital section, and it is categorized well, as discussed and agreed during Data collection 2. They also cited to add details about *SAP Fiori Apps Reference Library* in this section as this is one of the important topics which needs to be explained in the document. One of the Fiori developers cited:

> *"For the customers who are planning to deploy Fiori applications, first we should refer to SAP Fiori Apps Reference Library which is the first and*

> *starting point to find the necessary technical details of business roles and the Fiori applications." (*Fiori Developer 1*)*

For the fourth section of the strategy document, *SAP Fiori technical landscape,* stakeholders suggested to include two more subsections in addition to the technical landscape detail: 1) Explain *Technical Deployment Options* such as embedded deployment, standalone hub deployment and SAP BTP deployment in addition to *Recommendations* with advantages and disadvantages for three deployment options; 2) Describe Role Design configuration steps, SAP Fiori is a role-based technology; thus, the role design is a crucial phase for implementing SAP Fiori.

For the fifth section of the strategy document, *SAP Fiori design approach,* there were no changes required to make in this part. Stakeholders stated that necessary details are covered in this section as agreed during the Data collection 2.

For the sixth section of the strategy document, *Organization branding and theming in SAP Fiori,* stakeholders mentioned that this section has covered the necessary details about deployment and configuration of Fiori Organization's theme, and it is also good point that all required steps are described about how the theme can be imported. All steps are well described with visual aids and transaction codes which are required for creating, exporting, and importing the theme. These instructions would be helpful for the employees working for the first time in this task.

For the seventh section of the strategy document, *Fiori launchpad objects and tools,* stakeholders stated that the agreed contents (during Data 2) are covered in this section and there is no need for any changes.

For the eight section of the strategy document, *SAP Fiori design tools*, it was suggested to include them in the strategy document as well. Design tools need details mention as these are required during the design phase of Fiori project. Based on the discussion, it was realized that many people have no idea about these design tools. Thus, stakeholders suggested to list and explain the available design tools recommended by SAP in this section. During the discussion, one of the stakeholders asked:

> *"Which design tools can we use for the Fiori application's prototypes, and do we need to purchase license for it? It would be good if we include this information in the strategy document as well."* (Stakeholder 2)

For the ninth section of the strategy document, *the case company's approach to Fiori implementation,* it was suggested to add a summary of SAP's best practices and the experience gained through successfully implemented projects by the case company. According to the feedback, this section should present through a flowchart detailing various steps and processes within what appears to be an SAP Fiori implementation or setup. This section is prepared and summarized based on Data 3.

For the tenth section of the strategy document, *Fiori deployment and configuration,* stakeholders cited that all technical steps are included in this section required for configuration during the Fiori deployment. It makes clear for the readers to understand with provided snapshots.

The overall feedback from interviewees were positive about the contents of SAP Fiori UX strategy document. They found the visual aids and snapshots used for process explanation were clear and easily understandable. On the other hand, there were also suggestions to add new sections: 1) Introduction, 2) SAP Fiori design tools, 3) The case company's approach to Fiori implementation. The final draft of the Strategy document is enhanced based on the received recommendations and suggestions. The next section explains the final proposal of SAP Fiori UX Strategy document.

6.3 Final Proposal of SAP Fiori UX Strategy Document

The final contents of Strategy document were incorporated and further developed according to the proposed improvements and suggestions from the stakeholders, based on the findings from Data collection 2 and 3. The final contents of the Strategy document is shown in Table 8.

Table 8. The final contents for the SAP Fiori UX strategy document.

	The final table of contents for the Strategy document
1	Introduction

	Abstract Purpose and Objective
2	SAP Fiori UX Strategy 2.1 SAP UX Journey – From SAP GUI to SAP Fiori 2.2 Design Direction Overview 2.2.1 Technology Focus – User Experience as a Service 2.3 The Direction of SAP's User Experience Strategy 2.4 Role-Based Design/User Experience
3	SAP Fiori User Experience 3.1 SAP Fiori Dimensions 3.2 Benefits of SAP Fiori UX 3.3 Fiori Apps Reference Library 3.4 Key Design Principles of Fiori UX 3.5 SAP Fiori Application Types
4	SAP Fiori System Landscape 4.1 SAP Fiori Technical Deployment Options and Recommendations 4.2 Role Design – Step-by-Step
5	User Experience Approach / SAP Fiori Design 5.1 Fiori Launchpad 5.2 Components of SAP Fiori Launchpad
6	Organization Branding and Theming in SAP Fiori 6.1 Deployment and Configuration of Fiori Organization's Theme 6.2 Import Theme
7	Fiori Launchpad Objects and Tools 7.1 Configuration Tool – Manage Launchpad Spaces and Pages 7.2 Configuration Tool – SAP Fiori Launchpad Designer
8	SAP Fiori Design Tools 8.1 SAP Fiori Design Stencils 8.2 Theme Designer
9	The Case Company's Approach to Fiori Implementation
10	Fiori Deployment and Configuration 10.1 Fiori Launchpad Configuration

As shown in Table 8, a few changes were made in the Strategy document as well as new sections were added into the contents of the Strategy document. First, the

Introduction section was added as the first section of the Strategy document. Second section was modified by adding two more subsections 1) the direction of SAP's user experience strategy towards Fiori and explain design direction with technology focus, 2) Describe Role-Based user experience design based on the suggestions. Third, the details about *SAP Fiori Apps Reference Library* were included in the third section of the strategy document. Fourth section was also enhanced by including two more subsections 1) Technical Deployment Options and Recommendations, 2) Role Design Steps. Fourth, SAP Fiori design tools section was included in the contents. And last, *the case company's approach to Fiori implementation* was included as the completely new section based on the suggestions. The remaining contents of the Strategy document stay the same as it was proposed in the initial draft.

The important suggestions were made by Stakeholders as described previously to enhance the Strategy document during Data collection 3. The contents of the strategy document were modified based on the suggestions. As the outcome of Data 3, the final version of the SAP Fiori UX strategy document is completed.

7 Conclusion

The conclusion of the thesis is outlined in this section. The final version of SAP Fiori UX Strategy document becomes available for the business use.

7.1 Executive Summary

In many organizations, key users of SAP business processes are utilizing the current standard SAP transactions practices using SAP GUI for many years already, or some of them have limited knowledge of SAP technology. Yet, the technology landscape is changing rapidly, and there is a demand for digital transformation in this fast-changing business environment. Additionally, some customers find that SAP GUI is too complex to use when they are new to it, or have less experience to work with this system, and they also feel that it is not user-friendly, especially when compared to the latest design principles. Finally, users can enter to various business processes using only T-Codes in SAP GUI logon system. Thus, most of users feel that SAP GUI system is t-codes dependent, and, in the age of modern technologies, the usage of t-codes is seen as old-fashioned, and users cannot work with the SAP GUI system during travelling from mobile and tablet. All these challenges push technology companies to promote the use of the latest SAP Fiori environment as the most novel and customer friendly.

SAP Fiori was invented from this idea of being customer friendly. For this end, SAP examined all the functionality and transactions offered in the old SAP GUI and created a list of the most frequently used applications and transactions. SAP decided that it was time to renew these scenarios to do better on their mission to serve SAP customers. Thus, SAP Fiori has appeared, which is a new technology designed to provide an improved and efficient user experience of solutions. SAP Fiori user experience (UX) technology is offered by SAP, that consists of design rules, concepts, tools, and technologies to create consistent, modern, and user-friendly interfaces across multiple devices and platforms. Yet, customer interviewees revealed that customers find it difficult to implement and deploy SAP Fiori due to lack of understanding, knowledge, or resources.

To overcome this challenge, there was a need for creating a strategy document of the SAP Fiori deployment which can be used as a reference document for getting all

necessary information about SAP Fiori technology and its deployment. Accordingly, the objective of this study was to develop the SAP Fiori UX strategy document which would provide a holistic overview of the Fiori technology and its advantages, the necessary technical requirements for its effective implementation, and a systematic approach aimed at helping organizations in planning, designing, configuring, and deploying Fiori applications.

The research approach of the Thesis was based on the qualitative research methods such as interviews, discussions and workshops with internal customers and user observations. The qualitative research methods were used to gain an in-depth understanding of user needs in new technology adoption and challenges related to the current user experience of SAP applications. First, best industry practices were explored to identify the relevant knowledge needed for developing the strategy document. Based on all these inputs, the stakeholders were reached again for co-creating the strategy document.

The analysis and developments done in this study were based on Data collection 1 - 3 rounds conducted while first analysing and then developing the SAP Fiori UX strategy document. Data 1 was collected for the project background and needs, while Data 2 was utilized for building a proposal for the strategy document. Finally, Data 3 was collected for validating the final strategy document.

The results from the project needs and feedback from stakeholders revealed that organizations prefer to have a well-defined user experience strategy which can help to enhance user satisfaction, and productivity, save user training costs, and stay competitive in the market. The SAP Fiori implementation demand is increasing rapidly in the market as this technology is used as the presentation layer of SAP S/4HANA applications. The focus areas of the strategy document were acknowledged in the project needs as: 1) overview of the SAP Fiori technology, 2) a concept for the deployment of SAP Fiori technology (step by step), 3) a strategy document of the SAP Fiori deployment and implementation.

As soon as the project needs were clarified, available literature and best industry practices were analysed to identify the relevant knowledge needed for developing the strategy document. Then, the initial draft of the Strategy document was co-developed

and subsequently validated with the key stakeholders during the interviews and discussions.

As the initial proposal, the outline (table of contents) of the strategy document was co-developed with the stakeholders. The initial draft consisted of seven sections focusing on specific areas associated with SAP Fiori. The first section of the strategy document, *Summary of SAP Fiori UX Strategy,* explains the user experience strategy of SAP and the direction of SAP towards Fiori technology development. The second section, *Elements and benefits of SAP Fiori user experience*, provides the overview of SAP Fiori technology including these sub sections: 1) Fiori dimensions, 2) Key design principles, 3) Fiori application types, and 4) Benefits of SAP Fiori UX in detail. The third section, *SAP Fiori technical landscape* illustrates the technical landscape/architecture that supports to understand the tools and technologies which are used to implement a Fiori application. The fourth section, *SAP Fiori design approach* describes the Fiori launchpad and the components of Fiori launchpad. The fifth section, *Organization branding and theming in SAP Fiori* involves the activities of modifying the look and style of the SAP Fiori Launchpad and Fiori applications to match an organization's branding guidelines. The sixth section, *Fiori launchpad objects and tools,* that are the connections between catalogs and groups or spaces including pages and sections with users through PFCG roles are established in Fiori Launchpad. The seventh section, *Fiori deployment and configuration,* includes all necessary steps which are required to configure during the Fiori deployment.

As the last step of development, the initial draft was validated with the key stakeholders. A few changes were made in the Strategy document as well as new sections were added into the contents of the Strategy document based on validation. The final Fiori UX strategy document outlines the core objectives for the SAP Fiori deployment, with focus on its design principles to enhance the user experience of applications. The guidelines for Fiori applications selection, design, and deployment are included in the document which considering both technical and user perspectives.

In the modern business environment, SAP Fiori technology is considered the vital technology of SAP’s strategy to enhance user experience of SAP platforms and applications. However, it is important to note that Fiori roadmap is dynamic, and it can be changed based on the market trends, technological developments, and thus customer need continuous support with this technology.

7.2 Managerial Implications: How and for Whom to Apply the Strategy Document into the Business Practise

The strategy document gives insight into the SAP Fiori technology as to how it can benefit end users while also guiding those who want to implement Fiori in their organization. The goal of this strategy document is to offer its readers comprehensive knowledge of the Fiori User Experience (UX) methodology, including its advantages, core principles, approaches for implementation, and best practices. The target audience of this document is internal and external customers of the case company who is considering or seeking information for developing/implementing Fiori deployment in their business.

Elucidating the UX strategy in an SAP environment can help ensuring that all stakeholders in the organisation understand which tools to use and how to choose Fiori applications when new business requirements arise. The best practices and important technical considerations for managing Fiori applications that are also covered in the strategy document will further support the customers in the vital technical issues. By referring to this document, internal and external customers have the possibility to enhance their overall user experience knowledge in SAP Fiori which can help them in maximising the benefits from their SAP investments.

It is important to note that SAP has been consistently releasing the new versions of Fiori design which includes new design elements, patterns, and styles. This continuous update is based on user requirements, the latest technology and market trends. It is crucial to mention that this strategy document is based on the latest knowledge and SAP's updates gathered during the study, but it needs to be revised periodically to make sure that the information is up to date in the Strategy document based on the latest updates of the technology.

7.3 Thesis Evaluation

The objective of this study was to develop a strategy to deploy SAP Fiori technology to an industrial customer. The outcome is the SAP Fiori UX Strategy document. The objective and outcome of this study has been derived after carefully considering all aspects from the multiple data sources. The qualitative research methods were used in this Thesis which falls under the Applied action research approach.

The purpose of this strategy document is to present a comprehensive guide for SAP Fiori deployment for internal and external customers who are considering the implementation of SAP Fiori technology in the SAP landscape. The utilization of many different data sources such as workshops, internal interviews and discussions, participant observations, internal documentations helped to outline the project goals, objectives, and scope of the thesis. Having regular discussions and interviews with internal customers have helped to formulate the contents of the Strategy document.

The different background of stakeholders assisted in the analysis and gaining knowledge on the topics from different areas such as functional, sales, technical and management levels. The contents of the Strategy document were formulated based on the findings from Data collections 2 -3 and feedback from stakeholders. Internal customers of the case company were engaged via interviews and discussions throughout the proposal building up to the validation process. They discussed and validated the final version of the Strategy document.

With the Strategy document, internal and customers are enabled to get all necessary information regarding SAP Fiori technology. A detail overview of SAP Fiori, its technical requirements, and analysis of the key areas are covered in this document to be considered in order to maximise the effective use of the SAP system. This document allows organisations to plan and carry out an effective Fiori implementation and deployment that caters to their business requirements.

7.4 Closing Words

As the purpose of this study was to develop a strategy to deploy SAP Fiori technology to an industrial customer, the strategy document developed in this thesis aimed to support the pre-sales activities and sharing knowledge experience with the internal customers. Therefore, the customers of this project are SAP teams' employees from the Nordic and Asia countries, and it can be said that the primary audience of this document is the internal customers, while later it can be used for external customers as per need.

I sincerely would like to express my gratitude towards the case company who gave the opportunity to study the most important topic of SAP practises and to those SAP

employees of the case company who agreed for interviews and discussion for sharing their ideas and opinions for building the proposal to validating the Strategy document.

I am hoping that the idea of developing the SAP Fiori UX strategy document would help to get new projects and customers and furthermore, moving to SAP Fiori poses advantages in pre-sales marketing for the case company.

References

Afi Solutions. 25th July 2022. SAP Fiori Apps: The Whys and Therefores – an Introduction. Available from: https://www.afi-solutions.com/en/blog/article/sap-fiori-apps-introduction (Accessed 22nd February 2023)

Amarmn. n.d. Introduction to SAP, History and Evolution of SAP. Available from: https://www.amarmn.com/introduction-to-sap-history-and-evolution-of-sap/ (Accessed 19th February 2023)

Apple Information Systems. About SAP. Available from: https://www.appleinfosys.co.za/SAPEducation.php (Accessed 19th February 2023)

Bavaraju, A. 2017. SAP Fiori Implementation and Development. 2nd ed. SAP Press. ISBN 978-1-4932-1541-6.

Bastaci, C. n.d. ADVANTAGES AND BENEFITS OF SAP FIORI. Available from: https://mdpgroup.com/en/blog/advantages-and-benefits-of-sap-fiori/#How_SAP_Fiori_Started_and_Where_Its_Going (Accessed 22nd February 2023)

Bellis, M. 5th February 2019. The History of International Business Machines and IBM Computers. Available from: https://www.thoughtco.com/the-ibm-701-1991406 (Accessed 17th February 2023)

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

Dart, J. (2020). SAP Fiori for SAP S/4HANA – Successors of SAP Business Suite apps in SAP S/4HANA. Available from: https://blogs.sap.com/2020/08/06/sap-fiori-for-sap-s-4hana-successors-of-sap-business-suite-apps-in-sap-s-4hana/ (Accessed 1st June 2022).

Dotu, M. T. n.d. SAP S/4HANA: Cloud, On-Premise or Hybrid ? Available from: https://s4ic.com/2021/10/06/sap-s-4hana-cloud-on-premise-or-hybrid-options/

ERP Today. 14th June 2022. SAP and IBM: 50 years of collaboration, innovation and delivering the future. Available from: https://erp.today/sap-and-ibm-50-years-of-collaboration-innovation-and-delivering-the-future/ (Accessed 20th February 2023)

Eursap. 17th August 2021. SAP Tips: What are the 3 different types of Fiori apps which are available? Available from: https://eursap.eu/2021/08/17/sap-tip-the-three-different-types-of-fiori-apps/

Geeksforgeeks. 22th December 2023. What are different Types of SAP Fiori Applications? Available from: https://www.geeksforgeeks.org/what-are-different-types-of-sap-fiori-applications/

Golla., V. 18th January 2020. SAP S/4HANA On-premise vs Cloud. Available from: https://blogs.sap.com/2020/01/18/sap-s-4hana-on-premise-vs-cloud/

Guruprasath424. 5th April 2023. Explorer Cloud vs On-Premise SAP Business One: Which is Right for Your Business? Available from: https://community.sap.com/t5/enterprise-resource-planning-blogs-by-members/cloud-vs-on-premise-sap-business-one-which-is-right-for-your-business/ba-p/13567441

HCS University, IBM SAP's internal education platform. SAP S/4HANA Cloud Extended Edition. Handbook.

Hingorani. R. n.d. SAP FIORI Introduction and Architecture. Available from: https://www.michaelmanagement.com/blog/sap/introduction-to-sap-fiori-architecture (Accessed May 2022)

Hoque, A. 22nd August 2019. SAP S/4HANA Cloud and On-Premise Deployment Options. Available from: https://blogs.sap.com/2019/08/22/sap-s4hana-cloud-and-on-premise-deployment-options/

IBM. IaaS vs. PaaS vs. SaaS. Understand and compare the three most popular cloud computing service models. Available from: https://www.ibm.com/topics/iaas-paas-saas (Accessed 17th February 2023)

IBM. About IBM. Available from: https://www.ibm.com/about (Accessed 17th February 2023)

IBM Investor Ralations. 9th July 2019. IBM Completes Acquisition of Red Hat. Available from: https://www.ibm.com/investor/articles/ibm-completes-acquisition-of-red-hat (Accessed 17th February 2023)

IBM SAP Consulting Services. Available from: https://www.ibm.com/consulting/sap (Accessed 20th February 2023)

IBM Insights on SAP. Available from: https://www.ibm.com/downloads/cas/DKPANXJZ (Accessed 20th February 2023)

Ilg, A. 1st November 2020. Available from: https://medium.com/alexander-ilg/why-sap-fiori-is-not-the-solution-to-all-your-usability-problems-8d23c7878a95 (Accessed May 2022)

Infopulse. 17th January 2023. Hybrid Scenario: a Few Considerations on SAP S/4HANA Implementation. Available from: https://www.infopulse.com/blog/hybrid-scenario-a-few-considerations-on-sap-s-4hana-implementation

Jain, N. 25th July 2023. What is Research? Definition, Types, Methods and Process. Available from: https://ideascale.com/blog/what-is-research/

Kärkkäinen, J. (2020). Service Design for SAP Fiori Development. Jyväskylä. Publication of JAMK University of Applied Sciences.

Khade, B. 8th July 2023. The Evolution of SAP Fiori: From Classic to SAP Fiori 3.0. Available from: https://community.sap.com/t5/technology-blogs-by-members/the-evolution-of-sap-fiori-from-classic-to-sap-fiori-3-0/ba-p/13574884

Krakowski, J. and Stoddard, E. 26th August 2021. Value of SAP Cloud ALM for SAP S/4HANA Cloud. Available from: https://support.sap.com/en/alm/sap-cloud-alm/sap-cloud-alm-for-s4hana-cloud.html?anchorId=section_419553293

Lankila, P. (2019). Replacing SAP Portal with SAP Fiori in Application Development. Available from: https://www.theseus.fi/handle/10024/171827

Lewin, K. (1959). Action Research and Minority Problems. Psychological Bulletin. Volume 56: 161-169.

McKinsey. 2nd November 2020. How to become 'tech forward': A technology-transformation approach that works. Available from: https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/how-to-become-tech-forward-a-technology-transformation-approach-that-works (Accessed 5th March 2023)

Mobolutions. 27th January 2017. Available from: https://www.mobolutions.com/2017/01/27/advantages-benefits-using-fiori-rather-gui/ (Accessed May 2022)

Musil, J. (2019). Six Steps to Deploy SAP S/4HANA Cloud with SAP Activate. Available from: https://blogs.sap.com/2019/01/10/six-steps-to-deploy-sap-s4hana-cloud-with-sap-activate/ (Accessed 22nd February 2023)

Raj, A. 16th December 2020. A blog about SAP. Available from: https://erpiseasy.com/2020/12/16/a-brief-overview-of-sap/ (Accessed 19th February 2023)

Raja. 11th October 2018. S/4 HANA On-Premise Vs S/4 HANA Cloud. Available from: https://community.sap.com/t5/enterprise-resource-planning-blogs-by-sap/s-4-hana-on-premise-vs-s-4-hana-cloud/ba-p/13364649

Roan, A. (2020). SAP HANA and S/4HANA – a simple guide. Available from: https://blogs.sap.com/2020/06/04/sap-hana-and-s-4-hana-a-simple-guide/ (Accessed 22nd February 2023)

SAP. 11th June 2019. SAP Fiori: How It Started and Where It's Going. Available from: https://news.sap.com/2019/06/sap-fiori-how-it-started-where-its-going/ (Accessed 20th February 2023)

SAP Press. 15th October 2021. SAP S/4HANA Cloud Deployment Options. Available from: https://blog.sap-press.com/sap-s4hana-cloud-deployment-options

SAP Help Portal. n.d. SAP Fiori Overview. Available from: https://help.sap.com/docs/SAP_S4HANA_ON-PREMISE/22bbe89ef68b4d0e98d05f0d56a7f6c8/5b1b44e3524442a3889434ba24029c14.html

SAP SE. 2022. Design Principles. Available from: https://experience.sap.com/fiori-design-web/design-principles/ (Accessed May 2022).

SAP SE. 1. 2022. SAPX01. SAP User Experience Fundamentals and Best Practices. page no.24. Participant Handbook.

SAP SE. 2023. UX410. Developing SAP Fiori UIs. Participant Handbook.

SAP SE. 1. 2023. SAP Activate Methodology for Transition to SAP S/4HANA. Available from https://go.support.sap.com/roadmapviewer/#/group/AAE80671-5087-430B-9AA7-8FBE881CF548/roadmapOverviewPage/S4HANATRANSONPRE

Singh, V. 2017. Implementing SAP S/4HANA. Manage your SAP Projects with SAP Activate. Birmingham: Packt Publishing Ltd.

Suhas KR. 1st January 2024. Different Kinds of Apps in Fiori. Available from: https://www.linkedin.com/pulse/different-kinds-apps-fiori-suhas-kr-mxvoc?trk=public_post_main-feed-card_feed-article-content

Szirtes, T. & Rivlin, A. (2015). Implementing SAP Fiori Launchpad. SAP Press online. ISBN 978-1-4932-1291-0

Thornhill, A., Saunders, M., and Lewis, P. (2019). Research Methods for Business Students. 8th Edition, Pearson Education. ISBN 9781292208800.

Vanam, L. 28th December 2019. SAP Fiori App Assignment to Users. Available from: https://blogs.sap.com/2019/12/28/sap-fiori-app-assignment-to-users/ (Accessed May 2022).

Written Statement on the use of AI-based tools in this thesis

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SAP Fiori UX Strategy Document

The Strategy document contents confidential information.