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Futures of SIAM

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Preface

We are immensely grateful for the opportunity to work on this project, and we would like to express our appreciation to itSMF Finland and SIAM SIG for collaboration. Especially all SIAM SIG project members, Anjuska Kyllönen, Hashan Wickramasingha Wadanambi, Jana Redsven, Jani Jaatinen, Jyri Kosonen, and Matti Korhonen, thank you for guiding and supporting us with the project. Additionally, we are thankful for all other professionals who attended our interviews and provided important insights on the future of SIAM.

This project was a bit challenging since futures research was new territory for us. Fortunately, we had the guidance of a futures research student Lahara Ranaweera who patiently introduced us to the future research methodologies, for which we are thankful. With all the help we managed to complete the project successfully in schedule.

We want also to thank our supervisors, Nina Hellman, and Sonja Holappa, for guiding us through the project and helping us write this report. As a team, we worked well together, and we all learned a lot new about ITSM, SIAM, futures research, and business along the project.

It's been a real journey, and we are glad we could contribute to the world of service integration and management.

Thank you all!

Sincerely,
Lilli Niemelä, Ville Koivunen, Cindi Vienonen, Topi Saarinen &
Helmi Kytömäki
Helsinki
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Abstract

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Emerging technologies such as generative AI are transforming service business. The transformation creates challenges such as how organizations can adapt to the rapidly changing environment. The objective of this study was to provide a report including expert views on the future of service integration and management (SIAM) in five years, including the view of all parties in a SIAM setting: customers, service providers, and service integrators.

This study is based on existing literature and various Future Research methodologies, including brainstorming, expert interviews, workshops, the Futures Wheel, PESTEL analysis, Impact/Uncertainty matrix, Futures Table, and scenario building. The existing knowledge explored is used in the current state analysis and proposal sections as it explored SIAM theory and the Futures Research methods. The findings of current state analysis stated that there has not been any other public futures research conducted about SIAM, thus, in analyzing current state, it was needed to search for emerging trends in the field of business, but also any trends that can affect SIAM ecosystems. Data from SIAM professionals was collected during the current state analysis and proposal building stages to ensure a reliable outcome.

The outcome of this study is the final report, including three possible scenarios. These scenarios envision potential futures for SIAM over the next five years and are designed to assist organizations in preparing for potential future states in SIAM in the next five years. Proactively addressing these changes will afford organizations a competitive edge and the capacity to strategize for the future.

Keywords: service integration and management, future research, scenarios

Tiivistelmä

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Uudet teknologiat, kuten generatiivinen tekoäly, muuttavat palveluliiketoimintaa. Tämä muutos luo haasteita, kuten sen, miten organisaatiot voivat sopeutua nopeasti muuttuvaan ympäristöön. Tämän tutkimuksen tavoitteena oli laatia raportti, joka sisältää asiantuntijoiden näkemyksiä palveluintegraation ja -hallinnan (SIAM) tulevaisuudesta viiden vuoden aikavälillä. Raportti kattaa kaikkien SIAM-osapuolten, eli asiakkaan, palveluntarjoajan ja palveluintegraattorin näkemykset.

Tutkimus perustuu olemassa olevaan kirjallisuuteen ja erilaisiin tulevaisuuden tutkimusmenetelmiin, joita ovat ideoiminen, asiantuntijahaastattelut, työpajat, “Futures Wheel", PESTEL-analyysi, vaikutus/epävarmuusmatriisi, “Futures Table” ja skenaarioiden rakentaminen. Kirjallisuuden osalta tutkittiin SIAM-teoriaa ja tulevaisuuden tutkimusmenetelmiä. Nykytila-analyysin tulokset osoittivat, että julkista tulevaisuuden tutkimusta SIAMista ei ole aiemmin tehty. Siksi nykytilaa analysoitaessa oli tarpeen etsiä trendejä liiketoiminnan alalta, mutta myös trendejä, jotka voivat vaikuttaa SIAMiin. SIAM-ammattilaisilta kerättiin tietoa nykytila-analyysin ja ehdotusvaiheen aikana luotettavan lopputuloksen varmistamiseksi.

Tutkimuksen lopputuloksena syntyi kolme skenaariota, jotka kuvastavat SIAMin mahdollisia tulevaisuuksia seuraavien viiden vuoden aikana. Nämä skenaariot ovat suunniteltu auttamaan organisaatioita valmistautumaan SIAMin tulevaisuuteen. Muutoksiin valmistautuminen antaa organisaatioille kilpailuetua ja mahdollisuuden strategisoida tulevaisuutta.

Avainsanat: palveluiden integrointi ja hallinta, tulevaisuuden tutkimus, skenaariot

Contents

List of Abbreviations

AI:	Artificial Intelligence
ESM:	Enterprise Service Management
ITSM:	Information Technology Service Management
PESTEL:	Political, Economic, Social, Technological, Environmental, Legal
SIAM:	Service Integration and Management
SIG:	Special Interest Group

1 Introduction

The only thing that is certain is change. Technology is developing and the World is changing constantly. For example, generative AI gives great opportunities, but also changes the way of working. Surprises are not welcome in business therefore it is needed to be one step ahead. It is impossible to predict the future for sure, but there are some ways to have views what might be coming.

This project is a part of IT Service Management module in Metropolia University of Applied Sciences. Together with Future Research student Lahara Ranaweera the project team explores the future of Service Integration and Management (SIAM) in five years. The purpose of this project is to find interesting and important perspectives in co-operation with itSMF Finland's SIAM SIG members. Through this project itSMF member organizations obtain information how they can prepare for the future of SIAM.

1.1 Business Context

This study is made for IT Service Management Forum Finland, which is an independent, non-profit association that aims to share knowledge, promote co-operation, and conduct research in the field of service management and service leadership. The association was established in 2004 and it has 86 member organizations today.

As mentioned, the study is made in co-operation with the SIAM Special Interest Group, which was established in 2016. The groups are made up of volunteers with a common interest. The aim is to share knowledge both within the group and the wider itSMF community, network with others, and learn and create new knowledge.

1.2 Business Challenge, Objective and Outcome

Emerging technologies such as generative AI are transforming service business. The transformation creates challenges such as how to effectively

integrate these new technologies with common frameworks within the SIAM context, for instance ITSM, ESM, and Agile methodologies, and how organizations can adapt to the rapidly changing environment.

Therefore, the objective of this study is to provide a report including expert views on the future of SIAM in five years, including the view of all parties in a SIAM setting: customers, service providers, and service integrators. Thus, the aim of the report is to examine the future of SIAM based on the aforementioned challenges.

The outcome of this study is the report including expert views on the future of SIAM in five years, including the view of all parties in a SIAM setting: customers, service providers, and service integrators.

1.3 Scope and Outline

The scope of this study is focused on investigating the impact of emerging technologies, specifically generative AI, on SIAM practices within the IT service industry. The study encompasses an analysis of how these technologies can be effectively integrated with SIAM frameworks, such as ITSM, ESM and Agile. However, the study does not delve into detailed technical implementation aspects of emerging technologies. This exclusion is deliberate to maintain a strategic focus on the broader implications for SIAM practices and organizational adaptation to technological advancements.

The study follows a structured outline to systematically address the research objectives. The research methods used in this study include literature research, through record keeping and process of information, expert interviews, and workshops with SIAM professionals. On top of this, collaboration with a Futures Research student enhances the qualitive analysis process. The following chapter goes over the project plan and explains the plan for researching. Chapter 3 describes the theoretical background of SIAM and Future Research methods. Chapter 4 goes over the current state of future research of SIAM and SIAM trends. Chapter 5 includes the proposal and shows the results of future

research and discusses the conclusions. The conclusions built in the Chapter 5 are validated in Chapter 6. The final chapter of this thesis provides the conclusions with an executive summary and managerial implications along with an evaluation of the thesis and some final words.

2 Project Plan

This section describes the methods and material this thesis is based on. It first explains the research approach which includes the selected research methods. Next, this section introduces a graphical illustration of the research strategy to present the objective, the research steps, data collection stages and outcomes of each stage. Then the section proceeds to describe more in depth the data collection and analysis, and finally, it introduces an overview of the project schedule.

2.1 Research Approach

In this study, future research methods are used to identify and analyze emerging trends and forces which impact SIAM in the future. The methods are brainstorming, expert interviews, a workshop, Futures Wheel, PESTEL analysis, Impact/Uncertainty matrix, Futures Table, and scenarios. Everything is accomplished in cooperation with the future research student. These methods help to produce results and depict possible scenarios for the next five years.

2.2 Research Design

Figure 1 below presents the Research Design of the project which showcases the data stages, research steps, and outcomes of this research.

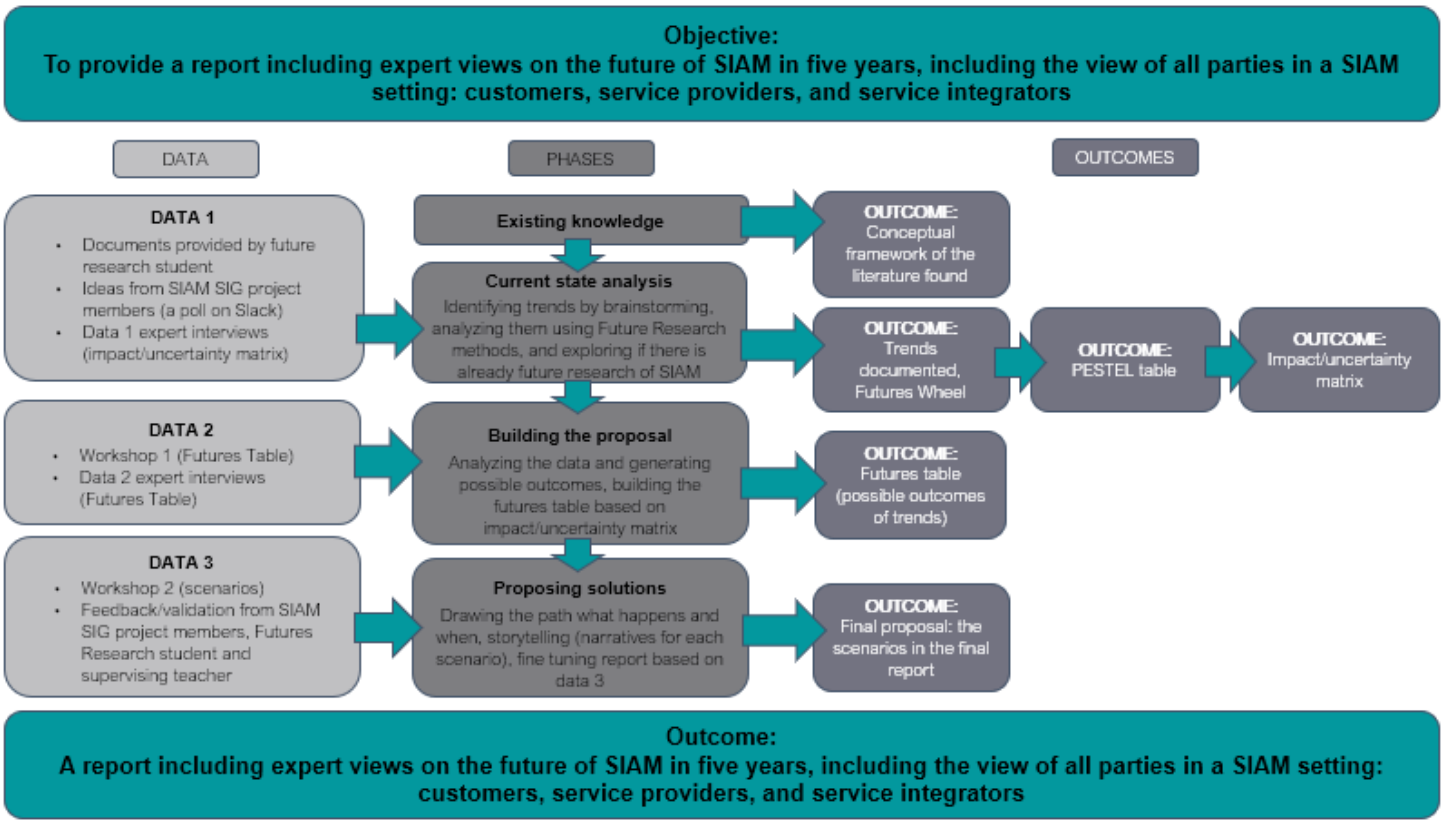

Figure 1. Research design of the study

As shown in Figure 1, the study starts with identifying trends related to SIAM and documenting them. At the same time existing knowledge of SIAM and Future Research methods is gathered and conceptual framework created, which is necessary for conducting the current state analysis. With the help of ideas from SIAM SIG project members and expert interviews, the Futures Wheel, PESTEL table and Impact/Uncertainty matrix are created. The expert interviews and Workshop 1 in Data 2 are used to create Futures table. The Futures Table is created based on the Impact/Uncertainty matrix. Finally, the Data 3 includes feedback and validation from SIAM SIG project group, Futures Research student and supervising teacher, and another workshop (Workshop 2) related to scenarios. The outcome of the Data 3 is the final report including scenarios.

2.3 Data Collection and Analysis

In this study data is gathered from small surveys, expert interviews, a workshop, and documents provided by itSMF Finland SIAM SIG members and the data is collected in three different phases of the project. The table below shows the data collecting phases, sources, topics, the duration of the phases and the documentation format.

Table 1. Data collection

DATA STAGE	SOURCE/INFORMANT	TOPIC	DATE/LENGTH	DOCUMENTED AS
DATA 1 For current state analysis	Documents provided by future research student	Understanding future trends	Weeks 7-9	-
	A poll for SIAM SIG members in Slack about future trends in SIAM	To get insights and validation for trends found	Weeks 7-9	Summary of the results and the trends sorted to the Futures Wheel.
	Data 1 expert interviews, online (Impact/Uncertainty matrix) - Session 1.1 (12.3.2024) - Session 1.2 (13.3.2024)	To get professional opinions for categorizing emerging trends to the Impact/Uncertainty matrix	Week 11 (1h each)	The sessions were recorded, and the content summarized. The changes were made to the matrix during the sessions.
DATA 2 For building proposal	Workshop 1, online (Futures Table) - 14.3.2024 in steering group Data 2 expert interviews, online (Futures Table) - Session 2.2 (22.3.2024) - Session 2.3 (22.3.2024) - Session 2.4 (26.3.2024)	Professional point of views to create alternative future states from the clustered high impact trends on the matrix.	Weeks 11-13 (1h each)	Excel file, where the states were described. All the states were gathered to one table after all sessions. The workshop and interview sessions were recorded, and the content summarized.
DATA 3 For building proposal	Workshop 2, face to face (Scenarios) in steering group session 5.4.2024	To build ideas for the stories about three scenarios	Week 14 (5.4.2024, 2h)	Note sheets, post it notes, pictures

Since the SIAM concept was new for the project team, it was very important to involve professionals in the brainstorming process at every stage of the project. Thus, almost all the data was gathered from SIAM professionals.

In Data 1 the student project group studied Future Research methods based on the material provided. It was then possible to start working on with the trends through brainstorming and searching information online.

Trends discovered; the team conducted a poll by using Polly-app for the steering group channel on Slack. This was answered by five of the six professionals of the steering group.

Participants in the Data 1 expert interviews were SIAM professionals. The Data 1 expert interviews were held in two sessions, both dealing with the same Impact/Uncertainty matrix with two different professionals. The matrix was first created by the student project group and then iteratively edited in the interview sessions. The interviews with two different professionals allowed for a variety of ideas and cross-validation. The summary and the main discoveries of Data 1 expert interviews can be found in chapter 4.2.3 Impact/Uncertainty Matrix.

Data 2 consisted of Data 2 expert interviews and Workshop 1, which focused on building the Futures Table. In preparation for Workshop 1 the data from the previous phase was clustered into themes. Workshop 1 and all Data 2 Expert interviews covered different clusters, so that all clusters were covered. Workshop 1 was held first, prior to the expert interviews. In the workshop the participating SIAM professionals were sorted into break out rooms since there were multiple of them, but the issue was that not all points of view could be heard. The following sessions had only one person in each session for scheduling reasons, but also, to make sure that they can express all their views. As a result from Workshop 1 and Data 1 expert interviews, a Futures Table which consisted of professional perspectives was built.

Data 3 was gathered from face-to-face Workshop 2 in the steering group meeting. The idea of the Workshop 2 was to build ideas for the stories about three scenarios with the input of five SIAM professionals. The three scenario ideas were built before the Workshop 2 by the students based on the Futures Table. The professionals were writing their story ideas on paper and post it

notes which were gathered by the student group after the meeting into an Excel file.

2.4 Project Schedule

Figure 2 below shows the schedule of the project. It illustrates the main phases and milestones of the project.

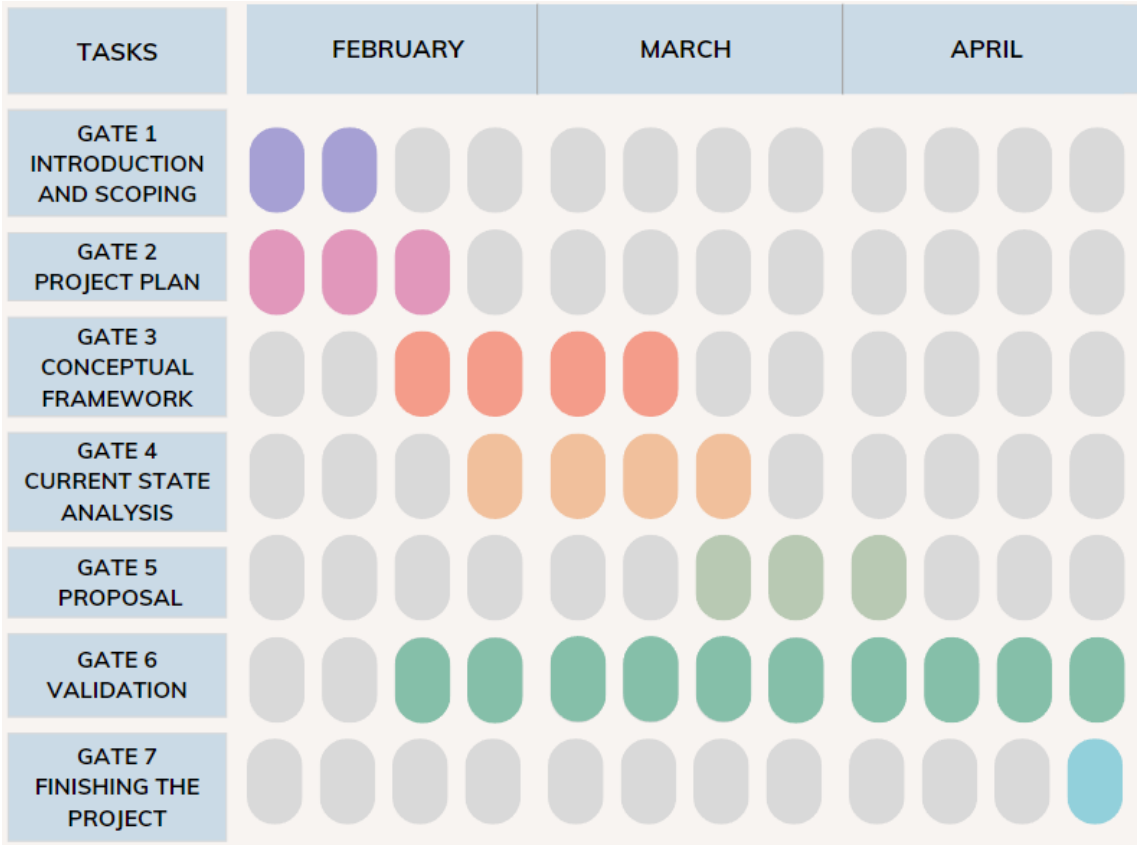

Figure 2. The schedule of the project.

As shown in the figure 2 above, the project is scheduled roughly according to the GATE method which is used in the IT Service Management module of Metropolia. Thus, the scheduling is based on the GATE returning days determined by Metropolia supervisors. The more detailed schedule as a Gantt chart is provided as a separate Excel file.

This completes the Project Plan section. The next section focuses on describing the literature which is needed to conduct the current state analysis.

3 Existing Knowledge of Future Research Methods and SIAM

This section discusses existing knowledge on Future Research Methods and SIAM. The section discusses SIAM first and then proceeds to go through the Future Research methods which will be used later in the current state analysis and final proposal. Finally, the section will provide a conceptual framework of the existing knowledge.

3.1 Service Integration and Management (SIAM)

This section goes through the basics and main things of Service integration and management. It is important to understand what SIAM is before it is possible to conduct the Future Research.

SIAM is a methodology to help organizations manage with multiple service providers. Companies need use services from different service providers since they are decentralized. By using SIAM customer gets the maximum value from its service providers. It gives governance and assurance for companies apart from the number of suppliers. SIAM framework will give value for customers who want to integrate external service providers, internal service providers or both service providers. SIAM can be used in different sizes of organizations from different industries sectors. (Agutter 2021).

3.1.1 SIAM Ecosystem

SIAM includes three layers, customer organization, service integrator, and service providers. The purpose of service integrator is assembling logical entity end-to-end delivery of services for customer. Complex operating models can be managed with an integrator and work can be streamlined. The methodology of

SIAM incorporates practices, processes, functions, roles, and structural elements. (Agutter 2021).

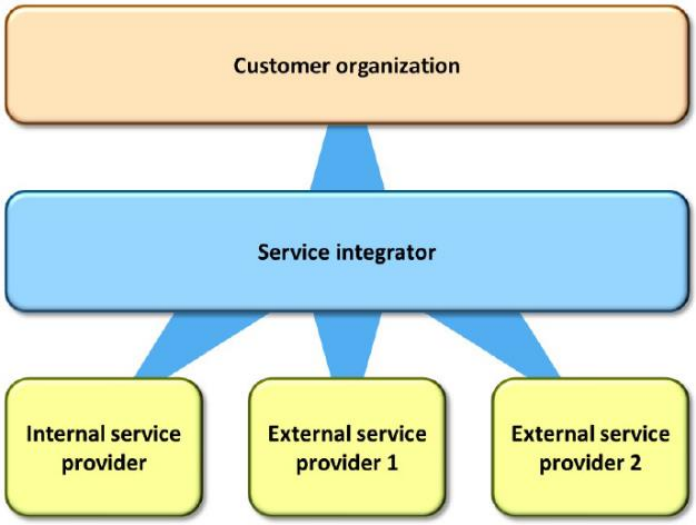

Figure 3. A simple view of SIAM ecosystem. (Agutter 2021)

3.1.2 Layers of SIAM Customer Organization

The end client, customer organization, may contain different business units such as finance and sales. Their own customers also use their products and services. Depending on the size of the customer organization, they might have hundreds of services to integrate. (Agutter 2021).

The customer organization is responsible for retained capabilities so called intelligent client function. The retained capabilities include strategic, architectural, business engagement and corporal governance activities that are business-differentiating functions. Service integrator does not participate in these activities. (Agutter 2021).

3.1.3 Layers of SIAM Service Integrator

The service integrator is the heart of SIAM ecosystem. The service integrator works and communicates directly with customer organization and service providers. The service integrator gives end-to-end management and

governance and streamlines customers business. By the work of the service integrator, customer can focus on other functions. In some cases, customer organization can also participate for the integration of services. (Agutter 2021).

3.1.4 Layers of SIAM Service Providers

Service providers are responsible for delivering services for the customer organization. They can be internal or external. Service providers can for example provide security, cloud, data center, hosting, or printing services. In SIAM ecosystem service providers are divided in three categories to help see services different amount of needed management. The categories are strategic, tactical and commodity service providers. Categories also define the importance of the providers for the customer organization. (Agutter 2021).

3.2 Future Research Methods

This section discusses the Future Research methods that are used during the study. It explains the methods in the order in which they are utilized. The methods include the Futures Wheel, PESTEL analysis, Impact/Uncertainty matrix, and Scenarios.

Futures methodology aims to improve decision-making by methodically exploring, creating, and testing both desirable and possible futures. It assists in offering a framework for expanding mental views and a deeper understanding of the current state. Future research methods are used by various businesses to understand future markets and create strategies and plans. Utilizing futures methods enhances the ability of an organization to anticipate and respond swiftly to changing environment. (Glenn n.d. a: 1–2).

3.2.1 Futures Wheel

The Futures Wheel is a structured brainstorming technique that helps discover and organize the primary, secondary, and tertiary effects of events, trends, new problems, and potential future actions. It was created by Jerome C. Glenn in

1971. It is beneficial to recognize possible issues and possibilities, as well as new markets for goods and services. It can be used, for instance, to consider the potential effects of current trends or upcoming events, arrange ideas regarding these events, make forecasts within various scenarios, and encourage group discussion among workshop participants about the future. (Glenn n.d. b: 1-2).

Several ways exist to utilize the Futures Wheel method, but the one used in this project starts with defining the focal issue in the middle. On the next layer the primary impacts of the issue are written down for instance people involved, stakeholders, clients, service providers and integrators.

On the third layer the factors that influence the elements displayed on the previous layer are written down. The factors of this layer are often trends and megatrends. On the last layer the weak but emerging signals of change are documented. Creating the layers continues until a clear understanding of the significance of event or trend is obtained (Glenn n.d. b: 4).

The advantages of Futures Wheel method include its simplicity of use, not requiring specific equipment, and ability to emphasize rapid participation while looking into the future scenarios. Also, its adaptability makes it ideal for different phases of futures study and helps to understand new trends. It allows getting beyond difficulties in strategy planning and promotes inclusive involvement in creative thinking. (Glenn n.d. b: 8).

Like other futures research methodologies, the Futures Wheel contains limitations since it depends on the opinions of all parties involved. Sometimes probability evaluations of discovered consequences can be hidden by its simplicity, although it can be useful in identifying significant events. Moreover, understanding the observed effects as final outcomes may result in misunderstandings. Instead, the output of the Futures Wheel should act as an entry point for additional research and methodical study utilizing related methodologies. (Glenn n.d. b: 8–9).

3.2.2 PESTEL Analysis

PESTEL analysis is an acronym for Political, Economic, Social, Technological, Environmental, Legal analysis (Buye 2021: 1; Issa et al. 2010: 74). Buye (2021: 3-4) states that one method for identifying and analyzing the primary drivers of change in the organizational environment is the PESTEL analysis. In addition, it can be utilized in predicting the future of the organization. Issa et al. (2010: 75), in turn argues that PESTEL is also used to understand the bigger picture of the environment where an organization operates. It allows organizations to leverage opportunities and mitigate threats effectively.

The political dimension of the analysis is used to examine the political environment and how the organizations are affected by the political factors. The factors include for instance government, tax, and foreign trade policies, and regulations. The political environment can also be influenced by governmental uncertainty or war. (Buye 2021: 5; Gani et al. 2018: 35; Washington State University 2023).

The economic dimension examines economic factors in the environments of the organizations. The factors include for instance interest and wage rates, inflation, economic growth, unemployment, and material and labor costs which will have a direct effect on the profitability of the organization. (Buye 2021: 5; Gani et al. 2018: 35; Washington State University 2023).

The social dimension helps organizations to learn about their stakeholders. The social dimension includes factors such as values, lifestyles, demographics, attitudes, cultural trends, and beliefs. With these factors organizations can understand the needs of the stakeholders and therefore to understand the market and labor force. (Buye 2021: 5; Gani et al. 2018: 36; Washington State University 2023).

The technological dimension of the PESTEL analysis examines for instance technological advances, innovation, rate of obsolescence of the technology, and product development or the organization. Because technology makes it easier

to communicate with customers and suppliers, many organizations employ it to increase productivity and effectiveness. Therefore, it is important for organizations to examine their own technology and update it if needed. Also, technology enables organizations to create new methods for delivering goods and services, creating new goods and services, and interacting with target markets. (Buye 2021: 6; Gani et al. 2018: 36; Washington State University 2023).

The environmental dimension examines the natural environment, thus raising awareness among organizations to consider sustainability and protection of natural recourses. The dimension includes factors such as limited availability of raw materials, pollution, carbon footprint, and weather. (Buye 2021: 6; Gani et al. 2018: 37; Washington State University 2023).

The legal dimension of PESTEL analysis includes factors such as advertising standards, health and safety legislation, product safety, and various laws for instance consumer, employment, and competition laws. Thus, the dimension yields information regarding aforementioned factors that impact organizations in terms of their production and sales processes. (Buye 2021: 6; Gani et al. 2018: 37; Washington State University 2023).

Furthermore, Buye (2021: 6) points out that PESTEL analysis can encompass an ethical dimension in addition to the legal and social dimensions. The ethical dimensions may involve considerations such as values, duties, and morality. Consequently, these ethical dimension factors are not laws but may align with societal rules.

3.2.3 Impact/Uncertainty Matrix

Dragicevic et al. (2017: 6, 21) states that Impact/Uncertainty matrix is used to find critical uncertainties pertaining to the focal issue. The matrix itself has four sections, and the purpose is to place driving forces to the sections based on two criteria: impact and uncertainty. The driving forces are macro factors that have an impact on the emergence of trends. According to Pluijm (n.d.), it is also

possible to place trends to the matrix sections. The figure below displays the impact/uncertainty matrix and the four distinct sections of it.

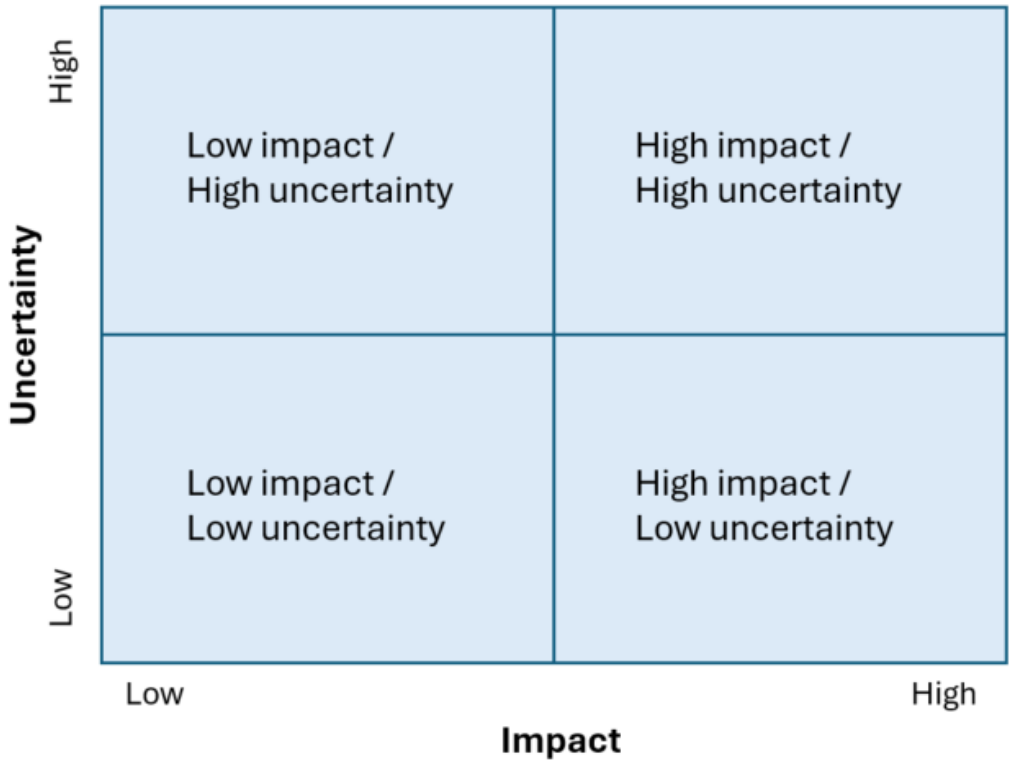

Figure 4. Impact/Uncertainty matrix (figure is created based on Dragicevic et al. (2017: 7))

Figure 4 presents the Impact/Uncertainty matrix. The trends or driving forces are placed to the matrix sections separately based on two questions: would it have high or low impact on the focal issue, and does it have high or low uncertainty? After the matrix sections are filled, the section “High impact / High uncertainty” will include the critical uncertainties, which will be the foundation for the future scenario development. Thus, the critical uncertainties are the elements that will drive various storylines in the scenarios based on how they develop. (Dragicevic et al. 2017: 6). The next chapter will delve deeper into the scenario development.

3.2.4 Scenarios

Scenarios are narratives or descriptions of potential future events, circumstances, and results that the user could reasonably experience. They help to methodically investigate, generate, and evaluate consistent alternative future settings. (Amer et al. 2013: 23; Glenn n.d. c: 2). Glenn (n.d. c: 2-4) highlights the significance of decision points and plausible cause-and-effect relationships in investigating alternate future settings and testing presumptions. While acknowledging that scenarios differ from forecasts in that they are investigations of potential futures rather than projections, Amer et al. (2013: 24-25) also emphasizes how scenarios are used to express abstract ideas about the future, deal with uncertainty, and test solutions.

Glenn (n.d. c: 18-19) lists the benefits of utilizing scenarios in strategic planning, including their ability to help decision-makers visualize abstract future possibilities, promote flexibility in planning for a variety of futures, and help planners develop predictive awareness. This method improves flexibility by changing the focus from optimizing for a particular result to planning for a range of possible futures.

Besides the benefits, Glenn (n.d. c: 18-19) highlights weaknesses such as the possibility that if not all stakeholders are involved in the construction of the scenarios, they may restrict thinking and result in a bias based on the author's presumptions. The goal of investigating a variety of possibilities may be compromised if contentious or unusual ideas are excluded out of fear of criticism. The writer highlights that, rather than being precise in foretelling certain results, the value of scenarios is found in their capacity to provoke thought and enhance future decision-making.

In scenario building, qualitative or quantitative methods can be used. Qualitative scenario building approaches mostly rely on expert opinions and narrative inputs. They emphasize the interpretation of complex, frequently non-numerical facts. These methods are typically more interpretative, using descriptive

techniques to try and comprehend the scope and complexity of possible futures. Conversely, quantitative methods make use of computational tools, mathematical models, and statistical data to predict future events. These techniques use advanced computing tools for analysis to give a more measurable, data-driven understanding of possible futures. (Amer et al 2013: 26). The methods used in this study for building scenarios are qualitative.

Validating the scenarios built is necessary to make sure they offer a trustworthy foundation for decision-making. Though there are variances, most academics have suggested criteria for scenario validation that emphasize the significance of plausibility and internal consistency of the chosen scenarios as critical elements. Relevance to decision-making, the capacity to challenge conventional thinking, structural difference between scenarios, and the creation of fresh viewpoints are additional factors that are commonly emphasized. (Amer et al 2013: 36)

3.3 Conceptual Framework

The existing knowledge explored in the section 3 is used in the current state analysis and proposal sections. The explored knowledge is summarized in the Conceptual Framework which is described in Table 2 below.

Table 2. Conceptual Framework

Addressed Topic from Literature	Reference in Literature	How is the Literature Source Used?
SIAM	Agutter 2021	To define what SIAM means so it is possible to examine the future of it
Futures Wheel	Glenn n.d. b.	To help in creating the Futures Wheel
PESTEL Analysis	Buye 2021	To help in creating the PESTEL table
Impact/Uncertainty Matrix	Dragicevic et al. 2017	To help in creating the Impact/Uncertainty matrix
Scenarios	Glenn n.d. c.	To help in creating the scenarios to the proposal

As shown in the Table 2 above, the Conceptual Framework consists of five topics from the existing knowledge, which are SIAM, and four Future Research methods, Futures Wheel, PESTEL analysis, Impact/Uncertainty matrix and scenarios. SIAM is being studied, as knowledge of SIAM is needed to carry out the project and the future research. Also, knowledge of Future Research methods is essential to explore the future of SIAM.

The Conceptual Framework created in this section is used in the next section to conduct the analysis of the current state of future research of SIAM and trends.

4 Current State Analysis of SIAM Future Research and Trends

This section covers Futures Research methods used to carry out the current state analysis of the project. The methods include Futures Wheel, PESTEL analysis and Impact/Uncertainty matrix. The section also covers how the trends were found, whether there is any existing futures research done on the subject as well as introducing a survey, expert interviews, and a workshop conducted with SIAM professionals.

4.1 Overview of Current State Analysis Stage

As the objective of this project is to provide a report including expert views on the future of SIAM in five years, including the views of all parties in the SIAM setting, the current state analysis was carried out by Futures Research methods including Futures Wheel, PESTEL analysis and Impact/Uncertainty matrix, expert interviews, and a workshop with SIAM professionals and a survey on the trends found conducted with SIAM SIG members.

First the Futures Wheel was built by finding and brainstorming trends in SIAM setting. A survey was also conducted in Slack including the trends found at the time. The meaning of this survey was to identify the trends that the SIAM SIG members thought were the most important or interesting ones. SIAM SIG

members also provided with the opportunity to suggest new trends that were not mentioned in the survey.

The PESTEL analysis was then carried out to place the trends in the right categories. After sorting the trends in the PESTEL, it was time to place the trends in the Impact/Uncertainty matrix. First the project team did the matrix by themselves and after that two expert interviews were conducted with one SIAM professional taking part in each. The meaning of the interviews was to validate the correct placement of trends in the matrix, include professional views and make changes if needed.

During the current state analysis, the student project group also found out that there has not been any public futures research conducted about how the emerging technologies and trends will affect SIAM in the future, but some SIAM market research has been done which is not particularly relevant in this project.

4.2 Finding and Sorting Trends

Since no existing future research has been done, it is needed to search for emerging trends in the field of business, but also any trends that can affect SIAM ecosystems. At this point there are no limits for the creativeness and out of the box thinking is recommended. Plenty of trends were found from various sources as a result of brainstorming and creative thinking. Some ideas for the trends also came from student project group and SIAM SIG members. The trends used in upcoming states of future research are listed and defined in Appendix 1.

4.2.1 Futures Wheel

All the founded and brainstormed trends were placed into a Futures Wheel. The Futures Wheel template was provided by the Future Research student, who also helped the student project group to understand how the trends are placed

in the Futures Wheel. Figure 5 below presents the final Futures Wheel of the study.

Figure 5. Futures Wheel

As shown in Figure 5, the trends identified and brainstormed were placed by the student project group into five different sections on the Futures Wheel. The white part in the middle is the "Focal Issue," which is the subject of the study. Then the "Local Environment" includes the key factors that influence the focal issue. The "Driving Forces" includes the macroenvironment factors that will influence the key local forces; thus, the "Driving Forces" are mostly trends or megatrends of SIAM. Although the driving forces section is defined as megatrends or trends, for the purposes of this study, all things in this Futures Wheel and in later stages of futures research are called trends. The "Weak Signals" are weak but emerging issues that could be signals of change, and the "Surprise Factors" are something that will have a huge effect on the whole business and environment, not only on the focal issue.

In the early stage of the sorting of the trends, a survey was conducted for the SIAM SIG project members in Slack. The survey included the trends found thus far and project members were asked to rate each trend on a scale from 1 to 5, with 5 indicating the highest relevance to the respondent. Five persons completed the survey, and the results were gathered to Table 3 below.

Table 3. Survey results

Trends ranked based on poll points	1's	2's	3's	4's	5's	Total Points
1 - Employee or User Experience and AI Adoption					5	25
2 - AI/machine learning			1		4	23
3 - Automation				2	3	23
4 - Better Customer Experience and Engagement				2	3	23
5 - Automation and Orchestration			1	1	3	22
6 - Strategic Importance of SIAM			1	2	2	21
7 - Enterprise-wide service management(ESM)	1		1		3	19
8 - Sustainability Investments			1	4		19
9 - People Management Improvement			2	2	1	19
10 - Value demonstration	1		1	1	2	18
11 - Recognizing Specialized Skills in Service Integration			3	1	1	18
12 - Importance of SIAM Education and Training			3	1	1	18
13 - Shifting Focus to Outcomes and Collaboration		1	1	2	1	18
14 - Focus on Governance and Relationship Management		2		2	1	17
15 - Evolution towards Hybrid SIAM Solutions			3	2		17
16 - Embracing Organizational Adaptability	1	1	1		2	16
17 - Integration of SIAM with Agile and DevOps		1	3	1		15
18 - Focus on the role of organizational change management	1		3		1	15
19 - Higher Information Security		2	2	1		14
20 - Cyber Security		2	3			13
21 - Integration with Cloud and Hybrid Environments	1	2	1		1	13
22 - Standardization and Certification in SIAM	2	1	1		1	12
23 - Internet of Things(IoT)	2	2	1			9

Since the survey was conducted in the early stage of trend brainstorming, not all the trends identified were included in the survey. Therefore, as presented in Table 3, the survey included only 23 trends. Additionally, there was a possibility for SIAM SIG project members to add some trends they deemed important. These trends were also included in the Futures Wheel.

The student project group analyzed the survey results and decided to mark the highest-ranked trends on the Futures Wheel with black star figures. This allows the views of the professionals to be considered in the next stages of future research. The decision was to mark all trends with 18 or more points with stars, thus the trends 1-13. All the grey stars in the Futures Wheel are marked for each trend that the project team considers important.

4.2.2 PESTEL Table

The next phase, after identifying the trends, was to sort the driving forces from the Futures Wheel into the PESTEL table. This phase was carried out independently by the student project group, without any professional input.

The PESTEL table was created to understand the impact of the key drivers. Making the table also helps to view and analyze the drivers from different perspectives which will be useful for scenario building later. From the table, the most influential categories were identified by looking at which categories the drivers were placed in. The result predicts which categories will play a bigger role in the scenarios. Below figures 6-8 shows the final PESTEL table of the current state analysis.

Figure 6. PESTEL table: Economic and Social/cultural

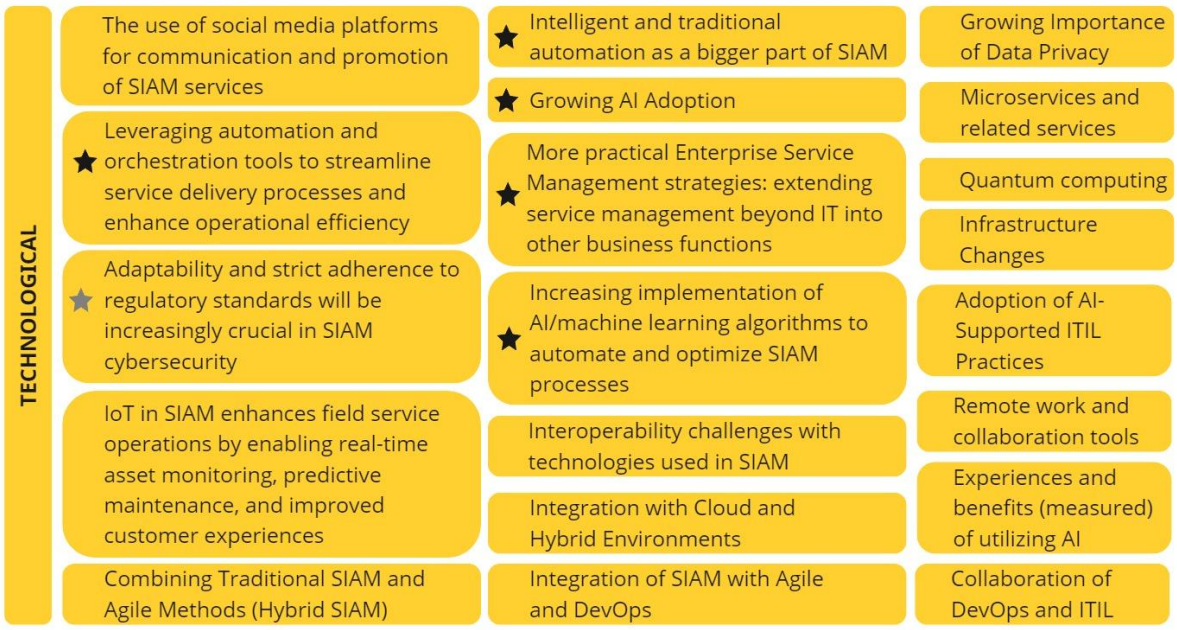

Figure 7. PESTEL table: Technological

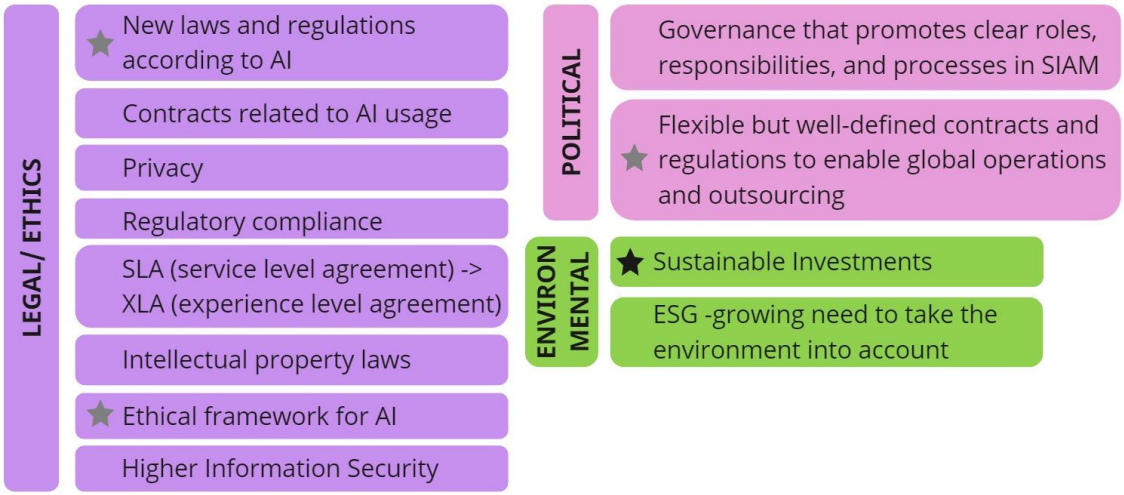

Figure 8. PESTEL table: Legal/ethics, Political and Environmental

As shown in Figures 6-8 above the driving forces have been sorted to the PESTEL table. The study of the trends did not identify many items in the “Legal/Ethics” section, and therefore most of them were added to the table from outside the Futures Wheel by the project team. From the table, it can be seen that “Social/Cultural” and “Technological” are the categories with most driving forces. This implies that those sections are important for the future of SIAM.

4.2.3 Impact/Uncertainty Matrix

After sorting the trends into the PESTEL table, the next step was to place them into the correct quadrants in the Impact/Uncertainty Matrix. The trends were preliminarily placed by the student project group and afterwards polished and validated by the input of two SIAM professionals in two separate interviews (Data 1 expert interviews). The interviews in this phase were discussion based and consisted of going through the trends one by one and making sure that they were in the correct quadrants.

Figure 9. The Impact/Uncertainty matrix after the preliminary placement of the trends

Figure 9 presents the matrix created by the student project group. The colors of each trend come from the PESTEL table colors. Thus, this is the matrix which was iteratively edited in the Data 1 expert interview sessions.

Data 1 expert interviews: Session 1

The first session of Data 1 expert interviews involved the student project group and the first SIAM professional. The trends that were focused on were the starred ones. Aligning SIAM practices with overarching organizational objectives emerged as a central theme in the interview. The session highlighted the need for skilled SIAM professionals, sparking a debate on certifications as the sole indicator. Real-world experience, it was argued, is crucial. The potential impact of sustainable investments on SIAM was also acknowledged. Lastly, the trend “Quantum Computing” was added to the “High Impact/High Uncertainty” quadrant as well as to the previously completed PESTEL table and Futures Wheel.

Figure 10. The Impact/Uncertainty matrix after the first session of the Data 1 expert interviews

The matrix in above Figure 10 was used in the next session of Data 1 expert interviews where it was edited again with professional 2.

Data 1 expert interviews: Session 2

The second session of Data 1 expert interviews involved the student project team and SIAM professional 2. The session focused on both the starred and high impact trends. Hybrid cloud models and data privacy were key concerns. Discussions addressed integrating SIAM with Agile/DevOps and using user experience over SLAs. AI in ITIL and sustainability were also highlighted as well as the importance of well-defined contracts in SIAM. The following trends were also added to the “High Impact/Low Uncertainty” quadrant of the matrix: Contracts related to AI usage, Microservices and related services, Ecosystem thinking, Capability and service area type thinking. These trends were also added to the previously completed PESTEL table and Futures Wheel.

Figure 11. The Impact/Uncertainty matrix after the second session of the Data 1 expert interviews

The matrix in the above Figure 11 is the final matrix which will be used in building a Futures Table in the next phase of the future research. This completes the current state analysis section. The next section is the proposal; thus, it includes final future research stages and scenarios of the future of SIAM.

5 Proposal

This section covers all the phases in proposal building. First it discusses the overview of the proposal building stage, then the Data 2 and Futures Table creation and later Data 3 and explanation of scenario building. Finally, the section will provide the most important part of the study, thus the final scenarios of the future of SIAM.

5.1 Overview of Proposal Building Stage

As the objective of this project is to provide a report including expert views on the future of SIAM in five years, including the views of all layers in the SIAM setting, the proposal building stage is carried out with expert interviews and a workshop with SIAM professionals. It ensures that the final report will have expert views of the future included.

First, the Futures Table was developed with assistance of clusters identified from the Impact/Uncertainty matrix. The student group determined these clusters, and Data 2 expert interviews were conducted based on the cluster themes. During the interview sessions, SIAM professionals deliberated on possible future states, which were then gathered into the Futures Table.

With the help of Futures Table, the student group generated ideas for three scenarios, which served as the foundation for Workshop 2. The aim of Workshop 2 was to develop ideas for stories of the three scenarios with input from five SIAM professionals.

After the Workshop 2, it was time to create the final scenarios. These were created by the student group with assistance of the professional's notes from Workshop 2. Additionally, the group employed their imagination and incorporated some ideas from previous stages of future research. All the scenarios include three parts: a description of the scenario, a pathway figure, and a story which depict a typical workday of the main character in 2030, complete with side characters that highlight the perspectives of all three layers of SIAM.

5.2 Futures Table

After creating the Impact/Uncertainty matrix, the trends from the high impact/low uncertainty and high impact/high uncertainty boxes were divided into seven clusters based on the topic. The clusters are seen as the key drivers of the scenarios. These two boxes were included because they represent the most important trends with high impact for organizations. The clustering was conducted by the student project group. Below are all the key drivers with the included trends.

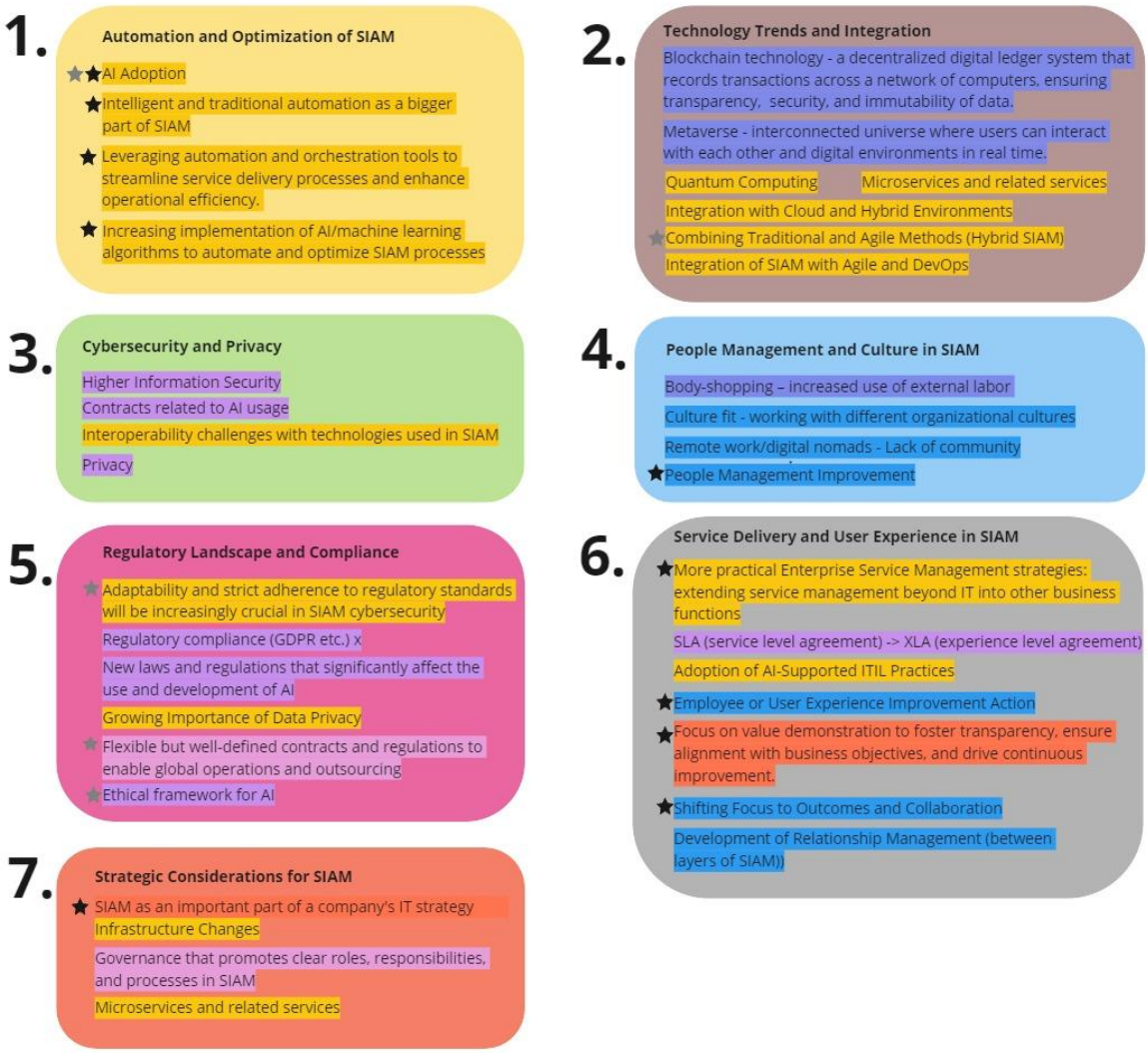

Figure 12. Key drivers

With the help of the key drivers, the next step was to create a Futures Table where is three possible future states for every cluster. The states were created by SIAM professionals in Workshop 1 and Data 2 expert interviews. The workshop 1 was conducted in the steering group and the 3 expert interviews after that. The idea was to think about possible future events related to the cluster topic in question and the sessions were discussion based. The outcomes of the Workshop 1 and Data 2 expert interviews were two Futures Tables: one with shorter explanations of the states and one with broader and more descriptive explanations. The shorter version is presented in the table below, and the broader version is provided as Appendix 2.

Table 4. Futures Table

Key Drivers/Clusters	State 1	State 2	State 3
1. Automation and Optimization of SIAM	AI is used in ITIL processes improving service quality	Automation will make integrations seamless	Lots of data leaks, too much AI
2. Technology Trends and Integration	The platform components of the services will be more similar between different suppliers	Information management becomes easier and automated	The questioning of the reliability of information increases
3. Cybersecurity and Privacy	The need for information security in integrations will increase	Protecting privacy becomes more important	A security partner will be added to SIAM suppliers
4. People management and Culture in SIAM	Body-shopping will expand	The challenges of change management will increase	Nullification of people
5. Regulatory Landscape and Compliance	The interpretation of the regulations will get more complicated	The challenges of multinational organizations in the interpretation of the laws	AI and automation will speed up the creation of new legislation
6. Service Delivery and User Experience in SIAM	Speed will be a key because customer needs will be changing fast	Customer expectations will rise so user experience will be more important	Customer will value more stronger security and risk management
7. Strategic Considerations for SIAM	The need for a strategic understanding of SIAM will grow	The need for an understanding of the overall situation of SIAM will increase	

The key drivers 1 and 6 were created in Workshop 1 with two experts per key driver, while the rest of the key drivers were developed with one professional at a time in the expert interviews. Key driver 7 is missing state 3 as it proved to be quite challenging to determine the strategic considerations for SIAM, but the absence of this, is not problematic for the project.

The Futures Table was created in preparation for the next phase, which is final scenario building. Leveraging the states outlined in the table, the student group generated scenario ideas by combining various states from all or part of key drivers that are compatible.

5.3 Scenarios

The most important part of the outcome of the study is the scenarios of the futures of SIAM. These scenarios are designed to assist organizations in preparing for potential future states in SIAM in the next five years. Proactively addressing these changes will afford organizations a competitive edge and assist in strategic planning of the future. In this chapter the scenario building phases are explained, and the final three scenarios are described.

DISCLAIMER: Please note that predicting future with absolute certainty is impossible; therefore, the scenarios presented in the study should not be construed as factual predictions. These scenarios are constructed using information and opinions gathered through Future Research methods, as well as the imaginative input of both the student group and SIAM professionals.

5.3.1 Scenario Building

After creating the Futures Table, it was possible to leverage the states outlined in the table, thus the student group generated scenario ideas by combining various states from all or part of key drivers that are compatible. The purpose was to create three different scenarios from the Future Table states. Below table with the states combined.

Table 5. Futures Table with colors indicating each scenario

Key Drivers	State 1	State 2	State 3
1. Automation and Optimization of SIAM	AI is used in ITIL processes improving service quality	Automation will make integrations seamless	Lots of data leaks, too much AI
2. Technology Trends and Integration	The platform components of the services will be more similar between different suppliers	Information management becomes easier and automated	The questioning of the reliability of information increases
3. Cybersecurity and Privacy	The need for information security in integrations will increase	Protecting privacy becomes more important	A security partner will be added to SIAM suppliers
4. People management and Culture in SIAM	Body-shopping will expand	The challenges of change management will increase	Nullification of people
5. Regulatory Landscape and Compliance	The interpretation of the regulations will get more complicated	The challenges of multinational organizations in the interpretation of the laws	AI and automation will speed up the creation of new legislation
6. Service Delivery and User Experience in SIAM	Speed will be a key because customer needs will be changing fast	Customer expectations will rise so user experience will be more important	Customer will value more stronger security and risk management
7. Strategic Considerations for SIAM	The need for a strategic understanding of SIAM will grow	The need for an understanding of the overall situation of SIAM will increase	

As illustrated in above Table 5, there are three colors, one for each scenario idea. The orange color is the idea for scenario 1 – All about automatization, the green color for scenario 2 – AI and human hand in hand and the blue color for scenario 3 – Fight back against AI. The scenarios were named by the student group. These three scenarios were presented in Steering Group 2 and used as a base for Workshop 2. The idea of the Workshop 2 was to build ideas for the

stories about three scenarios with the input of five SIAM professionals. Each professional chose their role in such a way that ensures at least one role is selected from each SIAM layer and after that thought what the future would be in those roles in the scenarios. They wrote the ideas down of the future to post it notes and discussed about the subject in the group.

After Workshop 2, student group gathered all the notes in tables which are provided as Appendix 3. The student group cannot guarantee that what is written in the tables is exactly the same as what is meant by the professionals, as some of the notes left room for interpretation. In Appendix 3 is three tables, one for each scenario and all the tables include the roles and therefore the layers of SIAM and the ideas on every scenario.

The final scenarios were created by the student group with the help of the professional notes in Appendix 3. In addition, group used their imagination and added some ideas from previous Future Research stages, for instance from the Futures Wheel. Each of the three scenarios include a description of the scenario, a pathway figure, and a personal narrative which depict a typical workday of the main character in 2030, complete with side characters that highlight the perspectives of all three layers of SIAM. The pathways illustrate the events that will lead to the situation in 2030.

5.3.2 Scenario 1 – All About Automatization

Description:

In this scenario, integrating AI into processes has significantly improved service quality. Tasks are now simpler with AI assisting in meeting organization and automating incident closures. Moreover, AI expedites the creation and enforcement of laws, showcasing its broad impact. As technology advances and new laws emerge, AI's superiority over humans becomes increasingly apparent. However, amidst these advancements, privacy concerns and the need for ethical guidelines are critical considerations.

Societies are undergoing cultural shifts as they embrace AI-based services, reshaping values, and norms. This emphasizes the importance of speed and adaptability in business operations and relationships. Achieving efficiency requires a thorough understanding of Service Integration and Management (SIAM) across all levels. Although AI and automation improve data management and processing, they also raise the risk of misuse and privacy breaches. To address these risks, service providers must implement stricter data protection measures to safeguard customer information and adhere to regulations.

Pathway:

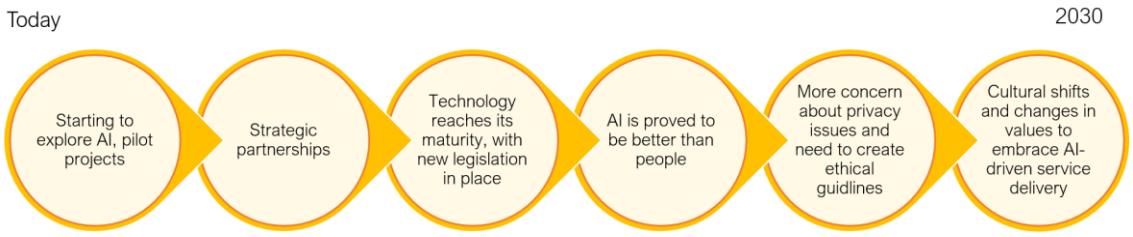

Figure 13. Pathway for scenario 1

Personal narrative:

Emma is 25 years old woman living in Tampere. She is working in a global innovative corporation as a HOB (Head of Bots). Her job is to manage the bots that are working as integrators between the customer and the provider. Sitting down at her laptop in the morning, she notices that a corporate bot that nowadays handles many duties of the CEO has sent the monthly report to her mail. The report says that the company will swift to quantum computers soon.

While reading the report, their service provider, a digital nomad, working now from Hawaii calls Emma in Metaverse. He tells how effortless his job is nowadays and how satisfied their customers are since AI monitors customers' needs so they can deliver on short notice what and when they need. In the

middle of the call, Emma sees from the window that a delivery drone is bringing her the new charger for her XR headset, so she stops the call.

During her lunch break, Emma hears news of an impending conflict that could affect their service providers, but she remains undisturbed since AI bots have already begun offboarding and onboarding processes anticipate potential issues. She only needs to communicate with relevant stakeholders updating them on the situation and the actions.

Last task of the day, Emma views the summary of a user experience survey that AI has produced to her. The customers are satisfied, and bots keep the company on track, so she closes the computer, puts the XR glasses on table and starts her free time.

5.3.3 Scenario 2 – Human and Machine Hand in Hand

Description:

In this scenario machine and human are working hand in hand, seamlessly together. Thanks to this, service quality is amazing. Change of suppliers is easier since service platforms have less differences between each other. Based on the help of standardized platforms, there is more time and resources for personalized services to meet customer needs. They will also expect fast service delivery and have high hopes about user experience. Although AI offers efficiency, customers still require and value human interaction. Customers will have a better understanding of SIAM and seek ways to improve their service management. By automated processes they support for example better measurement and quality control.

Multinational organizations can face challenges with different national laws and different regulations. As customers understand the SIAM processes well, they are also aware of all kinds of risks. That creates an increased focus on information security. In a rapidly changing environment companies are more likely to hire professionals on a contract basis for specific projects or tasks and

that is called body shopping. Body shopping is financially beneficial and flexible solution for both companies and professionals.

Pathway:

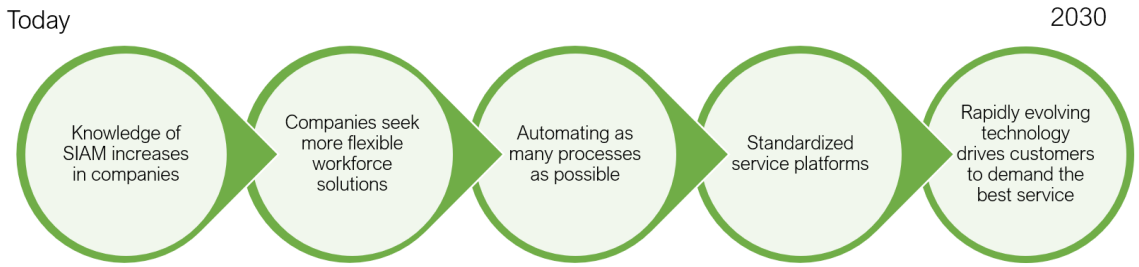

Figure 14. Pathway for scenario 2

Personal narrative:

Daniel sips his morning coffee and asks his AI assistant what the most relevant conversations with customers during the night were. He is 37-year-old CEO in a company that provides AI based software services. The company offers services mainly for international customers, but the headquarters is located in the center of Helsinki. He has a personal AI assistant, which is tailored specifically to his needs. Sometimes it feels that it can almost read his mind. The responsibility of all decisions still belongs to human CEO. The company is doing well, since nowadays customers understand SIAM processes well and want to use AI to automate them.

Midway through his day, a request for a big proposal arrives from the U.S. Service providers can change fast nowadays, because service platforms are standardized. Daniel turns to AI to analyze the request for proposal comprehensively, covering everything from legal considerations to user experience. With AI's efficiency, the work is easy to carry out and he can maintain high-quality of work. Daniel’s colleague knocked on his door. She says that they have an innovation that needs to be tested as soon as possible. Thanks to body shopping and automated recruiting they can match perfect employees really fast.

After his team sends out the proposal to the customer, Daniel starts a scheduled meeting addressing the rising customer expectations and demands. Because of rising use of AI amongst the service providers, it has become a standard that the services are always tailored specifically to customer’s needs. What comes to their own use of AI in customer support, customers have been pleased. Customers will get human interaction always when needed and when AI is working, it keeps customers updated while correcting any issue.

With AI's assistance, they're shaping the future of technology. As Daniel wraps up his workday, he closes his computer. He knows that his AI assistant remains hard at work, ensuring that the company stays ahead of the competitors and delivers the best service to its customers around the globe.

5.3.4 Scenario 3 – Fight Back Against AI

Description:

In this scenario, the use of AI has reached an unprecedented level and can no longer be relied upon. Its careless use has caused issues and raised concerns about privacy and security. In addition, inaccuracies and data leaks are leading to large amounts of disruptions. The security expectations from customers rises since they are increasingly aware of the risks associated with cyber risks and attacks. To handle this, organizations are looking to integrate more security partners into their supplier networks. The shift from annual vulnerability checks to continuous scanning threats enhances security control and responsiveness, thereby strengthening the SIAM ecosystem.

In the face of rapidly evolving technology, organizations understand the crucial need to effectively manage change to adapt to constant technological advancements while considering differences between teams and gaining the support from management. However, the differences in the interpretation of regulations across different SIAM layers further complicate security efforts and customers stress the need for robust security protocols to protect their data.

Pathway:

Figure 15. Pathway for scenario 3

Personal narrative:

It was a foggy morning in Stockholm when Lisa, a 43-year-old Chief Technology Officer, was awakened by a call from her boss about a blackmail email threatening to expose critical company data. They claimed that the data was obtained through an AI service. Lisa immediately suspected the leak came from an AI service provider they used.

She rushed to the office and contacted their integrator to track the breach. It turned out that some employees had uploaded confidential documents to an AI application provided by their AI service provider, violating company policy. Lisa starts to question their company's and service provider's AI policies and regulations. She realizes that the issue may be due the rapid evolution of AI, making it difficult to maintain and interpret regulatory documentation, so she cannot blame the employees.

However, it's evident that the issue stems from deficient education and flawed application design, necessitating the implementation of coded restrictions within the AI system to prevent unauthorized data entry. After receiving this insight from the integrator, Lisa decides to prohibit her employees from utilizing not only this AI service but also other AI platforms.

Lisa understands that the service provider lacks sufficient vulnerability checks, so the SIAM security partner needs to increase controls, thus proper change management will be needed. They also need to develop AI security training at every layer of SIAM. In addition to this, Lisa considers a possibility of implementing blockchain technology to enhance data security and transparency within their AI systems.

Lisa has mixed emotions when heading home, because she questions whether their reliance on AI should be reduced in favor of prioritizing security. But she wonders whether a return to the old, non-AI methods is possible, given their daily reliance on AI. While the service provider and integrator work on resolving the leak, Lisa must start thinking about the future use of AI. She retires to bed, determined to begin planning for change tomorrow.

5.4 Suggestions of the Scenario Usage

These scenarios are meant to provoke thoughts and assist people and organizations to prepare for the future. The scenarios might or might not happen, but it is important to start thinking about what could possibly happen in the future. This way, organizations can begin preparing and be ready for the future.

The report can be utilized for further analysis. Organizations can consider their course of action in response to these scenarios. Alternatively, by leveraging the Futures Research methods outlined in the report and considering the trends listed, organizations can begin crafting scenarios tailored to their specific situations. For instance, organizations can employ the Impact/Uncertainty matrix alongside the trend list which identifies trends and events with the greatest potential impact on their unique situations.

This completes the Proposal section. The next section focuses on summarizing and evaluating the study.

6 Conclusions

In this chapter, the main steps of the study are put together and briefly explained, focusing on the proposal and its significance. The chapter begins with an executive summary, which explains the entire study and the implications of its outcome. It is followed by self-evaluating the credibility of the study and finalized with closing words.

6.1 Executive Summary

The transformation of emerging technologies creates challenges such as how to effectively integrate these new technologies with common frameworks within the SIAM context, and how organizations can adapt to the rapidly changing environment. Therefore, the objective of this study was to provide a report including expert views on the future of SIAM in five years, including the view of all parties in a SIAM setting: customers, service providers, and service integrators. To achieve this objective, the study encompassed first a conceptual framework, following a current state analysis, the utilization of various Future Research methods, and finally the formulation of a final proposal: three scenarios of the future of SIAM.

The conceptual framework was created to assist in conducting the analysis of the current state of SIAM and trends, as well as in proposal building for the future. In conclusion, the current state analysis primarily involved sorting SIAM-related trends using Future Research methods and expert interviews with SIAM professionals. The main outcome of this phase was the Impact/Uncertainty matrix, which was utilized in the next phase, proposal building.

The proposal building phase included a workshop and expert interviews with SIAM professionals. It ensured that the final report have expert views of the future included. First, the Futures Table was developed with assistance the Impact/Uncertainty matrix and then the final scenarios were built with assistance of the Futures Table. All the scenarios include three parts: a

description of the scenario, a pathway figure, and a story which depict a typical workday of the main character in 2030, complete with side characters that highlight the perspectives of all three layers of SIAM.

The most important outcome of the study is the scenarios. These scenarios are designed to assist organizations in preparing for potential future states in SIAM in the next five years. Proactively addressing these changes will afford organizations a competitive edge and the capacity to strategize for the future.

6.2 Self-Evaluation of Project Credibility

The validity of the project was ensured through careful curation of the research plan and validation of the steering group members in each phase. Following the structure of the GATE system, with a few necessary changes, made the process logical. The selection of Future Research methods was guided by an experienced Futures Research student. Additionally, employing SIAM professionals in the project ensured the accuracy and correctness of gathered information. All the mentioned increases internal validity of the project. To strengthen generalizability, the same questions were often asked of more than one professional.

Credibility was confirmed through preparation for interviews and workshops, utilizing appropriate methods for data collection and careful documentation practices, such as recording and note-taking. By combining and comparing multiple sources of information to create a conceptual framework, credibility was further enhanced. Different data collection methods, such as surveys, workshops, and interviews, reinforced the credibility of the results.

Transparency was maintained through clearly marked references and proper attribution of sources; thus the authors of other texts were duly acknowledged. The methodological choices were carefully documented at each stage, facilitating replication or continuation of the study.

Reflecting on the project, a few suggestions for improvement has emerged. The team started the project with very little prior knowledge, and a lot of new information had to be assimilated at the beginning. As the subject of the project was initially unfamiliar, the absorption of information was not as fast as it could have been. In addition, the sample size was limited by a tight schedule, a larger sample could have provided a wider range of perspectives. While transcriptions and summaries from interviews and workshops in the attachments would have added transparency, it was decided not to include them due to the tight schedule and heavy workload. In addition, managing the considerable amount of data proved challenging with current methods and schedule, increasing the risk of errors.

Going forward, the extensive groundwork already done will facilitate further work. However, it is advisable to have a good background knowledge and experience of SIAM before starting to explore the future. A continuation of the project would benefit from a wider range of interviewees, including international perspectives, to increase validation and credibility. In addition, streamlining data management processes and ensuring adequate resources for thorough documentation would be essential for future projects.

6.3 Closing Words

The past few years have taught that it is impossible to predict the future. Changes in the World with long-lasting consequences can happen when last expected. But that does not mean that planning is useless. By pausing to consider emerging trends that may already be showing signs today, it is possible to take the future into account when making choices for upcoming years. Scenarios help to explore the implications of the accelerating pace of technological development, and in particular artificial intelligence. Taking the future into account might influence for example supply and demand. Identifying and preparing also for weak signals may help gain competitive advantage and reduce risks. All the material we produce can be applied to support the process of brainstorming and imagining future events and opportunities.

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Appendix 1: List of Trends

List of emerging trends identified and utilized in this study, categorized by subsections of the Futures Wheel. The list includes the trends and their sources, some trends also have a brief explanation of their meaning in the study.

Local environment

Better customer experience and engagement
Prioritizing the enhancement of customer experience and engagement through improved service delivery and support mechanisms <https://www.mhcautomation.com/infographics/customer-engagement-vs-customer-experience/>

Building a good team and focusing on people
<https://www.oneio.cloud/blog/service-integration-and-management-siam>

Culture fit - working with different organizational cultures
<https://hbr.org/2021/06/research-how-cultural-differences-can-impact-global-teams> & <https://hbr.org/2020/01/how-corporate-cultures-differ-around-the-world>

Development of Relationship Management (between layers of SIAM)
<https://www.bmc.com/blogs/service-integration-and-management-siam-for-beginners/> & <https://www.sourcedogg.com/insight/the-future-of-supplier-relationship-management/>

Employee turnover
<https://hbr.org/2022/07/its-time-to-reimagine-employee-retention> & <https://financesonline.com/employee-turnover-statistics/>

Focus on value demonstration to foster transparency, ensure alignment with business objectives, and drive continuous improvement
<https://exalate.com/blog/service-integration-and-management/>

Importance of SIAM Education and Training
<https://www.tietoevry.com/en/blog/2021/04/Evolving-importance-of-SIAM-during-times-of-accelerated-digital-transformation/> & <https://www.spoclearn.com/blog/siam-governance-three-key-layers/>

Infrastructure Changes
<https://www.boston-technology.com/blog/everything-you-need-to-know-about-it-infrastructure-modernization>

Laws and regulations

Organizational adaptability
<https://workforce-resources.manpowergroup.com/white-papers/the-age-of-adaptability>

Recession
<https://www.imf.org/external/pubs/ft/fandd/basics/recess.htm>

SIAM as an important part of a company's IT strategy
<https://www.wrike.com/blog/what-is-siam/> & <https://exalate.com/blog/siam-model/>

Standardization and Certification
<https://www.exin.com/business-service-management/exin-siam/exin-siam-professional/>

Unstable world situation
<https://www.weforum.org/publications/global-risks-report-2023/in-full/1-global-risks-2023-today-s-crisis/>

Driving forces

Adaptability and strict adherence to regulatory standards will be increasingly crucial in SIAM cybersecurity
<https://www.researchgate.net/publication/377809590_From_Risk_to_Resilience_Strengthening_Cyber_Security_in_Financial_Institutions>

Adoption of AI-Supported ITIL Practices
Integrating AI technologies to enhance traditional ITIL practices, such as incident management and problem resolution, for greater efficiency and effectiveness.
<https://peoplecert.jp/doc/ITIL_WP_ITIL4-and-AI.pdf>

Capability and service area type thinking
<https://www.hosiaisluoma.fi/blog/capability-based-development/>

Collaboration of DevOps and ITIL
<https://www.pm-partners.com.au/insights/how-devops-and-itil-collaboration-can-drive-a-projects-success/>

Combining Traditional and Agile Methods (Hybrid SIAM)
<https://www.linkedin.com/advice/0/how-can-you-blend-agile-traditional-project>

Ecosystem thinking
<https://futurice.com/blog/ecosystem-thinking-value-proposition>

Employee or User Experience Improvement Action
<https://www.linkedin.com/pulse/power-user-experience-boosting-employee-lee-alexander/>

Enabling economic growth by investing in organizational change management
<https://online.hbs.edu/blog/post/organizational-change-management>

ESG – Environmental, Social and Governance
<https://www.investopedia.com/terms/e/environmental-social-and-governance-esg-criteria.asp>

Experiences and benefits (measured) of utilizing AI
In the future when there is more experience in AI usage we can measure the benefits of AI.
<https://aokmarketing.com/the-benefits-of-utilizing-ai-what-you-need-to-know/>

Flexible but well-defined contracts and regulations to enable global operations and outsourcing

Focus on the role of organizational change management
<https://online.hbs.edu/blog/post/organizational-change-management>

Governance that promotes clear roles, responsibilities, and processes in SIAM
<https://www.linkedin.com/pulse/core-principles-siam-shankar-narayana-kd4kc/>

Growing AI Adoption
Data suggests that usage of AI is on the rise due to early adopters. Also AI is becoming more useful due to development.
<https://newsroom.ibm.com/2024-01-10-Data-Suggests-Growth-in-Enterprise-Adoption-of-AI-is-Due-to-Widespread-Deployment-by-Early-Adopters>

Growing Importance of Data Privacy
<https://www.enzuzo.com/blog/data-privacy>

Higher Information Security
<https://blog.box.com/how-to-improve-information-security>

Increasing implementation of AI/machine learning algorithms to automate and optimize SIAM processes
<https://www.linkedin.com/pulse/transforming-enterprises-power-ai-ml-automating-tasks-raghunathan-hzzjf/>

Integration of SIAM with Agile and DevOps
<https://www.itsmf.co.uk/agile_siam/>

Integration with Cloud and Hybrid Environments
<https://www.cleo.com/blog/hybrid-integration-hybrid-cloud>

Intelligent and traditional automation as a bigger part of SIAM
<https://www.linkedin.com/pulse/intelligent-automation-use-cases-digazu-mxxdf/>

Interoperability challenges with technologies used in SIAM

IoT in SIAM
Enhances field service operations by enabling real-time asset monitoring, predictive maintenance, and improved customer experiences.
<https://www.techtarget.com/iotagenda/definition/Internet-of-Things-IoT>

Leveraging automation and orchestration tools to streamline service delivery processes and enhance operational efficiency
<https://www.linkedin.com/pulse/streamlining-software-deployment-management-guide-tools-dabholkar-e5qae/>

Microservices and related services
<https://microservices.io/>

More practical Enterprise Service Management strategies: extending service management beyond IT into other business functions
<https://www.linkedin.com/pulse/navigating-future-top-2024-itsm-trends-transformative-year-4ubqc/>

People Management Improvement
<https://empxtrack.com/blog/people-management/>

Recognizing Specialized Skills in Service Integration
<https://www.exin.com/career-paths/exin-career-path-certifications/exin-service-integration-manager/>

Remote work and collaboration tools

Remote work/digital nomads - Lack of community
<https://workwealthandtravel.medium.com/disadvantages-of-being-a-digital-nomad-82d8c4c4e6ff>

Shifting Focus to Outcomes and Collaboration
<https://rhianamatthew.medium.com/4-challenges-shifting-from-outputs-to-outcomes-and-what-you-can-do-about-it-2067dc3338ab>

SLA (service level agreement) -> XLA (experience level agreement)

Social Media marketing
<https://www.wordstream.com/social-media-marketing>

Sustainable Investments
<https://www.cfainstitute.org/en/rpc-overview/esg-investing/sustainable-investing>

Weak signals

AI-driven Integration Recommendations
AI can be used for creating personalized recommendations that take everything important into account in a short time.

<https://www.algolia.com/blog/ai/what-role-does-ai-play-in-recommendation-systems-and-engines/>

Blockchain technology
A decentralized digital ledger system that records transactions across a network of computers, ensuring transparency, security, and immutability of data.
<https://www.investopedia.com/terms/b/blockchain.asp>

Body shopping - Increased use of external labor
Body shopping means an IT-centric outsourcing/sub-contracting model. Usage of body shopping might be rising because of the need of consultants and project-based work.
<https://www.techtarget.com/whatis/definition/bodyshopping>

Decentralization of Integration Ecosystems
Blockchain based infrastructure being shared by multiple businesses for multiple use cases.
<https://www2.deloitte.com/nl/nl/pages/risk/solutions/decentralized-ecosystems.html>

Emergence of Next-Generation Integration Tools
The mention of future integration tools that are adaptive, intelligent, and decentralized hints at a potential shift towards a new generation of integration solutions. This could disrupt the current market landscape and drive innovation in integration technology.
<https://www.ibm.com/blog/demystifying-integration-building-a-next-gen-digital-integration-platform/>

Loss of jobs or change in job description because of AI etc.
AI will change the way people work. This might mean loss of certain jobs, but can also create new jobs.
<https://www.cnbc.com/2023/12/16/ai-job-losses-are-rising-but-the-numbers-dont-tell-the-full-story.html>

Metaverse
Interconnected universe where users can interact with each other and digital environments in real time.
<https://about.meta.com/fi/metaverse/>

Rise of Self-Describing APIs
The mention of APIs describing themselves and their changes hints at a potential future trend where APIs become more self-aware and provide richer metadata. This could lead to more automated and intelligent integration processes.

The use of drones to deliver goods and small spare parts
<https://www.emarketer.com/insights/drone-delivery-services/>

Vendor management issues
<https://www.digital-adoption.com/vendor-management-challenges/>

Surprise factors

Hybrid Operations

Pandemic

War

Appendix 2: Futures Table with broader explanations

Clusters	All About Automatization	AI and Human Hand in Hand	Fight Back Against AI
1. Automation and Optimization of SIAM	AI integration into ITIL processes maintains business as usual, improving service quality through simplified tasks, meeting assistance, and incident closure automation.	Automation seamlessly integrates into the system, handling tasks automatically like onboarding/offboarding, reporting, and addressing change resistance for business justification.	Data leaks and inaccuracies persist, questioning AI's management of visibility. Over-reliance on AI risks service disruption, emphasizing the dangers of excessive dependence on such systems.
2. Technology Trends and Integration	Data management methods improve data processing, but without the right combination of data from different sources, the risk of misuse increases. While AI can help, its suitability for validation may be uncertain, highlighting the role of humans in data management.	The service platform will enable convergence between different suppliers, which is already visible and will be reinforced in the future. This will have a significant impact on SIAM, making it easier to change suppliers in the future.	Questioning knowledge becomes a new skill when the mass of knowledge is consolidated.
3. Cybersecurity and Privacy	Protecting privacy is becoming more important. Service providers will need to adopt stricter data protection measures, to ensure the security of customer data and comply with local and international data protection regulations	As security threats from external sources are growing, there is a bigger need to protect information in integrations. This means that the data needs to stays safe and confidential during integration processes to keep businesses running smoothly and protect company's reputation.	The integration of a security partner into the vendor network enables continuous vulnerability scanning, instead once-a-year checking. This increases security control and responsiveness to rapidly changing threats, improving the security of the entire SIAM ecosystem.
4. People Management and Culture in SIAM	The need for people management will become even more important. Currently, there is too little focus on people, with everyone concentrating mainly on technology. Employees with good interpersonal skills helps to understand and operate effectively in the future world.	The expansion of bodyshopping, particularly in long-term and project-based capacities, meets the demand for temporary expertise. While financially beneficial and offering accounting flexibility for organizations, it also poses ethical risks.	The challenges of change management are accentuated by rapidly evolving technology, creating a constant and rapid need for change in organizations. Adapting to these changes will be an even greater challenge, which will need to consider differences between teams and the support of management.
5. Regulatory Landscape and Compliance	AI and automation speed up the creation and implementation of legislation. This will require businesses to adapt more quickly to future regulations.	International laws and regulations and differences between countries pose challenges to multinational organisations in their efforts to interpret laws.	Differences between SIAM layers affect the interpretation of the regulations. Organisations may have different rules that conflict with each other.
6. Service Delivery and User Experience in SIAM	Speed as the priority due to the swiftly evolving technology and market dynamics. With customer needs undergoing rapid changes, the flexibility of suppliers becomes crucial in meeting these evolving requirements.	As service levels and expectations rise, there's a heightened focus on UX. Integration of AI and bots is crucial, as users seek efficient automation to save time. With decreased patience and attention spans, consistent fast service delivery becomes imperative to meet evolving demands.	Security is crucial due to rising cyber and political risks. Growing AI adoption requires stronger security measures to counter new forms of harassment and attacks. Customers are increasingly aware of these risks.
7. Strategic Considerations for SIAM	A strategic understanding of SIAM and the integration of benefits into the organization requires clear definition of roles and objectives. The goal is efficiency without additional administrative effort, leveraging automation, security, data management and end-user satisfaction.	The integrator and the customer can effectively develop service management through clear overall visibility, roles and responsibilities, automation support and rapid supplier changes. Supplier requirements are clear and measurable, and the customer understands the strategic importance of services to their organisation.	

Figure 1. Futures Table with broader and more descriptive explanations

Appendix: Workshop 2 Tables

Table 1. Workshop 2 notes of scenario 1

CTO/CEO/Customer	Service Manager/ Customer	Business Intelligence Officer/ Chief Information Officer/Integrator	Service Provider	Business Manager/User
New strategy due to a war -> fast offboarding and onboarding needed as we don't want to risk our reputation	Efficient processes will minimize the need for people	People are not needed so much anymore	With AI, estimated customer needs based on customer data and external sources (support management)	AI can show status reports of projects and ask add on questions beforehand meetings. In the meeting focus is on the most relevant things and points where human opinion is needed (manager)
Off- and onboarding is expected to be fast in (one month) because AI match-making allows it	Every potential problem is pre-emptively recognized	Lot of unlabeled data -> algorithms -> system integrator -> contracting agent & governance	Service delivery will happen automatically (SaaS service) by AI after customer has done agreement/order	Projects/people know the areas to develop themselves with AI as well (team)
Nullification: CEO would be a bot	Every IT service is integrated into perfectly working machine		AI is monitoring the whole service environment and will fix problems automatically before customer can even recognize them	Is incident is resolved directly -> money directly

Table 3. Workshop 2 notes of scenario 2

CTO/CEO/Customer	Service Manager/ Customer	Business Intelligence Officer/ Chief Information Officer/ Integrator	Service Provider	Business Manager/User
CEO has a personal assistant that reads their mind and advises on how to deal with different external factors such as war.	AI will provide decision makers access to all service related data, which will increase service quality.	Automation will be done for the decisions which are normal and standard.	Incident management: most of the incidents AI will inform customers when incident is solved, but in critical cases human will contact customers and go through the incident cases	I get personal help when I want it and need it. The systems are always tuned to my purposes as I want them independent of suppliers
They can make great analysis, taking into account numerous factors.	User experience is enhanced because highly functionating AI that has access to	Human interaction is needed for critical decision making.		I get the person and AI when I want a new service
However the CEO needs to take the responsibility of the decisions as CEO can't be a bot.		Information security is kept with both human and machine interaction.		
CEO can support body shopping of the best individuals with AI		The machine can guarantee systems automatically but human should asses it.		
		The AI is known as one challenging area so in decision making the human		

Table 3. Workshop 2 notes of scenario 3

CTO/CEO/Customer	Service Manager/ Customer	Business Intelligence Officer/ Chief Information Officer/Integrator	Service Provider	Business Manager/User
CEO/CTO is putting more money to personalized AI-Driven organizational change management (OCM) to enable secure AI. This is distributed alongside change agents who are trained by the people. AI does so much for us so we have budget to focus on OCM.	AI makes bad recommendations. People will start to question its use.	**(The interpretation of AI from the mind map):** In a Service Integration and Management (SIAM) ecosystem, governance is established with a 'human-led' approach, prioritizing human decision-making. This governance model, referred to as 'Model A,' serves as the foundation for the ecosystem. The 'marketplace' represents the environment where various services and solutions are available for integration. Within this marketplace, 'service providers' play a pivotal role in offering services, while 'AI' technologies contribute to enhancing capabilities. The 'system integrator' orchestrates the integration process, ensuring seamless operation. Legal considerations ('Law?') are accounted for, alongside customer engagement ('Customer A'). This illustration emphasizes the collaborative nature of SIAM ecosystems, highlighting the importance of human oversight, technical integration, legal compliance, and customer satisfaction.	**Service integrations:** We are not providing any customized integrations to our customers or partners due to security risks	Lots of security measures in using data and in services
			Service continuity: We use several security technology vendors, the best from the market, to be able to mitigate security risks in our service environment	I see what services could be good but accept that I can't get them.
			Security coaching: Our staff is well trained to be aware of security risks that are in our everyday life. Security training happens every	