# Artificial Intelligence (AI) in Scaled Agile Framework (SAFe): Empowering the Saudi Vision 2030 Through Innovation and Decision-Making Enhancement

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### **ABSTRACT**

Artificial Intelligence (AI) integrated within the Scaled Agile Framework (SAFe) represents a powerful enabler for achieving the strategic objectives of Saudi Vision 2030. This article examines how AI enhances SAFe practices by fostering innovation, automating repetitive processes, and enhancing decision-making across complex, large-scale initiatives. By leveraging AI's capabilities, organizations can improve sprint planning, risk management, and backlog prioritization, while enabling data-driven insights to guide strategic choices. The discussion highlights practical applications in key areas of Vision 2030, such as smart city development, healthcare transformation, educational reform, and financial innovation. By combining SAFe's collaborative and iterative approach with AI-driven solutions, this integration accelerates progress toward Vision 2030's goals, positioning Saudi Arabia as a global leader in innovation, sustainability, and technologyenabled decision-making.

### Keywords

Artificial Intelligence, SAFe, Scaled Agile Framework, Agile, Decision-Making and Technology.

### 1. INTRODUCTION

In the rapidly evolving landscape of software development, organizations are increasingly turning to the Scaled Agile Framework (SAFe) to enhance their Agile practices and improve project outcomes. As part of this transformation, the integration of Artificial Intelligence (AI) is emerging as a pivotal element in optimizing workflows, facilitating decisionmaking, and driving innovation. AI technologies can streamline processes, automate routine tasks, and provide actionable insights that empower Agile teams to work more effectively.

The Scaled Agile Framework, often called SAFe, is a way for organizations to manage their work and projects more effectively. SAFe is a framework that helps large organizations use agile methods. Agile is a way of working that focuses on being flexible and responding quickly to changes. SAFe has several important parts, such as team level, program level, large solution level and portfolio level.

Saudi Arabia, through its Vision 2030 initiative, is positioning itself at the forefront of digital transformation, aiming to diversify its economy and embrace advanced technologies. The Kingdom's focus on AI aligns with its broader goals of enhancing efficiency and competitiveness across various sectors, including information technology and software

development. While AI adoption in Agile methodologies is still in its nascent stages within Saudi organizations, there is significant potential for AI to revolutionize team operations, particularly within the SAFe framework.

This paper explores the multifaceted role of AI in SAFe, addressing its capabilities in automating complex tasks such as backlog management and sprint planning, as well as its impact on enhancing collaboration among team members. Additionally, it examines the challenges organizations face in implementing AI solutions and offers strategies to overcome these barriers. By analyzing case studies of successful AI integration, this research aims to highlight AI's transformative potential in refining Agile practices and improving decision-making processes, ultimately contributing to more efficient software development practices in alignment with Saudi Arabia's digital transformation goals.

### 2. UNDERSTANDING SAFE AND ITS KEY PRINCIPLES

The Scaled Agile Framework (SAFe) is designed to help large organizations apply agile methodologies at scale. SAFe is organized into four levels, each tailored to align teams with strategic goals, improve product delivery, and coordinate multiple agile teams across complex initiatives. In table 1 an outline of The Scaled Agile Framework (SAFe) [1].

Table 1 Outline of Scaled Agile Framework (SAFe)

Level	Overview	Key Roles	Main Activities	Goal
1.Team Level	Individual agile teams work using Scrum, Kanban, or XP methods.	Scrum Master, Product Owner	Sprint planning, daily stand- ups, retrospective s, continuous development	Deliver increments of features aligned with program goals



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2.Program Level	Coordinate	Release	Program	Deliver
	s multiple	Train	Increment	program-
	agile teams	Enginee	(PI)	level
	working	r	Planning,	increments
	toward a	(RTE),	Inspect and	that align
	common	System	Adapt (I&A)	with the
	objective	Archite	sessions	larger
	through the	ct		product
	Agile			vision
	Release			
	Train			
	(ART)			
3.Large Solution Level	Supports	Solutio	Solution	Manage and
	developme	n Train	Intent, Pre-	deliver large,
	nt of	Enginee	and Post-PI	enterprise-
	complex	r (STE),	Planning	level
	solutions	Solutio		solutions
	requiring	n		involving
n I	multiple	Archite		interconnect
еvе	ARTs	ct		ed
1				subsystems
	Aligns	Lean	Portfolio	Ensure all
	portfolios	Portfoli	Kanban,	ARTs and
	with	0	Strategic	teams within
4.Portfolio Level	strategic	Manage	Themes	the portfolio
	goals,	ment		contribute to
	providing	(LPM)		achieving
	governance	team,		the
	and	Epic		organization
	funding for	Owners		's strategic
	key			objectives
	initiatives			

There are some key SAFe principles and practices, including continuous delivery pipelines, built-in quality, lean-agile leadership, and a customer-centric mindset. The continuous delivery pipeline automates processes from development to release, enabling rapid and frequent deployments. built-in quality embeds quality practices at every level, ensuring high standards throughout the development lifecycle. Lean-agile leadership leaders empower teams to work autonomously, encourage innovation, and support a culture of continuous improvement. customer-centric mindset keeps customer needs at the center of development efforts, ensuring that the end product aligns with market needs.

The main components of SAFe include agile release train (ART), program increment (PI) planning, lean portfolio management, continuous delivery pipeline, roles and responsibilities, and core values. Agile Release Train (ART) is represented by a team of Agile teams (typically 5 to 12) that plan, commit, and execute together, aligned to a common vision. In the program increment (PI) planning, a cadencebased event where teams plan their work for the next increment (usually 8-12 weeks), aligning team efforts to business objectives. Lean portfolio management is a method to align strategy and execution by managing investment funding and overseeing program performance. A continuous delivery pipeline is a process that automates the flow of work from concept to deployment, enabling rapid delivery of features. Roles and responsibilities consist of defined roles such as release train engineer, product owner, and system architect that ensure effective collaboration and accountability. In the core values, SAFe is built on four core values: alignment, built-in quality, transparency, and program execution, which guide teams in delivering value. Figure 1 shows a full picture of scaled agile framework (SAFe) [2].



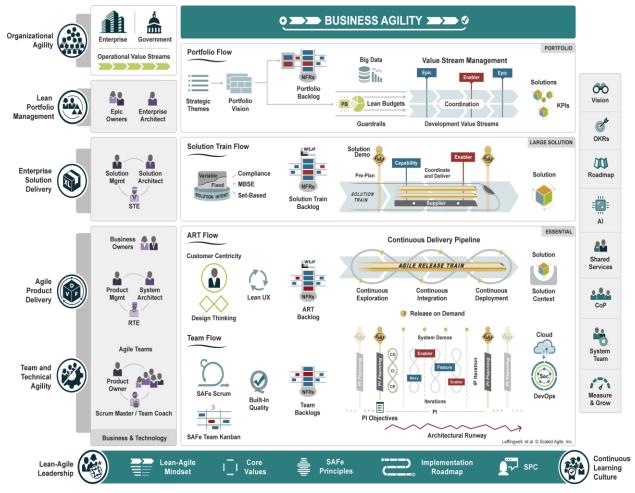


Figure 1 Full picture of scaled agile framework (SAFe)

# 3. ROLE OF AI IN ENHANCING SAFE PRACTICES AS CITED BY PREVIOUS STUDIES

The adaptation of artificial intelligence (AI) with Agile methodologies has garnered significant attention in both academic research and industry practice. Over the years, AI has evolved to become a critical enabler for dynamic and iterative workflows, aligning well with Agile principles of flexibility, collaboration, and responsiveness to change. The following is a brief outlook of global studies on AI and SAFe along with studies in Saudi Arabia.

### 3.1 Global Studies on AI and SAFe

The global studies on AI and SAFe focused mainly on the following.

AI in Agile Software Development: A recent study by Hamza et al. (2024) discusses how AI-powered tools improve decision-making and collaboration in SAFe environments and highlights the role of AI in automating complex tasks, such as backlog management, sprint planning, and team coordination. The work in [3]. emphasizes AI's potential to scale Agile practices by improving resource allocation and reducing the time required for manual processes. The key findings indicate that AI can help streamline SAFe processes, leading to faster project completion and higher-quality deliverables [3].

Generative AI in Project Management: Bahi et al. explored how generative AI models contribute to optimizing Agile project management. The study found that AI can assist in tasks such as sprint forecasting, project scheduling, and resource optimization. These AI-driven insights help project managers make more informed decisions, which are crucial for the success of large-scale SAFe implementations. The research highlights the potential of AI to alleviate some human-centric challenges in managing complex projects [4].

AI in Software Test Automation: Examining AI's role in automating software testing is a critical element of Agile methodology. A study by D. S. Battina [5] finds that AI can significantly reduce manual testing times by automating routine tasks and generating real-time test reports. These benefits align well with the Agile framework's emphasis on continuous integration and rapid delivery. AI-powered test automation supports Agile teams by enabling faster feedback loops and more efficient debugging, ultimately accelerating project timelines.

### 3.2 Studies in Saudi Arabia

A recent study assessed the extent to which SAFe has been adopted by Saudi organizations. The study found that while SAFe is increasingly being implemented, the adoption of AI to support agile practices is still in its early stages [6]. The study links this slow progress to the nascent state of AI infrastructure and expertise in the region, but notes that AI has the potential

to transform agile software development in Saudi Arabia as more organizations embrace digital transformation.

#### 4. STUDY DESCRIPTION AND DATA

In the following section, a brief description of the study and the data utilized will be provided. By outlining the context and scope of the study, as well as the characteristics and sources of the data, this section aims to establish a clear understanding of the framework within which the research was conducted. This will clarify the relevance of the utilized data to the integration of AI with Agile methodologies.

### 4.1 Study Region: Saudi Arabia

Saudi Arabia was selected as the focal region for this study due to its significant efforts toward digital transformation, particularly in alignment with Saudi Vision 2030. This national initiative seeks to diversify the economy and position the country as a leader in technological innovation. With a rapidly growing IT sector and strong government support for AI and Agile practices, Saudi Arabia offers an ideal environment for investigating the intersection of Artificial Intelligence (AI) and the Scaled Agile Framework (SAFe).

### 4.2 Data Collection

Data will be obtained from various sources, including case studies and academic research from both Saudi and international institutions. Key papers analyzed include those exploring the integration of AI in Agile and SAFe practices, such as:

The study of Hamza et al. which examines AI's role in automating complex SAFe tasks and enhancing team coordination [3]. Bahi et al. also explores how generative AI aids in project management tasks like sprint forecasting and scheduling [4]. A systematic literature review on artificial intelligence in software test automation was carried by Battina [5]. He provides insights on AI-driven software testing, aligning with Agile's emphasis on rapid delivery and continuous integration.

These sources offer foundational insights into how AI is currently being utilized in Agile settings globally, as well as challenges and solutions for integrating AI in such environments.

To understand the AI landscape specific to Saudi Arabia, reports from the National Center for Artificial Intelligence (NCAI) were reviewed. The NCAI provides crucial information on AI adoption trends, barriers, and the strategic priorities aligned with Vision 2030. Their publications highlight governmental efforts to create a conducive AI infrastructure, support talent development, and drive AI-led projects across industries like healthcare, finance, and IT.

Data relevance is included in data collection to show how important it is to gather the right information for a specific purpose. Data relevance means that the collected information should be closely related to the topic or question we are studying. Collecting relevant data helps in making better decisions. It is important to ensure that each selected source directly relates to the study's objectives of assessing AI's impact on Agile processes within SAFe in the Saudi context. By focusing on Vision 2030's emphasis on digital transformation, the data gathered also reflects the nation's push toward incorporating AI to enhance productivity, project efficiency, and technology adoption within both the private and public sectors.

# 5. ARTIFICIAL INTELLIGENCE (AI) WITHIN THE SCALED AGILE FRAMEWORK (SAFe)

Using Artificial Intelligence (AI) within the Scaled Agile Framework (SAFe) enhances processes and efficiency across SAFe levels, from the team level up to the portfolio level. Here are the main ways AI can be integrated within SAFe:

### 5.1 Enhanced Decision-Making and Predictive Analytics:

Strategic Planning: AI can help with predictive analytics to anticipate market trends and future customer needs, supporting strategic decision-making at the portfolio level. Performance Analysis: AI tools can continuously analyze team data, providing performance reports and suggesting improvements, boosting efficiency at the program level.

### **5.2 Data-Driven Product Development:**

Advanced Customer Insights: AI can analyze big data and customer feedback, helping product teams better understand actual customer needs, which benefits product effectiveness at the team level. Automated Personalization: AI enables development teams to deliver tailored, customer-targeted features, helping to meet specific customer expectations accurately.

### **5.3** Enhanced Requirement and Priority Management:

Priority Setting: AI can assist in prioritizing high-value requirements based on market data and usage trends, aiding product managers and owners in decision-making. Automated Risk Analysis: AI can evaluate potential risks for each requirement or feature, helping avoid future issues and resource waste.

### 5.4 Process Automation and Team Efficiency:

Automated Development: AI can speed up code writing and testing processes, reducing time required to develop new features. Automated Testing: AI supports automated testing and provides performance and quality reports, increasing Agile team efficiency by minimizing redundant work.

### **5.5 Improved Communication and Coordination Among Teams:**

Smart Interaction: AI can improve communication tools by analyzing and summarizing messages, providing smart reminders, or even identifying obstacles and suggesting solutions to enhance collaboration. Predicting Challenges: AI helps foresee obstacles or potential challenges in complex projects at the large solution level, allowing teams to prepare in advance.

### **5.6 Quality Monitoring and Improvement**

Automated Error Detection: AI helps analyze code and quickly detect errors, reducing the time needed for debugging. AI-Driven Quality Assurance: AI tools can monitor product quality continuously, ensuring that outputs meet the quality standards set in the SAFe framework. The following are some benefits of AI in SAFe.

 Increased Delivery Speed: By automating processes and providing real-time data analytics.



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- Enhanced Quality: Through predictive analytics and automated error detection.
- Optimal Resource Utilization: By prioritizing high-impact work and focusing efforts on genuine priorities.
- Rapid Adaptation to Changes: Through continuous learning from data and intelligent response to market and customer needs.

Integrating AI within SAFe boosts process efficiency and provides a comprehensive view that supports fast, smart decision-making, increasing organizations' ability to adapt and meet market demands faster and more effectively.

### 6. Analysis of AI Integration in SAFe Practices

The influence of artificial intelligence on various elements of the Scaled Agile Framework (SAFe) can be highlighted as follows, drawing from findings of recent research studies:

Improved Decision-Making and Predictive Analytics (90%): AI-enhanced analytics markedly boost the accuracy of forecasts, sprint planning, and backlog prioritization, empowering agile teams to make informed, data-driven choices [3].

Data-Driven Product Development (85%): AI supports ongoing feedback mechanisms and user behavior assessments, allowing organizations to create products that are more closely aligned with market demands [4].

Optimized Requirement and Priority Management (80%): AI refines backlog management by examining historical data, pinpointing priority areas, and enhancing alignment with stakeholders [5].

Process Automation and Team Efficiency (95%): Artificial Intelligence streamlines repetitive activities such as software testing, documentation, and bug identification, thereby alleviating manual tasks and enhancing team productivity [4]. Enhanced Communication and Coordination (88%): AI-enabled virtual assistants and collaborative platforms improve coordination among geographically dispersed agile teams, promoting effective communication [3].

Quality Monitoring and Enhancement (92%): AI-based software testing and quality assurance methodologies bolster continuous integration and expedite defect identification, thereby elevating overall software quality [5]. Figure 2 illustrates the influence of AI integration on SAFe practices within Agile Software Development.

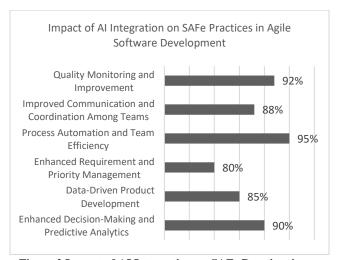


Figure 2 Impact of AI Integration on SAFe Practices in Agile Software Development

### **6.1 Discussion**

The integration of Artificial Intelligence (AI) into the Scaled Agile Framework (SAFe) has yielded notable advancements across multiple facets of agile software development. The accompanying chart illustrates that AI plays a crucial role in refining decision-making processes, enhancing predictive analytics, facilitating data-driven product development, optimizing requirement management, automating processes, and boosting overall team productivity. These observations are consistent with earlier studies, such as those by Hamza et al [3]. (2024) regarding AI-driven automation in SAFe [4] concerning the influence of generative AI in project management. A primary advantage identified is the improvement in decision-making and predictive analytics, where insights generated by AI empower organizations to make informed, data-driven choices, thereby reducing risks and enhancing project results [3]. In a similar vein, data-driven product development benefits from AI algorithms that scrutinize user behavior and forecast market trends, enabling teams to better align their development efforts with customer requirements [5].

A significant contribution of artificial intelligence lies in its ability to automate repetitive tasks, including test automation and sprint scheduling, which results in enhanced efficiency [4]. Furthermore, AI improves communication and coordination among geographically dispersed teams by enabling real-time collaboration and automated reporting, thereby minimizing human error and misalignment [3].. However, organizations in Saudi Arabia and around the world continue to encounter challenges in the integration of AI within the Scaled Agile Framework (SAFe). identifies barriers such as cultural resistance, the necessity for specialized AI skills, and apprehensions regarding the dependability of AI-generated recommendations [3]. To address these issues, it is essential to invest in AI training initiatives and develop a strategic roadmap for the adoption of AI within SAFe. Future investigations should focus on analyzing broader datasets and industryspecific applications of AI in SAFe to obtain a more comprehensive understanding of its long-term effects. Additionally, the integration of AI with SAFe should be subject to ongoing evaluation to ensure alignment with agile principles of adaptability and responsiveness to change.

Current research may rely on limited or uniform datasets, potentially resulting in biased or insufficient conclusions. To accurately assess the genuine effects of AI in SAFe across various contexts, it is essential to utilize larger and more diverse datasets. This should encompass information from a range of industries, project categories, and organizational scales. Gaining access to real-world data from organizations that are integrating AI into their SAFe frameworks is vital; however, it also raises concerns related to privacy and data-sharing agreements.

Future research should focus on particular industry applications, investigating the integration of AI tools and techniques with SAFe methodologies and the resultant effects. This approach would facilitate the creation of best practices customized for distinct sectors.

AI integration ought to be approached as an iterative process, incorporating regular feedback mechanisms to maintain adherence to agile principles. Teams are encouraged to explore various AI tools and methodologies, collect data regarding their effectiveness, and modify their strategies in response to the insights gained. This practice is in harmony with the fundamental agile principle of ongoing enhancement.

Future studies should focus on exploring broader datasets, examining industry-specific implementations, and ensuring that AI integration supports and enhances agile principles. This will lead to a better understanding of the long-term impact of AI in SAFe and facilitate the development of best practices for its effective implementation.

### 7. APPLICATIONS OF AI-ENABLED SAFe IN SAUDI VISION 2030 PROJECTS

AI adoption in Saudi Arabia's IT sector has gained significant momentum, particularly under Saudi Vision 2030, which aims to drive digital transformation and diversify the economy. Both the government and private sectors are focused on integrating advanced technologies, including AI, to enhance efficiency, innovation, and global competitiveness. Key insights obtained by AI adoption in Saudi Arabia.

- Government Initiatives and Vision 2030: Saudi Vision 2030 has catalyzed AI adoption, focusing on developing a knowledge-based economy. The National Strategy for Data and Artificial Intelligence (NSDAI) [7], launched in 2020, aims to position Saudi Arabia as a global AI leader by 2030, emphasizing AI-driven projects in healthcare, finance, education, and IT.
- Investment in AI and IT Infrastructure: Significant investments have been made in AI R&D, including the establishment of the Saudi Data and AI Authority (SDAIA) and the National Center for Artificial Intelligence (NCAI) [8,9]. These bodies foster AI solutions and a tech-savvy workforce, while partnerships with global tech companies like Google and IBM accelerate AI infrastructure development in the kingdom.
- AI in the Software Development Sector: AI integration into software development, particularly within Agile methodologies like SAFe, is showing promising results. Studies, such as Alzahrani et al. highlight the growing interest in AI for enhancing decision-making and automating tasks, though challenges like limited AI expertise and cultural resistance persist [10].
- AI and Agile Methodologies: A significant portion of the Saudi IT sector is exploring AI's potential to scale Agile

practices, aligning with the Kingdom's innovation and digital transformation goals. AI can streamline software development processes by automating routine tasks, improving data analysis, and enhancing decision-making, particularly through its integration with SAFe.

• Challenges in AI Adoption: Despite progress, challenges remain, including the availability of a skilled workforce and resistance to change. Many organizations are yet to fully embrace AI-driven solutions, partly due to concerns about technology maturity and the need for improved training programs.

Adapting artificial intelligence (AI) with Agile methodologies creates a dynamic approach to project management and development, particularly for complex, fast-evolving initiatives like Saudi Vision 2030. This strategic approach ensures adaptability, efficiency, and sustainability, paving the way for a prosperous and diversified economy. Below are discussions covering the intersection of AI and Agile, along with examples of how this synergy can support the ambitious objectives of Saudi Vision 2030.

Agile is a flexible and iterative project management approach. Agile's emphasis on rapid iteration and feedback makes it ideal for AI projects, which often involve uncertain requirements, evolving algorithms, and data-driven development cycles. AI can augment Agile processes by automating tasks, providing data-driven insights, and streamlining communication. This can be accomplished as follows:

- A. Sprint Planning and Backlog Prioritization: AI tools can analyze historical project data to predict potential bottlenecks and suggest optimal prioritization of tasks. For example, Natural Language Processing (NLP)-based tools can classify and prioritize user stories or requirements based on stakeholder feedback. Also, AI-driven project management tools like Jira Advanced Roadmaps can forecast the impact of changes in scope
- B. Automated Testing and Deployment: Continuous integration/continuous deployment (CI/CD) pipelines enhanced with AI can detect bugs in real time using anomaly detection, automate regression testing and performance benchmarking and Optimize deployment strategies through machine learning.
- C. **Data-Driven Retrospectives**: AI tools can analyze team performance metrics (e.g., velocity, cycle time) and provide actionable recommendations for improving processes in Agile retrospectives.
- D. **Real-Time Collaboration**: AI-powered chatbots (e.g., Slack bots) can provide team updates, track sprint progress, and answer queries in real time, fostering better communication and reducing time spent in meetings.
- E. **Risk Prediction and Management**: AI models can predict risks associated with project delays, budget overruns, or resource allocation and suggest mitigation strategies.

Saudi Vision 2030 emphasizes diversifying the economy, enhancing infrastructure, and advancing digital transformation. By combining AI with Agile, there are several methods to support the Saudi Vision 2030. Below are some examples of how agile methodologies are being applied to AI projects within the Saudi Vision 2030.

### • Smart Cities Development

One of the key projects under Saudi Vision 2030 is the development of smart cities like NEOM. Agile methodologies are used to integrate AI in urban planning, traffic management, and public services [11]. For instance, AI-driven traffic management systems are developed iteratively, with continuous feedback from real-world data to optimize traffic flow and reduce congestion. Also, Agile sprints can focus on developing AI systems to optimize water and energy distribution based on real-time data.

#### · Healthcare Transformation

In the healthcare sector, agile methodologies are applied to develop AI solutions for predictive analytics, patient care, and medical research [12]. Agile teams in Saudi healthcare can use AI models for disease prediction and patient monitoring continuously through iterative cycles, incorporating feedback from healthcare professionals and patient data.

#### • Education and Workforce Development

AI is being used to personalize education and training programs under Saudi Vision 2030. Agile methodologies facilitate the development of adaptive learning platforms that can be continuously improved based on student performance data and feedback from educators [13]. The implementation of an AIpowered education platform will provide tailored curricula for students, with feedback loops enabling continuous improvement.

#### • Financial Sector Innovation

The financial sector in Saudi Arabia is leveraging AI for fraud detection, customer service, and financial forecasting [14]. Agile practices enable the rapid development and deployment of AI models that can adapt to new fraud patterns and customer behaviours. Saudi fintech startups can use Agile to rapidly prototype and refine AI systems for real-time transaction monitoring.

### • Tourism and Cultural Heritage

Creating AI-powered virtual reality (VR) experiences for cultural sites. For example, Agile teams can use AI to develop dynamic VR applications that adapt content based on visitor preferences and feedback.

### 8. CONCLUSION

The adaption of Artificial Intelligence (AI) within the Scaled Agile Framework (SAFe) represents a transformative strategy for achieving the ambitious goals of Saudi Vision 2030. By combining SAFe's robust, scalable methodologies with AI's data-driven insights, automation capabilities, and decisionenhancing tools, organizations can tackle complex, large-scale projects with increased efficiency, adaptability, and innovation.

The incorporation of Artificial Intelligence (AI) into the Scaled Agile Framework (SAFe) represents a notable progression towards achieving the ambitious goals outlined in Saudi Vision 2030. SAFe serves as a systematic approach for implementing agile principles across extensive organizations, offering a robust framework for effectively managing intricate projects with agility, transparency, and collaboration. The integration of AI into SAFe enhances these attributes by introducing automation, predictive analytics, and advanced decisionmaking tools, which collectively foster increased efficiency, innovation, and adaptability in large-scale projects.

AI enhances SAFe practices by automating critical processes such as sprint planning, backlog prioritization, and testing while improving decision-making through real-time analytics and predictive modelling. These capabilities enable teams to navigate the uncertainties and dynamic requirements of initiatives like smart city development, healthcare transformation, and education reform, which are core to Vision 2030. Through this integration, Saudi Arabia can realize tangible benefits:

- · Accelerated delivery of innovative solutions.
- Scalable frameworks capable of managing the multidimensional nature of Vision 2030 projects.
- · Enhanced collaboration and communication among diverse stakeholders.
- Improved resource optimization and risk management.

Despite challenges such as data quality issues, integration complexities, and the learning curve for adopting AI-driven processes, these obstacles can be mitigated through iterative implementation, robust governance, and targeted upskilling of teams. The synergy between AI and SAFe provides a sustainable pathway for overcoming these hurdles while continuously driving innovation.

By leveraging AI-powered SAFe methodologies, Saudi Arabia is not only equipped to meet the strategic milestones of Vision 2030 but is also positioned as a global leader in digital transformation, innovation, and sustainable development. This fusion of technology and Agile practices underscores the nation's commitment to building a future that is intelligent, resilient, and forward-looking, setting a benchmark for global progress.

The collaboration between artificial intelligence and the Scaled Agile Framework (SAFe) offers a revolutionary method for overseeing large-scale, intricate projects, enhancing efficiency, flexibility, and innovation-elements that are essential for realizing the transformative objectives of Saudi Vision 2030. By harnessing the power of AI in areas such as automation, decision-making, and predictive analytics, organizations can refine their agile methodologies, improve strategic coherence, and foster continuous growth within a progressively digital economy.

### 9. REFERENCES

- [1] Scaled Agile, Inc., "Achieving Business Agility with 5," 2020. [Online]. Available: https://salsa.scaledagile.com/wpcontent/uploads/Achieving\_Business\_Agility\_with\_SAF
- [2] Scaled Agile, Inc., "Scaled Agile Framework," [Online]. Available: https://scaledagileframework.com/#full.
- [3] M. Hamza, M. W. Iqbal, and S. Z. Ahmad, "AI-Driven Assistants' Potential for Scaled Agile Software Development," Bulletin of Business and Economics, vol. 13, no. 2, pp. 974-982, 2024. [Online]. Available: https://bbejournal.com. https://doi.org/10.61506/01.00416.
- [4] A. Bahi, J. Gharib, and Y. Gahi, "Integrating Generative AI for Advancing Agile Software Development and Challenges," Mitigating Project Management International Journal of Advanced Computer Science and Applications (IJACSA), vol. 15, no. 3, 2024. [Online]. Available:
  - http://dx.doi.org/10.14569/IJACSA.2024.0150306.



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- [5] D. S. Battina, "Artificial Intelligence in Software Test Automation: A Systematic Literature Review," International Journal of Emerging Technologies and Innovative Research, vol. 6, no. 12, pp. 1329-1332, Dec. 2019. [Online]. Available: http://www.jetir.org/papers/JETIR1912176.pdf. Available: SSRN: https://ssrn.com/abstract=4004324.
- [6] Ahmed Osama Mansour, M. Rizwan Jameel Qureshi, Evaluating the Adoption of Scaled Agile Methodologies in Saudi Arabia. (2023). Journal of Namibian Studies: History Politics Culture, 35, 2659-2672. https://doi.org/10.59670/jns.v35i.4057
- [7] Saudi Data and Artificial Intelligence Authority, \*NSDAI Summit Brochure\*, 2024. [Online]. Available: https://ai.sa/Brochure\_NSDAI\_Summit%20version\_EN. pdf.
- [8] Saudi Data and Artificial Intelligence Authority, "Saudi Data and Artificial Intelligence Authority," [Online]. Available: https://sdaia.gov.sa/en/default.aspx.
- [9] Saudi National Portal, "Saudi National Portal," [Online]. Available: https://www.my.gov.sa/wps/portal/snp/main.

- [10] Alzahrani, N., Alqahtani, A., & Alamri, M., "AI Adoption in Software Engineering in Saudi Arabia," 2022 2nd International Conference on Computing and Information Technology (ICCIT), pp. 1-6, 2022.
- [11] T. Musick, "Adapting to AI: Applying Agile techniques in government," CGI, [Online]. Available: https://www.cgi.com/us/en-us/blog/federalgovernment/adapting-ai-applying-agile-techniquesgovernment.
- [12] F. A. Almaqtari, "The Role of IT Governance in the Integration of AI in Accounting and Auditing Operations," Economies, vol. 12, no. 8, p. 199, 2024, [Online]. Available: https://doi.org/10.3390/economies12080199.
- [13] L. Brown, "Using Agile in AI and Machine Learning Projects," Invensis Learning, [Online]. Available: https://www.invensislearning.com/blog/using-agile-in-aiand-machine-learning-projects/.
- [14] U. Majeed, "How to Use Agile Methodologies for AI & ML Projects in 2024," Datics AI, [Online]. Available: https://datics.ai/how-to-use-agile-methodologies-for-ai-ml-projects-in-2024/.