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Abstract. [Context and Motivation] A growing emphasis on integrating social responsibility into requirements engineering (RE) and Agile practices is vital to ensuring the sustainability of modern software development. This paper explores the evolving intersection of Agile practices and RE, emphasizing the alignment of both functional and non-functional requirements, including transparency, ethics, and social responsibility, throughout the software development lifecycle. **[Question/Problem]** The lack of effective integration between RE and agile practices poses challenges to achieving responsible software development that aligns with ethical standards and addresses societal needs. **[Principle Idea/Results]** The ultimate vision is to create software systems that are not only functionally robust but also ethically sound and socially aligned, guiding both business objectives and societal well-being. Addressing these research areas will enable the development of methodologies that holistically integrate ethical standards and societal values within RE Agile practices. **[Contribution]** Through a systematic review of existing research and practices, the paper proposes future research directions aimed at advancing value-driven processes, interdisciplinary design models, and iterative mechanisms for the continuous assessment and integration of ethical considerations in RE Agile.
Keywords: Requirements Engineering, Agile Practices, Software Development, Social Responsibility, Social Value.

1 Introduction

The rise of Agile practices has transformed software development, making it essential to integrate social responsibility. As software becomes more pervasive, rethinking RE is vital to balance functional needs with ethics, transparency, and social responsibility [1]. The growing trust deficit and ethical concerns in technologies like AI underscore the need for responsible practices to maintain user trust. Agile methodologies, with their iterative and collaborative nature, are well-suited for integrating social responsibility

into RE. Nevertheless, their inherent adaptability renders it difficult to systematically tackle both functional and non-functional requirements, especially in the realms of ethics and sustainability [2]. Agile RE often lacks formality and consistency, relying heavily on individual skills and experiences, which can complicate efforts to embed social responsibility effectively [3].
Non-functional requirements like privacy, security, transparency, and fairness are vital to responsible software development and must be integrated into Agile RE processes from the outset, ensuring both functional and non-functional needs are met [4, 5]. Moreover, corporate social obligation (CSR) can now be valuable to software program improvement, and Agile methodologies, with their scalability, offer an awesome framework for integrating CSR throughout the development lifecycle. Model-driven approaches support effective CSR integration into software systems [6]. Additionally, domain-specific modeling languages allow for a structured representation of CSR concerns, ensuring that Agile RE aligns with societal values and environmental considerations [7]. However, Agile practices in large-scale systems face challenges in maintaining consistent social responsibility. Continuous stakeholder engagement and effective communication of requirements are essential to align development with sustainability goals and social considerations [3, 8]. Additionally, Software Quality Assurance (SQA) facilitates make certain compliance with functional and non-purposeful requirements in Agile approaches. Future SQA must comprehensively assess system performance, ethical soundness, and social alignment [9]. Continuous testing in Agile ensures adherence to social responsibility and ethical standards. Clear guidelines for quality requirements are needed to address user consent, data security, transparency, and fairness in RE [4]. Adhering to these principles not only ensures that Agile teams meet functional objectives but also contributes to societal well-being by developing software that aligns with social values and ethical standards.

In summary, the next wave of RE could evolve to align Agile practices with social responsibility, embedding human values, social responsibility principles, and ethical considerations throughout the software development lifecycle [10]. Aligning functional requirements with societal needs is crucial. Continuous stakeholder engagement, iterative quality assurance, and a value-driven RE approach are key to success. Consequently, this study aims to address a key research question: How can RE and agile practices be effectively integrated to ensure responsible software development that aligns with ethical standards and societal needs? This paper explores integrating social responsibility into Agile RE and product development. It opinions the modern-day kingdom of research (Section 2), proposes a destiny imaginative and prescient (Section 3), outlines studies instructions (Section 4), and discusses challenges and opportunities in implementation (Section 5), concluding with the anticipated influences (Section 6) and references (Section 7).

2 Related Work

Research on socially responsible software highlights the need to integrate social values and Agile practices, identifying key gaps for further exploration through qualitative

meta-synthesis [11, 12]. It reviews and integrates qualitative studies, offering insights into complex issues. This method is ideal for exploring socially responsible software development by identifying patterns in RE, ethics, human values, and Agile practices.

Social Responsibility in Software Development. Academic inquiries emphasize the importance of socially responsible software by prioritizing non-functional requirements, including trust and ethical considerations [1]. The paper advocates embedding CSR in software design to address ethics and build trust but lacks practical methods. Future research should develop concrete strategies for effective implementation.

Human Values in RE. A survey of 56 practitioners provides insights into a four-step process for embedding human values in RE [10]. The research shows that integrating human values in RE improves value identification and feature alignment. However, broader validation is needed to confirm its generalizability across different contexts.

Domain-Specific Modelling Language for CSR. The study proposes a domain-specific modeling language (DSML) and a metamodel for CSR, providing structured tools for representing CSR concepts in software engineering [7]. The DSML shows potential for guiding CSR practices in software design but is limited by a single case study. Broader research across various domains is needed to test its applicability and adaptability.

Agile RE: Stakeholder Engagement. A body of research examines methodologies and artifacts in Agile RE, focusing on stakeholder and user participation in Agile Software Development (ASD) [13]. The research highlights stakeholder collaboration, documentation, and NFR management but lacks scope. Broader studies are needed, particularly on integrating NFRs into Agile practices.

Large-Scale Agile Development Challenges. A study on large-scale Agile RE identifies 24 challenges across six themes, mapping solutions from industry practices and frameworks like SAFe and LeSS [14]. Though insightful, this study's focus on seven companies limits its generalizability. Further research is needed to validate its findings across diverse Agile contexts, including smaller projects and software-specific setups.

Mapping Agile RE. A comprehensive review mapping Agile RE discusses gaps in areas like requirements elicitation, validation, and change management [2]. The study reviews 2171 papers, identifying challenges in Agile RE, but bias and lack of validation highlight the need for further research to propose solutions.

Social Initiatives in Agile Organizations. Research shows that social initiatives like pro-ecological activities, health programs, and community support improve corporate image, sustainability, and stakeholder relations in Agile organizations [15]. The study's survey-based, limited scope calls for broader, longitudinal analysis across regions for more comprehensive evaluation.

Ethical, Social, and Legal Considerations in Agile Development.. The iTRACK project demonstrates how iterative ELSI integration in Agile development effectively addresses privacy and ethical issues in crisis management [16]. The study shows the benefits of iterative ELSI assessments, but its single-project focus limits broader applicability. Further research across diverse projects and domains is needed for a universal Agile ELSI approach.

The literature review's summary, limitations, and results are presented in Table 1:

Table 1. Literature review summary

Ref	Summary	Limitations	Results
[1]	The paper advocates CSR principles to address trust issues in AI, IoT, and cloud tech, focusing on NFRs like trust, ethics, and transparency.	The research is conceptual, lacking methods and validation, requiring further practical studies to implement the proposed NFRs.	The paper proposes integrating Trust, Ethics, Transparency, Privacy, Safety, and Security as key NFRs to create socially responsible, trust-building software.
[10]	The paper examines how considering human values in RE aligns software features with user values, based on a survey of 56 practitioners. A four-step elicitation process is suggested.	The study is based on a single survey and lacks empirical validation across different contexts, needing further research.	Considering human values in RE enhances value identification, feature alignment, and broader thinking. A four-step process is provided for values-aligned features.
[7]	The paper proposes a DSML for CSR, offering a metamodel and UML profile, validated by a case study.	The DSML is validated by a single case study, limiting generalizability; more diverse studies are needed.	A CSR metamodel and UML profile were developed to model CSR in software engineering.
[13]	The paper reviews Agile RE, focusing on stakeholder involvement and identifying relevant methodologies and artifacts.	The study is limited by its scope and reliance on predefined protocols, possibly missing relevant studies.	The study identifies key aspects of Agile RE such as stakeholder involvement, user perspective, artifacts for requirements documentation, and challenges in NFRs.
[14]	The paper identifies 24 RE challenges in large-scale Agile development and maps solutions from practices like SAFe and LeSS.	The study, based on seven companies, may not generalize to smaller or purely software-driven setups.	The research identifies key RE challenges in large-scale Agile, maps solutions, and suggests areas for further research.
[2]	The research reviews 2171 papers on Agile RE, narrowing to 104, and identifies 15 key areas, including gaps in requirements elicitation and change management.	The study's scope may miss some research, and classification criteria could introduce bias, with many gaps lacking empirical validation.	Key RE topics in Agile are analysis, validation, process quality, and NFRs. The study identifies 24 challenges and calls for more research on requirements sources and change management.
[15]	The paper highlights how social activities in Agile organizations, like pro-ecological and health initiatives, improve flexibility, innovation, corporate image, and sustainability.	The study's survey data may be subjective and geographically limited, lacking longitudinal analysis and broader context.	Agile organizations prioritize pro-ecological and health activities, enhancing sustainability and stakeholder relations.
[16]	The paper explores integrating ELSI into Agile development through the iTRACK project, improving privacy and ethics in humanitarian tech.	The study's focus on the iTRACK project limits generalizability, and the Agile ELSI approach needs further development and wider application.	The paper suggests that iterative ELSI assessment in Agile development improves privacy, ethics, and flexibility, effectively addressing the evolving needs of crisis management.

Previous research emphasizes integrating social responsibility, human values, and stakeholder needs into Agile RE for responsible software development. However, practical gaps remain. Future studies should expand scope, employ diverse case studies, and create strategies aligning Agile RE with ethical goals. The next section presents a vision for addressing these challenges.

3 Vision for the Future

Advancing technology calls for embedding social awareness into both RE and Agile practices to deliver software that meets social responsibility standards. The future vision emphasizes aligning these practices with ethical and societal considerations. As noted in [17], Future Agile and RE practices will embed social responsibility across the software lifecycle. Washizaki et al.'s SE4BS approach highlights traceability from business goals to uphold societal values. Furthermore, a cross-disciplinary framework for value-oriented design encourages comprehensive stakeholder inclusion and decision-making, ensuring holistic outcomes, as mentioned in [18]. Empirical studies like NaPiRE highlight challenges, including incomplete requirements and communication gaps, emphasizing the need for standardized practices [19]. Incorporating value-sensitive design and continuous ethical improvements can align Agile processes with both functional and non-functional requirements, as highlighted in [20], fostering a future where value, ethics, and societal well-being are central to RE and Agile methodologies. This research envisions a value-driven approach aligning business goals with societal needs through ethical, traceable, and flexible Agile processes. Organizations adopting this approach will build stakeholder trust, increase adaptability, and meet demands for transparency, fostering ethical decision-making and collaboration that benefits both the organization and its community. A summary of the future vision of the research field is presented in Table 2:

Table 2. Summary of the future vision

Aspect	Current Vision	Proposed Future Vision
Value-Driven Process	Emphasizes traceability from business ideas to software, focusing on aligning software development with societal values [17].	Develop comprehensive approach or framework to link software requirements directly to ethical and social considerations.
Cross-Disciplinary Value-Oriented Design	Promotes multidimensional value integration across stakeholders, considering both functional and non-functional aspects [18].	Incorporate interdisciplinary insights to enhance system value, balancing economic, ethical, and social factors. Innovation approaches such as Design Thinking could plays a undeniable role in this vision.
Challenges in Agile RE	Identifies issues like incomplete requirements and communication flaws, calling for improved alignment with social responsibility [19].	Develop structured methodologies to ensure RE-Agile incorporates ethical considerations systematically. Developing conceptual models could strongly support this purpose.

Iterative Improvement in Social Responsibility	Agile practices are naturally iterative, allowing for incremental alignment with social values but need better guidelines [20].	Enhance Agile methodologies with mechanisms for continuous assessment and integration of ethical concerns.
Interdisciplinary Collaboratoin	Current approaches are grounded in RE and software engineering principles with some reference to societal impacts.	Foster collaboration across engineering, business, and social sciences to create socially responsible systems.
Core Conceptual Model for Social Values	Current conceptual models of RE primarily focus on its broader scope and process groups [21].	The future vision could involve developing the RE conceptual model that is centered on social values.

The future vision for using RE and Agile to produce and launch social responsible-friendly software products emphasizes aligning business goals with societal needs through traceability, ethical integration, and interdisciplinary collaboration. It aims to enhance methodologies and Agile processes for creating socially responsible and efficient software systems.

4 Proposed Research Direction

This section proposes research directions for integrating social responsibility into RE and Agile practices. Key areas include developing frameworks and methodologies that align software processes with ethical, social, and stakeholder needs, as summarized in Table 3:

Table 3. Detailed proposed research directions

Research Aspect	Proposed Research Direction
Value-Driven Process	Develop traceability frameworks to link ethical principles (e.g., fairness, privacy) to functional requirements, ensuring clear design-to-implementation mapping.
Cross-Disciplinary Value-Oriented Design	Create integrated design models that incorporate business impact analyses, ethical trade-off evaluations, and social sustainability assessments within RE practices.
Challenges in Agile RE	Design structured practices, such as ethical user stories or acceptance criteria, to consistently incorporate ethical considerations into Agile sprints and backlog refinement.
Iterative Improvement in Social Responsibility	Use Agile retrospectives to create feedback loops for refining social responsibility goals during development.
Interdisciplinary Collaboration	Implement cross-functional workshops bringing together engineers, business stakeholders, and ethicists to co-develop socially responsible software solutions.
Core Conceptual Model for Social Values	Design a value-driven RE model that embeds social responsibility throughout the software development process.

This research proposes integrating social responsibility into RE and Agile through frameworks aligning software processes with ethical and stakeholder needs. Practical steps might include ethical user stories, interdisciplinary workshops, and traceability tools to gradually embed social responsibility into development practices.

5 Challenges and Opportunities

This section explores the challenges and opportunities of integrating socially responsible RE into Agile practices. Key challenges, such as Agile adoption struggles, stakeholder resistance, and a lack of standardized ethical frameworks, may make social responsibility feel burdensome. Adaptable frameworks and education can ease integration, enhancing brand loyalty and innovation. Industry-specific models in health, digital health, and fintech further support this shift, though success requires a collective commitment to embedding sustainability and ethics into development.

6 Conclusion

This section highlights the critical shift towards socially responsible Agile and RE practices, emphasizing the alignment of software development with social, economic, and ecological sustainability. As software pervades various sectors, integrating RE with these three sustainability dimensions is vital for addressing functional, societal, and environmental needs. This value-driven approach promotes interdisciplinary collaboration and ethical accountability. Bridging research gaps in this area will foster robust frameworks that support a responsible and sustainable evolution in software product management.

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