

Evaluating a Behavioral Software Engineering (BSE)-informed framework for smoother AI integration by Software Engineering organizations

Thank you for taking the time to participate in this survey, conducted as part of my Master's Thesis! The objective is to evaluate the usefulness of a proposed *Behavioral Software Engineering* (BSE)-informed solution framework. A framework that aims to facilitate AI integration in Software Engineering organizations with a view to improve internal work processes, focusing on behavioral aspects. The proposed framework was structured based on challenges that were shared by practitioners of organizations that are in the early phases of the AI integration process. Therefore, its purpose is to facilitate the initialization of the AI-driven organizational change, rather than providing a holistic approach that will act as an one-size-fits-all solution.

Your honest feedback is invaluable for my research, enabling me to refine the model, identify potential gaps, and improve its relevance to industrial needs. The survey is expected to last around 20 minutes.

Please be assured that your participation remains confidential, and your responses will be used solely for research purposes. If you have any questions or concerns, feel free to contact Theodoris Tavantzis at gustavth@student.gu.se.

I truly appreciate your input. Thank you for devoting the time to participate in this survey.

Key Definitions:

- **Behavioral Software Engineering (BSE):** The study of the cognitive, behavioral and social aspects at different levels relating to the work of software engineers. The analysis can be conducted focusing on the individual, group or organizational level.

* Indicates required question

1. I agree to participate in this research. I understand that I can withdraw from this study at any point.

Mark only one oval.

☐ Yes *Skip to question 2*

☐ No

Participant's Background

2. Please enter your age in years. *

3. Please select the pronouns you use. *

Mark only one oval.

☐ He/Him

☐ She/Her

☐ They/Them

☐ Prefer not to say

☐ Other:

4. What is the domain of your organization? *

Mark only one oval.

- ☐ Aerospace
- ☐ Automotive
- ☐ Education
- ☐ Finance
- ☐ HealthCare
- ☐ Public Sector
- ☐ Telecommunications
- ☐ Other: _____

5. How long have you been working in this industry (in years)? *

6. What is your current job role/designation in your company? *

7. How long have you been working in this role (in years)? *

Current AI integration landscape

8. Select the most critical challenges your organization faces when integrating AI to improve internal work processes?

Tick all that apply.

- ☐ External communication
- ☐ Internal communication
- ☐ Considerate use of external AI with company's data
- ☐ Risk aversion due to sensitive data
- ☐ Adaptation to global and local data legislation
- ☐ Cross-Functional Collaboration
- ☐ Ensuring organizational alignment
- ☐ Handling differing views regarding AI transformation
- ☐ Inter-generational Collaboration
- ☐ Public sector's unique nature
- ☐ Job displacement
- ☐ Lack of deep AI knowledge and understanding
- ☐ Lack of patience to work with AI
- ☐ Keeping up with AI advancements
- ☐ Lack of skills due to AI (Over-reliance on AI leads to a decline in problem-solving and hands-on capabilities)
- ☐ Necessity to adjust skillset
- ☐ Balance automation with human supervision
- ☐ Considering AI as a team member, instead of a tool
- ☐ Contextual Use of AI (Recognize cases where AI use is effective or is not effective)
- ☐ Establish balance in using internal and external AI solutions
- ☐ Over-reliance on AI
- ☐ Purpose-driven AI adoption
- ☐ Other: _____

9. How has your organization dealt with these challenges? (Scale: 1 = Not successfully, 5 = Very successfully)

Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Does your organization have a defined strategy for AI integration? *

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ Not sure

11. If yes, how do you feel with your organization's AI integration strategy? (Scale: 1 = Not satisfied, 5 = Very satisfied)

Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The dimensions of the proposed framework

The proposed solution consists of the following nine dimensions that pertain to different aspects the process of AI integration:

- **Leadership:** enables AI adoption by fostering urgency, shared needs, and collaboration and leveraging talent and innovation to achieve small wins.
- **Organizational Dynamics:** secures that both internal (e.g., leadership alignment) and external (e.g. industry partnerships) factors are managed to facilitate AI integration.
- **AI Strategy Evaluation:** ensures the effective AI integration by establishing continuous

monitoring mechanisms, such as by defining certain KPIs.

- **AI Strategy Design:** involves developing an AI strategy that aligns with business objectives, incorporates the latest technological advancements, and considers regulatory and ethical guidelines.
- **Organizational Culture:** refers to how fostering experimentation and adopting an agile mindset across the organization can accelerate AI integration and drive innovation.
- **Governance & Ethics:** ensures responsible AI usage by defining regulatory compliance measures, internal governance policies, and risk mitigation strategies to maintain trust and accountability.
- **Up-skilling:** aims to enhance employees' capabilities and skills that are necessary in the AI era.
- **Communication:** encourages continuous and structured engagement to ensure smoother AI adoption.
- **Collaboration:** relates to the importance of cross-functional teamwork and knowledge sharing to enhance AI adoption and integration.



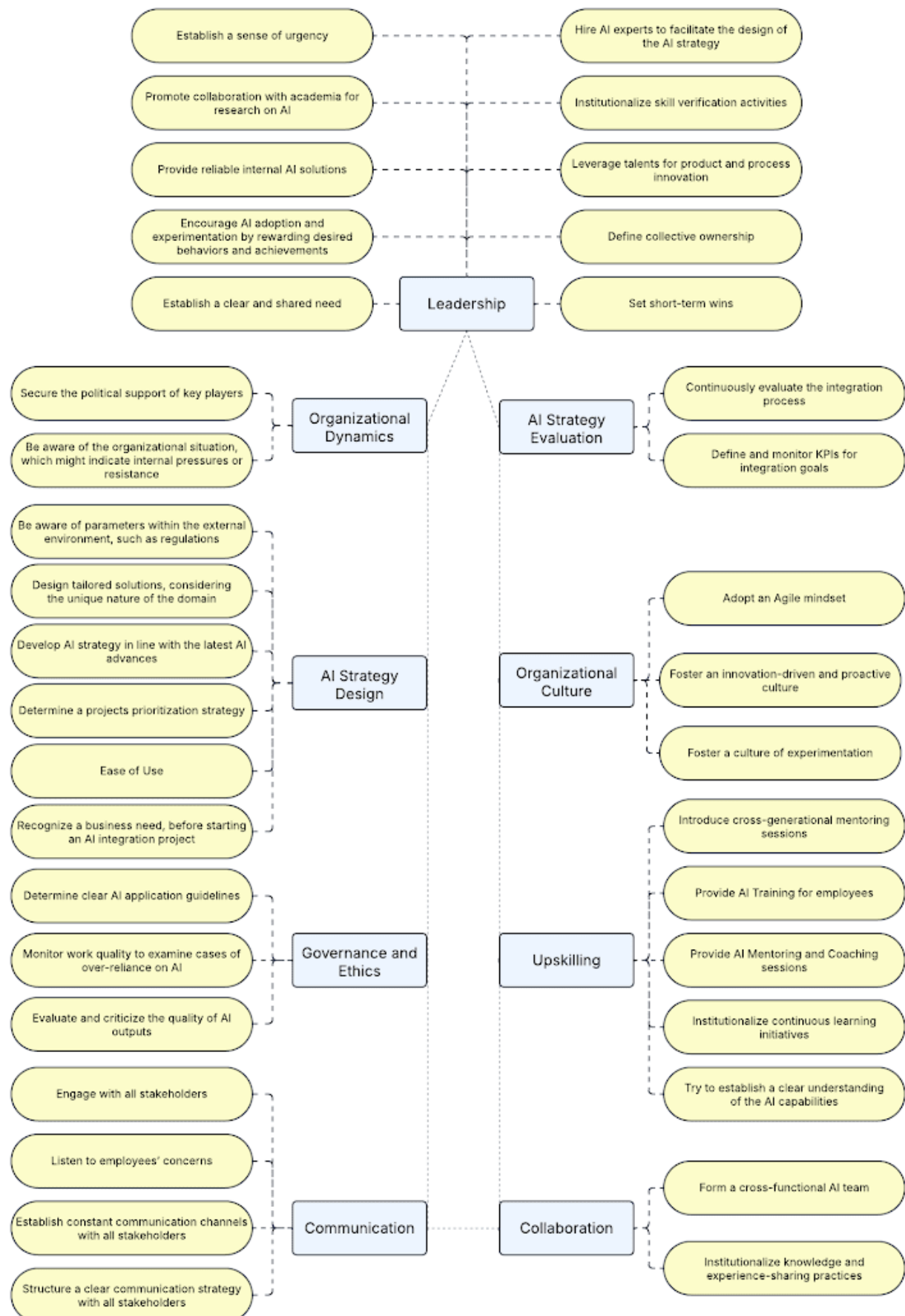
12. Do you see any gaps or missing dimensions in the framework? *

13. Would you suggest any modifications to improve clarity or relevance? *

Overall Model Feedback

The model consists of the nine dimensions that were presented in the previous section. Each dimension comprises several guidelines. The following Figure illustrates the dimensions with their respective guidelines.

Proposed BSE-informed solution model



14. How do you find the **understandability** of the proposed BSE-informed solution framework? (Scale: 1 = Not difficult at all, 5 = Very difficult)

Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Do you think that the proposed model can address the challenges that AI integration raises?

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ To some degree

16. Please explain your thinking in the previous question. *

Dimensions' Prioritization - \$100 Method

Imagine you have \$100 to distribute among the following dimensions of the model based on how important each one is to you. The more important a dimension is, the more money you should allocate to it. You do not have to allocate money to every dimension, but the total must add up to exactly \$100. If you decide not to allocate any money to a dimension, please enter the value '0'.

17. **AI Strategy Design** (Money allocation, from \$0 to \$100. The sum of all the dimensions should not exceed the \$100.)

18. **AI Strategy Evaluation** (Money allocation, from \$0 to \$100. The sum of all the dimension should not exceed the \$100.)

19. **Collaboration** (Money allocation, from \$0 to \$100. The sum of all the dimensions should not exceed the \$100.)

20. **Communication** (Money allocation, from \$0 to \$100. The sum of all the dimensions should not exceed the \$100.)

21. **Governance and Ethics** (Money allocation, from \$0 to \$100. The sum of all the dimensions should not exceed the \$100.)

22. **Leadership** (Money allocation, from \$0 to \$100. The sum of all the dimensions should not exceed the \$100.)

23. **Organizational Culture** (Money allocation, from \$0 to \$100. The sum of all the dimension should not exceed the \$100.)

24. **Organizational Dynamics** (Money allocation, from \$0 to \$100. The sum of all the dimensions should not exceed the \$100.)

25. **Up-skilling** (Money allocation, from \$0 to \$100. The sum of all the dimensions should not exceed the \$100.)

Additional Feedback

26. What improvements would you suggest to enhance the framework's effectiveness?

27. Would you be willing to participate in a follow-up discussion? *

Mark only one oval.

☐ Yes

☐ No

28. Do you have any final comments?

Closing Statement

Thank you for your valuable input! Your responses will contribute to structure a more effective AI integration model. If you are interested in receiving the final outcome of this study or having a follow up discussion (if needed), please provide your email (optional).

29. Participant's email:

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