

Collaborative model-driven software engineering (MDSE) in Industry

The purpose of this questionnaire is to identify and understand the practices and needs of industrial practitioners in Collaborative Model-Driven Software Engineering.

The target audience of this questionnaire is: industrial practitioners with experience on model-driven engineering in collaborative settings. We will ask you to think of a previous project you have been (or still are) involved in, and provide your answers based on that project.

Please, refer to the following one-pager for more context on Collaborative Model-Driven Software Engineering: <https://bit.ly/3ftaG8c>.

Filling out this questionnaire will take approximately 15-20 minutes. To alleviate the cognitive load on the respondents, the majority of the questions are closed-ended.

Your participation in this research is anonymous. The responses will be handled with care and confidentiality; no information will be recorded that can be traced back to individuals. Should you choose to receive the final research report, we will e-mail it to you once we have aggregated and analyzed the data, and drawn the essential conclusions.

This research is carried out jointly by the Software and Sustainability Research Group, Vrije Universiteit Amsterdam (the Netherlands), and the Department of Computer Science and Operations Research, University of Montreal (Canada).

Thank you for your time and cooperation.

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* Required

Demographics and company
information

In this section, you will be asked to answer general demographic questions.

1. Primary background *

Mark only one oval.

☐ Technical (STEM)

☐ Business

☐ Other: _____

2. How many years of professional experience do you have in model-driven software engineering? *

3. Your current role at your company *

4. Location of your company unit (country and city)

5. Company size (number of employees) *

Mark only one oval.

☐ 1-9

☐ 10-24

☐ 25-49

☐ 50-99

☐ 100-249

☐ 250-499

☐ 500+

6. Primary sector of your company *

Information
about your
chosen
project

In the remainder of this questionnaire, please, answer the questions by considering a recent significant project you have been (or still are) involved in, and in which collaborative modeling was applied.
If you have been involved in more than one project like that, please consider **ONLY ONE** project.

7. What is the primary application domain of the project? Please state only one domain. (Examples: finance, networking, tourism, Internet of Things, etc.)

8. On average, how many users were collaborating on the same models? *

9. Which modeling platforms have been used during the project? Please, use the "Other" option to list every platform other than the ones mentioned. *

Check all that apply.

- ☐ Eclipse
☐ JetBrains MPS
☐ MetaEdit+

Other: ☐ _____

10. What is the approximate overall duration of the project (in months)? *

Please, use the "Other" option if you wish to specify the exact number

Mark only one oval.

☐ 0-3

☐ 4-12

☐ 13-24

☐ 25-36

☐ 37-48

☐ 49-60

☐ 61+

☐ Other: _____

11. Can you provide a rough estimation of the size of the software system being developed?

Feel free to use the metric you find more convenient here, such as: lines of code, number of components, etc.

12. What is the average size of the models on which collaboration is happening?

Mark only one oval.

- ☐ small (less than 100 elements)
- ☐ medium (between 100 and 999 elements)
- ☐ large (1000 elements and more)

Collaborative MDSE I: Model management

The model management aspect of collaborative MDSE deals with managing the lifecycle of models, including their creation, editing, manipulation, and storage.

1. State-of-the-practice

Please, indicate how frequently you have encountered the following means of model management. To answer this question, please consider a recent significant project you have been (or still are) involved in, and in which collaborative modeling was applied. If you have been involved in more than one project like that, please consider ONLY ONE project.

13. Models and languages *

In **your project**, how frequently did you encounter the following means of model management?

Mark only one oval per row.

[illegible]

14. Model manipulation *

In **your project**, how frequently did you encounter the following means of model manipulation?

Mark only one oval per row.

[illegible]

15. Editors and modeling environments *

In **your project**, how frequently did you encounter the following editors and environments?

Mark only one oval per row.

	never	rarely	sometimes	often	always	I don't know.
Visual editors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textual editors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tabular editors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tree-based editors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sketch-based editors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Editors supporting multiple types of notations (e.g., textual and graphical at the same time).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desktop-based modeling environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Web-based modeling environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile-based modeling environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Have you encountered any other means of model management in addition to those listed above?

Please, consider **your chosen project** when answering.

2. Needs

Considering a **potential future project**, please, assess the usefulness of the following means of model management.

17. Models and languages *

In a **potential future project**, how useful would you find the following means of model management?

Mark only one oval per row.

[illegible]

18. Model manipulation *

In a **potential future project**, how useful would you find the following means of model manipulation?

Mark only one oval per row.

[illegible]

19. Editors and modeling environments *

In a **potential future project**, how useful would you find the following editors and environments?

Mark only one oval per row.

[illegible]

- Please, consider a **potential future project** when answering.

This aspect of collaborative MDSE deals with facilitating effective and efficient groupwork across the involved stakeholders. Typical means of collaboration in MDSE include versioning systems, diff and merging tools, real-time collaborative techniques, consistency management mechanisms and conflict resolution algorithms.

Please, indicate how frequently you have encountered the following means of collaboration. To answer this question, please consider a recent significant project you have been (or still are) involved in, and in which collaborative modeling was applied. If you have been involved in more than one project like that, please consider **ONLY ONE** project.

- In **your project**, how frequently did you encounter the following means of stakeholder management and access control?

[illegible]

24. Conflicts and consistency *

In **your project**, how frequently did you encounter the following conflict- and consistency management techniques/tools?

Mark only one oval per row.

[illegible]

25. Network architecture & robustness

In **your project**, how frequently did you encounter the following network and robustness techniques?

Mark only one oval per row.

	never	rarely	sometimes	often	always	I don't know.
P2P (serverless) network architecture	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cloud-based network architecture	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Failure recovery	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. Have you encountered any other means of collaboration in addition to those listed above?

Please, consider **your chosen project** when answering.

2. Needs

Considering a **potential future project**, please, assess the usefulness of the following means of collaboration.

27. Stakeholder management & access control *

In a **potential future project**, how useful would you find the following means of stakeholder management and access control?

Mark only one oval per row.

[illegible]

28. Collaboration dynamics *

In a **potential future project**, how useful would you find the following collaboration dynamics?

Mark only one oval per row.

[illegible]

29. Versioning *

In a **potential future project**, how useful would you find the following versioning techniques/tools?

Mark only one oval per row.

[illegible]

30. Conflicts and consistency *

In a **potential future project**, how useful would you find the following conflict- and consistency management techniques/tools?

Mark only one oval per row.

[illegible]

31. Network architecture & robustness *

In a **potential future project**, how useful would you find the following network and robustness techniques?

Mark only one oval per row.

	definitely not useful	probably not useful	neutral	probably useful	definitely useful	I don't know.
P2P (serverless) network architecture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cloud-based network architecture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Failure recovery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

32. From your experience, do you need any other collaboration techniques/tools in addition to those listed in the previous question?

Please, consider a **potential future project** when answering.

Collaborative MDSE III: Communication

The communication aspect of collaborative MDSE deals with facilitating a rich exchange among the involved stakeholders, in order to augment the technical information carried by the models. Typical means of communication are chats, wikis, model annotations, comments, change proposals, and forums.

1. State-of-the-practice

Please, indicate how frequently you have encountered the following means of communication. To answer this question, please consider a recent significant project you have been (or still are) involved in, and in which collaborative modeling was applied.

If you have been involved in more than one project like that, please consider ONLY ONE project.

33. Synchronous communication *

In **your project**, how frequently did you encounter the following synchronous means of communication?

Mark only one oval per row.

[illegible]

34. Asynchronous communication *

In **your project**, how frequently did you encounter the following asynchronous means of communication?

Mark only one oval per row.

[illegible]

35. Integration *

In **your project**, how frequently did you encounter the following levels of integrating communication tools into modeling tools?

Mark only one oval per row.

	never	rarely	sometimes	often	always	I don't know.
Communication means built into the modeling tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication means NOT built into the modeling tools (e.g., an external teleconferencing tool, or a stand-alone messaging app)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

36. Have you encountered any other means of communication in addition to those listed above?

Please, consider **your chosen project** when answering.

2. Needs

Considering a **potential future project**, please, assess the usefulness of the following means of communication.

37. Synchronous communication *

In a **potential future project**, how useful would you find the following synchronous means of communication?

Mark only one oval per row.

[illegible]

38. Asynchronous communication *

In a **potential future project**, how useful would you find the following asynchronous means of communication?

Mark only one oval per row.

[illegible]

39. Integration *

In **your project**, how frequently did you encounter the following levels of integrating communication tools into modeling tools?

Mark only one oval per row.

	definitely not useful	probably not useful	neutral	probably useful	definitely useful	I don't know.
Communication means built into the modeling tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication means NOT built into the modeling tools (e.g., an external teleconferencing tool, or a stand-alone messaging app)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

40. From your experience, do you need any other communication techniques/tools in addition to those listed in the previous question?

Please, consider a **potential future project** when answering.

Comments
and
contact
details

Thank you very much for your feedback on collaborative MDSE in practice. We believe the information collected in this questionnaire will lead to valuable insights. If you are interested in receiving the final research report, please, feel free to leave your contact details below, and we will e-mail it to you once we have aggregated and analyzed the data, and drawn the essential conclusions.

Please, do not forget to click the Submit button below.

41. Finally, would you like to add any comments relevant to this study?

42. Name

43. Email address

44. Please select your interest

Check all that apply.

- ☐ I am interested in receiving a preprint of the report.
- ☐ I am interested in staying in touch for potential further discussions on the results of this research, or related scientific topics.

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